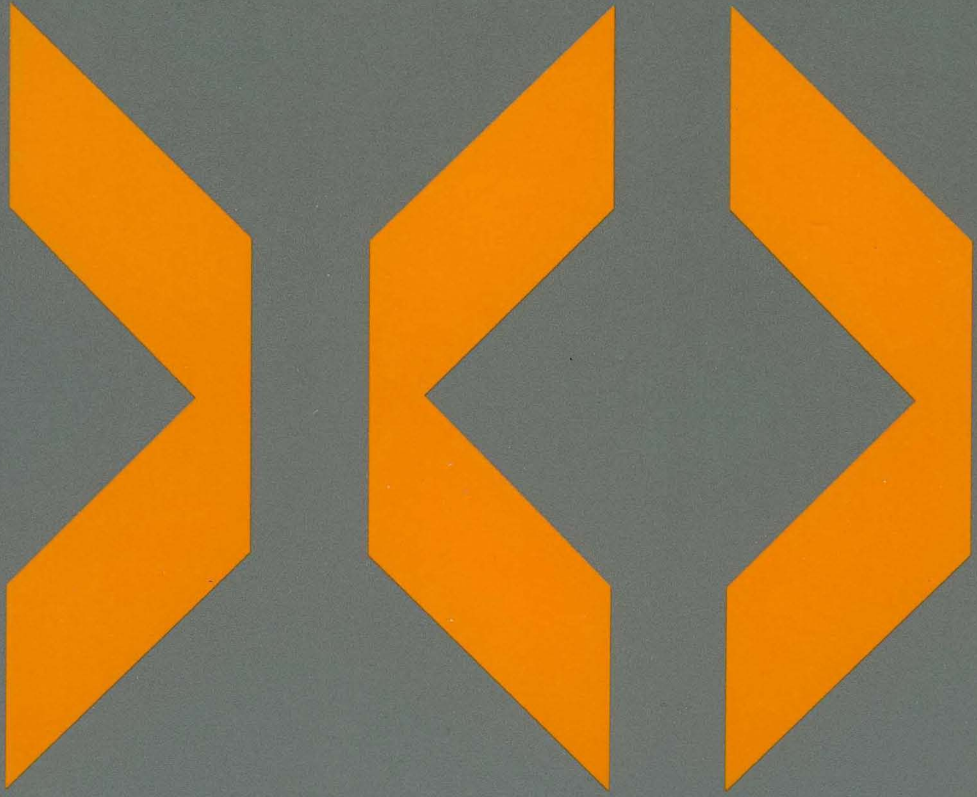
IBM

GC35-0033-16

Device Support Facilities

User's Guide and Reference

Release 13



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Note!

Before using this information and the product it supports, be sure to read the general information under "Special Notices" on page xiii.

Fifteenth Edition (March 1991)

This edition replaces and makes obsolete the previous edition, GC35-0033-15.

This edition applies to Device Support Facilities, Release 13.

The changes for this edition are summarized under "Summary of Changes" following the preface. Specific changes are indicated by a vertical bar to the left of the change. These bars will be deleted at any subsequent publication of the page affected. Editorial changes that have no technical significance are not noted.

Changes are made periodically to this publication; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370, 30xx, 4300, and 9370 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

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Special Notices

Device Support Facilities provides no macros that allow a customer installation to write programs that use the services of Device Support Facilities.

Warning: Do not use as programming interfaces any Device Support Facilities macros.

This publication is intended to help the customer to do installation and maintenance of the DASD subsystem.

This publication also documents Product-Sensitive Programming Interface and Associated Guidance Information.

Product-Sensitive programming interfaces allow the customer installation to perform tasks such as diagnosing, modifying, repairing, tailoring, or tuning of this IBM software product. Use of such interfaces creates dependencies on the detailed design or implementation of the IBM software product. Product-Sensitive programming interfaces should be used only for these specialized purposes. Because of their dependencies on detailed design and implementation, it is to be expected that programs written to such interfaces may need to be changed in order to run with new product releases or versions, or as a result of service.

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IBM	MVS/DFP	MVS/370	MVS/SP
MVS/XA	MVS/ESA	VM/ESA	VM/XA
DFSMS	VSE	VSE/ESA	

Preface

This publication describes the Device Support Facilities (ICKDSF) processor and commands. It also discusses hardware considerations, operating system considerations, and planning and installation. It is written for installation managers, system programmers, system operators, and other data processing personnel who manage or use direct access storage devices (DASD).

Wherever an IBM operating system is discussed, it is assumed readers understand the concepts and terms used in that operating system.

Introduction to maintaining IBM DASD

For an introduction to maintaining IBM 3380 and 3390 DASD using ICKDSF see *Device Support Facilities: A Primer for the User of IBM Direct Access Storage* This primer includes the following:

- Considerations on handling data checks
- Description of some of the functions of the ANALYZE, INITialize, INSPECT, and INSTALL and INSPECT commands
- Using ICKDSF for various tasks such as installation, HDA replacement, etc.
- General guidelines on when and how to perform media maintenance and the use of the INITialize, INSPECT, and INSTALL and INSPECT commands for performing media maintenance.

If you are experiencing problems

This publication is a reference for ICKDSF; however, if you are experiencing device errors or media maintenance problems, you should first refer to *Storage Subsystem Library: Maintaining IBM Disk Storage Media*, GC26-4495 to determine the correct procedure.

Don't let the size of the book deter you. There is much duplication in the interest of giving you information where you need it rather than referring you to a common section. For example, "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73 and "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195 describe the ICKDSF commands. However, Part 2 *only* describes the commands used by count-key-data (CKD) devices and Part 3 *only* describes the commands used by fixed block architecture (FBA) devices. Also Part 2, Part 3, the Appendixes (which include *all* the messages), the Glossary, and Index are all reference information.

Just as a picture is worth a thousand words, an example can clearly and concisely illustrate what may take pages to explain. For this reason, numerous examples have been included in the book. Both "Examples of ICKDSF Tasks—CKD Devices" on page 39 and "Examples of ICKDSF Tasks—FBA Devices" on page 55 consist *entirely* of examples. Also, after the description of each command there are examples of that command.

To assist you in finding information, see the table of contents, the figure list, and the index.

Organization of This Publication

For convenience, information on ICKDSF is presented under three major headings followed by the appendixes:

- "Part 1. General Information" on page 1 describes ICKDSF and how it is used by the system programmer and the system operator. This section includes an overview of the product and how to use the different versions of the product. Examples of ICKDSF tasks are included for both count-key data and fixed block architecture devices.
- "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73 and "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195 describe the function and syntax of the ICKDSF commands. Both of these parts include detailed reference information for each command and each command includes examples.

The appendixes, the glossary, and the index follow these sections.

See the table of contents, the figure list, and the index for assistance in finding information.

Related Publications

Other books that may be helpful to you are:

- *Device Support Facilities: A Primer for the User of IBM Direct Access Storage*, GC26-4498, is an introduction to maintaining IBM 3380 and 3390 DASD using ICKDSF.
- *IBM System/370 and 4300 Processors Bibliography*, GC20-0001, describes the publications that are applicable and current for MVS and VSE operating systems.
- MVS/ESA Publications
  - *MVS/ESA Planning: Dynamic I/O Configuration*, GC28-1674, includes information concerning dynamic I/O configuring.
  - *MVS/ESA—Data Administration Guide*, SC26-4505, includes information on indexed VTOCs.
  - *MVS/ESA Message Library: System Messages*, GC28-1812 and GC28-1813
  - *MVS/ESA Data Administration: Utilities*, SC26-4526, describes the utility programs available in the MVS/ESA environment.
  - *MVS/ESA Interactive Storage Management Facility User's Guide*, SC26-4508, describes how to use ISMF under MVS/ESA.
  - *MVS/ESA Storage Administration Reference*, SC26-4514, contains more information concerning storage administrator applications.
- MVS/XA Publications
  - *MVS/Extended Architecture System—Data Administration*, GC26-4149, includes information on indexed VTOCs.
  - *MVS/XA Message Library: System Messages*, GC28-1376 and GC26-1377.
  - *MVS/Extended Architecture Data Administration: Utilities*, GC26-4018, describes the utility programs available in the MVS/XA environment.

- *Interactive Storage Management Facility (ISMF) User's Guide*, GC26-4266, describes how to use ISMF under MVS/XA.
- *MVS/Storage Management Library: Managing Storage Pools*, SC26-4407, contains more information concerning using volumes under the Data Facility Storage Management Subsystem (DFSMS).

- MVS/370 Publications
  - *MVS/370 System Programming Library: Data Management*, GC26-4056.
  - *MVS/370 Message Library: System Messages*, GC28-1374.
  - *OS/VS2 MVS Resource Access Control Facility (RACF). General Information Manual*, GC28-0722, describes the functions and capabilities of access control.
  - *OS/VS2 System Programming Library: Supervisor Services and Macro Instructions*, GC28-0683, describes the authorized program facility and service management (SRB dispatching).
  - *OS/VS2 MVS Utilities*, GC26-3902, describes the functions of the OS/VS2 MVS utility programs and the control statements used with each.
  - *MVS/370 Utilities*, GC26-4065, describes the utility programs available in the MVS/370 environment.
- VM Publications
  - *VM/ESA Service Guide*, SC24-5429.
  - *VM/ESA Operation*, SC24-5432.
  - *VM/ESA Installation*, SC24-5431.
  - *VM/ESA CP Planning and Administration for 370*, SC24-5430.
  - *VM/XA SP Real System Operation*, SC23-0371.
  - *VM/XA SP Installation and Service*, SC23-0364.
  - *IBM VM/SP HPO Planning and Reference*, SC19-6223.
  - *IBM VM/SP HPO Installation Guide*, SC38-0107.
  - *VM/SP Planning Guide and Reference*, SC19-6201.
  - *VM/SP Service Guide*, SC24-5389.
  - *VM Running Guest Operating Systems*, GC19-6212.
- VSE Publications
  - *VSE/ESA Messages and Codes*, SC33-6507.
  - *VSE/ESA System Utilities*, SC33-6517 describes the VSE System Utilities including format emulated extent utility (INITEM).
- Device Support Publications
  - *Component Summary—2835 Storage Control, 2305 Fixed Head Storage*, GA26-1589, describes the 2305 fixed head storage module.
  - *IBM System 360—Component Descriptions, 2314 Direct Access Storage Facility and 2844 Auxiliary Storage Control*, GA26-3599, describes the 2314 direct access storage device.
  - *IBM 2319 Disk Storage—A Series, Component Description*, GA26-1606, describes the 2319 direct access storage device.
  - *Component Description—2841 Storage Control, 2311 Disk Storage*, GA26-5988, describes the 2311 disk storage device.
  - *IBM 3310 Direct Access Storage Reference Manual*, GA26-1660, describes the 3310 fixed block storage device.
  - *Reference Manual for IBM 3330 Series Disk Storage*, GA26-1615, describes the 3330 direct access storage device.
  - *Reference Manual for IBM 3340 3344 Disk Storage*, GA26-1619, describes the 3340 and 3344 direct access storage devices.

- *Reference Manual for IBM 3350 Direct Access Storage*, GA26-1638, describes the 3350 direct access storage device.
- *IBM 3370 Direct Access Storage Description*, GA26-1657, describes the 3370 storage system and its fixed block data format.
- *IBM 3375 Direct Access Storage Description and User's Guide*, GA26-1666, describes the 3375 direct access storage device.
- IBM Storage Subsystem Library Publications
  - *Using IBM 3390 Direct Access Storage in a VSE Environment*, GC26-4576.
  - *IBM 3390 Direct Access Storage Introduction*, GC26-4573.
  - *IBM 3390 Direct Access Storage Reference Summary*, GX26-4577.
  - *Using IBM 3390 Direct Access Storage in an MVS Environment*, GC26-4574.
  - *Using IBM 3390 Direct Access Storage in a VM Environment*, GC26-4575.
  - *Maintaining IBM Storage Subsystem Media*, GC26-4495.
  - *Storage Subsystem Library Master Bibliography, Index, and Glossary*, GC26-4496.
- *IBM 3850 Mass Storage System (MSS) Introduction and Preinstallation Planning*, GA32-0038, introduces the concepts of the Mass Storage System.
- *Operator's Library: IBM 3850 Mass Storage System (MSS) Under OS/VS*, GC35-0014, describes commands used with the Mass Storage System.
- *IBM 3990 Storage Control Planning, Installation, and Storage Administration Guide*, GA32-0100, describes the 3990 Storage Control.
- *IBM 9332 Disk Unit: Planning*, GA21-9532, helps you to plan for the 9332 fixed block storage device.
- *IBM 9335 Direct-Access Storage Subsystem: Functional Characteristics*, SA33-3143, describes the 9335 fixed block storage device.
- *IBM 9336 Disk Unit Customer Information*, SA21-9549, describes how to operate and plan for the IBM 9336 Disk Unit.
- *IBM 4321 and 4331 Processor Compatibility Features*, GA33-1528, describes the Direct Access Storage Compatibility Feature and emulation restrictions.
- *IBM 4361 Processor Compatibility Feature*, GA33-1569, describes the Direct Access Storage Compatibility Feature and emulation restrictions.

Summary of Changes

Release 13, February, 1991

New Support

Information has been included to support the following:

The IBM 9336

The IBM 0671 Models 4 and 8.

System Support

The IBM 9336 is supported by the VSE, CMS, and stand-alone versions of ICKDSF.

The IBM 0671 is supported by the VSE, CMS, and stand-alone versions of ICKDSF.

Compatibility

Existing jobs will run under the new support as previously.

Command Changes

The REFORMAT command has a new parameter, VTOCPTR, which allows you to recover the destroyed volume serial of a previously initialized volume.

The CPVOLUME command has a new parameter, FILLER/NOFILLER, which allows you to specify if filler records should be included when you are formatting a 3380 volume (or 3390 volume in 3380 track compatibility mode) for use in a VM environment.

Other Changes

Updates have been added to Appendix C, "Device Support Facilities Messages (ICK)" on page 265

Release 12, May, 1990

New Support

Dual Copy volume support has been added to the following commands:

- ANALYZE
- INSPECT

This new support allows you to address a primary or secondary volume of a dual copy pair using the DIRECTIO parameter. As part of this support, the TOLERATE(PRIFAIL) parameter has been added to the INSPECT command to allow you to continue processing a secondary volume when you encounter a problem on the primary volume.

When you invoke the CMS version of ICKDSF you can now specify the INPUT and OUTPUT devices with the invoke ICKDSF command. This will aid in running ICKDSF remotely.

A new parameter, RESETICD, has been added to the CONTROL command. RESETICD allows you to reset an IBM 3990-3 control unit when it is in an indefinite state.

A new parameter, AVAILABLE, has been added to the INSPECT command. AVAILABLE ensures *concurrent media maintenance* is in effect for INSPECT PRESERVE processing.

You can now perform the following emulation of CKD on FBA devices in the VSE version:

- the IBM 3375 can be emulated on the IBM 9335
- the IBM 3340 can be emulated on the IBM 9313 or IBM 9332

  The following functions are supported for these emulations:
  - ANALYZE SCAN
  - Minimal or medial INIT
  - INSPECT, without surface checking functions

System Support

The dual copy enhancements which allow you to specify the primary or secondary volume of a dual copy pair is supported in the following versions of ICKDSF:

- MVS/XA
- MVS/ESA
- Stand-alone.

The CMS parameter list enhancement is supported by the CMS version of ICKDSF.

The CONTROL command enhancement allows you to reset an indefinite condition on an IBM 3990-3. It is supported in the following version of ICKDSF:

- MVS/370
- MVS/XA
- MVS/ESA
- VSE
- CMS
- Stand-alone.

Compatibility

Existing jobs will run under the new support as previously.

Command Changes

The ANALYZE command has a new parameter, DIRECTIO, which allows you to specify either the primary or secondary volume of a dual copy pair.

The INSPECT command has the following changes:

- A new parameter, DIRECTIO, which allows you to specify either the primary or secondary volume of a dual copy pair.

- A new parameter, TOLERATE(PRIFAIL), which allows you to specify that processing on a secondary volume is to continue when a problem occurs on the primary volume.

- A new parameter, AVAILABLE, which ensures *concurrent media maintenance* processing is in effect for INSPECT PRESERVE processing.

The CONTROL command has a new parameter, RESETICD, which allows you to reset an indefinite condition of a device which is attached to an IBM 3990-3.

Other Changes

Updates have been added to Appendix C, "Device Support Facilities Messages (ICK)" on page 265

Part 1. General Information

Overview

Device Support Facilities (ICKDSF) is a program you can use to perform various operations on direct-access storage devices. It can be used to perform service functions on a direct-access storage device, as well as error detection and media maintenance.

With ICKDSF, you can:

- Initialize a direct-access storage volume so that it can be used in an MVS, VM, or a VSE* system.
- Inspect a volume for defective tracks.
- Modify the volume label and IPL bootstrap and program records.
- Examine a device with a nonremovable storage mechanism to determine if there are problems with the drive.
- Determine if there is a problem with reading or writing data stored on the volume.

Device Support Facilities supports a stand-alone version and the following operating system versions:

- MVS/370*
- MVS/Extended Architecture (MVS/XA)*
- MVS/Enterprise System Architecture (MVS/ESA)*
- VSE/SP and VSE/ESA*
- VM
  - You can execute ICKDSF under the VM/SP, VM/SP HPO, VM/XA* and VM/ESA* versions of CMS.

  The stand-alone version of ICKDSF runs under an IBM System/370 or System/390 as follows:
  - The IBM 308X, 3090, and 4381 are supported in Extended Architecture mode.
  - The IBM 303X, 308X, 3090, 43XX, and 9370 are supported in 370 mode.
  - The IBM 4381, 3090, and ES/9000 are supported in Enterprise System Architecture mode.

Abbreviations used for operating systems in this book:

- The term "MVS," as used in this book, includes the following systems: MVS/370 MVS/XA and MVS/ESA.
- The term "VSE," as used in this book, refers to VSE/SP and VSE/ESA systems.
- The term "VM," as used in this book, includes VM/SP, VM/SP HPO, VM/XA, and VM/ESA.

Introduction to maintaining IBM DASD

For an introduction to maintaining IBM 3380 and 3390 disk storage using ICKDSF, see *Device Support Facilities: A Primer for the User of IBM Direct Access Storage*. This primer includes the following:

- Considerations on handling data checks
- Description of some of the functions of the ANALYZE, INITialize, and INSPECT INSPECT, and INSTALL commands
- Using ICKDSF for various tasks such as installation, HDA replacement, etc.
- General guidelines on when and how to perform media maintenance and the use of the INITialize, and INSPECT, INSPECT, and INSTALL commands for performing media maintenance.

If you are experiencing problems

This publication is a reference for ICKDSF; however, if you are experiencing device errors or media maintenance problems, you should first refer to *Storage Subsystem Library: Maintaining IBM Disk Storage Media* to determine the correct procedure.

Tasks You Can Perform with ICKDSF

ICKDSF performs two basic functions: volume formatting and disk surface maintenance.

- Volume formatting makes a volume usable by an operating system and provides a means of updating old volume formats. This is also known as "initializing" a volume.

  Newly installed volumes and replaced head disk assemblies (HDAs) will always require formatting.

- Disk surface maintenance aids in detecting problems with device operation and attempts to correct data errors that can be traced specifically to disk surface defects.

Device Support Facilities Commands

ICKDSF operates on both count-key-data (CKD) and fixed block architecture (FBA) devices. The commands, syntax, and functions are common for the stand-alone version and system versions of ICKDSF if the operating system supports the device and/or the function. The ICKDSF commands are:

- ANALYZE
- BUILDIX
- CPVOLUME
- CONTROL
- INIT
- INSPECT
- INSTALL
- IODELAY
- MAPALT
- REFORMAT
- REVALidate

The following is a description of each command:

- ANALYZE helps to detect and differentiate recording surface and drive-related problems on a volume. It can also scan data to aid in detecting the existence of possible media problems.
- BUILDIX changes a standard MVS-format VTOC into an indexed VTOC, or an indexed VTOC into a standard MVS-format VTOC.
- CONTROL command:
  - The FBA version of the CONTROL command with the RECLAIM(SYSAREA) parameter, allows you to reclaim primary and alternate blocks associated with the Systei.: Reserved Area of the IBM 9335 devices.
  - The CKD version of the CONTROL command with the ALLOWWRITE parameter allows subsequent writes to the devices controlled by an IBM 3880 or IBM 3990 Storage Control if that storage control has been WRITE INHIBITed by the error recovery procedures at the channel, director, or storage control level.

    The CKD version of the CONTROL command with the CLEARFENCE parameter (IBM 3990 only)allows you to clear a fence status of a path and/or a device that has been fenced off by the subsystem.
- CPVOLUME prepares a volume for use in the VM environment.
- INIT prepares a direct-access storage volume so that it can be used in an operating system environment or it reinitializes a volume that was previously prepared.
- INSPECT provides surface checking functions for blocks or tracks on a subset of a volume.
- INSTALL performs the necessary verification procedures after installation, head-disk assembly (HDA) replacement, or some physical movement (see product information) of IBM 3380 and 3390 DASD.
- IODELAY allows functions other than ICKDSF more processing time by "slowing down" ICKDSF I/O. Other functions are allowed processing time between ICKDSF I/Os rather than ICKDSF issuing consecutive I/O. Although IODELAY affects CKD and FBA commands, it has been included in the CKD section.
- MAPALT produces a report showing the assignment of primary blocks to alternate blocks on fixed block architecture devices.
- REFORMAT can be used to update or replace information on a previously initialized volume. For CKD devices, the volume label, owner ID, IPL bootstrap, and IPL program records can be updated. For FBA devices, the volume label and owner ID can be replaced.
- REVALidate combines the track validation functions of medial initialization with the problem determination and data verification functions of the ANALYZE command and also the INSPECT functions, if required.

Each command is described in:

- "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73
- "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

  Each command description is followed by examples, and further examples are presented in:

  - "Examples of ICKDSF Tasks—CKD Devices" on page 39
  - "Examples of ICKDSF Tasks—FBA Devices" on page 55

Figure 1 lists the ICKDSF commar ds and the available versions of ICKDSF. It indicates the commands which are supported by each version.

Figure 1. Commands supported by each version of ICKDSF

	ANLYZE	**BLDX**	**CTL**	**CPVOL**	**INIT**	**INSP**	**INST**	**IODELY**	**MAP**	**RFMT**	**REVAL**
MVS/370	X	X	X	-	X	X	X	X	-	X	X
MVS, XA & ESA	X	X	X	-	X	X	X	X	-	X	X
VSE	X	-	X	-	X	X	X	X	X	X	X
CMS*	X	-	X	X	X	X	X	X	X	X	X
Stand-alone	X	-	X	X	X	X	X	X	X	X	X

Legend:

An X indicates support and a hyphen (-) indicates nonsupport.

* See Appendix B, "VM Support" on page 257 for a description of the ICKDSF VM support.

Figure 2 on page 6 lists the ICKDSF commands and indicates the devices each command supports.

Figure 2. Devices Supported by ICKDSF Commands

	ANLYZE	BLDX	CTL	CPVOL	INIT	INSP	INST	MAP	RFMT	REVAL
CKD Devices										
2305	X	X	-	-	X	X	-	-	X	-
2311	X	-	-	-	X	X	-	-	X	-
2314	X	-	-	-	X	X	-	-	X	-
2319	X	-	-	-	X	X	-	-	X	-
3330	X	X	X	X	X	X	-	-	X	-
3333	X	X	X	X	X	X	-	-	X	-
3340	X	X	X	X	X	X	-	-	X	-
3344	X	X	X	X	X	X	-	-	X	-
3350	X	X	X	X	X	X	-	-	X	-
3375	X	X	X	X	X	X	-	-	X	-
3380	X	X	X	X	X	X	X	-	X	X
3390	X	X	X	X	X	X	X	-	X	X
FBA Devices										
0671	-	-	-	X	X	X	-	-	X	-
3310	X	-	-	X	X	X	-	X	X	-
3370	X	-	-	X	X	X	-	X	X	-
9313	-	-	-	X	X	X	-	-	X	-
9332	-	-	-	X	X	X	-	-	X	-
9335	X	-	X	X	X	X	-	X	X	-
9336	-	-	-	X	X	X	-	-	X	-

Legend:

An X indicates support and a hyphen (-) indicates nonsupport.

- The stand-alone version of ICKDSF supports all the above devices. The support under the operating system versions is limited to the devices supported by each operating system. (For example, the MVS version does not support the IBM 3370.)
- For DASD operating as a paging subsystem, all ICKDSF commands must be directed to the base address.
- ICKDSF automatically bypasses caching functions in all channel programs requiring direct knowledge of DASD operations, if caching functions exist.

Devices You Can Use

ICKDSF supports the following DASD in various environments:

IBM Count-Key-Data (CKD) Devices

- 2305 Fixed Head Storage
- 2311 Disk Storage
- 2314 Direct Access Storage Facility
- 2319 Disk Storage
- 3330 Disk Storage
- 3333 Disk Storage and Control
- 3340 Direct Access Storage Facility
- 3344 Direct Access Storage
- 3350 Direct Access Storage

- 3375 Direct Access Storage
- 3380 Direct Access Storage Models A04, B04, and AA4
- 3380 Direct Access Storage Models AD4, BD4, AE4, and BE4
- 3380 Direct Access Storage Models AJ4, AK4, BJ4, BK4, and CJ2
- 3390 Direct Access Storage Models A14, A18, A24, A28, B14, B18, B1C, B24, B28, and B2C

IBM Fixed Block Architecture (FBA) Devices

- 0671 Direct Access Storage
- 3310 Direct Access Storage
- 3370 Direct Access Storage
- 9313 Direct Access Storage
- 9332 Direct Access Storage
- 9335 Direct Access Storage
- 9336 Disk Unit

How to Use ICKDSF

The ICKDSF program is controlled by the use of commands (and their associated parameters) presented to it as part of the input stream. Briefly, to use ICKDSF you must do the following:

- To use the stand-alone version of ICKDSF, you must IPL ICKDSF from a tape (or virtual card reader on a VM system).

  See "Using the Stand-alone Version of ICKDSF" on page 11.

  ICKDSF commands are then entered from the input device

- To use the MVS or VSE version of ICKDSF, you execute ICKDSF using JCL (MVS) or job control statements (VSE).

  See

  - "Using the MVS Version of ICKDSF" on page 18
  - "Using the VSE Version of ICKDSF" on page 21.

  ICKDSF commands are then entered as part of the SYSIN data for MVS or part of the system data stream for VSE.

  Also, in the MVS/XA and MVS/ESA versions, you can use the Interactive Storage Management Facility (ISMF) to schedule ICKDSF jobs. For more information see "Using ICKDSF in an ISMF Environment" on page 20.

- To use the CMS version of ICKDSF, you execute ICKDSF either by IPLing the stand-alone version in a virtual machine or executing the CMS version. See:

  - "Using the CMS Version of ICKDSF" on page 22 or "Using the Stand-alone Version of ICKDSF" on page 11

  You can then enter and execute the ICKDSF commands from the input device or from a CMS file.

- To specify the ICKDSF commands to perform the function you require see:
  - "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73
  - "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

  You may find it useful to select an example that most closely matches the task(s) you want to perform and use it as a model for your ICKDSF job. Examples of ICKDSF commands are presented in:

  - "Examples of ICKDSF Tasks—CKD Devices" on page 39
  - "Examples of ICKDSF Tasks—FBA Devices" on page 55

  Further examples are presented after each command in:

  - "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73
  - "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195
- If required, you can control ICKDSF command execution using IF-THEN-ELSE statements.

  See "Controlling Command Execution" on page 27.

Installation Information

Instructions explaining how to install ICKDSF are contained in the program directory shipped with the machine-readable material.

Storage Requirements

ICKDSF requires the following estimated amounts of storage space:

MVS/370, MVS/XA, and MVS/ESA
Virtual storage: 1M bytes

VSE
Minimum partition size of 1M bytes

Stand-alone
1M bytes

CMS
1M byte user storage

Using Device Support Facilities (ICKDSF)

To use Device Support Facilities (ICKDSF), you execute the ICKDSF command processor. Each command is processed completely before processing of the next command begins.

This section describes how to use the following versions of ICKDSF:

- Stand-alone
- MVS (includes ICKDSF in an Interactive Storage Management Facility (ISMF) environment)
- VSE
- CMS

Using the Stand-alone Version of ICKDSF

This section describes how to use the stand-alone version of ICKDSF.

The stand-alone version of ICKDSF runs under an IBM System/370 in 370 mode or Extended Architecture mode. Under VM, each DASD device must be either ATTACHed to the VM virtual machine or LINKed as a minidisk. See Appendix B, "VM Support" on page 257.

To use the stand-alone version of ICKDSF you must do the following:

- Create a stand-alone IPL tape under MVS, CMS or VSE. For VM, you can use an already existing stand-alone tape, or you can use the CMS file "IPL ICKDSF, or ICKSADSF COREIMAG" and punch it to your virtual card reader.

  See:

  - "Creating an ICKDSF Stand-alone IPL Tape using MVS" on page 12
  - "Creating an ICKDSF Stand-alone System Under CMS" on page 12
  - "Preparing to Run ICKDSF Stand-alone using VM" on page 13
  - "Creating an ICKDSF Stand-alone IPL Tape Using VSE" on page 15

- Ipl ICKDSF using the tape created in the last step.

  See "How to IPL ICKDSF from a Stand-alone Tape" on page 15.

- To specify the ICKDSF commands to perform the function you require, see:

  - "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73
  - "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

You may find it useful to select an example that most closely matches the task(s) you want to perform and use it as a model for your ICKDSF job. Examples of ICKDSF commands are presented in:

  - "Examples of ICKDSF Tasks—CKD Devices" on page 39
  - "Examples of ICKDSF Tasks—FBA Devices" on page 55

  Further examples are presented after each command in:

  - "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73
  - "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

- If required, you can control ICKDSF command execution using IF-THEN-ELSE statements.

  See "Controlling Command Execution" on page 27.

Creating an ICKDSF Stand-alone IPL Tape using MVS

For MVS, the stand-alone code is found in SYS1.SAMPLIB as ICKSADSF. The ICKDSF program is usually loaded from a file on tape, but can be loaded from a binary-card deck.

The following is sample MVS JCL that can be used to copy the stand-alone ICKDSF code to an unlabeled tape. There should only be one file on the tape. Note that BLKSIZE=80 is required on the tape data set.

```
//JOBNAME  JOB  JOB CARD PARAMETERS
//STEPNAME EXEC PGM=IEBGENER
//SYSPRINT DD   SYSOUT=A
//SYSIN    DD   DUMMY,DCB=BLKSIZE=80
//SYSUT1   DD   DSNAME=SYS1.SAMPLIB(ICKSADSF),UNIT=3380,
//              DISP=SHR,VOLUME=SER=XXXXXX,
//SYSUT2   DD   DSNAME=ICKDSF,UNIT=3480,LABEL=(,NL),
//              DISP=(,KEEP),VOLUME=SER=YYYYYY,
//              DCB=(RECFM=F,LRECL=80,BLKSIZE=80)
```

Creating an ICKDSF Stand-alone System Under CMS

For CMS, the stand-alone code is found in the CMS file ICKSADSF COREIMAG. This stand-alone version of ICKDSF can be executed by punching the ICKSADSF COREIMAG to a virtual card reader and IPLing the file from the virtual reader. Alternatively, the stand-alone ICKDSF can also be copied to a tape and IPLed from the tape.

Creating the ICKDSF Stand-alone Tape under CMS

Figure 3 is a sample EXEC to copy the stand-alone program code to an unlabeled tape.

```
*THIS EXEC COPIES THE STAND-ALONE DEVICE SUPPORT FACILITIES
*FROM CMS FILE 'ICKSADSF COREIMAG' TO AN IPLABLE TAPE.
*THE TAPE MUST BE ATTACHED AS VIRTUAL ADDRESS '181'.
CP REWIND 181
&IF &RETCODE NE 0 &GOTO -NOTAPE
FILEDEF INMOVE DISK ICKSADSF COREIMAG * (LRECL 80 RECFM F
FILEDEF OUTMOVE TAP1 (LRECL 80 RECFM F BLOCK 80
MOVEFILE
&IF &RETCODE NE 0 &GOTO -BADMOVE
&BEGTYPE
*** STAND-ALONE ICKDSF SUCCESSFULLY GENERATED ***
&END
&EXIT 0
-BADMOVE
&TYPE ERROR LOADING CMS FILE TO TAPE
&EXIT 10
-NOTAPE
&TYPE TAPE 181 NOT ATTACHED OR NOT READY
&EXIT 20
```

Figure 3. Sample CMS EXEC to copy stand-alone ICKDSF to tape

Preparing to Run ICKDSF Stand-alone using VM

In the VM environment, the stand-alone code is available as a loadable file. That file can be converted to card format and ICKDSF can be loaded from a virtual card reader as follows:

1. Spool your reader to *.
2. Punch fname ftype (noh

   This punches the file to your virtual card reader without any header information.
3. IPL your virtual card reader as you would the tape, and continue as specified below.

See Figure 4 on page 14 for a sample EXEC to invoke ICKDSF from your virtual card reader. This EXEC assumes that stand-alone ICKDSF has been copied into a CMS file named "IPL ICKDSF or ICKSADSF COREIMAG."

```
* THIS IS A SAMPLE EXEC TO INVOKE DEVICE SUPPORT FACILITIES
*
* IT IS INVOKED USING THE FOLLOWING COMMAND:
*
*     ICKDSF <FILENAME FILETYPE FILEMODE>
*
* WHERE THE FILE IDENTIFIER IS OPTIONAL.  IF SPECIFIED, THE FILE
* CONTAINS DEVICE SUPPORT FACILITIES CONTROL STATEMENTS THAT WILL
* BE AVAILABLE AS INPUT TO DEVICE SUPPORT FACILITIES.
*
* THIS EXEC WILL PUNCH A COPY OF THE STAND-ALONE DEVICE SUPPORT
* FACILITIES TO THE READER FOLLOWED BY THE DEVICE SUPPORT FACILITIES
* CONTROL STATEMENTS, IF SPECIFIED.  IT WILL THEN IPL THE READER TO
* INVOKE STAND-ALONE DEVICE SUPPORT FACILITIES.
*
* YOU MUST THEN IDENTIFY THE CONSOLE BY CAUSING AN ATTENTION INTERRUPT.
* ON A 3270 TYPE DISPLAY, THIS IS DONE BY PRESSING THE ENTER KEY.
*
* DEVICE SUPPORT FACILITIES RESPONDS WITH THE MESSAGE:
*
*   ICK005E DEFINE INPUT DEVICE 'DDDD,CUU' OR 'CONSOLE'
*
* IF YOU SPECIFIED A FILE WITH DEVICE SUPPORT FACILITIES CONTROL
* STATEMENTS, YOU ENTER:
*
*   2540,00C
*
* IF YOU WISH TO ENTER STATEMENTS DIRECTLY AT THE TERMINAL, YOU ENTER:
*
*   CONSOLE   (OR IF YOU ENTER A NULL LINE, CONSOLE IS INPUT DEVICE)
*
* DEVICE SUPPORT FACILITIES RESPONDS WITH THE MESSAGE:
*
*   ICK006E DEFINE OUTPUT DEVICE 'DDDD,CUU' OR 'CONSOLE'
*
* YOU MAY RESPOND 'CONSOLE' OR ENTER A NULL LINE
* TO SEE THE OUTPUT ON YOUR TERMINAL OR
* '1403,00E' TO SPOOL THE OUTPUT TO YOUR VIRTUAL PRINTER.
*
* WARNING:  THIS EXEC WILL RESET YOUR SPOOLED PUNCH TO CLASS A
*           NOHOLD NOCONT OFF, AND YOUR SPOOLED READER TO CLASS *.
*           THIS EXEC REQUIRES THAT NO CLASS I FILES EXIST IN YOUR
*           READER.
*
&TYPE **** SPOOLING ICKDSF TO YOUR READER
CP SPOOL PUNCH TO * NOHOLD CLASS I CONT
PUNCH IPL ICKDSF * (NOH)
&IF &RETCODE NE 0 &GOTO -ERROR
&IF &INDEX GT 0 PUNCH &1 &2 &3 (NOH)
&IF &RETCODE NE 0 &GOTO -ERROR
CP SPOOL PUNCH NOCONT CLOSE
CP SPOOL PUNCH OFF CLASS A
CP CLOSE READER
CP ORDER READER CLASS I
CP SPOOL READER NOCONT CLASS * NOHOLD
&TYPE **** IPLING ICKDSF
&TYPE **** WHEN ICKDSF IS FINISHED, RE-IPL CMS
CP IPL 00C CLEAR
-ERROR &R = &RETCODE
CP SPOOL PUNCH NOCONT PURGE
CP SPOOL PUNCH OFF CLASS A
&EXIT &R
```

Figure 4. Sample CMS EXEC to invoke Device Support Facilities

Creating an ICKDSF Stand-alone IPL Tape Using VSE

In the VSE/AF 2.1 environment, the stand-alone version of ICKDSF is automatically retrieved from the IJSYSRES.SYSLIB library. If the stand-alone version of ICKDSF (DSFSA.Z) is installed in any other sub-library, it must be copied to the IJSYSRES.SYSLIB library before a stand-alone tape is created.

```
// JOB BUILD A STAND-ALONE TAPE ON VSE/AF21
// ASSGN SYS006,280  OUTPUT TAPE
// MTC REW,SYS006
// EXEC LIBR
   BACKUP RESTORE=STANDALONE TAPE=SYS006 LIB=IJSYSRS
/*
/&

IF RESTORE = STANDALONE LIB= MUST BE SPECIFIED
```

How to IPL ICKDSF from a Stand-alone Tape

Because the procedures for loading a program are not the same for all models of processing units, you must load the ICKDSF program from the tape unit according to the procedures for your processing unit. The program contains the instructions necessary to load and store itself in the lower addresses of main storage. When the program has completely loaded, the processor enters the WAIT state. When the processor enters the WAIT state, the program status word (PSW) should contain the following:

```
* FF060000 XXFFFFFF (BC mode) or * 030E0000 XXFFFFFF (EC mode)
```

* An asterisk before the PSW indicates the high order bit may or may not be on (either X'80' or X'00') in the byte designated by "X"

See "Error Conditions" on page 17 for other wait PSW conditions.

Notes:

1. When ICKDSF loads the wait state code that waits for identification of the console, the first interrupt that occurs is interpreted as the console device. If any device that can generate an interrupt at this time is attached to the system and the device is not a console, that device must be disabled.
2. When you IPL standalone ICKDSF in 370 mode, the tape device and IPL console must be on the same IPL processor.

At this time, you continue by identifying the console, the input device, and the output device.

Identifying the Console

You identify the console to the program by pressing the REQUEST or ENTER key at the console. You must use one of the following consoles:

- 3036 Graphics Console
- 3148, 3158 Consoles in typewriter keyboard mode
- 3205 Console (supported as a 3278/3279)
- 3277 Graphics Console
- 3278 Graphics Console
- 3279 Graphics Console

Note: Remote devices are not supported.

Identifying the Input Device

After you have identified the console, message ICK005E prompts you to specify the input device and its address. (See Appendix C, "Device Support Facilities Messages (ICK)" on page 265 for the full message text.) You may specify the console as the input device by entering CONSOLE (or a null line) in response to message ICK005E. Otherwise, you must use one of the following input devices:

- 1442 Model N1 Card Read Punch, Model N2 Card Punch
- 2501 Models B1 and B2 Card Reader
- 2520 Model B1 Card Read Punch, Models B2 and B3 Card Punch
- 2540 Model 1 Card Read Punch
- 3504 Models A1 and A2 Card Reader
- 3505 Models B1 and B2 Card Reader
- 3525 Card Punch (with card-read feature)

Note: Remote devices are not supported.

You can specify the word CARD or one of the device types listed above (for example, "CARD,ccuu" or "5424,ccuu").

When running under VM, if the stand-alone code is loaded from the virtual card reader, and the same card reader is specified as the input device, the ICKDSF commands should be in the same logical file as the stand-alone code. See Figure 4 on page 14. If the command statements are in a separate file, stand-alone ICKDSF encounters an end-of-file condition. Cause an attention interrupt by pressing the ENTER key. This causes the stand-alone ICKDSF to restart. You will be prompted for the input device and processing will continue normally.

Identifying the Output Device

After you respond to message ICK005E, message ICK006E prompts you to specify the output device and its address. (See Appendix C, "Device Support Facilities Messages (ICK)" on page 265 for the full message text.) You may specify the console as the output device by entering CONSOLE (or a null line) in response to message ICK006E. Otherwise, you must use one of the following output devices:

- 1403 Models 2, 7, and N1 Printer
- 1443 Model N1 Printer
- 3203 Models 1, 2, 4, and 5 Printer
- 3211 Printer
- 3800 Printing Subsystem
- 3262 Line Printer
- 3289 Model 4 Printer
- 4248 Printer
- 5203 Model 3 Printer
- 6262 Printer

Note: Remote devices are not supported.

You can specify the word PRNT or one of the devices listed above (for example, "PRNT,ccuu" or "3800,ccuu").

Specifying the Date and Time of Day

The date and time of day are automatically picked up from the TOD (time of day) clock of the processing unit. Note that the TOD clock would typically indicate Greenwich Mean Time, and this would be reflected in any listings.

In the event that the TOD clock is in error or not set, message ICK015E prompts you to enter the date. Then, message ICK016E prompts you to enter the time of day. In response to these messages, you can enter a string of up to 8 characters which will appear in the title line of the output. On the other hand, you can press the ENTER key without specifying a date or time of day. In this case, the time of day and date are set to zeros. Note that these messages can appear again if a VTOC entry has to be created tor a data set. It is necessary to furnish the information each time it is requested if the VTOC entry is to be correct.

Error Conditions

In the event that the real storage available for ICKDSF is not sufficient, all the input is read and an error condition is posted in the PSW. This error condition is:

```
* 00020000 XX000033 (BC mode) * 000A0000 XX000033 (EC mode)
```

Other IPL error WAIT-state PSW codes are:

- * 00020000 XX000022 (BC mode) or * 000A0000 XX000022 (EC mode): Indicates that a unit check occurred on the IPL device during the IPL.
- * 00020000 XX000044 (BC mode) or * 000A0000 XX000044 (EC mode): Indicates that a channel error occurred on the IPL channel during the IPL
- * 00020000 XX000055 (BC mode) or * 000A0000 XX000055 (EC mode): Indicates that the IPL device became "not operational" during the IPL process

The PSW is also used to indicate the cause of an error during ICKDSF processing in a stand-alone environment. The processor is placed in a WAIT state and the PSW contains the following:

```
* FF060000 XXEEEEnn (BC mode) or * 030E0000 XXEEEEnn (EC mode)
```

Values of *nn* indicate the type of error:

- X'13' indicates an SVC interrupt
- X'14' indicates a program interrupt
- X'15' indicates insufficient main storage
- X'16' indicates an I/O error
- X'17' indicates data set not open
- X'18' indicates console not defined
- X'19' indicates no end-of-data routine

Notes:

1. A PSW code of * "FE020000 XX111111" (BC mode) or * "020A0000 XX111111" (EC mode) is loaded by ICKDSF whenever it is waiting for an I/O interrupt. If ICKDSF stops running, with this PSW code, a missing I/O interrupt condition has occurred. If this happens, re-IPL ICKDSF and rerun the failing command. If the problem persists, the cause of the missing interrupt should be investigated.
2. A PSW code of * "00020000 XX0000E2" (BC mode) or * "000A0000 XX0000E2" (EC mode) is loaded by ICKDSF whenever a machine check has occurred.

3. Either "01020000 00999999" (BC mode) or "010A0000 00999999" (EC mode) is loaded when a wait state is entered when you use the ICKDSF I/O DELAY command.
4. * In the above and following PSWs, an asterisk(*) before the PSW indicates the high order bit may or may not be on (either X'80' or X'00') in the byte designated by "XX."

Program Termination

Execution of the ICKDSF program terminates in the stand-alone version when the end of the command input stream is encountered. If the console was specified as the input device, you enter the characters EOF in response to a request for the next command. When the execution terminates, the processor is placed in a WAIT state, and the PSW should contain the following:

```
* FF060000 XXEEEEzz (BC mode) or * 030E0000 XXEEEEzz (EC mode)
```

where *zz* indicates the highest decimal condition code encountered during execution as follows: (See "Condition Codes to Control Command Execution" on page 27 for an explanation of condition codes.)

- X'00' indicates 0
- X'04' indicates 4
- X'08' indicates 8
- X'0C' indicates 12
- X'10' indicates 16

Using the MVS Version of ICKDSF

To use the MVS version of ICKDSF, you execute ICKDSF as a job or job step as follows:

- Execute ICKDSF using JCL.

  See "Sample MVS JCL" on page 19.

- Specify the ICKDSF commands to perform the function you require. See:
  - "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73

    You may find it useful to select an example that most closely matches the task(s) you want to perform and use it as a model for your ICKDSF job. Examples of ICKDSF commands are presented in:

    - "Examples of ICKDSF Tasks—CKD Devices" on page 39

    Further examples are presented after each command in:

    - "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73

- If required, you can control ICKDSF command execution using IF-THEN-ELSE statements.

  See "Controlling Command Execution" on page 27.

Sample MVS JCL

To execute the MVS version of ICKDSF, you invoke the ICKDSF program when you specify PGM=ICKDSF in the EXEC statement as follows:

```
//JOBNAME  JOB   YOUR INSTALLATION'S JOB-ACCOUNTING DATA
//JOBCAT   DD    DSNAME=YOUR.CATALOG,DISP=SHR
//STEP1    EXEC  PGM=ICKDSF
//MYVOL    DD    UNIT=devicetype,DISP=OLD,VOL=SER=VOL123
//STEPCAT  DD    DSNAME=ANOTHER.CATALOG,DISP=SHR
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
  Device Support Facilities commands
/*
```

Sample MVS JCL Explanation

1. //JOBNAME is **required**. The JOB statement describes your job to the MVS system. Procedures at your installation may require you to supply user identification, accounting, and authorization information with the JOB statement's parameters.
2. //JOBCAT is optional. The JOBCAT DD statement identifies a user catalog that can be used by each of the job's steps. If your job uses only the master catalog, do not specify the JOBCAT DD statement since the master catalog is always open and available to all the jobs on the system. The JOBCAT DD statement is not supported under the Data Facility Storage Management Subsystem (DFSMS*).
3. //STEP1, an EXEC statement, is **required**. The EXEC statement invokes the ICKDSF program to process the ICKDSF commands.
4. //STEPCAT is optional. The STEPCAT DD statement identifies a user catalog that can be used when processing the job step. If user catalogs are identified with JOBCAT and STEPCAT DD statements, only the catalog identified with the STEPCAT DD statement and the master catalog are used with the job step. If your job step uses only the master catalog, do not specify the STEPCAT DD statement, because the master catalog is always open and available to all the jobs on the system. The STEPCAT DD statement is not supported under the Data Facility Storage Management Subsystem (DFSMS).
5. //SYSPRINT is **required**. The SYSPRINT DD statement identifies the output data set to which ICKDSF sends messages and output information.
6. //SYSIN is **required**. The SYSIN DD statement identifies the source of the input statements. An input statement to ICKDSF is a command. When you code SYSIN DD *, you identify the statements that follow as input.
7. The last input statement is followed by /* in the first two columns of the next input record.

Printed Output Data Set

The standard printed output data set is SYSPRINT. The default parameters for this data set are:

- Record format of VBA
- Logical-record length of 125 (121 + 4)
- Block size of 629 (5 x (121 + 4) + 4)

The first byte of each record is the American National Standards Institute (ANSI) control character. The minimum specifiable logical-record length (LRECL) is 121 (U-format records only). If a smaller size is specified, it will be overridden to 121.

You can alter the above defaults by specifying the desired values in the DCB parameter of the SYSPRINT statement. However, the record format cannot be specified as F or FB. If you specify either of these, it will be changed to VBA.

Using ICKDSF in an ISMF Environment

In the MVS/XA or MVS/ESA versions of ICKDSF, you can execute ICKDSF as a job or job step as shown previously in "Using the MVS Version of ICKDSF" on page 18.

You can also use ICKDSF under the Interactive Storage Management Facility (ISMF), a component of the MVS/XA or MVS/ESA Data Facility Product (DFP), to build job streams for ICKDSF command functions using menu-driven panels. ISMF can be used in an MVS environment under MVS/XA or MVS/ESA.

The information you supply on ISMF panels is used to build and submit job streams like those you generate using JCL and ICKDSF commands. Using ISMF panels, though, you no longer have to remember ICKDSF keywords and syntax. You merely fill in the values you want on the panels and ISMF generates the job stream. You can then either submit the job or save the jobstream for later use.

Using ISMF panels, you can use the following ICKDSF commands:

- ANALYZE
- BUILDIX
- CONTROL
- INIT
- INSPECT
- INSTALL
- REFORMAT
- REVALidate

How to Invoke ICKDSF under ISMF

To use ICKDSF under ISMF requires you to do the following:

- Log on to TSO
- Select ISPF from TSO menu
- Select ISMF from ISPF menu
- Select the volume application from the ISMF primary menu
- Build a volume list from the volume selection entry panel
- Specify the required ICKDSF command against the volume
- Fill in the ICKDSF command panel(s) to perform the required function.

For more information on ICKDSF commands, see "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73. For more information on ISMF, see the ISMF online help panels, or *Interactive Storage Management Facility (ISMF) User's Guide*. *MVS SML: Managing Storage Pools* or *MVS/ESA: Storage Administration Reference* contain more information on the tasks you can perform under ISMF.

Using the VSE Version of ICKDSF

To use VSE version of ICKDSF, you execute ICKDSF as a job as follows:

- Execute ICKDSF as a job, using system control statements.

  See "Sample VSE System Control Statements"

- Specify the ICKDSF commands to perform the function you require. See:

  – "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73

  – "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

  You may find it useful to select an example that most closely matches the task(s) you want to perform and use it as a model for your ICKDSF job. Examples of ICKDSF commands are presented in:

  – "Examples of ICKDSF Tasks—CKD Devices" on page 39
  – "Examples of ICKDSF Tasks—FBA Devices" on page 55

  Further examples are presented after each command in:

  – "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73

  – "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

- If required, you can control ICKDSF command execution using IF-THEN-ELSE statements.

  See "Controlling Command Execution" on page 27.

Sample VSE System Control Statements

To execute the VSE version of ICKDSF you invoke the ICKDSF program by specifying EXEC ICKDSF in the EXEC statement as follows:

```
// JOB      jobname   YOUR INSTALLATION'S JOB-ACCOUNTING DATA
// ASSGN    SYS010,353
// EXEC     ICKDSF,SIZE=AUTO
   Device Support Facilities commands
/*
/&
```

Sample VSE System Control Statements Explanation

1. // JOB is an optional statement used to describe your job to the VSE system.
2. // ASSGN causes the SYSNAME SYS010 to be assigned to the device whose channel and unit address is 353.
3. /* appears in the first two columns of the input record following the last input statement.
4. /& appears in the first two columns of the input record following the /* card to indicate end of job.

Printed Output

All printed output is directed to SYSLST.

Using the CMS Version of ICKDSF

To use the CMS version of ICKDSF you must do the following:

- Invoke ICKDSF under the CMS operating system
- Identify the input and output device(s)
- Specify the ICKDSF commands to perform the function you require.

Notes:

1. ICKDSF can also be invoked by the use of an EXEC or you can invoke ICKDSF and specify the input and output devices with a single command. See "Invoking the CMS Version of ICKDSF from a CMS EXEC" on page 23 or "Invoking the CMS Version of ICKDSF using a Parameter List" on page 25, respectively.
2. Type "ICKDSF ?" or "HELP ICKDSF" initially, to invoke the online help panels while you are using ICKDSF under CMS. Subsequently, you type "?" to invoke the panels.

Invoking ICKDSF under CMS

Use ICKDSF under CMS as follows:

- To invoke ICKDSF when you are under control of the CMS operating system, type "ICKDSF"
- After you have invoked ICKDSF, define the input device when you receive the following message:

  "ICK030E DEFINE INPUT DEVICE: fn ft fm, 'CONSOLE,' OR 'READER'"

  - If you want to key in the ICKDSF commands and parameters at your console, type "CONSOLE" or a null line (ENTER)
  - If you want ICKDSF to read its commands and parameters from a CMS file you type the file name, and, optionally, the file type, and file mode.
    - The logical record size of the file must be 132 or less. However, as ICKDSF uses column 72 for a line continuation character, the input line is 70 characters(beyond 72 can be used for comments). See "Line Continuations" on page 70 for more information on continuing lines.
    - The default for file type is "INPUT"
    - The default for file mode is "A"
  - If you want ICKDSF to read commands and parameters from your virtual reader, type "READER"
  - To invoke the online help panels type "?"

  Note: The first reader file is used when you specify "READER"

- After you have defined the input device, you define the output device when you receive the message:

  "ICK031E DEFINE OUTPUT DEVICE: fn ft fm, 'CONSOLE' OR 'PRINTER'"

  - If you wish to receive the output at your console, type "CONSOLE" or a null line (ENTER)

  - If you want your output stored in a CMS file, type the file name, and, optionally, the file type, and file mode.
    - If the file already exists, you receive a message and reply "U" to allow the file to be erased.
    - The default for file type is "OUTPUT"
    - The default for file mode is "A"
  - Type "PRINTER" to route the output to your virtual printer.
  - To invoke the online help panels type "?"

- If you specified "CONSOLE" as your input device, you receive the following message which allows you to start to enter and execute ICKDSF commands. The time (hh/mm/ss) and date (mm/dd/yy) in the message is supplied by the system:

  ```
  ICKDSF - CMS DEVICE SUPPORT FACILITIES 13
  Time: hh/mm/ss Date: mm/dd/yy  PAGE 1
  ENTER INPUT COMMAND:
  ```

  you can now specify the ICKDSF commands to perform the function you require. For more information on ICKDSF commands, you can type "?" to view the online help panels or see:

  - "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73
  - "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

  You may find it useful to select an example that most closely matches the task(s) you want to perform and use it as a model for your ICKDSF job. Examples of ICKDSF commands are presented in:

  - "Examples of ICKDSF Tasks—CKD Devices" on page 39
  - "Examples of ICKDSF Tasks—FBA Devices" on page 55

  Further examples are presented after each command in:

  - "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73
  - "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

- If required, you can control ICKDSF command execution using IF-THEN-ELSE statements.

  See "Controlling Command Execution" on page 27.

- ICKDSF is terminated when you type "END" at your console, or the END-OF-FILE condition is detected from the CMS file or your virtual reader file

Invoking the CMS Version of ICKDSF from a CMS EXEC

ICKDSF can be initialized and executed under CMS using an EXEC which contains the required statements to invoke ICKDSF, identify the input and output devices, and the ICKDSF commands and parameters for the function you want to perform.

Figure 5 is a sample CMS EXEC (using REXX) which invokes ICKDSF, identifies the console as the input device, and the printer as the output device. The ICKDSF statements are included which perform a minimal INIT followed by an ANALYZE SCAN. The "PUSH 'U'" statement replies to ICKDSF message ICK003D which is received when the INIT is started. You must supply the UNITADDRESS (ccuu) for both commands and also the VOLID (xxxxxx) for the INIT command.

```
/* Sample CMS exec to invoke and execute an ICKDSF INIT and ANALYZE*/
ADDRESS 'COMMAND'
PUSH 'END'
PUSH 'ANALYZE UNIT(ccuu) SCAN'
PUSH 'U'
PUSH 'INIT UNIT(ccuu) NVFY VOLID(xxxxxx)'
PUSH 'PRINTER'
PUSH 'CONSOLE'
ICKDSF
```

Figure 5. Sample CMS EXEC to invoke and execute an ICKDSF INIT and ANALYZE

Figure 6 is another sample CMS EXEC (using REXX) which invokes ICKDSF, uses a CMS file as the input device, and a CMS file as the output device. The ICKDSF statements are included which perform a minimum INIT. The "PUSH 'U'" statement responds to ICKDSF message ICK003D which is received when the INIT is started. The CMS file "ABC INPUT A" contains the ICKDSF command statement:

```
INIT UNIT(ccuu) NVFY VOLID(xxxxxx)
```

You must supply the UNITADDRESS (ccuu) and VOLID (xxxxxx) in this example. If an output file named "XYZ OUTPUT A" already exists, you will have to add a second "PUSH 'U'" to inform ICKDSF to erase the file. A "PUSH 'END'" is not required, as ICKDSF is terminated when end-of-file is detected from the input file.

```
/* Sample CMS exec to invoke and execute an ICKDSF INIT*/
ADDRESS 'COMMAND'
PUSH 'U'
PUSH 'XYZ OUTPUT A'
PUSH 'ABC INPUT A'
ICKDSF
exit
```

Figure 6. Sample CMS EXEC to invoke and execute an ICKDSF INIT

Invoking the CMS Version of ICKDSF using a Parameter List

You can invoke the CMS version of ICKDSF and specify the input and output devices using a single command as follows:

Command	Input Device	Output Device
ICKDSF	CONSOLE|READER|fn ft fm	CONSOLE|PRINTER|fn ft fm

where:

CONSOLE
specifies the CONSOLE is to be used as the input or output device

READER
specifies the READER is to be used as the input device

PRINTER
specifies the PRINTER is to be used as the output device

fn ft fm
indicates the *file name*, *file type*, and *file mode*, respectively, that are to be used as the input or output device. None of these values can be defaulted. Note that READER, PRINTER, or CONSOLE cannot be used for file name.

Figure 7. CMS Parameter List

Controlling Command Execution

Command execution can be controlled by the statements that follow:

- The **IF-THEN-ELSE** statement sequence tests a condition code and controls execution of subsequent commands according to the results of the test. The IF statement is followed by THEN and ELSE clauses, which specify alternative actions. DO and END statements are optionally part of THEN and ELSE clauses and specify the beginning and ending of a statement sequence. When you want to specify more than one ICKDSF command with either a THEN or an ELSE clause, include the DO and END statements.
- The **SET** statement sets condition codes.

Condition Codes to Control Command Execution

The condition codes compared in the IF-THEN-ELSE statement sequence are LASTCC and MAXCC, which take the following values:

0 indicates that the command was executed as specified. Some informational messages may have been issued.

4 indicates that some problem was met while executing the complete command, but ICKDSF processing continued. The continuation might not provide the user with exactly what was wanted, but no data or volume has been permanently harmed. A warning message was issued. An example of the kind of problem encountered is: The system ignored a parameter that was specified but did not apply.

8 indicates that a requested command was completed, but some actions were unavoidably bypassed. For example, ICKDSF was unable to reclaim an alternate track.

12 indicates that the requested command could not be executed. This condition code is a result of a logical error or a problem during execution. A logical error exists, for example, when inconsistent parameters are specified, when a too-small or too-large value is specified, or when required parameters are missing. A problem during execution exists when the volume label cannot be changed.

16 indicates a severe error occurred, causing the remainder of the command stream to be flushed. For example, this condition code might be a result of the following: the system output data set could not be opened (the SYSPRINT DD statement was missing, perhaps); an unrecoverable error occurred in a system data set; or ICKDSF encountered improper IF-THEN-ELSE statement sequences.

IF-THEN-ELSE Statement Sequence

You use the IF-THEN-ELSE statement sequence to control command execution. The syntax of the IF-THEN-ELSE statement sequence is:

<table>
<tr><td rowspan="3">IF</td><td>{<b>LASTCC</b> comparison operator
condition code |
<b>MAXCC</b> comparison operator
condition code}</td></tr>
<tr><td><b>THEN</b> [command | <b>DO</b>
command
<b>END</b>]</td></tr>
<tr><td>[<b>ELSE</b> [command | <b>DO</b>
command
<b>END</b>]]</td></tr>
</table>

where:

IF specifies that one or more ICKDSF commands are to be executed based on a test of a condition code value. The condition code was set by a SET command or reflects the completion status of previous ICKDSF commands.

LASTCC comparison operator condition code specifies that the condition code value resulting from the immediately previous ICKDSF command is to be compared to the condition code indicated by the comparison operator to determine whether the THEN or ELSE action is to be performed. See "Condition Codes to Control Command Execution" on page 27 for an explanation of condition codes.

For comparison operator, substitute one of the following six comparison operators to compare the condition code resulting from the previous ICKDSF command and the condition code you specified in the IF statement:

- Equal, specified as = or EQ
- Not equal, specified as ¬= or NE
- Greater than, specified as > or GT
- Less than, specified as < or LT
- Greater than or equal, specified as >= or GE
- Less than or equal, specified as <= or LE

For condition code, substitute the decimal number that is to be compared with LASTCC. Condition codes greater than 16 are reduced to 16. See "Condition Codes to Control Command Execution" on page 27 for an explanation of condition codes.

MAXCC comparison operator condition code specifies that the maximum condition code value resulting from any previous ICKDSF command or a SET command is to be compared to the condition code indicated by the comparison operator to determine whether the THEN or ELSE action is to be performed. See "Condition Codes to Control Command Execution" on page 27 for an explanation of condition codes.

For comparison operator, substitute one of the following six comparison operators to compare the maximum condition code resulting from any ICKDSF command and the condition code you specified in the IF statement:

- Equal, specified as = or EQ
- Not equal, specified as ¬= or NE

- Greater than, specified as > or GT
- Less than, specified as < or LT
- Greater than or equal, specified as > = or GE
- Less than or equal, specified as < = or LE

For condition code, substitute the decimal number that is to be compared with MAXCC. Condition codes greater than 16 are reduced to 16. See "Condition Codes to Control Command Execution" on page 27 for an explanation of condition codes.

THEN specifies that a single command (or a group of commands introduced by DO) is to be executed if the comparison is true. THEN can be followed by another IF statement.

ELSE specifies that a single command (or a group of commands introduced by DO) is to be executed if the comparison is false. ELSE can be followed by another IF statement.

When an IF statement appears in a THEN or ELSE clause, it is called a nested IF statement. The maximum number of nested levels allowed is 10, starting with the first time you specify IF.

Within nested IF statements, the innermost ELSE clause is matched to the innermost THEN clause, the next innermost ELSE clause is matched to the next innermost THEN clause, and so on. In other words, each ELSE clause is matched to the nearest preceding unmatched THEN clause. If there is an IF statement that does not require an ELSE clause, follow the THEN clause with a null ELSE clause, unless the nested structure does not require one.

DO command can be specified with the THEN and ELSE clauses to indicate that the group of commands following are to be treated as a single unit, that is, to be executed as a result of a single IF statement. Commands following a DO must begin on a new line. The group of commands is terminated by END. The DO statement does not allow you to specify the continuation sign (-) after it except for use as a comment. **Remember that if you follow the DO statement with a hyphen, the next line is** *ignored*. For example, if you specify:

```
THEN DO -
       INIT....
       REFORMAT....
     END
```

the INIT is ignored, and the REFORMAT is performed.

For command, substitute the ICKDSF command (or a group of commands introduced by a DO) that you want to process as a result of a single IF statement.

END specifies the end of a group of ICKDSF commands initiated by the nearest unended DO. END must be on a line by itself.

Null THEN and ELSE Clauses

When a THEN or ELSE clause is not followed by a continuation character or by a command in the same record, it results in no action.

For example, to specify a null THEN clause when you want a ICKDSF command to execute if the IF statement is false, you specify THEN without a continuation character or ICKDSF command. On the next line, specify ELSE followed by a ICKDSF command. If you want to specify a null THEN clause, specify:

```
IF ...
 THEN
 ELSE ...
```

If you want to indicate a null ELSE clause, specify:

```
IF ...
 THEN ...
 ELSE
```

SET Statement

The SET statement sets a condition code. See "Condition Codes to Control Command Execution" on page 27 for an explanation of condition codes. You can terminate all processing simply by setting MAXCC or LASTCC to 16.

The syntax of the SET statement is:

SET	{**LASTCC** = condition code| **MAXCC** = condition code}

where:

SET specifies that a condition-code value is to be set. If a SET statement is specified following a THEN or ELSE clause, and the clause is not executed because the comparison in the IF statement does not allow the clause to execute, the condition code specified with LASTCC or MAXCC is not set.

LASTCC = condition code specifies that the condition code to be set is the condition code set by the immediately preceding ICKDSF command.

For condition code, substitute a decimal number that is to be assigned to LASTCC. Condition codes greater than 16 will be reduced to 16. If the condition code assigned to LASTCC is a greater value than the condition code assigned to MAXCC, MAXCC assumes the condition code assigned to LASTCC.

MAXCC = condition code specifies that the condition code to be set is the maximum condition code. Setting MAXCC does not affect the condition code for LASTCC.

For condition code, substitute a decimal number that is to be assigned to MAXCC. Condition codes greater than 16 will be reduced to 16.

Continuation Lines

Use continuation lines cautiously when specifying IF-THEN-ELSE statements, SET statements, comments, or blank records in the input stream. Blank records or records ending with comments must end with a continuation mark when you specify these types of records in the middle of a command or between the THEN and ELSE clauses of an IF statement. Always specify a continuation mark when records end with partial comments. (See "Line Continuations" on page 70.)

You must be careful when you continue IF-THEN-ELSE statements so that you don't inadvertently specify a null THEN or ELSE clause. For information on this subject, see "Null THEN and ELSE Clauses" on page 30.

Examples of Statements to Control Command Execution

The examples that follow show the use of the IF-THEN-ELSE statement sequence and the SET statement.

IF-THEN-ELSE Statement Example

```
INIT DDNAME(VOLXYZ) VERIFY(VOLABC)
  IF LASTCC=0 -
    THEN REFORMAT DDNAME(VOL293) VOLID(SYX1) NOVERIFY
    ELSE REFORMAT DDNAME(VOL123) VOLID(SYX2) NOVERIFY
```

SET Statement Example

```
SET LASTCC=8
```

DO-END Statement Example

```
IF MAXCC=05 THEN DO
                   ANALYZE UNITADDRESS(ccuu) SCAN
                   REFORMAT UNITADDRESS(ccuu) NOVERIFY
                 END
```

ELSE-DO-END Statement Example

```
ANALYZE UNITADDRESS(ccuu)
  IF LASTCC>4 -
    THEN ...
    ELSE DO
           MAPALT UNITADDRESS(ccuu) SCAN
           INIT UNITADDRESS(ccuu) NOVERIFY VOLID(SYSX1)
         END
```

Volume and Data Set Security

Device Support Facilities (ICKDSF) commands are used to manage direct-access storage volumes. As there is some danger to data through inadvertent manipulation of a volume, it is important to have a means of protecting data. With ICKDSF, there are several degrees of volume and data set protection.

There are two environments in which ICKDSF can execute: under an operating system or in a stand-alone environment. Under MVS operating systems, two modes of operation are available: offline and online. In a stand-alone environment, only the offline mode is available. Under VSE, only the online mode is available. Volume and data set security in different environments and with different modes of operation are discussed in the following sections.

The ANALYZE and MAPALT commands do not expose data on the volume to unauthorized disclosure, modification, or destruction. These commands do not write on any user tracks and do not transmit any user data from the device. Therefore, no security functions are performed for these commands in any environment.

Volume Security

Volume security is limited to what is indicated below:

- The VERIFY parameter of the INIT, INSPECT, and REFORMAT commands can be specified to ensure that the volume serial number and owner identification supplied in the command match those found on the volume. If they match, execution of the command continues; if they do not match, execution of the command terminates. This check is operational under all environments and modes of operation.
- Under an MVS/370, MVS/XA, or MVS/ESA operating system, the RACF program can determine whether the volume is RACF-protected (RACF DASDVOL is active) and whether the user has authority to access the volume. If the user has insufficient access authority to a RACF-protected volume, command execution terminates. This is valid for INIT and INSP commands.

Data Set Security in an Offline Mode (MVS) or in a Stand-alone Environment

Data set security in an offline mode or in a stand-alone environment is limited to the following:

The PURGE parameter of the INIT command can be specified. Before the command starts processing the volume, the system operator is requested to confirm that the contents of the volume can be altered (see message ICK003D in Appendix C, "Device Support Facilities Messages (ICK)"). If the operator confirms that the volume contents can be changed, execution of the command continues and any data sets contained in the volume are purged.

Data Set Security in an Online Mode (MVS)

Because the resources of the operating system are available to ICKDSF in an online mode, data set security is greater. The data security function is only invoked for the INIT and INSPECT commands. The action taken depends on the type of data set, the expiration date, and whether the data set is RACF or password protected. The actions taken are as follows:

- *RACF-protected data sets*: For the INIT command, the RACF program is called for each RACF-protected data set on the volume to determine whether the user is authorized to access the data set contents. For the INSPECT command, the RACF program is called for each user-specified track that falls within any RACF-protected data set to determine whether the user has authority to access and alter the data set. With either command, if the user has the appropriate authority, command execution continues; otherwise, command execution terminates.
- *Non-VSAM password-protected data sets*: For the INIT command, all password-protected data sets on a volume are subject to the security function. For the INSPECT command, the security function is called for each track that falls within a password-protected data set. The user may provide passwords by using the PASSWORDS parameter on the INIT and INSPECT commands.

  When the first password-protected data set subject to the security function is encountered, ICKDSF invokes a user security exit module to determine what needs to be done (a default user security exit module (ICKUSER1) is provided with ICKDSF—for details see Appendix G, "User Security Exit Module" on page 357). This module returns a code to ICKDSF indicating one of the actions in Figure 8.

Figure 8. Codes Returned by the User Security Exit Module for Password-protected Data Sets

Return Code	Meaning
0	Bypass checking of password-protected data sets on the volume and do not call the exit routine again.
4	Bypass checking of the current password-protected data set but call the exit routine for the next password-protected data set.
8	Check the current password-protected data set normally and call the exit routine for the next password-protected data set.
12	Check all password-protected data sets on the volume normally and do not call the exit routine again. (The default for ICKUSER1.)
16	Reject access to this data set, but return to the exit routine for the next data set.
20	Terminate this command immediately.

If normal checking is to be done, ICKDSF looks for a user-supplied password for the current data set. If one is not found, the command is targeted for termination, and the next data set is checked. When a password is found, the system PASSWORD data set is checked to determine whether the user-supplied password provides authority to alter the data set. If it does not, the command is targeted for termination, and the next data set is checked.

As long as the user exit routine returns a code indicating that the routine should be called again, it is called for each password-protected data set. Even if the command is targeted for termination, password checking continues for all data sets on the volume before processing actually terminates. This ensures that all missing passwords are identified.

- *VSAM/unexpired data sets*: For the INIT command, all VSAM and unexpired data sets on a volume are subject to the security function. For the INSPECT command, the security function is called for each VSAM/unexpired data set that contains a track that is to be inspected. When the first VSAM/unexpired data set is encountered, ICKDSF invokes the user security exit module (ICKUSER1) to determine what needs to be done. This module returns a code to ICKDSF which indicates one of the actions in the VSAM/unexpired data set return codes in Appendix G, "User Security Exit Module" on page 357.

  Normal processing for the INIT command is to check whether PURGE has been specified. If not, the command is targeted for termination and the next data set is checked.

  Normal processing for the INSPECT command is to target the command for termination and to check the next data set.

- *VTOC and the VTOCIX data set*: For the INSPECT command when NOPRESERVE is specified, ICKDSF does not allow inspection of tracks inside a VTOC or a VTOCIX data set in an online (MVS) mode. Cylinder 0, track 0 is also not allowed to be inspected with NOPRESERVE in an online mode.

Figure 9 shows the required RACF authorization for each ICKDSF command.

Figure 9. ICKDSF MVS RACF Authorization Table

ICKDSF Command/Function	Required RACF Volume Access Authority	Type of Access Used
ANALYZE	none	read only
BUILDIX	ALTER	alters vtoc
CONTROL	none	does not access data on volume
CPVOLUME	not applicable	not applicable
INIT	ALTER	contents of volume destroyed
INSPECT	ALTER	data unavailable; can be destroyed
INSTALL	not applicable	volume offline
IODELAY	not applicable	not applicable
REFORMAT—IPLDD	UPDATE	changes IPL text
REFORMAT—no IPLDD	ALTER	changes volume label
REVALIDATE	not applicable	volume offline

Authorized Program Facility (MVS/370, MVS/XA, MVS/ESA only)

The authorized program facility (APF) limits the use of sensitive system services and resources to authorized system and user programs. See *OS/VS2 System Programming Library: Supervisor Services and Macro Instructions* for information about program authorization.

The ICKDSF load module is contained in SYS1.LINKLIB. The load module (ICKDSF) is link-edited with the SETCODE AC(1) attribute. This ensures that ICKDSF is correctly link-edited.

This authorization is established at the task level. If, during the execution of an APF-authorized job step, a load request is satisfied from an unauthorized library, the task will be abnormally terminated. It is the installation's responsibility to ensure that a load request cannot be satisfied from an unauthorized library during ICKDSF processing.

If an ICKDSF module is loaded from an unauthorized library, the Authorized Program Facility authorization of ICKDSF terminates.

Data Set Security and Protection (VSE)

The VERIFY parameter of the INIT, INSPECT, and REFORMAT commands can be specified to ensure that the volume serial number and owner identification supplied in the command match those found on the volume. If they match, execution of the command continues; if they do not match, execution of the command terminates.

The NOPURGE parameter of the INIT command can be specified. Execution of the command terminates if unexpired files, data-secured files, or VSAM files are found on the volume.

The PURGE parameter of the INIT command or the NOPRESERVE parameter of the INSPECT command can be specified. If unexpired files, data-secured files, or VSAM files are on the volume, data loss is prevented as follows:

- *Unexpired files*: The operator is requested to confirm that the contents of the volume can be purged (see message ICK001D in Appendix C, "Device Support Facilities Messages (ICK)"). Only one request is made, regardless of the number of unexpired files on the volume. A list of the unexpired files is not provided.
- *Data-Secured files*: If a file is a data-secured file, message ICK017D prompts the operator with the name of the secured file, and message ICK018D requests permission to purge the file. This sequence is repeated for each data-secured file that exists on the volume.
- *VSAM files*: If a single VSAM file is found on the volume, permission is requested for the purging of all the VSAM files on the volume (message ICK019D).

Processing in a Shared Environment (MVS)

The commands BUILDIX, INIT, INSPECT, INSTALL, REVALidate, and REFORMAT issue the RESERVE macro during processing to obtain control of the device. After processing on the device is completed, the DEQ macro is issued to release the device. This is done for offline as well as online processing.

This procedure prevents other processors from accessing the volume, but cannot guarantee exclusive access to the volume from the same processor.

When processing online there is always a potential danger that a particular track will be concurrently updated. In order to minimize this impact, the following steps are taken by ICKDSF.

ICKDSF will not permit a volume with more than one active user to be processed online when either of the following commands is specified:

- INIT
- REFORMAT with VOLID

At completion of any ICKDSF command that modifies the volume label, the VTOC, or the VTOC index, a MOUNT command should be issued from the other processors that are sharing the volume.

When the INSPECT command is specified to perform skip displacement processing (using the SKIP parameter), if a track is part of a data set, INSPECT will enqueue on the data set while processing that track.

Additionally, if the INSPECT command exposes user data for a relatively long period of time, ICKDSF enqueues for exclusive control of the data set containing the track which is to be processed. Data set enqueue takes place when:

- The device is online to the operating system.
- The track is part of a non-VSAM data set.
- The SKIP parameter is specified.
- NOSKIP is specified, but primary surface checking indicates that skip displacement processing is necessary for the track.

If exclusive control of a data set cannot be obtained, a message is issued, and processing continues on the next track.

The TOLERATE(ENQFAIL) parameter is provided to indicate that processing is to continue if the data set enqueue fails when SKIP is specified.

If the enqueue is performed as a result of primary surface checking indicating the need for skip displacement surface checking, TOLERATE(ENQFAIL) is assumed to be in effect.

For tracks in VSAM data sets, TOLERATE(ENQFAIL) must always be specified when processing online.

Processing in a Shared Environment (VSE)

For all commands, processing continues only after the operator has replied to a console message (ICK020D) granting permission to process on the device that is being shared.

ICKDSF cannot guarantee exclusive access to an entire volume. When processing online there is always the danger of a particular track being concurrently updated; users who run ICKDSF online must be prepared to deal with this possibility.

In order to minimize the risks involved in online processing, exercise system controls when using ICKDSF.

Examples of ICKDSF Tasks—CKD Devices

The following examples show the commands and parameters needed for each task in the **stand-alone version** of ICKDSF. Default parameters are indicated only where they produce additional output. Optional parameters for the stand-alone version of ICKDSF are described briefly in the notes that follow each example. For complete descriptions of each command see the individual commands beginning with "ANALYZE Command—CKD" on page 75.

You may find it useful to select an example that most closely matches the task(s) you want to perform and use it as a model for your ICKDSF job. Examples of ICKDSF commands using count-key-data devices are presented in this section. Examples of ICKDSF commands using fixed block architecture devices are presented in:

- "Examples of ICKDSF Tasks—FBA Devices" on page 55.

Further examples are presented after each command in:

- "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73
- "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

Initializing a Replaced Head Disk Assembly (HDA)

Use the INIT command to prepare a replaced HDA for use. Volumes are initialized at the medial level.

```
INIT UNITADDRESS(ccuu) NOVERIFY VOLID(serial) OWNERID(owner) -
     VTOC(cylinder,track,extent) VALIDATE DATA
```

Notes:

- Data on the volume is destroyed.
- This example establishes a volume ID, an owner ID, and a VTOC for the volume.
- The VALIDATE parameter ensures that potentially erroneous data on all tracks is erased by initializing at the medial level for the entire volume.
- This process rewrites all home addresses and record zeros on the volume.
- To,write IPL program records on the volume, add the IPLDD parameter to the end of the parameter list: IPLDD(SYSIN,ABSFORMAT)
- The DATA parameter specifies that factory functional verification data patterns (FFVDP) are written on the specified tracks. The DATA parameter is valid for the IBM 3375, 3380, and 3390 only. If the example is run against a device other than the 3375, 3380, or 3390, DATA is ignored.

Initializing Minidisks

Using the CMS version of ICKDSF, you can use the INIT command to prepare a minidisk for use at the minimal level as follows.

```
INIT UNITADDRESS(ccuu) NOVERIFY VOLID(serial) OWNERID(owner) -
     VTOC(cylinder,track,extent)
```

Notes:

- This example establishes a volume ID, an owner ID, and a VTOC for a minidisk.
- This procedure would normally be used to prepare a minidisk for use with a guest operating system, not for CMS minidisks.

Initializing a Minidisk in the Stand-alone Version of ICKDSF

Under the stand-alone version of ICKDSF you can use the MIMIC(MINI) parameter of the INIT command to prepare a minidisk for use. Minidisks (except 2314) must be initialized at the minimal level.

```
INIT UNITADDRESS(ccuu) NOVERIFY VOLID(serial) OWNERID(owner) -
     VTOC(cylinder,track,extent) MIMIC(MINI(15)) DEVICETYPE(3390)
```

Notes:

- This example establishes a volume ID, an owner ID, and a VTOC for the volume.
- Minidisks can only be initialized in the ICKDSF stand-alone version by using the MIMIC(MINI) parameter.

Initializing or Reinitializing a Device

Volumes should be reinitialized at the minimal level.

This example illustrates how to initialize or reinitialize a device at the minimal level. See "Initializing a Replaced Head Disk Assembly (HDA)" on page 39 for an example of medial initialization, and "Checking Disk Surfaces" on page 42 for an example of maximal initialization.

```
INIT UNITADDRESS(ccuu) NOVERIFY VOLID(serial) -
     OWNERID(owner) VTOC(cylinder,track,extent)
```

Notes:

- The VTOC is rewritten and access to data on the volume is lost.
- If you want to erase previous data on the volume, initialize at the medial level. See "Initializing a Replaced Head Disk Assembly (HDA)" on page 39.

Setting an IBM 3390 to 3380 track compatibility mode

In this example, an IBM 3390 volume is changed from 3390 mode to 3380 track compatibility mode.

```
//EXAMPLE   JOB
//          EXEC  PGM=ICKDSF
//SYSPRINT  DD    SYSOUT=A
//SYSIN     DD    *
 INSTALL UNITADDRESS(0353) SETMODE(3380)
   IF LASTCC<8 -
     THEN INIT UNIT(ccuu) NOVERIFY VOLID(ABCD4) NOVALIDATE
/*
```

Notes:

- **Note that the volume is not initialized after INSTALL processing**. Use the CPVOLUME command to prepare a volume for VM use, or the INIT command for other environments. A minimal INIT is shown, specifying the volume identification and NOVERIFY.

Investigating Suspected Drive Problems

If you suspect a problem with a drive, use the ANALYZE command to assist in determining:

1. If the drive can perform basic operating functions correctly
2. If all data can successfully be read from the disk surface

```
ANALYZE UNITADDRESS(ccuu) SCAN
```

Notes:

- The data on the volume is not altered.
- The drive test option of the ANALYZE command is valid only for devices with nonremovable media: IBM 3344, 3350, 3375, 3380, 3390, or any CKD emulated on CKD devices.
- Add the SPEED parameter to the parameter list to scan data one cylinder at a time rather than one track at a time.
- Add the LIMITS parameter to the parameter list to specify only a limited area for scanning.

Restoring Factory Functional Verification Data Patterns to a Volume

Use the following example to restore the factory functional verification data patterns on an IBM 3375, 3380, or 3390 volume. Because DATA is specified, the example is valid only for these devices.

```
INIT UNITADDRESS(ccuu) NOVERIFY VALIDATE VOLID(serial) DATA
```

Note:

- Data on the volume is erased.
- The factory functional verification data patterns are restored on the volume.

- Because DATA is specified, this example is valid only for the IBM 3375, 3380, or 3390. If the example is used for a device other than a 3375, 3380, or 3390 DATA is ignored.

Checking Disk Surfaces

Use the INIT command to check the surface of all tracks on a volume (other than an IBM 3375, 3380, or 3390) by writing test patterns and then reading them back for every track on the volume. An alternate track is assigned for any primary track that is indicated to be defective.

Note that the CHECK parameter is invalid for 3375, 3380, or 3390 devices.

Use the INSPECT command (see below for an example) to check the surface of a specific track or range of tracks of a volume for all devices including the IBM 3375, 3380, and 3390.

```
INIT UNITADDRESS(ccuu) NOVERIFY VOLID(serial) CHECK(n)
```

Notes:

- This example is not valid for the IBM 3375, 3380, or 3390 because the CHECK parameter is not supported for these devices. See the INSPECT command below for an example of surface checking these devices.
- **Data on the volume is erased.** If data is to be retained, it should be dumped before processing begins.
- Tracks that were flagged defective when processing started will be surface checked, but not reclaimed. See "Reclaiming a Single Flagged Track" on page 44 and "Reclaiming Flagged Tracks" on page 44 if you want to try to reclaim defective tracks.
- **n** can be any number from 1 to 10. See Appendix F, "Surface Checking" on page 353 for recommended values of n for specific devices.
- This process rewrites all home addresses and record 0s and performs read/write checks on all surfaces.
- The default MAP prints a volume map of alternate tracks assigned during this process.

The following example uses the INSPECT command to check the surface of a volume. The example is valid for all devices

```
INSPECT UNITADDRESS(ccuu) NOVERIFY CHECK(n) -
        TRACKS(cccc,hhhh) PRESERVE
```

Notes:

- **n** can be any number from 1 to 10. See Appendix F, "Surface Checking" on page 353, for recommended values of n for specific devices.
- PRESERVE saves the data on the track by moving the data from the current track to an alternate track. NOPRESERVE causes the data on the track to be erased. Use this parameter only if there is no meaningful data on the track or if track errors prevent successful use of PRESERVE.
- When running online to an MVS operating system, security procedures are invoked.

Conditionally Assigning Alternate Tracks

Use the INSPECT command to check the surface of the specified track and to assign an alternate track if the surface checking process indicates that the track is defective. When PRESERVE is specified, the data is moved from the current track to the alternate track that is assigned.

```
INSPECT UNITADDRESS(ccuu) NOVERIFY CHECK(n) -
      TRACKS(cccc,hhhh) PRESERVE
```

Notes:

- **n** can be any number from 1 to 10. See Appendix F, "Surface Checking" on page 353, for recommended values of n for specific devices.
- PRESERVE saves the data on the current track by moving the data from the current track to an alternate track. NOPRESERVE causes the data on the track to be erased. Use this parameter only if there is no meaningful data on the track or if track errors prevent successful use of PRESERVE.
- When running online to an MVS operating system, security procedures are invoked.

Unconditionally Assigning Alternate Tracks

Use the INSPECT command to unconditionally assign an alternate track regardless of the condition of the primary track.

```
INSPECT UNITADDRESS(ccuu) VERIFY(serial,owner) NOCHECK -
      ASSIGN TRACKS(cccc,hhhh) PRESERVE
```

Notes:

- If the specified track is an alternate, the primary track currently assigned to it (if any) is assigned a different alternate track.
- When NOPRESERVE is specified, the data on the current track is lost.
- When running online to an MVS operating system, security procedures are invoked.

Printing a Track Assignment Map

Use the INSPECT command to prepare and print a report of alternate tracks assigned on the volume, for your information.

```
INSPECT UNITADDRESS(ccuu) NOVERIFY NOCHECK NOASSIGN -
      ALLTRACKS MAP
```

Note: Data on the volume is not altered.

Reclaiming a Single Flagged Track

Use the INSPECT command to check the surface of a specified track and to reclaim the track if it is currently flagged defective.

```
INSPECT UNITADDRESS(ccuu) NOVERIFY CHECK(n) -
      TRACKS(cccc,hhhh) RECLAIM PRESERVE
```

Notes:

- Data on the track is **not** erased. If the track is reclaimed, the data is rewritten to the reclaimed track.
- The maximum level of surface checking available for the device is done for the track. If the track condition is determined to be good, and the track was assigned an alternate when processing began, reclamation takes place. Conversely, if the track condition is determined to be defective, reclamation does not occur.
- If the above task is used for a track that is not flagged defective when processing begins, the results are the same as those described for "Conditionally Assigning Alternate Tracks" on page 43.
- See Appendix F, "Surface Checking" on page 353, for recommended values of n for specific devices.

Reclaiming Flagged Tracks

Use the INIT command to check the surface of all tracks on a volume (other than a 3375, 3380, or 3390) and to determine if tracks currently flagged as defective can be reclaimed.

```
INIT UNITADDRESS(ccuu) RECLAIM CHECK(n) NOVERIFY VOLID(serial)
```

Notes:

- **Data on the volume is erased. If data is to be retained, it should be dumped before processing begins.**
- Reclamation for a track that was flagged defective when processing started occurs only if surface checking indicates that the track is now defect-free.
- For skip displacement devices, skip displacement checking is done on currently flagged tracks (instead of primary checking) to ensure the current condition of the track.
- **n** can be any number from 1 to 10. See Appendix F, "Surface Checking" on page 353, for recommended values of n for specific devices.
- This process rewrites all home addresses and record 0s and performs read/write checks on all surfaces.
- The default MAP prints a volume map of alternate tracks assigned during this process.
- Note that the CHECK(n) parameter is not valid for IBM 3375, 3380, or 3390 devices. Use the INSPECT command to surface check and reclaim tracks for these devices

Rewriting Home Address/Record 0

Use the INIT command at the medial level to rewrite all home addresses and record zeros on the volume.

```
INIT UNITADDRESS(ccuu) NOVERIFY VALIDATE VOLID(serial)
```

Note: Data on the volume is erased. If data is to be preserved, it should be dumped before processing begins.

Emulating a CKD Device on an FBA Device

Preparing to Emulate a CKD Device on an IBM 3310 or 3370

Emulating a count-key-data device on an IBM 3310 or 3370 fixed block architecture device requires the following procedure:

1. Use ICKDSF to prepare the FBA disk for use. If you have not already done so, initialize the FBA disk with the FBAVTOC in the standard location (FBAVTOC(2,56,1024)) and write a volume label. See "Initializing a New Device or HDA" on page 55 for an example of initialization.

2. Execute the format emulated extent utility (INITEM). Refer to *VSE/ESA System Utilities* for a description of the INITEM utility.

3. If it is not already active, activate the Direct Access Storage Compatibility Feature, described in *IBM 4331 Processor Compatibility Features*. Refer to this manual for a detailed description of:

   - Association of native device addresses with the emulated device addresses
   - Physical space boundaries of emulated space on native devices
   - Emulation restrictions

4. Use the ICKDSF INIT command to initialize the emulated CKD disk for use.

   For full emulated CKD devices, use:

```
INIT  UNITADDRESS(ccuu) NOVERIFY VALIDATE -
      VOLID(volser) MIMIC(EMUALL) DEVTYPE(2314)
```

   For partial emulated CKD devices, use:

```
INIT  UNITADDRESS(ccuu) NOVERIFY VALIDATE -
      VOLID(volser) MIMIC(EMU(n)) DEVTYPE(2314)
```

   Notes:

   a. For **n**, substitute the same number of cylinders that was specified as the size of the subdisk during the format emulated extent (INITEM) program/operator dialog. ICKDSF does not check the validity of **n**.

   b. INIT writes a special data set control block (DSCB) on the partial CKD device to ensure that the nonexistent cylinders are never accessed.

Preparing to Emulate a CKD device on an IBM 9313, 9332, or 9335

You can emulate:

- the IBM 3340 on the IBM 9313 or 9332
- the IBM 3375 on the IBM 9335

When you emulate a CKD device on the 9313, 9332, or 9335 do not use the MIMIC(EMU) or MIMIC(EMUALL) parameter or perform any of the steps listed in "Preparing to Emulate a CKD Device on an IBM 3310 or 3370" on page 45. The commands and parameters you use are the same as you use when you are not emulating.

If the emulated device has never been initialized after conversion to CKD emulation, the device is unusable and you must run a *medial INIT* before running any other command or the results are unpredictable.

When you are emulating CKD devices on the 9313, 9332, or 9335 you can perform *only* the following ICKDSF functions:

- ANALYZE scan
- Minimal or medial initialization
- INSPECT, with no surface checking functions

To perform a medial initialization on a CKD device emulated on an IBM 9313, 9332, or 9335 use:

```
INIT  UNITADDRESS(ccuu) NOVERIFY VALIDATE -
      VOLID(volser) VTOC(cylinder,track,extent)
```

Notes:

1. The VTOC is rewritten and access to data on the volume is lost.
2. The volume serial you specify is checked against the *volser* of the volume
3. The checkpoint CONTINUE function of the INIT command is not supported
4. Maximal initialization is not supported
5. A medial initialization must process the whole volume. Range parameters are ignored.

To perform a data scan on a CKD device emulated on a 9313, 9332, or 9335 use:

```
ANALYZE  UNITADDRESS(ccuu) NODRIVETEST SCAN
```

Notes:

1. Only the data verification test is supported when you emulate CKD devices on the 9313, 9332, or 9335. The drive test is not supported.

To use the INSPECT command to perform unconditional assignment of alternate tracks on a CKD device emulated on a 9313, 9332, or 9335 use:

```
INSPECT UNITADDRESS(ccuu) NOCHECK ASSIGN TRACKS(cccc,hhhh)
```

Notes:

1. The only INSPECT command function you can perform when you emulate CKD devices on 9313, 9332, or 9335 is INSPECT with no surface checking functions.
2. The TRACKS parameter is used to specify the required tracks to be reassigned.

Media Maintenance on an Emulated Device

When you perform media maintenance because of surface defects, you should use INSPECT or the FBA maximal INIT against the base address. INSPECT can assign an alternate track to the emulated device. However, this has a greater performance impact than assigning alternates to blocks found defective on the base FBA device address.

Changing the Volume Serial Number and Owner Identification

Use the REFORMAT command to change the volume serial number and/or owner identification when the volume changes hands.

```
REFORMAT UNITADDRESS(ccuu) NOVERIFY VOLID(newvol) -
         OWNERID(newowner)
```

Notes:

- You may specify either VOLID, or OWNERID, or both.
- No other data on the volume is changed.
- You may also add the IPLDD(SYSIN) parameter to add IPL text to the volume at the same time.

Adding IPL Text to a Volume

Use the REFORMAT command to add IPL text to an already-initialized volume.

```
REFORMAT UNITADDRESS(ccuu) NOVERIFY BOOTSTRAP IPLDD(SYSIN)
```

Converting a Volume to Indexed Format

To convert an OS VTOC to indexed format, use the BUILDIX command:

```
//jobname    JOB . . .
//stepname   EXEC PGM=ICKDSF
//SYSPRINT   DD SYSOUT=A
//VOLDD      DD UNIT=(3390,,DEFER),VOL=(PRIVATE,SER=VL3390),
//           DSN=SYS1.VTOCIX.VL3390,DISP=OLD
//SYSIN      DD *
 BUILDIX  DDNAME(VOLDD)  IX
/*
```

```
BUILDIX DDNAME(dname) IXVTOC
```

To convert an indexed VTOC back to OS format, use the BUILDIX command:

```
//jobname   JOB . . .
//stepname  EXEC PGM=ICKDSF
//SYSPRINT  DD SYSOUT=A
//VOLDD     DD UNIT=(3390,,DEFER),VOL=(PRIVATE,SER=VL3390),
//          DSN=SYS1.VTOCIX.VL3390,DISP=OLD
//SYSIN     DD *
 BUILDIX  DDNAME(VOLDD)  OS
/*

BUILDIX DDNAME(dname) OSVTOC
```

Note: The BUILDIX command is valid only in MVS environments.

Surface Checking Part of a Volume

The following example performs primary surface checking, as part of an INSPECT command, on part of a volume, from cylinder 4, head 6, to cylinder 50 head 8.

```
INSPECT UNIT(ccuu) NOVFY CHECK(2) NOSKIP -
     FROMRANGE(4,6) TORANGE(50,8) PRESERVE
```

Notes:

- Primary surface checking is performed beginning at cylinder 4 head 6 and ending at cylinder 50, head 8.
- The total combination of tracks that can be inspected is 2500.

The following example performs primary surface checking on all heads of a volume, from cylinder 50 through cylinder 100.

```
INSPECT UNIT(ccuu) NOVFY CHECK(2) NOSKIP CYLRANGE(50,100) PRESERVE
```

The following example performs primary surface checking, on head 4 only, for all cylinders of a volume.

```
INSPECT UNIT(ccuu) NOVFY CHECK(2) NOSKIP HEADRANGE(4,4) -
        PRESERVE
```

Notes:

- Primary surface checking is performed on cylinder 0, head 4, to the last alternate cylinder head 4.
- Data is saved at the backup location on each track processed.

The following example performs primary surface checking on heads 5 and 6 only, on cylinders 500 through 599:

```
INSPECT UNIT(ccuu) NOVFY CHECK(2) NOSKIP -
    CYLRANGE(500,599) HEADRANGE(5,6) PRESERVE
```

The following example performs primary surface checking starting at cylinder 500, starting at head 14:

```
INSPECT UNIT(ccuu) NOVFY CHECK(2) NOSKIP -
     CYLRANGE(500,9999) HEADRANGE(14,9999) PRESERVE
```

- In this example, all cylinders from cylinder 500 through the last alternate cylinder are processed, for heads 14 through the last head for this device type.
- For a 3390-2, ICKDSF processes cylinders 500 through 2226, head 14 only.
- For a 3350, ICKDSF processes cylinders 500 through 559, heads 14 through 29.
- Total combination of tracks cannot exceed 2500.

The following example performs skip displacement surface checking of all tracks on the alternate cylinder of an IBM 3380 Model A04, AA4, and AD4.

```
INSPECT UNIT(ccuu) NOVFY CHECK(1) SKIP CYLRANGE(885,885)
```

Resume Processing from a Checkpointed Location

The examples below show processing being resumed after ICKDSF has automatically checkpointed itself during a medial INIT. CONTINUE specifies ICKDSF is to resume from the last checkpoint.

The following example (let's call it JOB1) validates and writes factory functional verification data patterns on a volume. Assume that ICKDSF automatically last took a checkpoint at cylinder 200, head 0, and processing is interrupted after that checkpoint.

```
INIT UNIT(ccuu) NOVFY VALIDATE DATA
```

If you ran the following, after processing has been interrupted as in JOB1 above, you can validate part of a volume.

```
INIT UNIT(ccuu) VALIDATE NODATA NOVERIFY -
     CYLRANGE(100,500) HEADRANGE(2,6) CONTINUE VOLID(volser)
```

Notes:

- All tracks starting at cylinder 200, head 0 (the last checkpointed location), and continuing for about 1000 tracks, are validated and data is erased from those tracks. An IBM 3380 would be validated from cylinder 200 head 0 to cylinder 266 head 14.
- Validation (including erasing data) is also done for heads 2 through 6 for all cylinders beyond the last cylinder validated above, up to and including cylinder 500. For example, on a 3380, cylinders 267 to 500 are validated.
- Minimal initialization is performed.

If you ran the following, after processing has been interrupted as in JOB1 above, you can write factory functional verification data patterns on part of a volume. Note that the part of the volume specified had been totally completed (in JOB1) before the last checkpointed location.

```
INIT UNIT(ccuu) NOVFY DATA VALIDATE -
     CYLRANGE(0,100) CONTINUE VOLID(volser)
```

Notes:

- All tracks starting at cylinder 200, head 0 (the last checkpointed location), and continuing for about 1000 tracks are validated and have factory functional verification data patterns written on them.
- Additional validation and writing of factory functional verification data patterns does not occur for the tracks in the specified range, because the specified range is totally contained before the last checkpointed location.
- Minimal initialization function is performed.

If you ran the following, after processing has been interrupted as in JOB1 above, you can perform a minimal initialization of the volume:

```
INIT UNIT(ccuu) NOVFY NOCHECK NOVALIDATE CONTINUE VOLID(volser)
```

Notes:

- All tracks starting at cylinder 200, head 0 (the last checkpointed location), and continuing for approximately 1000 tracks, are validated and data is erased.
- Then the requested minimal initialization is performed.

If you ran the following, after processing has been interrupted as in JOB1 above, you can write factory functional verification data patterns on part of the volume, regardless of where previous processing was interrupted (NOCONTINUE).

```
INIT UNIT(ccuu) NOVFY VALIDATE DATA -
     CYLRANGE(0,100) NOCONTINUE VOLID(volser)
```

Notes:

- All tracks starting at cylinder 200, head 0 (the last checkpointed location), and continuing for about 1000 tracks, are validated and factory functional verification data patterns are written on them.
- Tracks are validated and factory functional verification data patterns are written for the specified cylinders for all heads on the device:
  - For a 3380 A04, AA4, and AD4, ICKDSF processes heads 0 through 14 for cylinders 0 through 100
- Minimal initialization is performed.

If you ran the following, after processing has been interrupted as in JOB1 above, you can validate part of the volume from a specific point.

```
INIT UNIT(ccuu) NOVFY VALIDATE -
     FROMRANGE(500,6)  CONTINUE VOLID(volser)
```

Notes:

- All tracks starting at cylinder 200, head 0 (the last checkpointed location), and continuing for approximately 1000 tracks, are validated and data is erased.
- All tracks are then validated starting from cylinder 500 head 6, through the last head on the last alternate cylinder.

  - For a 3380 A04, AA4, and AD4, ICKDSF processes all tracks on each cylinder starting from cylinder 500, head 6 through cylinder 885, head 14.
  - Minimal initialization is performed.

If you ran the following, after processing has been interrupted as in JOB1 above, you can validate part of the volume to a specific point.

```
INIT UNIT(ccuu) NOVFY VALIDATE -
     TORANGE(500,6) CONTINUE VOLID(volser)
```

Notes:

- All tracks starting at cylinder 200, head 0 (the last checkpointed location), and continuing for approximately 1000 tracks, are validated and data is erased.
- Starting from cylinder 200 head 0 through cylinder 500 head 6, all tracks on each cylinder are validated and data is erased from those tracks.

If you ran the following, after processing has been interrupted as in JOB1 above, you can validate and write factory functional verification data patterns for part of the volume starting at a specific cylinder for only one head.

```
INIT UNIT(ccuu) NOVFY VALIDATE DATA -
     CYLRANGE(500,9999) HEADRANGE(6,6) CONTINUE VOLID(volser)
```

Notes:

- All tracks starting at cylinder 200, head 0 (the last checkpointed location), and continuing for approximately 1000 tracks, are validated and factory functional verification data patterns are written.
- Tracks are validated and factory functional verification data patterns are written on head 6 only, from cylinder 500 through the last alternate cylinder.
  - For a 3380 A04, AA4, and AD4, ICKDSF processes head 6 only, from cylinder 500 through cylinder 885.
- Minimal initialization is performed.

If you ran the following, after processing has been interrupted as in JOB1 above, you can validate the last few heads of a device.

```
INIT UNIT(ccuu) NOVFY VALIDATE -
     HEADRANGE(8,99) CONTINUE VOLID(volser)
```

Notes:

- All tracks starting at cylinder 200, head 0 (the last checkpointed location), and continuing for approximately 1000 tracks, are validated and data is erased.
- Validation is performed and data is erased for all cylinders on the device, for heads 8 through n (where n is the maximum head number for the device).
  - For a 3380 A04, AA4, and AD4, ICKDSF processes heads 8 through 14, from cylinder 200 through cylinder 885.
  - Minimal initialization is performed.

Recovering after an INSPECT Job Failure

The following examples show how to recover after an INSPECT job failure. When PRESERVE is specified, ICKDSF saves a copy of the data on the track at a backup location as well as in storage. If processing is not completed, ICKDSF can find and restore the track that was being processed when the job was interrupted.

The following job ensures that data is saved during surface checking for all tracks on cylinder 200. When PRESERVE is specified, ICKDSF saves a copy of the data on the track at a backup location as well as in storage.

```
INSPECT UNIT(ccuu) NOVFY CHECK(1) SKIP -
        CYLRANGE(200,200) PRESERVE
```

The following example (let's call it JOB2) performs skip displacement surface checking on part of a volume. When PRESERVE is specified, ICKDSF saves a copy of the data on the track being processed at a backup location as well as in storage.

Assume that ICKDSF is executing on a 3380, and processing is interrupted on cylinder 201, head 1.

```
INSPECT UNIT(ccuu) NOVFY CHECK(2) SKIP -
        FROMRANGE(200,4) TORANGE(201,3) PRESERVE
```

If you ran the following job after processing has been interrupted as in JOB2 above, you can surface check a different portion of the volume:

```
INSPECT  UNIT(ccuu) NOVFY CHECK(2) NOSKIP -
         CYLRANGE(100,500) HEADRANGE(2,6) KEEPIT
```

Notes:

- Cylinder 201, head 1 is validated and primary surface checked.
- If primary surface checking for cylinder 201, head 1 fails, skip displacement surface checking is invoked.
- If any data existed for cylinder 201, head 1 when processing was interrupted, the data is rewritten on cylinder 201, head 1 from the backup location.
- Primary surface checking is then performed for all the tracks within the new range.
  - Heads 2 through 6 on cylinders 100 through 500.

If you ran the following job after processing has been interrupted as in JOB2 above, you can surface check the specified heads for part of the volume:

```
INSPECT  UNIT(ccuu) NOVFY CHECK(2) NOSKIP -
         CYLRANGE(100,500) HEADRANGE(2,6) PRESERVE
```

Notes:

- Cylinder 201, head 1 is validated and primary surface checked.
- If primary surface checking for cylinder 201, head 1 fails, skip displacement surface checking is invoked.

- If any data existed for cylinder 201, head 1 when processing was interrupted, the data is rewritten on cylinder 201, head 1.
- Primary surface checking is then performed for all the tracks within the new range.

If you ran the following job after processing has been interrupted as in JOB2 above, you can use INSPECT to restore any data that may exist on the backup location, and ensure the usability of the volume.

```
INSPECT  UNIT(ccuu) NOVFY
```

Notes:

- Cylinder 201, head 1 is validated and primary surface checked.
- If primary surface checking for cylinder 201, head 1 fails, skip displacement surface checking is invoked.
- If any data existed for cylinder 201, head 1 when processing was interrupted, the data is rewritten on cylinder 201, head 1.

Scanning Data on Part of a Volume

The following examples show parts of a volume being specified for the ANALYZE command

In this example, the data verification test is performed for heads 5 and 6 only, on cylinders 500 through cylinder 599.

```
ANALYZE UNIT(ccuu) SCAN NODRIVE -
        CYLRANGE(500,599) HEADRANGE(5,6)
```

In this example, after the drive test, the data verification test is performed for all heads starting at head 14, for all cylinders starting at cylinder 500.

```
ANALYZE UNIT(ccuu) SCAN -
        CYLRANGE(500,9999) HEADRANGE(14,9999)
```

Notes:

After the drive test, all cylinders from cylinder 500 until the last primary cylinder are scanned, for heads 14 through the last head for this device type.

- For a 3380 A04, AA4, and AD4, ICKDSF processes head 14 only, on cylinders 500 through 884 (alternate cylinder not processed).
- For a 3350, ICKDSF processes heads 14 through 29 on cylinders 500 through 554 (alternate cylinder not processed).

How to Find Where a Job Failed Using ANALYZE

If you specified the following INSPECT job (let's call it JOB3), to perform skip displacement surface checking on part of a volume and the job did not finish, you could use ANALYZE to locate the track that was being processed when execution terminated. Assume that ICKDSF was executing on a 3380, and processing was interrupted on cylinder 201 head 1.

```
INSPECT UNIT(ccuu) NOVFY CHECK(2) SKIP -
      FROMRANGE(200,4) TORANGE(201,3) PRESERVE
```

If you ran the following job after processing has been interrupted as in JOB3 above, ANALYZE will determine and report the location of the track that was being processed when execution terminated. Note that the DRIVETEST parameter is valid only for direct-access storage devices with nonremovable storage media. For more information, see "ANALYZE Command—CKD" on page 75.

```
ANALYZE UNIT(ccuu) DRIVETEST
```

Placing a VTOC at the End of a Volume

In the following example, ICKDSF puts the VTOC at the end of the volume. This example allows ICKDSF to choose the location and size of the VTOC and is valid for any device.

```
INIT UNIT(ccuu) NOVFY VOLID(volser) VSEVTOC(END)
```

Note:

- ICKDSF places the VTOC on the last primary cylinder of the volume. The VTOC is one cylinder in length. This example is valid for all device types.

The following example allows ICKDSF to determine the location and size of the VTOC for an MVS system.

```
INIT UNIT(ccuu) NOVFY VOLID(volser) VTOC(END)
```

Note:

- ICKDSF places the VTOC on the last primary cylinder of the volume and the VTOC is one cylinder in length.

Clearing a Storage Path Fence Status

In the following example, ICKDSF clears a fence status. When this command is issued, all paths to all devices on the subsystem are cleared.

```
CONTROL  UNITADDRESS(0162) CLEARFENCE
```

Notes:

- When you issue the CLEARFENCE parameter of the CONTROL command, it is assumed the path and/or the device which has been fenced off by the subsystem has been repaired.
- The CONTROL command with the CLEARFENCE parameter clears ALL paths to ALL devices on the subsystem.

Examples of ICKDSF Tasks—FBA Devices

The following examples show the commands and parameters needed for each task in the **stand-alone version** of ICKDSF. Default parameters are indicated only where they produce additional output. Optional parameters for the stand-alone version are described briefly in the notes that follow each example. For complete descriptions of each command and examples of VSE operations, see the descriptions of the individual commands beginning with "ANALYZE Command—FBA" on page 197.

You may find it useful to select an example that most closely matches the task(s) you want to perform and use it as a model for your ICKDSF job. Examples of ICKDSF commands using fixed block architecture devices are presented in this section. Examples of ICKDSF commands using count-key-data devices are presented in

- "Examples of ICKDSF Tasks—CKD Devices" on page 39.

Further examples are presented after each command in:

- "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73
- "Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices" on page 195

Initializing a New Device or HDA

Use the INIT command to prepare a new device or a replaced HDA for use. To surface check the volume for possible defects (not normally required for a new device), see "Checking Disk Surfaces" on page 56.

```
INIT UNITADDRESS(ccuu) NOVERIFY FBAVTOC(rbn,extent,cisize) -
     VOLID(serial) OWNERID(owner) NOMAP
```

Notes:

- Data on the volume is destroyed.
- This example establishes a volume ID, an owner ID, and a FBA VTOC on the volume.
- If you operate in VSE, add the PURGE parameter.

Initializing FBA Minidisks

Using the CMS or the stand-alone version of ICKDSF you can use the INIT command to prepare an FBA minidisk for use.

```
INIT UNITADDRESS(ccuu) NOVERIFY FBAVTOC(rbn,extent,cisize) -
     VOLID(serial) OWNERID(owner)
```

Notes:

- This example initializes a minidisk at the minimal level, by establishing a volume ID, an owner ID, and an FBA VTOC on the minidisk.
- This example is initialized at the minimal level in the CMS or stand-alone version.

Reinitializing a Volume

Volumes should be reinitialized at the minimal level.

```
INIT UNITADDRESS(ccuu) NOVERIFY VOLID(serial) -
     OWNERID(owner) FBAVTOC(rbn,extent,cisize) NOMAP
```

Note: The VTOC is rewritten and access to data on the volume is lost.

Investigating Suspected Drive Problems

If you suspect a problem with a drive, use the ANALYZE command to assist in determining:

1. If the drive can perform basic operating functions correctly
2. If all data can successfully be read from the disk surface

```
ANALYZE UNITADDRESS(ccuu) SCAN
```

Notes:

- The data on the volume is not altered.
- Add the SPEED parameter to scan the maximum number of data blocks on each pass. This option is not recommended for VM users; although SPEED makes the scanning process faster, it also keeps the drive busy and therefore degrades the performance of other VM users.
- Add the LIMITS parameter to specify only a limited area for scanning.
- Refer to "ANALYZE Command—FBA" on page 197 for information on ANALYZE output.

Checking Disk Surfaces

Use the INIT command to check the surface of all blocks during initialization by writing test patterns on the new volume and then reading them back. Any block flagged defective during this analysis is then assigned an alternate block (see also "Conditionally Assigning Alternate Blocks" on page 57). No attempt is made to reclaim defective blocks; refer to "Reclaiming Flagged Blocks" on page 57 for the recommended procedure.

```
INIT UNITADDRESS(ccuu) VERIFY(serial,owner) -
     FBAVTOC(rbn,extent,cisize) CHECK(3)
```

Notes:

- **The data on the volume is erased. If data is to be retained, it should be dumped before processing begins.**
- The CHECK(3) parameter ensures that the three data patterns available for surface checking are all used. A value higher than 3 merely repeats the three basic patterns. A value of 1 or 2 may be substituted and requires less run time; however, the surface checking is less thorough.

- If you operate in VSE, add the PURGE parameter.
- The default, MAP, prints a volume map of alternate blocks assigned during this process.

Conditionally Assigning Alternate Blocks

Use the INSPECT command to assign an alternate block only when the primary block is indicated to be defective as the result of surface checking. When PRESERVE is specified, the data is moved from the current block to the alternate block that is assigned.

```
INSPECT UNITADDRESS(ccuu) VERIFY(serial,owner) BLOCKS(rbn) -
        CHECK(3) NOPRESERVE|PRESERVE
```

Notes:

- The CHECK(3) parameter ensures that the three data patterns available for surface checking are all used. A value higher than 3 merely repeats the three basic patterns. A value of 1 or 2 may be substituted and requires less run time; however, the surface checking is less thorough.
- You may specify up to 20 blocks for conditional assignment by adding them to the BLOCKS parameter (separated by commas).
- NOPRESERVE causes the data on the block to be erased. Use this parameter only if there is no meaningful data on the block or if block errors prevent successful use of PRESERVE.

Unconditionally Assigning Alternate Blocks

Use the INSPECT command to unconditionally assign an alternate block regardless of the condition of the primary block. When PRESERVE is specified, the data is moved from the current block to the alternate block that is assigned.

```
INSPECT UNITADDRESS(ccuu) VERIFY(serial,owner) BLOCKS(rbn) -
        ASSIGN NOCHECK
```

Notes:

- If the inspected block has a current alternate, a new alternate is assigned.
- You may specify up to 20 blocks for unconditional assignment by adding them to the BLOCKS parameter (separated by commas).

Reclaiming Flagged Blocks

In general, a block should only be flagged defective if a known defect is found on it. If a volume contains multiple flagged blocks that no longer need to be flagged, the defective blocks may be reclaimed.

To reclaim blocks, first verify correct device operation using the ANALYZE command. Then, if there are no problems with the device, use the INIT command to reclaim previously flagged blocks.

```
ANALYZE UNITADDRESS(ccuu)

IF LASTCC ≤ 4 THEN -
INIT UNITADDRESS(ccuu) VERIFY(serial,owner) -
    FBAVTOC(rbn,extent,cisize) CHECK(3) RECLAIM
```

Notes:

- The INIT command **destroys** the data on the volume. If you want to save the data, dump it before processing begins.
- After all assigned alternate blocks (except factory-flagged blocks) become unassigned, the INIT command makes thorough surface check of all nondefective primary blocks and factory-assigned alternate blocks. Any block found defective and any block previously flagged defective at the factory are assigned alternate blocks.
- The CHECK(3) parameter ensures that the three data patterns available for surface checking are all used. A value higher than 3 merely repeats the three basic patterns. A value of 1 or 2 may be substituted and requires less run time; however, the surface checking is less thorough.
- If you operate in VSE, add the PURGE parameter.
- The default, MAP, prints a volume map of alternate blocks assigned during this process.
- If a maximal initialization, with RECLAIM specified, abends or terminates with an I/O error before reclaim processing completes, the volume being initialized may have one or more defective primary blocks with invalid alternate block pointers. If this occurs, resolve the cause of the early termination and rerun the maximal initialization job, respecifying the RECLAIM parameter. Any future attempt to initialize the volume will force the maximal INIT RECLAIM to continue.

Printing a Block Assignment Map

Use the MAPALT command to prepare and print a detailed report of alternate block assignment status for the volume.

```
MAPALT UNITADDRESS(ccuu) DETAIL
```

Notes:

- The data on the volume is not altered.
- Add the LIMITS parameter to restrict the report to a specific range of blocks.
- To produce only a summary report, remove the DETAIL parameter.
- The INIT or INSPECT command can also be used to get a map of alternate blocks assigned.

Changing the Volume Serial Number and Owner Identification

Use the REFORMAT command to change the volume serial number and/or owner identification when the volume changes hands.

```
REFORMAT UNITADDRESS(ccuu) VERIFY(serial,owner) -
         VOLID(newserial) OWNERID(newowner)
```

Notes:

- You may specify either VOLID, or OWNERID, or both.
- No other data on the volume is changed.

Emulating a CKD Device on an FBA Device

Refer to "Emulating a CKD Device on an FBA Device" on page 45.

Resume Processing From a Checkpointed Location

The following examples assume you were INITIALIZING a volume with ICKDSF automatically taking checkpoints and processing is interrupted. Some examples of how you might resume processing from the last checkpointed location are illustrated. Checkpointing is assumed to occur every 20000 blocks.

The following example (let's call it JOB4) is surface checking an FBA device, and a checkpoint is taken last at block 5000 before processing is interrupted.

```
INIT UNIT(ccuu) NOVFY CHECK(3)
```

If you ran the following job next, after processing has been interrupted as in JOB4 above, you can surface check part of the volume:

```
INIT UNIT(ccuu) NOVFY CHECK(3) -
     BLOCKRANGE(3000,24000) CONTINUE VOLID(volser) NOMAP
```

Notes:

- The blocks starting at block 5000, and continuing for 20000 blocks are surface checked.
- No additional blocks are processed.
- Minimal initialize functions will be performed.

If you ran the following job next, after processing has been interrupted as in JOB4 above, you can perform a minimal initialization of the volume:

```
INIT UNIT(ccuu) NOVFY NOCHECK CONTINUE VOLID(volser) NOMAP
```

Notes:

- Blocks 5000 through 24999 are processed to ensure that the data fields are readable.
- Minimal initialize functions are then be performed.

If you ran the following job next, after processing has been interrupted as in JOB4 above, you can ensure processing starts from the beginning of the specified range:

```
INIT UNIT(ccuu) NOVFY CHECK(3) -
     BLOCKRANGE(3000,24000) NOCONTINUE VOLID(volser) NOMAP
```

Notes:

- Blocks 3000 through 24000 are surface checked.
- Blocks 24001 through 24999 are processed to ensure that the data fields are readable.
- Minimal initialize functions are then performed.

Preventing Accidental Destruction of Data

The following example (let's call it JOB5) surface checks an FBA device, and processing is interrupted on block 13656. PRESERVE specifies that the data is to be saved during surface checking and saves a copy of the data at the backup location as well as in storage.

```
INSPECT UNIT(ccuu) NOVFY CHECK(3) -
        BLOCKRANGE(5000,25000) PRESERVE
```

If you ran the following job next, after processing has been interrupted as in JOB5 above, you can surface check a different part of the volume:

```
INSPECT  UNIT(ccuu) NOVFY CHECK(3) -
         BLOCKRANGE(50000,100000) PRESERVE NOMAP
```

Notes:

- Block 13656 is surface checked. If any data existed for block 13656 when processing was interrupted, the data is rewritten on block 13656.
- Surface checking is then performed for all the blocks within the new range.

If you ran the following job next, after processing has been interrupted as in JOB5 above, you can ensure the usability of the block and recover the data.

```
INSPECT  UNIT(ccuu) NOVFY
```

Note:

- Block 13656 is surface checked. If any data existed for block 13656 when processing was interrupted, the data is rewritten on block 13656.

Specifying Part of a Volume

The following example surface checks all blocks from the beginning of the volume through block 25000. PRESERVE specifies that the data is to be saved during surface checking and saves a copy of the data at the backup location as well as in storage.

```
INSPECT UNIT(ccuu) NOVFY CHECK(1) -
        BLOCKRANGE(0,25000) PRESERVE NOMAP
```

The following example performs the data verification test for blocks 0 to 100000. The drive test is not performed. As BLOCKRANGE is identical to LIMITS you can substitute LIMITS for BLOCKRANGE.

```
ANALYZE UNIT(ccuu) SCAN NODRIVE BLOCKRANGE(0,100000)
```

How to Find Where a Job Failed, Using ANALYZE

The following example (let's call it JOB6) surface checks an FBA device, and processing is interrupted on block 13656. PRESERVE specifies that the data is to be saved during surface checking and saves a copy of the data at the backup location as well as in storage.

```
INSPECT UNIT(ccuu) NOVFY CHECK(3) -
        BLOCKRANGE(5000,25000) PRESERVE
```

If you ran the following job after processing has been interrupted as in JOB6 above, you can use ANALYZE to determine the location of the block that was being processed when execution was terminated. Note that DRIVETEST is only valid for devices which have non-removable storage media. See "ANALYZE Command—FBA" on page 197 for more information.

```
ANALYZE UNIT(ccuu) DRIVETEST
```

How to Place an FBAVTOC at the End of a Volume

In the following example, ICKDSF puts the FBAVTOC at the end of the volume. This example allows ICKDSF to choose the location and size of the FBAVTOC and is valid for any device.

```
INIT UNIT(ccuu) NOVFY VOLID(volser) FBAVTOC(END) NOMAP
```

Reclaiming the System Reserved Area of an IBM 9335 device

In this example, the primary and alternate blocks of the System Reserved Area of an IBM 9335 device are reclaimed.

```
CONTROL UNITADDRESS(0141) RECLAIM(SYSAREA)
```

Notes on Using Device Support Facilities

Determining the level of your Device Support Facilities

You can verify the version, release, and modification level of ICKDSF as well as the environment supported by checking the top line of any printed page. The format is as follows:

```
ICKDSF-xxx DEVICE SUPPORT FACILITIES yyy
```

where:

```
xxx=MVS (MVS/370)
    VSE (VSE/SP)
    MVS/XA (MVS/XA or MVS/ESA)
    SA (stand alone/370 mode)
    SA/XA (stand alone/XA mode)
    CMS (ICKDSF/CMS 370)
    CMS/XA (ICKDSF/CMS XA or CMS/ESA)
yyy=Release (for example, 13)
```

Surface Checking Considerations

The surface checking functions performed by ICKDSF are not equivalent to the surface checking that is performed on a volume at the factory.

Marginal defects that exist on the surface of a track cannot be detected consistently by ICKDSF because of their intermittent nature. Therefore, different results can be obtained for the same track and/or volume from multiple runs of ICKDSF. Also, ICKDSF output can differ from other surface checking products because of different checking algorithms. See Appendix F, "Surface Checking," for more information.

Disk Surface Error Diagnosis

A prime use of ICKDSF is to maintain disk surfaces without requiring the assistance of a customer engineer. To do this efficiently, and as an aid in problem detection and analysis, you should be familiar with a few terms.

Data Errors

Data errors are errors detected in the bit pattern read from a disk.

When a data check occurs, there are two methods that may be attempted for automatic recovery:

- The data may actually be corrected.
- The data may be read correctly when the operation is retried.

All DASDs supported by ICKDSF add error detection information to each count, key, and data area of a record when it is written. Later, when the record is read, the information is used to detect errors that may be present and to correct the data where possible.

Error detection and correction information is a pattern of bits, coded to define a validity check for the full data in the recorded area. It is referred to as error correction code (ECC). When **ECC correctable**, the data is reconstructed to be the same as the data originally transferred to disk storage. The data correction may be done by the subsystem as data is transferred to main storage, or it may be done by the system after the data is in main storage. Although the data in main storage is correct for use in processing, the data on the disk is not changed. The next attempt to read the data from the disk may again result in a data error.

The other technique used for recovery from data errors is to retry the read operation by reissuing the command. Retry is sometimes done by the subsystem and sometimes by the system. The **retry** is done repeatedly in attempts to read the data correctly. If retry attempts are made a certain number of times without successfully reading the data, some disk storage types physically adjust the access mechanism. This causes the head to move to different positions across the track in attempts to better read the data signals. This technique is referred to as **retry with head offset**.

The method used for data error recovery depends on the disk storage type and the area that contains the error. (The error may be in the home address area of the track, in the count, key, or data area of a record, in a block, or in an identification field.)

Temporary or Permanent Errors

The terms **temporary** and **permanent** describe whether or not an error is recovered as seen by the program issuing the I/O operation. This error can be recovered either by the subsystem or by the operating system error recovery procedures (ERPs).

A temporary error is one that is recovered by correcting the data or by retrying the operation. In both cases, the operation in progress is completed.

A permanent error is one that is not correctable and cannot be recovered by retrying the operation.

Maintaining Disk Surfaces

ICKDSF surface checking procedures bypass ALL system recovery procedures, and as many of the subsystem recovery procedures as can be bypassed (this varies by subsystem). This ensures that errors are as visible as possible to the ICKDSF surface checking procedures; that is, ECC correctable data field errors for count-key-data devices are visible to ICKDSF, and subsystem retry with offset in the data field is bypassed for 3375, 3380, and 3390 devices.

ICKDSF actions during surface checking procedures vary with the characteristics of the device being processed, but it always executes with data error recovery bypassed. Because of the high visibility of data errors being enforced, ICKDSF may classify a data error as uncorrectable when the subsystem retry may actually be able to correct the error. This might include data errors that could be fixed by subsystem retry and/or subsystem offset, and also errors that could be fixed by system error recovery procedures. All other data error I/O failures are classified as correctable.

Running Multiple ICKDSF Jobs

When you schedule multiple ICKDSF jobs the multiple invocations of ICKDSF commands can cause contention for resources. This can occur when the number of ICKDSF jobs accessing devices on the same control unit or subsystem exceeds the number of paths to the devices. However, all jobs will run to completion.

Running ICKDSF on Dual Copy Volumes

There are diffe.ent ways to establish or fail a dual copy pair (for example, using IDCAMS or the subsystem). During this process ICKDSF is unable to ensure the volume is in a usable state. You must allow the current ICKDSF command to run to its completion before changing the primary or secondary volume state (establishing or failing a dual copy pair). Also, do not start an ICKDSF job until a dual copy volume change has completed. If an ICKDSF command function prematurely terminates you must examine the ICKDSF output carefully to determine the reason for the failure before you reinvoke the function. If the volume has changed from a duplex state to a suspended duplex state the original primary and secondary may be swapped and you must be sure you are reinvoking the ICKDSF job to the correct volume.

Device Thermal Stability Requirements Before Running ICKDSF

Before you run ICKDSF jobs the DASD devices must have established thermal stability. All devices must be powered on, in the ready condition, and all covers closed to establish thermal stability. Some recommended times are given below:

Figure 10. Device Thermal Stability Requirements

Device	Time required
3380	2 hours 30 minutes
3390	1 hour 20 minutes

Count Key Data (CKD) Device Characteristics

Skip Displacement Devices

The IBM 3340, 3344, 3350, 3375, 3380, and 3390 devices contain "skip displacement areas" reserved on every track, and are called *skip displacement devices*.

ICKDSF can use skip displacement checking on tracks on these device types to allow the defective area of a track to be skipped over without affecting track capacity or performance. A track is not considered defective unless the entire skip displacement area for that track has been used and another defect is then detected.

For skip displacement devices, ICKDSF can perform extensive analysis on a track and possibly prevent the need for assigning alternates.

Nonskip Displacement Devices

The IBM 2305, 2311, 2314, 2319, 3330, and 3333 devices do not have the ability to skip defective track areas. These are referred to as *nonskip displacement devices*.

ICKDSF can perform read/write analysis for a track to verify that a defect exists. If an uncorrectable error is detected, the track is considered defective. If the error is correctable, a note of this fact is made on the volume map. Because software can correct the problem faster than the hardware can seek to an alternate track, ICKDSF will never consider a correctable error as a defective condition for nonskip displacement devices.

Fixed Block Architecture (FBA) Device Characteristics

For IBM 3370 FBA devices, assignment of an alternate block is generally done on the same physical cylinder on which the defective block resides, thereby minimizing any performance degradation experienced when seeking to an independent alternate cylinder.

A block is therefore considered defective for correctable data checks as well as for uncorrectable data checks when the correctable data check is made visible to ICKDSF.

For IBM 3310 FBA devices, correctable data checks cannot be made visible to ICKDSF. Uncorrectable data checks cause the block to be declared defective.

Emulated Devices

ICKDSF operates on count-key-data devices that might be emulated on other count-key-data devices (for example, a 3330 emulated on a 3350), and on count-key-data devices that might be emulated on fixed block architecture devices (for example, a 3330 emulated on a 3370).

CKD Emulated on CKD

For count-key-data devices emulated on other count-key-data devices, the emulation is transparent to the ICKDSF user. However, an emulated device works in the same manner as the device which is being emulated, not the native device. For example, if a 3330 is being emulated on a 3350, skip displacement is not performed as the 3330 does not support skip displacement.

In addition, the drive test function of the ANALYZE command, which would not work on the native version of the device (for example, a native 3330-1), will operate on the emulated version (for example, a 3330-1 emulated on a 3350). No special input, other than that required for any other invocation of ANALYZE, is required to run on an emulated device.

CKD Emulated on IBM 3310 or 3370 FBA

For count-key-data devices emulated on 3310 or 3370 fixed block architecture devices, ICKDSF must be made aware of the situation. This is done by use of the MIMIC(EMUALL) or MIMIC(EMU(n)) parameter on the INIT or INSPECT command. There are also multiple steps that the user must perform *before* the emulated device is ready for ICKDSF. See “Emulating a CKD Device on an FBA Device” on page 45.

The drive test function of the ANALYZE command does not operate on count-key-data devices being emulated on fixed block architecture devices.

The CONTINUE function of the INIT command and the recovery backup function of the INSPECT command are not supported on a 3340 emulated on a 3370.

CKD Emulated on IBM 9313, 9332, or 9335 FBA

When you emulate count-key-data devices on 9313, 9332, or 9335 fixed-block-architecture devices, you do not have to specify the MIMIC(EMU) or MIMIC(EMUALL) parameters. Also, the steps specified under "CKD Emulated on IBM 3310 or 3370 FBA" do not have to be performed.

If the emulated device has never been initialized after conversion to CKD emulation, the device is unusable and you must run a *medial INIT* before running any other command or the results are unpredictable.

The following functions *only* are supported:

- ANALYZE data verification test
- Minimal or medial INIT
- INSPECT, with no surface checking functions.

The drive test is not supported.

The checkpoint CONTINUE function of the INIT command is not supported.

Range parameters are ignored when you perform a medial initialization.

Syntax of the Device Support Facilities Commands

The illustrations of command formats in this book use the following conventions:

- Brackets ([]) indicate an optional field or parameter.
- Braces ({}) indicate that one of alternative items must be selected.
- Items separated by a vertical bar (|) represent alternative items. Only one item may be selected.
- An ellipsis (...) indicates that multiple entries of the type immediately preceding the ellipsis are allowed.
- **BOLDFACE UPPERCASE** type indicates the exact characters to be entered. Such items must be entered as shown or in the abbreviated form allowed.
- **UNDERSCORED BOLDFACE UPPERCASE** type indicates a default option. If the parameter is omitted, the default value is assumed.
- *italics* indicates fields to be supplied by you.
- Parentheses, commas, slashes, spaces, and other punctuation must be entered as shown.
- Numeric parameters can be coded in two ways: decimal or hexadecimal (X'n'). This applies to any parameter that specifies a substitution of decimal numbers.
- Character string parameters can be coded either with or without enclosing them in single quotation marks. However, if delimiters such as commas, blanks, or parentheses appear within a character string, the string must be enclosed within single quotation marks.

You can specify values with some keyword parameters. The value is entered within parentheses following the keyword parameter. A typical keyword with a value appears in this book as:

VOLID(*serial***)**

A value cannot contain commas, semicolons, blanks, parentheses, or slashes unless the entire value is enclosed within single quotation marks. (A single quotation mark in a field enclosed within quotation marks must be coded as two single quotation marks.)

Positional Parameters: In the explanations of commands within this book, the positional parameters are shown in *italics*. When a positional parameter consists of a list of items, you must enclose the list in parentheses.

Abbreviating Commands and Parameters

Some of the commands and parameters can be abbreviated. Abbreviations for commands are listed just before the syntax for each command. Abbreviations for parameters are shown under the heading "Abbreviations." The full form of the parameter is given first, followed by acceptable abbreviations. A vertical bar is used to separate the parameter and its abbreviations.

Delimiters

When you issue a command, you must separate the command name from the first parameter by one or more blanks. You must separate parameters from each other by one or more blanks or a comma. Do **not** use a semicolon as a delimiter, because any characters that follow a semicolon are ignored.

Line Continuations

A command, IF statement, or comment can be entered using one or more lines. To continue a command or comment that requires more than one line, each line, except the last, must be terminated by a plus (+) or a minus (-) character. This line continuation character must occur in the last nonblank column at or before column 72, and must be preceded by a space. The minus character causes leading blanks in the following line to be read as part of the command. The plus character causes leading blanks in the following line to be ignored.

Note: When using an 80-column card format, the ICKDSF commands must be entered within columns 2 and 72. If the length of the command exceeds column 72, a continuation character must be entered, and the command continued on the next line. When commands are entered at the console in the stand-alone version of ICKDSF, they can begin at the left margin and are also subject to the 72-column maximum. When you are entering ICKDSF commands under CMS, and you want to specify a continuation line is to follow (+ or -), you press the ENTER key and are prompted to continue your next line.

Comments

You can add comments to any of the commands wherever a blank character can appear. To distinguish your comments from the commands, enter them within the comment delimiters /* and */. A comment may be continued onto the next line by using a line continuation character at the end of the line.

Terminator

The terminator indicates the end of the command. The terminator can be either an end-of-command condition (that is, no continuation character) or a semicolon (;). If you use the semicolon as the terminator, the semicolon cannot be enclosed in quotation marks or be embedded in a comment. Everything to the right of the semicolon is ignored. If there is information to the right of the semicolon that is continued to another record, all such information, including the continued information, is ignored.

For example, if you code:

```
REFORMAT UNITADDRESS(0353) VOLID(AA3390); VFY(BB3390,SMITH) -
INIT
REFORMAT
```

characters following the semicolon terminator are ignored. The continuation (minus) character at the end of the first record causes the INIT command to be ignored also. The two REFORMAT commands are the only commands that are recognized.

Conflicting Keyword Parameters

Conflicting keyword parameters are identified by a logical OR sign (|) representing alternative items. If conflicting keyword parameters are entered, execution of the command terminates.

Using the Device Support Facilities Commands

A command consists of a command name followed by one or more operands or parameters. Hereafter, all operands described in this book are called parameters. They provide the specific information required for the command to perform the requested function.

For example, some parameters associated with the INSPECT command indicate where the volume is mounted, which tracks are to be inspected, and whether the volume serial number and owner identification should be verified.

The following is an example of this command:

```
INSPECT DDNAME(VOL1) TRACKS((4,6),(4,10)) VERIFY(DSF123,SMITH)
```

where:

- DDNAME specifies the DD statement that contains the description of the device.
- TRACKS specifies that cylinder 4, tracks 6 and 10 are to be inspected.
- VERIFY specifies that volume serial number DSF123 and owner identification SMITH are to be verified before inspection continues.

Several of the parameters take default values if they are not specified when the command is issued. In the foregoing example, the following parameters were not specified, but are defaulted:

- CHECK(1) indicates that track surfaces are checked for media defects.
- NORECLAIM indicates that no attempt is made to reclaim tracks that were previously flagged defective.
- PRESERVE indicates that existing data on the inspected tracks is saved and rewritten.
- MAP indicates that a volume map is printed after the command processes.
- ASSIGN indicates that alternate tracks are assigned for the specified tracks if they are shown to be defective as a result of surface checking.

Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices

This part of the book is intended as a reference when you specify the ICKDSF commands for count-key-data (CKD) devices. See "Devices You Can Use" on page 7 for a list of count-key-data devices supported by ICKDSF.

"Examples of ICKDSF Tasks—CKD Devices" on page 39 and this part of the book are guides to help you determine why, when, and how to run ICKDSF.

This part describes the ICKDSF commands for CKD devices. The commands are listed in alphabetic order. "Syntax of the Device Support Facilities Commands" on page 69 describes the syntax of the commands. The presentation of each command includes:

- A general description of the command and its use
- A table summarizing the syntax of the command
- An explanation of required and optional parameters
- Examples

ICKDSF Functions

The following ICKDSF commands operate on count-key-data (CKD) devices: ANALYZE, BUILDIX, CONTROL, INIT, INSPECT, INSTALL, and REFORMAT. The IODELAY command affects CKD and FBA devices and is included in both book sections.

- ANALYZE helps to detect and differentiate recording surface and drive-related problems on a volume. It can also scan data to aid in detecting the existence of possible media problems.
- BUILDIX changes a standard MVS-format VTOC into an indexed VTOC, or an indexed VTOC into a standard MVS-format VTOC.
- The CONTROL command with the ALLOWWRITE parameter allows subsequent writes to the devices controlled by an IBM 3880 or IBM 3990 Storage Control if that storage control has been WRITE INHIBITed by the error recovery procedures at the channel, director, or storage control level.

  The CONTROL command with the CLEARFENCE parameter (IBM 3990 only) allows you to clear a fence status of a path and/or device that has been fenced off by the subsystem.
- CPVOLUME prepares a volume for use in a VM environment.
- INIT prepares a direct-access storage volume so that it can be used in an operating system environment or it reinitializes a volume that was previously prepared.
- INSPECT provides surface checking functions for defective tracks on a volume.
- INSTALL performs the procedures necessary for installation, head-disk assembly (HDA) replacement, and some (see product information) physical movement of IBM 3380 and 3390 DASD.

- IODELAY is used to allow functions other than ICKDSF more processing time. It affects CKD and FBA commands and has been included in both sections of the book for convenience.
- REFORMAT can be used to update or replace information on a previously initialized volume. The volume label, owner ID, IPL bootstrap, and IPL program records can be updated.
- REVALidate combines the track validation functions of medial initialization with the problem determination and data verification functions of the ANALYZE command and also the INSPECT functions, if required.

ICKDSF performs two basic functions: volume formatting and disk surface maintenance.

- Volume formatting makes a volume usable by an operating system and provides a means for updating old volume formats. This is also known as "initializing" a volume.

  Newly installed volumes and replaced head disk assemblies (HDAs) will always require formatting.
- Disk surface maintenance aids in detecting problems with device operation and attempts to correct data errors that can be traced specifically to disk surface defects.

ANALYZE Command—CKD

The ANALYZE command is used to examine the drive and/or the user's data on a volume to help determine if errors exist. The output is intended to aid in distinguishing between drive problems (on nonremovable media) and media problems, in addition to providing assistance in locating and fixing the problem.

There are two basic functions of the ANALYZE command, the drive test, and the data scan.

The Drive Test

The drive test provides a general exercising of the storage device by issuing SEEK, READ, and WRITE commands.

Notes:

1. WRITE commands are issued to the CE cylinder only
2. wherever the CE cylinder is referred to, this can be either the CE, device support, or diagnostic cylinder depending on the device.

It is to be used with IBM direct-access storage devices (DASD) that have nonremovable storage media. These include the IBM 3350, 3375, 3380, and 3390 and any CKD device emulated on a CKD device.

The drive test is not supported if you are running ICKDSF under VM unless the device is ATTACHed.

The drive test runs with all system error recovery procedures disabled.

ANALYZE determines that the drive is fully operational by performing I/O operations on the CE track which test the drive's functional capabilities. Each I/O operation, called a channel command word (CCW) chain, tests a specific function of the drive and logical volume. Tests are executed in order of increasing complexity.

Drive problems that can be detected during initial ANALYZE tests are access arm positioning errors and the ability to read and write (on the CE cylinder). The drive is also checked to ensure that it can detect an address mark, can switch read/write heads as a result of a multitrack command, can sense the disk's rotational position, and can detect and skip over defective areas on a track.

If PRESERVE or CONTINUE data exists on the CE cylinder, ANALYZE does not destroy this data (this data is written by an INSPECT or INIT). ANALYZE bypasses writing over the data, and reports the presence of the data. As this feature is part of the drive test, it supports only nonremovable storage media.

The drive test is optional. It is controlled by the DRIVETEST/NODRIVETEST parameters.

Path Control under ANALYZE Drive Test

The channel path is a connection between a processor and control unit along which signals and data can be sent to perform I/O requests. The device path is a connection between a control unit and a device. To use path control, specify the channel path or CHPID. When you are running the ANALYZE drive test, you can direct ICKDSF to process the drive test down every channel path or you can limit processing to specific channel path(s). All device paths on the selected channel path are processed.

Path control is provided to assist you in determining if errors are caused by the media or hardware. This is accomplished by using path control for all I/O to a device and identifying the path used when errors occur. If only one path to a device has errors and other path(s) do not, the media (HDA) is probably not at fault. If all paths to a device have errors, the media (HDA) is suspect.

Path control is valid only for IBM 3380 and 3390 devices. It is not performed if no path control parameters are specified. Path control is ignored in the CMS/370 or VSE versions. Path control is not valid when you are processing minidisks. Path control is not supported when you are executing under VM in 370 mode.

When path control is specified, ICKDSF prints a table of the path(s) with their status. See Figure 11 on page 92 for an example of the path status table. The path status table can be printed without executing the drive test by specifying NODRIVE NOSCAN.

In the MVS/ESA, MVS/XA, Standalone/XA, CMS/XA, or CMS/ESA versions path control is specified by the CHPID or ALLCHPID parameters. CHPID(nn) allows you to specify up to 8 channel path(s) for processing. ALLCHPID processes all the channel paths.

In the MVS/370 environment, the CHANNUM/ALLCHAN and CHANSET parameters are used to specify path control. CHANNUM(n,n,...) specifies the channel number to be processed. ALLCHAN specifies all channel numbers on all channel sets are to be processed. CHANSET is used to specify whether channel set 0 or channel set 1 is to be processed.

In the standalone/370 environment, CHANNUM/ALLCHAN/CHANSET are used to specify path control. The value specified for CHANNUM or CHANSET is ignored and the path processed is always the channel specified in the UNITADDRESS parameter. The first channel path found is the path that is processed. To process each channel in the standalone/370 version, the drivetest must be executed for each channel number specifying the *ccuu* for each channel.

Notes:

1. The number of unique paths is limited by the number of channel paths accessible to ICKDSF.
2. ANALYZE path control processing is valid for the drive test only. Any errors that occur prior to or after this test cannot distinguish path control errors from other errors, and the "I/O Error" message is issued without regard to path.

   WARNING: When path control is specified, contention problems may arise when other jobs are running for devices that share the same path.

The Data Verification Test

The data verification test reads (without data transfer across the channel to the processor) all data records on the volume (minidisk if you are running ICKDSF under CMS).

Before running the ANALYZE data verification test (or any ICKDSF job) the devices must establish thermal stability. See "Device Thermal Stability Requirements Before Running ICKDSF" on page 65.

Options for the data verification tests include:

- Specifying data verification of the whole volume.

  If you are running the CMS version of ICKDSF, you can verify the whole minidisk.

- Selecting a range of data to be verified:
  - By cylinders (LIMITS or CYLRANGE)
  - CCHH to CCHH (FROMRANGE,TORANGE)
  - All heads within a range of cylinders, for example, CC to CC (CYLRANGE or LIMITS)
  - All cylinders for certain heads, for example, head 3 for all cylinders (HEADRANGE).
  - A range of heads within a range of cylinders, for example, heads 2 through 4 on cylinders 10 through 20 (CYLRANGE and HEADRANGE). Similarly, if you are running the CMS version of ICKDSF, you can select a range to be verified within a minidisk.

- Selecting the SPEED or NOSPEED parameter on the data verification tests.

  SPEED specifies:

  - Perform one I/O per cylinder for count-key-data devices

  NOSPEED specifies:

  - Perform one I/O per track for the count-key-data devices.

The intent of the data verification test is to scan the CURRENT DATA on the volume for data checks.

Data verification does not ensure that the volume is in standard IBM format.

ANALYZE data verification completes successfully even if one or more of the following is true:

- No data exists on the volume.
- Data on the volume is written as nonstandard record zeros.
- There are no record zeros on the volume.

Data Verification Output

ANALYZE will report the cylinder and head location of all ECC correctable data checks, in addition to the cylinder and head location of ECC uncorrectable data checks, followed by the CCW, CSW, and sense bytes of the failing I/O.

The data verification portion of ANALYZE executes without system error recovery procedures (regardless of the environment you are running in), and with storage control retry inhibited where possible.

If the surface defect is of the type that can be corrected by storage control retry (that is, an error in a count field or a key field), ANALYZE will report the error as uncorrectable.

Subsequent I/O against the data in a standard operating system environment might detect the error as correctable, or might not detect the error at all.

Unexpected I/O errors

If the data verification test encounters an "unexpected" I/O error (that is, an equipment check, environmental data, and so forth) depending upon the severity of the error, ANALYZE might:

- Issue a message and stop processing (for example, equipment check)
- Issue a message and continue (for example, invalid track format)
- Ignore the error and continue (for example, environmental data)

RANGE Parameters: Specifying Part of a Volume

LIMITS, CYLRANGE/HEADRANGE, and FROMRANGE/TORANGE are optional parameters, used to limit the areas of a volume or minidisk that are to be scanned. Use the CYLRANGE/HEADRANGE pair to specify the starting and ending cylinder(s) and the starting and ending head(s) to be scanned. Use the FROMRANGE/TORANGE pair to specify the starting track (cylinder and head) and the ending track (cylinder and head) to be scanned.

The following notes apply to specifying part of a volume:

- LIMITS, CYLRANGE/HEADRANGE, and FROMRANGE/TORANGE are mutually exclusive parameters. LIMITS and CYLRANGE can be used interchangeably.
- LIMITS, CYLRANGE/HEADRANGE, and FROMRANGE/TORANGE are only valid if SCAN is specified.
- If you specify CYLRANGE and do not specify HEADRANGE, all the heads of the specified cylinders are processed.
- If you specify HEADRANGE and do not specify CYLRANGE, the specified heads for all the cylinders on the volume (minidisk) are processed.
- Both the starting and ending values are required for CYLRANGE and HEADRANGE. If you specify an ending value greater than the maximum for the device, the device (minidisk) maximum is used for the ending value.
- If you specify FROMRANGE and do not specify TORANGE, TORANGE is defaulted to the last cylinder of the device (minidisk).
- If you specify TORANGE and do not specify FROMRANGE, FROMRANGE is defaulted to cylinder 0 track 0 (starting cylinder and track of the minidisk)
- If you do not specify LIMITS or CYLRANGE, the default is ALL if SCAN is specified. If you are running under CMS and do not specify a range, the default is all of the specified minidisk.

CMS Version Minidisk Support

When you are using the CMS version of ICKDSF you can use the ANALYZE command to perform the data verification test for a minidisk.

The following parameters are valid for minidisks:

- ALL, CYLRANGE, FROMRANGE, HEADRANGE, LIMITS, NODRIVETEST, SCAN/NOSCAN, SPEED/NOSPEED, TORANGE, and UNITADDRESS

The following parameters are valid *only* when you are using the CMS version of ICKDSF and have DEVMAINT authority (as defined in the CP directory):

- USERID and REALADDR

USERID: With DEVMAINT authority you can use the USERID parameter to perform the data verification test on another user's minidisk. The following parameters are valid in this mode:

- ALL, CYLRANGE, FROMRANGE, HEADRANGE, LIMITS, NODRIVETEST, SCAN/NOSCAN, SPEED/NOSPEED, TORANGE, and UNITADDRESS.

REALADDR: With DEVMAINT authority you can use the REALADDRESS parameter to specify the real device address to perform the data verification test on a volume. The following parameters are valid in this mode:

- ALL, CYLRANGE, FROMRANGE, HEADRANGE, LIMITS, NODRIVETEST, SCAN/NOSCAN, SPEED/NOSPEED, and TORANGE

See Appendix B, "VM Support" on page 257 for more information.

Dual Copy Volumes

When you process dual copy volumes using the ANALYZE command, you should specify the DIRECTIO parameter to select the primary or secondary volume. Otherwise, the default is selected depending on the mode of the device.

The ANALYZE command supports dual copy volumes which are in duplex or suspended duplex state.

Syntax

Command	Required Parameters
ANALYZE	DDNAME(*dname*)|SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)|REALADDR(*ccuu*)
	Optional Parameters

	ALL
	CHPID(*nn,nn,...*)|ALLCHPID
	CHANNUM(*n,n,...*)|ALLCHAN
	CHANSET(*{0|1}*)
	DIRECTIO(PRIMARY|SECONDARY)
	DRIVETEST|NODRIVETEST
	FROMRANGE(*cccc,hhhh*)
	HEADRANGE(*hhhh,hhhh*)
	LIMITS(*scanlo,scanhi*)|CYLRANGE(*cccc,cccc*)
	MSS
	SCAN|NOSCAN
	SPEED|NOSPEED
	TORANGE(*cccc,hhhh*)
	USERID(*user's ID*)

Required Parameters

DDNAME|SYSNAME|UNITADDRESS|REALADDR: Identifying the Volume

Explanation: **DDNAME|SYSNAME|UNITADDRESS|REALADDR** are required parameters identifying the volume (or minidisk).

DDNAME(*dname*)
Required for an online MVS volume. Note that the volume must be online. For *dname*, specify the MVS JCL statement that identifies the volume.

SYSNAME(*sysxxx*)
Required for a VSE volume For *sysxxx*, specify the SYSNAME in the ASSGN system control statement.

UNITADDRESS(*ccuu*)
Required for an offline MVS volume or stand-alone or CMS version volume.

In MVS, the volume must be on a channel that is online. If the volume is on a channel that is offline, the program might enter a nonterminating wait state. For *ccuu*, specify the address (3 or 4 hexadecimal digits) of the channel and unit of the volume.

For the CMS version, specify the virtual address of the ATTACHed volume or minidisk.

REALADDR(*ccuu*)
Used to specify the real address of a volume. This parameter is only valid when you are running the CMS version of ICKDSF and you have DEVMAINT authority. For *ccuu*, specify the real address (3 or 4 hexadecimal digits) of the channel and unit of the volume.

REALADDR is mutually exclusive with UNITADDRESS, DDNAME, SYSNAME, and USERID.

Abbreviations:

```
DDNAME|DNAME
UNITADDRESS|UNITADDR|UNIT
REALADDR|RADDR
```

Default: None

Optional Parameters

ALL: Specifying the Area of Data Verification

Explanation: **ALL** is an optional parameter that specifies that all cylinders of the specified device are to be read during the data verification tests.

Abbreviations: None

Default: ALL is the default if LIMITS or CYLRANGE is not specified.

Restrictions: ALL applies only when the SCAN parameter has been specified.

ALL cannot be specified with FROMRANGE/TORANGE, CYLRANGE/HEADRANGE, or LIMITS.

CHPID|ALLCHPID: Specifying path control

Explanation: **CHPID(*nn,nn,...*)|ALLCHPID** are optional parameters denoting path control is required when the ANALYZE drive test is specified for a 3380 or 3390 device in an XA environment.

CHPID

specifies that path control is to be used for the drive test of a 3380 or 3390 device. CHPID specifies that the drive test is to process the specified CHPIDs.

nn specifies the CHPID to be used. A maximum of 8 CHPIDs can be specified. Valid values for CHPID are 00-FF and must match a valid CHPID in your configuration.

ALLCHPID

ALLCHPID specifies that *all* CHPIDs are to be processed.

Abbreviations:

```
CHPID|CHP
ALLCHPID|ALLCHP
```

Default: If CHPID or ALLCHPID is not specified in the XA environment, path control is not used during the drive test.

Restrictions: CHPID or ALLCHPID is only valid in the MVS/ESA, MVS/XA, Standalone/XA, CMS/XA, or CMS/ESA environment.

CHPID or ALLCHPID is valid for 3380 and 3390 devices only.

CHANNUM|ALLCHAN: Specifying Path Control

Explanation: **CHANNUM(*n,n,...*)|ALLCHAN** are optional parameters denoting path control is required when the ANALYZE drive test is specified in an MVS/370 or standalone/370 environment for a 3380 or 3390 device.

CHANNUM(*n,n,...*)

specifies that path control is to be used for the drive test of a 3380 or 3390 device. CHANNUM specifies that channel number *n* is to be selected for processing.

n specifies the channel number. A maximum of 2 channel numbers can be specified. Valid values are 0-F and must match a channel number in your configuration.

CHANNUM can be used with or without CHANSET to direct processing to a specific path in an MVS/370 environment. If the CHANNUM parameter is specified without CHANSET, channel set 0 is selected for processing.

ALLCHAN

specifies that all channels are to be processed, causing all channel numbers on channel set 0 and 1 to be processed. ALLCHAN is not valid when CHANSET is specified.

Abbreviations:

```
CHANNUM|CHAN
```

Default: If CHANNUM, ALLCHAN, or CHANSET are not specified in an MVS/370 or standalone/370 environment, path control is not used during the drive test. You must specify either CHANNUM, ALLCHAN or CHANSET.

Restrictions: When you use path control in a standalone/370 environment, the path processed is always the channel specified in the UNITADDRESS parameter. The value specified for CHANNUM or CHANSET is ignored.

CHANNUM or ALLCHAN is valid for 3380 or 3390 devices only.

WARNING: Do not use either parameter when running under VM in 370 mode. You can receive unpredictable results.

CHANSET: Specifying Path Control

Explanation: **CHANSET(0|1)** is an optional parameter specifying path control is required when the ANALYZE drive test is specified in the MVS/370 or standalone/370 environment for a 3380 or 3390 device.

CHANSET(0|1)

specifies that path control is to be used for the drive test of a 3380 or 3390 device. CHANSET specifies that channel set number *n* is to be selected for processing.

n specifies the channel set number. You can select either set 0 or 1.

CHANSET can be used with or without the CHANNUM parameter in an MVS/370 environment to direct processing to a specific path. If CHANSET 0 or 1 is specified without the CHANNUM parameter, all channels on the specified channel set are selected. If CHANNUM is specified without the CHANSET parameter, channel set 0 is selected for processing.

Abbreviations:

```
CHANSET|CHSET
```

Default: If CHANNUM, ALLCHAN, or CHANSET are not specified in an MVS/370 or standalone/370 environment, path control is not used during the drive test. You must specify either CHANNUM, ALLCHAN or CHANSET.

Restrictions: CHANSET is only valid in the MVS/370 or standalone/370 environment.

CHANSET is valid for 3380 or 3390 devices only.

CHANSET is not valid when the ALLCHAN parameter is specified.

When you use path control in a standalone/370 environment, the value specified for CHANNUM or CHANSET is ignored and the path processed is always the channel specified in the UNITADDRESS parameter.

WARNING: Do not use the CHANSET parameter when running under VM in 370 mode. You can receive unpredictable results.

DIRECTIO: Specifying Primary or Secondary Volumes

Explanation: **DIRECTIO(PRIMARY|SECONDARY)** is an optional parameter that specifies whether I/O for the drive test or the data verification test is to be directed to the primary or secondary volume of a dual copy pair.

DIRECTIO(PRIMARY)
Specifies that the primary volume of a dual copy pair is to be processed.

DIRECTIO(SECONDARY)
Specifies that the secondary volume of a dual copy pair is to be processed.

Abbreviations:

```
DIO(PRI|SEC)
```

Default: If the DIRECTIO parameter is not specified when you are using a dual copy pair, the default is:

- the primary volume if the dual copy pair is in duplex state.
- the secondary volume if the dual copy pair is in suspended duplex state.

Restrictions: The DIRECTIO parameter is effective only when the dual copy pair is in duplex or suspended duplex state.

The DIRECTIO parameter is ignored if the volume is in simplex state or the subsystem does not support dual copy.

DRIVETEST|NODRIVETEST: Specifying the Drivetest

Explanation: **DRIVETEST|NODRIVETEST** are optional parameters specifying whether or not the drive test function of the command should be executed.

DRIVETEST
Specifies that the drive test should be executed. This parameter is valid only on IBM direct-access storage devices (DASD) that have nonremovable storage media. These include the 3350, 3375, 3380, and 3390 and any supported DASD emulation where these devices are the the native devices.

If DRIVETEST is specified for a nonsupported device, a warning message is issued and processing continues.

NODRIVETEST
Specifies that the drive test should be bypassed.

Abbreviations:

```
DRIVE
NODRIVE
```

Default: DRIVETEST

Restrictions: If path control is supported, NODRIVE NOSCAN prints the path status table. If path control is not supported NODRIVE NOSCAN performs no functions but will complete without error. See "Path Control under ANALYZE Drive Test" on page 76 for path control support information.

DRIVETEST must be the only ICKDSF command running on a device.

Under VM, DRIVETEST is valid only for devices that are ATTACHed to the current userid. I/O errors will occur if the drive test is attempted for LINKed devices or minidisks. The drivetest is bypassed for a minidisk in the CMS version.

FROMRANGE: Specify a Specific Starting Location

Explanation: **FROMRANGE**(*cccc,hhhh*) is an optional parameter used to specify that part of a volume is to be scanned. Use this parameter to specify the starting track (cylinder and head) to be scanned.

For *cccc,hhhh* substitute one to four decimal (n) or hexadecimal (X'n') digits to identify the cylinder and head at which processing is to start.

If you specify FROMRANGE and do not specify TORANGE, TORANGE is defaulted to the last cylinder of a volume or minidisk.

For information on specifying the ending track (TORANGE) to go with the starting track, see "TORANGE: Specify a Specific Ending Location" on page 87.

For information on specifying part of a volume to be examined, see "RANGE Parameters: Specifying Part of a Volume" on page 78.

Abbreviations:

```
FROMRANGE|FROM
```

Default: None

Restrictions: FROMRANGE cannot be specified with CYLRANGE/HEADRANGE.

FROMRANGE applies only when SCAN is specified.

HEADRANGE: Specify a Range of Heads

Explanation: **HEADRANGE**(*hhhh,hhhh*) is an optional parameter used to specify that part of a volume is to be scanned. Use the HEADRANGE parameter to specify the starting and ending head(s) to be scanned.

For *hhhh,hhhh* substitute one to four decimal (n) or hexadecimal (X'n') digits to identify the starting and ending heads to be examined.

If you specify HEADRANGE and do not specify CYLRANGE, the specified heads for all the cylinders on a volume (or minidisk) are processed.

For information on specifying the starting and ending cylinder(s) (CYLRANGE) to go with the starting and ending heads, see "LIMITS|CYLRANGE: Specifying the Area of Data Verification."

For information on specifying part of a volume, see "RANGE Parameters: Specifying Part of a Volume" on page 78.

Abbreviations:

```
HEADRANGE|HDRANGE|HD
```

Default: None

Restrictions: Both the starting and ending values are required for HEADRANGE. If you specify an ending value greater than the maximum for the device, the device maximum is used for the ending value.

HEADRANGE applies only when you specify SCAN.

HEADRANGE cannot be specified with FROMRANGE/TORANGE.

Because SPEED operates on a cylinder at a time, it is not valid with HEADRANGE, and is ignored if you specify both parameters.

LIMITS|CYLRANGE: Specifying the Area of Data Verification

Explanation: **LIMITS(***scanlo,scanhi***)** **|CYLRANGE(***cccc,cccc***)** are optional parameters to specify the area of the disk where data verification is to be performed. Specify the range of cylinders that are to be read during the data verification tests.

LIMITS (*scanlo,scanhi***)**

scanlo specifies the relative cylinder number for the start of the data verification tests. *scanlo* can be expressed in decimal (n) or hexadecimal (X'n') form.

scanhi specifies the relative cylinder number of the last cylinder of the data verification tests. *scanhi* can be expressed in decimal (n) or hexadecimal (X'n') form.

Also, the numbers *scanlo* and *scanhi* must be equal or in ascending order.

CYLRANGE(*cccc,cccc***)**

For *cccc,cccc*, substitute one to four decimal (n) or hexadecimal (X'n') digits to identify the starting and ending cylinders to be examined.

If you specify CYLRANGE and do not specify HEADRANGE, all the heads of the specified cylinders are processed.

For information on specifying the starting and ending heads (HEADRANGE) to go with the starting and ending cylinders, see "HEADRANGE: Specify a Range of Heads" on page 84.

For information on specifying part of a volume, see "RANGE Parameters: Specifying Part of a Volume" on page 78.

Abbreviations:

```
LIMITS|LIMIT|LIMS|LIM
CYLRANGE|CYL
```

Default: If you do not specify LIMITS or CYLRANGE, ALL is the default (if SCAN is specified). For a minidisk (CMS version), if you do not specify a range the default is all the specified minidisk.

Restrictions: The LIMITS/CYLRANGE parameters apply only when the SCAN parameter has been specified.

Both the starting and ending values are requireu for LIMITS or CYLRANGE. If you specify an ending value greater than the maximum for the device, the device maximum is used for the ending value.

LIMITS or CYLRANGE cannot be specified with FROMRANGE/TORANGE.

MSS:

Explanation: **MSS** is an optional parameter to be specified only when ANALYZE is executed against a 3330 staging volume that is currently offline to the MSS.

By specifying this parameter, the high cylinder value of the LIMITS parameter (and the default high cylinder value if ALL is specified) can be expanded to include one additional track, as follows:

- 408 for a 3330-1
- 808 for a 3330-2,11

Abbreviations: None.

Default: None.

Restrictions: If MSS is not specified for a staging volume, the last cylinder is not scanned.

If both MSS and NOSCAN are specified, MSS is ignored.

SCAN|NOSCAN: Run Data Verification Tests

Explanation: **SCAN|<u>NOSCAN</u>** are optional parameters specifying whether the data verification test is to be run.

Data verification is run if SCAN is specified and any of the following is true:

- The drive test completed successfully.
- The drive test is not supported for the input device type.
- The drive test has been bypassed

SCAN
Indicates that you want the data verification test to be run.

NOSCAN
Indicates that you do not want the data verification test to be run.

Abbreviations:

```
SCAN|SCN
NOSCAN|NOSCN|NSCAN|NSCN
```

Default: NOSCAN

Restrictions: None

SPEED|NOSPEED: Specify Data Verification Tests

Explanation: **SPEED|NOSPEED** are optional parameters which specify how much is read by each I/O for the data verification tests.

SPEED
One cylinder is read at a time.

NOSPEED
One track is read at a time.

Abbreviations:

```
NOSPEED|NSPEED.
```

Default: NOSPEED.

Restrictions: This option is not recommended for VM users, because this may degrade the performance of other users.

Because SPEED operates one cylinder at a time, it improves the performance of the scanning process, but, at the same time, it can severely degrade the performance of other users accessing the channel. This impact should be considered. SPEED is only valid when SCAN is specified.

TORANGE: Specify a Specific Ending Location

Explanation: **TORANGE**(*cccc,hhhh*) is an optional parameter used to specify that part of a volume is to be surface checked. Use this parameter to specify the ending track (cylinder and head) to be examined before minimal volume initialization is performed.

For *cccc,hhhh*, substitute the 1 to 4 decimal (n) or hexadecimal (X'n') digits to identify the cylinder and head where processing is to end.

If you specify TORANGE and do not specify FROMRANGE, FROMRANGE is defaulted to cylinder 0 head 0 of the specified or minidisk.

For information on specifying the starting track of part of a volume (FROMRANGE) see "FROMRANGE: Specify a Specific Starting Location" on page 84.

For information on specifying part of a volume, see "RANGE Parameters: Specifying Part of a Volume" on page 78.

Abbreviations:

```
TORANGE|TO
```

Default: None

Restrictions: None

USERID: Specify Another User's Minidisk

Explanation: **USERID**(*user's ID*) is an optional parameter used to specify that the ANALYZE data verification test is to be performed on another user's minidisk.

For *user's ID*, substitute the 1 to 8 characters of the user ID of the owner of the minidisk you want to verify.

Abbreviations:

```
USERID|UID
```

Default: If USERID is not specified your own minidisk is verified.

Restrictions: USERID can only be specified if you are using the CMS version of ICKDSF have DEVMAINT authority. USERID is ignored in all other system environments.

USERID is mutually exclusive with REALADDR

Examples of the ANALYZE Command

The following examples show different ways to use the ANALYZE command.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system. Add your JCL or JCS as required to complete these examples.

Analyzing a Stand-alone Version Volume

In this example, only the Direct Access Storage drive tests are performed.

```
ANALYZE UNITADDRESS(0141)
```

Using keyword abbreviations, you could have specified:

```
  ANALYZE UNIT(0141)
```

Analyzing a Stand-alone Version Volume

In this example, the Direct Access Storage drive tests are performed and are followed by the data verification tests for the entire volume. ALL is the default.

```
ANALYZE UNITADDRESS(0141) SCAN
```

Analyzing a Stand-alone Version Volume

In this example, the Direct Access Storage drive tests are bypassed. A partial data verification test, starting at relative cylinder 6 and ending at relative cylinder 9, is performed.

```
ANALYZE UNITADDRESS(0351) LIMITS(6,9) SCAN NODRIVETEST
```

Analyzing a Partial Volume

In this stand-alone version example, the data verification test is performed for all heads starting at cylinder 500 head 14, to the end of the volume.

```
ANALYZE UNITADDRESS(0351) SCAN -
        FROMRANGE(500,14) TORANGE(9999,9999)
```

Analyzing Another User's Minidisk in the CMS Version

In this CMS version example, the data verification test is performed for another user's minidisk. You specify the USERID parameter to ANALYZE the minidisk which is owned by user SMITH at the user's virtual address 0351. You must have DEVMAINT authority to specify the USERID parameter.

```
ANALYZE UNIT(0351) SCAN USERID(SMITH) NODRIVETEST
```

Analyzing a Volume in a CMS Version Specifying a Real Address

In this CMS version example, the data verification test is performed for a volume at real address 290 by using the REALADDR parameter. You must have DEVMAINT authority to specify the REALADDR parameter.

```
ANALYZE REALADDR(290) SCAN NODRIVETEST
```

Analyzing an Emulated Volume in Online MVS

In this example, VOLUMEG is a 3330 emulated on a 3350. VOLUME2 is a native 3330.

For VOLUMEG, the drive test is performed, and, if the drive test is successful, data verification of cylinders 2 through 5 is performed.

For VOLUME2, the drive test is automatically bypassed, and data verification of cylinders 2 through 5 is performed.

```
//EXAMPLE  JOB
//         EXEC  PGM=ICKDSF
//VOLUMEG  DD    UNIT=3330,DISP=SHR,VOL=SER=PAY345
//VOLUME2  DD    UNIT=3330,DISP=SHR,VOL=SER=PAY320
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
 ANALYZE DDNAME(VOLUMEG) SCAN LIMITS(2,5)
 ANALYZE DDNAME(VOLUME2) SCAN -
         LIMITS(2,5)
/*
```

Analyzing a VSE Version Volume

In this example, drive tests are performed on volume SYS001. Specification of the NOSCAN parameter indicates that data verification tests are not to be performed.

```
// JOB   jobname
// ASSGN SYS001,150
// EXEC  ICKDSF,SIZE=AUTO
   ANALYZE SYSNAME(SYS001) NOSCAN
/*
/&
```

Analyzing an MVS Version MSS Volume (Offline)

In this example, the data verification test is being done on an MSS staging volume that is offline to the MSS. Data verification includes what would otherwise be the first alternate cylinder.

```
//EXAMPLE  JOB
//         EXEC  PGM=ICKDSF
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
  ANALYZE UNIT(0164) SCAN MSS NODRIVE
/*
```

Analyzing the Primary Volume of a Dual Copy Pair

In this stand-alone version example, the ANALYZE drive test is run on the primary volume of a dual copy pair with a primary address of 141. Note that the device must be in duplex or suspended duplex state.

```
  ANALYZE UNITADDRESS(0141) DRIVETEST NOSCAN DIRECTIO(PRIMARY)
```

Analyzing the Secondary Volume of a Dual Copy Pair

In this stand-alone version example, the ANALYZE drive test is executed against the secondary volume of a dual copy pair with a primary address of 141. In the MVS/XA version, the DD card should point to the primary volume of a dual copy pair. Note that the device must be in duplex or suspended duplex state.

```
  ANALYZE UNIT(0141) DRIVE DIO(SEC)
```

Examples of Path Control under the ANALYZE Drive Test

Multiple examples of path control follow to illustrate different specification of path control.

- In the following example ANALYZE drive test is run without path control.

  ```
  ANALYZE UNIT(0141) DRIVE NOSCAN
  ```

- In the following example ANALYZE drive test is run on all device paths accessible through all CHPIDs in an MVS/XA, CMS/XA, CMS/ESA or standalone/XA environment.

  ```
  ANALYZE UNIT(0141) DRIVE NOSCAN ALLCHPID
  ```

- In the following example ANALYZE drive test is run on all device paths accessible through CHPID "0E" in an MVS/XA, CMS/XA, CMS/ESA, or standalone/XA environment.

  ```
  ANALYZE UNIT(0141) DRIVE NOSCAN CHPID(0E)
  ```

- In the following example ANALYZE drive test is run on all device paths accessible through all channel numbers on channel set 0 and channel set 1 in an MVS/370 environment.

  ```
  ANALYZE UNIT(0141) DRIVE NOSCAN ALLCHAN
  ```

- In the following example, using path control for MVS/370, ANALYZE drive test is run on all device paths accessible through channel number "3" on channel set 0.

  ```
  ANALYZE UNIT(0141) DRIVE NOSCAN CHANNUM(3)
  ```

- In the following example, using path control for MVS/370, ANALYZE drive test is run on all device paths accessible through channel number "3" on channel set 1.

  ```
  ANALYZE UNIT(0141) DRIVE NOSCAN CHANNUM(3) CHANSET(1)
  ```

- In the following example ANALYZE drive test is run on all device paths accessible through all channel numbers on channel set 1.

  ```
  ANALYZE UNIT(0141) DRIVE NOSCAN CHANSET(1)
  ```

- In the following example, using path control for Stand-alone in 370 mode, ANALYZE drive test is run on all device paths accessible through channel 3.

  ```
  ANALYZE UNIT(0341) DRIVE NOSCAN CHANNUM(3)
  ```

- In the following example, using path control for Stand-alone in 370 mode, ANALYZE drive test is run on all device paths accessible through channel 3. Only one channel path is processed.

  ```
  ANALYZE UNIT(0341) DRIVE NOSCAN ALLCHAN
  ```

Diagnostic Messages

ANALYZE prints diagnostic messages to the output device. They can be used by a programmer (and by the customer engineer or service representative) to aid in determining if and what type of problem might exist on the volume.

The informational and diagnostic messages are listed and explained in Appendix C, "Device Support Facilities Messages (ICK)" on page 265.

In addition, ANALYZE produces a movable head and/or fixed head error table that summarizes errors associated with the read/write circuitry and/or data verification. See Figure 13 on page 94 or Figure 14 on page 95, respectively.

Note: The fixed head error table may be printed although the drive under test does not include the fixed-head feature. In that case, Figure 15 on page 96 can be used to map the fixed head numbers to the physical movable cylinder and head.

The path status table is printed when the drive test is executed for the IBM 3380 or 3390, and when path control is supported, and when the path control parameters or NODRIVE NOSCAN are specified. See Figure 11 on page 92 for an example of the path status table.

When the drive test is executed for the IBM 3380 and 3390, a drive test error summary is printed if any errors are detected during the read or write test on the CE cylinder.

Remember that whenever the CE cylinder is referred to, this can be the CE, device support, or diagnostic cylinder depending on the device.

See Figure 12 on page 93 for an example of the drive test error summary.

PATH STATUS

CHPID	09	0D	0E	0F	-	-	-	-
CHANNEL	9	-	-	-	-	-	-	-
CHAN, CHANSET	9, 0	9, 1	3, 0	3, 1	-	-	-	-
AVAILABLE	YES	YES	YES	YES	-	-	-	-
ONLINE	YES	NO	YES	YES	-	-	-	-
STORAGE DIRECTOR	BC	BC	BD	BD	-	-	-	-
SUBSYSTEM ID	0060	0060	0060	0060	-	-	-	-
DLSE	YES	YES	YES	YES	-	-	-	-
CLUSTER	1	0	1	0	-	-	-	-
STORAGE PATH 0	A	AD	ADFC	A	-	-	-	-
STORAGE PATH 1	A	A F	A	A	-	-	-	-

Legend

```
- = Not applicable

Storage Path:  A = attached
               D = disabled
               F = device fenced from storage path
               C = channel fenced from storage path
```

Notes:

1. This table is an example of the Path Status Table. Depending on your system environment and control unit, certain lines in the table shown above do not print. For example:
   - CHPID only prints if you are executing in the Stand-alone/XA, MVS/XA, CMS/XA, or CMS/ESA environment.
   - CHANNEL only prints if you are executing in the Stand-alone/370 environment.
   - CHAN, CHANSET only prints if you are executing in the MVS/370 environment.
   - ONLINE only prints if you are executing in the MVS environment.
   - STORAGE DIRECTOR only prints if you are executing on an IBM 3880 control unit.
   - SUBSYSTEM ID, DLSE, CLUSTER, STORAGE PATH 0, and STORAGE PATH 1 only print if you are executing on an IBM 3990 control unit.
   - The paths are displayed in the sequence the path information is returned from the system.
   - The following notes apply when you are using dual copy volumes:
     - The path status table only reflects the path status for the volume being processed (primary or secondary). The table header indicates whether the primary or secondary volume is being processed.
     - When you are processing a secondary volume, the line indicating online status is not printed.

Figure 11. The Path Status Table for IBM 3380 and 3390

```
DRIVE TEST ERROR SUMMARY
|  HEAD  | WRTCE | RDCE  |
|--0000--|-------|-------|
|--0001--|-------|-------|
|--0002--|-------|-------|
|--0003--|-------|-------|
|--0004--|-------|-------|
|--0005--|-------|-------|
|--0006--|-------|-------|
|--0007--|---X---|-------|
|--0008--|-------|-------|
|--0009--|-------|-------|
|--000A--|-------|-------|
|--000B--|-------|-------|
|--000C--|-------|-------|
|--000D--|-------|-------|
|--000E--|-------|-------|
```

An “X&” indicates that at least one error has occurred on the indicated head during the write tests (WRTCE column) or the read tests (RDCE column) to the CE cylinder (part of the drive test).

Figure 12. The Drive Test Error Summary for IBM 3380 and 3390

```
                          MOVABLE HEAD ERROR TABLE
HEAD NUMBER   DATA CHK   SEEK VERIFY  WRITE CHK   DATA CHK   DATA COMP
                            CHECK                  CE CYL      ERROR
    00 -----|---TUC----|-------------|-----------|----------|-----------|
    01 -----|----------|-------------|-----------|----------|-----------|
    02 -----|----------|-------------|-----------|----------|-----------|
    03 -----|----U-----|-------------|-----------|----------|-----------|
    04 -----|----------|-------------|-----------|----------|-----------|
    05 -----|---T-C----|-------------|-----------|----------|-----------|
    06 -----|----------|-------------|-----------|----------|-----------|
    07 -----|-----C----|-------------|-----------|----------|-----------|
    08 -----|----------|-------------|-----------|----------|-----------|
    09 -----|---TU-----|-------------|-----------|----------|-----------|
    11 -----|----------|-------------|-----------|----------|-----------|
    12 -----|----------|-------------|-----------|----------|-----------|
    13 -----|---T------|-------------|-----------|----------|-----------|
    14 -----|----------|-------------|-----------|----------|-----------|
    15 -----|----------|-------------|-----------|----------|-----------|
    16 -----|----------|-------------|-----------|----------|-----------|
    17 -----|----------|-------------|-----------|----------|-----------|
    18 -----|----------|-------------|-----------|----------|-----------|
    19 -----|----------|-------------|-----------|----------|-----------|
    20 -----|----------|-------------|-----------|----------|-----------|
    21 -----|----------|-------------|-----------|----------|-----------|
    22 -----|----------|-------------|-----------|----------|-----------|
    23 -----|----------|-------------|-----------|----------|-----------|
    24 -----|----------|-------------|-----------|----------|-----------|
    25 -----|----------|-------------|-----------|----------|-----------|
    26 -----|----------|-------------|-----------|----------|-----------|
    27 -----|----------|-------------|-----------|----------|-----------|
    28 -----|-----C----|------X------|-----X-----|----X-----|-----X-----|
    29 -----|----U-----|------X------|-----X-----|----X-----|-----X-----|
```

In the data check column:

"T" indicates which head(s) exceeded the data check threshold error rate.

"U" indicates that at least one ECC uncorrectable error occurred on this head.

"C" indicates that at least one ECC correctable error occurred on this head.

"X" indicates that at least one error, as indicated by the column heading, has occurred on this head.

The actual number of errors that occurred for a specific head can be obtained by examining previous messages provided in the ANALYZE output.

Figure 13. The Movable Head Error Table—CKD

```
                         FIXED HEAD ERROR TABLE
HEAD NUMBER  DATA CHECK SEEK VERIFY  HEAD NUMBER  DATA CHECK SEEK VERIFY
                          CHECK                                CHECK
    00 -----|-----U-----|-----X-----|   30 -----|-----U-----|-----X-----|
    01 -----|------C----|-----X-----|   31 -----|-----C-----|-----X-----|
    02 -----|-----------|-----------|   32 -----|-----------|-----------|
    03 -----|-----------|-----------|   33 -----|-----------|-----------|
    04 -----|-----------|-----------|   34 -----|-----------|-----------|
    05 -----|-----------|-----------|   35 -----|-----------|-----------|
    06 -----|-----------|-----------|   36 -----|-----------|-----------|
    07 -----|-----------|-----------|   37 -----|-----------|-----------|
    08 -----|-----------|-----------|   38 -----|-----------|-----------|
    09 -----|-----------|-----------|   39 -----|-----------|-----------|
    10 -----|-----------|-----------|   40 -----|-----------|-----------|
    11 -----|-----------|-----------|   41 -----|-----------|-----------|
    12 -----|-----------|-----------|   42 -----|-----------|-----------|
    13 -----|-----------|-----------|   43 -----|-----------|-----------|
    14 -----|-----------|-----------|   44 -----|-----------|-----------|
    15 -----|-----------|-----------|   45 -----|-----------|-----------|
    16 -----|-----------|-----------|   46 -----|-----------|-----------|
    17 -----|-----------|-----------|   47 -----|-----------|-----------|
    18 -----|-----------|-----------|   48 -----|-----------|-----------|
    19 -----|-----------|-----------|   49 -----|-----------|-----------|
    20 -----|-----------|-----------|   50 -----|-----------|-----------|
    21 -----|-----------|-----------|   51 -----|-----------|-----------|
    22 -----|-----------|-----------|   52 -----|-----------|-----------|
    23 -----|-----------|-----------|   53 -----|-----------|-----------|
    24 -----|-----------|-----------|   54 -----|-----------|-----------|
    25 -----|-----------|-----------|   55 -----|-----------|-----------|
    26 -----|-----------|-----------|   56 -----|-----------|-----------|
    27 -----|-----------|-----------|   57 -----|-----------|-----------|
    28 -----|-----------|-----------|   58 -----|-----------|-----------|
    29 -----|-----------|-----------|   59 -----|-----------|-----------|
```

In the data check column:

"U" indicates that an ECC uncorrectable error occurred on this head.

"C" indicates that an ECC correctable error occurred on this head.

"X" indicates that at least one error, as indicated by the column heading, has occurred on this head.

Figure 14. The Fixed-Head Error Table

Note: The fixed-head error table may be printed although the drive under test does not include the fixed-head feature. In that case, the table applies to movable heads 00 through 29.

The fixed-head error table could be printed for a 3350 in native or compatibility mode regardless of whether the fixed-head feature exists. This may happen if an intermittent error occurred on the movable heads during the fixed head-test. If this occurs, see the conversion table in Figure 15 on page 96 to determine which physical movable-head number corresponds with the fixed-head number in the fixed-head error table.

Head Number From Fixed Head Error Table	Physical Movable Head Number		Head Number From Fixed Head Error Table	Physical Movable Head Number	
	3350[1]	3330		3350[3]	3330
		(compatibility modes)[2]			(compatibility modes)[4]
0	0	20	30	0	11
1	1	21	31	1	12
2	2	22	32	2	13
3	3	23	33	3	14
4	4	24	34	4	15
5	5	25	35	5	16
6	6	26	36	6	17
7	7	27	37	7	18
8	8	28	38	8	0
9	9	29	39	9	1
10	10	20	40	10	2
11	11	21	41	11	3
12	12	22	42	12	4
13	13	23	43	13	5
14	14	24	44	14	6
15	15	25	45	15	7
16	16	26	46	16	8
17	17	27	47	17	9
18	18	28	48	18	10
19	19	0	49	19	11
20	20	1	50	20	12
21	21	2	51	21	13
22	22	3	52	22	14
23	23	4	53	23	15
24	24	5	54	24	16
25	25	6	55	25	17
26	26	7	56	26	18
27	27	8	57	27	Unused
28	28	9	58	28	Unused
29	29	10	59	29	Unused

[1] The head numbers listed below are on physical cylinder 1.

[2] The first 10 head numbers listed below (20 through 29) are on physical cylinder 0. The next 20 head numbers (20 through 28 and 0 through 10) are on physical cylinder 1.

[3] The head numbers listed below are on physical cylinder 2.

[4] The first 8 head numbers listed below (11 through 18) are on physical cylinder 1. The next 19 head numbers (0 through 18) are on physical cylinder 2.

Figure 15. Mapping of Fixed-Head Numbers to Physical Movable-Head Numbers if Fixed-Head Feature Not Present

BUILDIX Command—CKD

The BUILDIX command builds a VTOC index. Direct access volumes in the MVS version may optionally be changed from the OS format VTOC (OSVTOC) to the indexed format VTOC (IXVTOC) by invoking the BUILDIX command. BUILDIX will build a VTOC index data set and prepare the VTOC to show that the volume is in IXVTOC format. BUILDIX will also change a volume in IXVTOC format to OSVTOC format.

To build an index data set on a volume, the BUILDIX command requires that the host system contain indexed VTOC programming support. Execution of the command will terminate without action if this support is not present.

Appendix D, "The VTOC Index" on page 347, contains more information about indexed format VTOCs.

Restrictions

Volumes containing split cylinder extents are not supported by the BUILDIX command. VSE volumes will be converted to OSVTOC format or to IXVTOC format, according to the parameters specified.

The BUILDIX command is valid only in the MVS/370, MVS/XA, and MVS/ESA versions.

Processing in a Shared Environment

When using BUILDIX to convert a VTOC on a volume shared between systems, follow these guidelines:

- Vary the device offline to the other systems.
- Run BUILDIX.
- Vary the device back online to the other systems.

The other systems will then recognize the new format of the VTOC and continue with normal processing.

Converting an OSVTOC to an Indexed VTOC

If you are changing to an indexed VTOC, before you invoke BUILDIX you must preallocate the index data set in a separate job or job step, or you must provide a DD card describing the index data set in the same job step so that the scheduler will cause allocation of the index before command execution begins.

You must ensure that the name of the index data set begins with the characters "SYS1.VTOCIX." and must provide a unique third-level qualifier for each index data set in your installation. The recommended convention is "SYS1.VTOCIX.volser," which ensures that all online volumes have uniquely identified index data set names. This prevents ENQ lockouts on all other volumes needing IXVTOC services. In those cases where the first character of the volser is numeric, some other convention must be used. The convention used for the INDEX parameter of the INIT command, is to replace the first character of the volser with the letter "V." If this convention is used, the last five characters of all volser's starting with a numeric character must be unique. The name "SYS1.VTOCIX." is a reserved name in systems supporting the indexed VTOC, and only one data set per volume may begin with this prefix.

Space for the index must be reserved in one continuous extent. This can be accomplished by allocating the index by absolute track or by specifying the CONTIG subparameter for all other requests. The amount of space to reserve for the index is device-dependent, as well as dependent upon the size (in tracks) of the VTOC. A reference table to aid in determining how much space to reserve for the index is found in Appendix D, "The VTOC Index" on page 347.

When you convert the VTOC to OSVTOC or IXVTOC, BUILDIX performs a "dummy" allocation. The data set name used for the "dummy" allocation is *SYS1.VTOCIX.Vxxxxx* (see the INDEX parameter of the INIT command for the conventions followed for this data set name).

Converting an Indexed VTOC to an OSVTOC

This function will allow you to change an indexed VTOC to an OSVTOC.

You are provided an option to leave the index allocated (NOPURGE) or to delete it (PURGE). The option to leave it ensures that, if the volume should be changed again to the IXVTOC format, no calculation as to size and optimum location would be necessary. This convenience is realized when an IXVTOC volume is temporarily transported to a location that does not have programming support for the indexed VTOC and is then returned to a location having such support.

The procedure to follow when transporting IXVTOC volumes to nonindexed VTOC systems is to prepare the volumes prior to their removal from the indexed VTOC system by executing BUILDIX and specifying the OSVTOC parameter. Upon return of a volume, BUILDIX is again executed, if desired, to rebuild the index.

Care must be exercised if IXVTOC volumes are to be temporarily transported to nonindexed VTOC systems. If the volumes are not changed to OSVTOC format prior to being transported, serious errors may result when the volumes are returned to the indexed VTOC system. DADSM functions performed by the nonindexed VTOC system on the VTOC do not always force reconstruction of the VTOC to OSVTOC format. VTOC changes not causing reconstruction of the VTOC are not recorded in the index and, in effect, invalidate the index.

Dual Copy Volumes

The BUILDIX command supports dual copy volumes which are in duplex or suspended duplex state.

Syntax

Command	Required Parameters
BUILDIX	**DDNAME(*dname*)** **IXVTOC|OSVTOC**
	Optional Parameters
	PURGE|NOPURGE

Required Parameters

DDNAME: Identifying the Volume

Explanation: **DDNAME**(*dname*) must be specified to identify the volume where the VTOC is to be changed.

DDNAME
Required for an online MVS volume. Note that the volume must be online. For *dname*, specify the MVS JCL DD statement that identifies the device.

Abbreviations:

```
DDNAME|DNAME
```

Default: None.

IXVTOC|OSVTOC: Identifying the BUILDIX Function to Be Executed

Explanation: **IXVTOC** or **OSVTOC** must be specified to identify the BUILDIX function to be executed.

IXVTOC
Causes an OSVTOC to be changed to the indexed format.

OSVTOC
Causes an indexed VTOC to be changed to an OSVTOC.

Abbreviations:

```
IXVTOC|IX
OSVTOC|OS
```

Default: None.

Restrictions: **IXVTOC** may only be specified if indexed VTOC programming support is part of the host system. Command execution will terminate with no action taken, if this support is not available.

Optional Parameters

PURGE|NOPURGE: Specifying Disposition of the Index Data Set

Explanation: **PURGE|NOPURGE** are optional parameters describing the final disposition of the index data set when changing an indexed VTOC to an OSVTOC.

PURGE
Causes deletion of the index.

NOPURGE
Causes the index to be left on the volume.

Abbreviations:

```
PURGE|PRG
NOPURGE|NOPRG
```

Default: NOPURGE.

Restrictions: This parameter is valid only when changing from an indexed VTOC to an OSVTOC. If specified with the parameter **IXVTOC**, the option is ignored.

Examples of the BUILDIX Command

The following examples illustrate ways in which the BUILDIX command might be coded in a variety of situations.

The examples show the job control language statements you will need to use when invoking the BUILDIX command.

Note that the content of the data definition statement varies according to the function to be executed. The examples show various specifications of the statement.

Changing an IXVTOC to an OSVTOC

In the following example, a 3390 volume having the volume identification VL3390 is to be changed to OSVTOC format. The DD statement simply identifies the volume.

```
//jobname   JOB . . .
//stepname  EXEC PGM=ICKDSF
//SYSPRINT  DD SYSOUT=A
//DDCARD    DD UNIT=(3390,,DEFER),VOL=(PRIVATE,SER=VL3390),
//          DISP=OLD
//SYSIN     DD *
 BUILDIX  DDNAME(DDCARD)  OS  NOPURGE
/*
```

- UNIT=(3390,,DEFER) specifies that mounting of the volume on the 3390 device type is to be deferred.
- VOL=(PRIVATE,SER=VL3390) identifies the volume and specifies a private mounting to prevent use of the volume for temporary data sets. The volume must have been previously mounted as PRIVATE.
- DISP=OLD specifies that allocation routines will check the mount status of VL3390 and issue appropriate messages to the operator.
- Specification of NOPURGE in the BUILDIX command statement indicates that the index is to be left allocated. If NOPURGE were not specified, the command statement would have the same effect, since NOPURGE is the default. Specification of PURGE, as in the following command statement, would cause the index to be deleted.

  ```
  BUILDIX  DDNAME(DDCARD)  OSVTOC PURGE
  ```

  Note: Whether the index is purged or left allocated is controlled by command parameters. Disposition of the index data set must not be specified in the DD statement.

Building a VTOC Index on a Volume without an Index Allocated

This option requires additional parameters on the DD statement to cause allocation of the index. The statement must contain data set information for the index.

```
//jobname   JOB . . .
//stepname  EXEC PGM=ICKDSF
//SYSPRINT  DD SYSOUT=A
//VOLDD     DD UNIT=(3390,,DEFER),VOL=(PRIVATE,SER=VL3390),
//          DSN=SYS1.VTOCIX.VL3390,DISP=(NEW,KEEP),
//          SPACE=(ABSTR,(10,1))
//SYSIN     DD *
 BUILDIX  DDNAME(VOLDD)  IXVTOC
/*
```

- DSN=SYS1.VTOCIX.VL3390 specifies the name of the index data set. The third-level qualifier, VL3390 (the volume serial), follows the recommended convention for naming the index.
- DISP=(NEW,KEEP) directs the system allocation routines to allocate the data set prior to execution of ICKDSF commands and to retain it upon termination of the task.
- SPACE=(ABSTR,(10,1)) directs the allocation routines to allocate a ten-track index starting at track one. ABSTR is specified in the space request to ensure that the index space is a single continuous extent and is in the location desired by the user. If location is not a primary concern, space can be reserved by specifying SPACE=(TRK,10,,CONTIG). This causes ten contiguous tracks to be reserved at some location. Note that when you are processing DFSMS volumes, you cannot specify ABSTR on the SPACE parameter.

Building a VTOC Index on a Volume with an Index Allocated

In this example, the volume identified as VL3390 was changed to an OSVTOC at some time, either by the user or by a system routine that disabled the index and changed the VTOC to OSVTOC format. The index data set was left allocated on the volume. The DD statement required to change again to an IXVTOC is shown.

```
//jobname   JOB . . .
//stepname  EXEC PGM=ICKDSF
//SYSPRINT  DD SYSOUT=A
//VOLDD     DD UNIT=(3390,,DEFER),VOL=(PRIVATE,SER=VL3390),
//          DSN=SYS1.VTOCIX.VL3390,DISP=OLD
//SYSIN     DD *
 BUILDIX  DNAME(VOLDD)  IX
/*
```

- DISP=OLD specifies that the data set already exists.

CONTROL Command—CKD

The CONTROL command provides a means of resetting certain subsystem conditions that have been previously set. The CONTROL command is used after the condition has been repaired to reset that previous condition. For example, the CONTROL command can be used to reset a device that has been WRITE INHIBITed, reset an *indefinite status condition*, or to clear a fence status of a path and/or a device.

Using the CONTROL Command

The CONTROL command allows you to perform different functions. When you specify the ALLOWWRITE parameter you can clear a storage control that has been WRITE INHIBITed. The CLEARFENCE parameter allows you to clear a fence status of a path and/or a device that has been fenced off by the subsystem. The RESETICD parameter allows you to reset an *indefinite status condition* for a device attached to an IBM 3990-3.

These functions are described below.

ALLOWWRITE Function

The CONTROL command with the ALLOWWRITE parameter is provided for MVS/370, MVS/XA, MVS/ESA, CMS(ATTACHed devices only), and stand-alone users only. This command and parameter combination allows subsequent writes to the devices controlled by an IBM 3880 or IBM 3990 Storage Control if the storage control has been WRITE INHIBITed by the error recovery procedures at the channel, director, or storage control level.

After WRITE INHIBIT has occurred, subsequent write operations to any device attached to the WRITE INHIBITed storage control will fail. The CONTROL command with the ALLOWWRITE parameter causes **all** storage controls to which a specified device is attached to be cleared for subsequent write operations. This command gives you the ability to clear a storage control that has been WRITE INHIBITed without having to perform an IMPL.

There is the possibility, during normal processing in an MVS environment, that the system error recovery procedures (ERPs) may detect an error condition in the storage control such that future write operations to some or all of the devices through the storage control may fail.

When the ERPs detect such a condition, they can "write-inhibit" the storage control (at different levels), thereby inhibiting any further write operations to the devices through the failing storage control. (If an alternate path exists through a different storage control, the device(s) can remain online and functional.)

Maintenance is required on the failing storage control.

After the failing storage control has been repaired, the CONTROL command is the means by which the storage control is "write-allowed," thereby again allowing write operations through that storage control.

Notes:

1. Because CONTROL operates on a device basis, if more than one storage control (that is, path) to a device is failing, **all** such storage controls must be repaired before executing the CONTROL command.
2. When executing stand-alone ICKDSF in XA mode, all storage controls attached to the specified device are cleared for subsequent write operations. When executing the stand-alone ICKDSF in 370 mode, only the storage control attached to the specified device address is write-allowed. To cause all storage controls attached to the device to be cleared, the ALLOWWRITE must be executed on each path, specifying the *ccuu* for the path to be cleared.

   Maintenance on the failing storage control should be initiated following message IEA467 or IEA468(MVS environment) at the system console.

CLEARFENCE Function

When you are using an IBM 3990 Storage Control in DLSE mode, an error may occur causing the subsystem to fence off one particular path to a device or group of devices. The subsystem continues to function with the remaining path(s).

Maintenance is required on the failing storage control and/or the failing device to repair the condition that caused the FENCE. After the failing unit has been repaired, the CONTROL command with the CLEARFENCE parameter is provided to clear the fenced condition for the path.

The CONTROL command with the CLEARFENCE parameter will clear ALL paths to ALL devices on the subsystem. The specified device can be any device on the subsystem.

The CLEARFENCE function is available in the CMS, VSE, MVS/370, MVS/XA, MVS/ESA and stand-alone environments.

Maintenance is normally performed after message IEA473I (MVS environment) is issued at the console when a fence condition has occurred.

RESETICD Function

When devices are attached to an IBM 3990 Model 3 Storage Control, errors can occur when the 3990-3 attempts to read the device status track. If the device status track is unreadable, the device is placed in an *indefinite status condition* and all subsequent data transfer operations are terminated with a *unit check*. The unit check sense data indicates the error which prevents reading of the status track. Because of the indefinite status condition, Modified Cache Fast Write or DASD Fast Write data may exist in the 3990-3 cache storage and cannot be written to the device.

The RESETICD parameter of the CONTROL command is used to reset the indefinite status condition. The SETCACHE command of the IDCAMS utility is used to destage or discard any data which is pinned in the cache because of the indefinite status condition.

Dual Copy Volumes

The CONTROL command supports dual copy volumes which are in duplex or suspended duplex state.

Using the CMS Version of the CONTROL Command

When you are running the CMS version of ICKDSF, the CONTROL command is valid only with ATTACHed devices. See Appendix B, "VM Support" on page 257 for more information.

Syntax

Command	Required Parameters
CONTROL	**DDNAME(*dname*) |SYSNAME(*sysxxx*) |UNITADDRESS(*ccuu*)**
	Optional Parameters
	ALLOWWRITE **CLEARFENCE** **RESETICD**

Required Parameters

DDNAME|SYSNAME|UNITADCDRESS: Identifying the Volume

Explanation: **DDNAME(*dname*)|SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** are required parameters identifying the volume.

DDNAME
Required for an online MVS volume. The volume must be online. For *dname*, specify the MVS JCL DD statement that identifies the volume.

SYSNAME
Required for a VSE volume. For *sysxxx*, specify the SYSNAME specified in the ASSGN control statement.

UNITADDRESS
Required for an offline MVS volume, or for a stand-alone or CMS version volume.

In MVS, the volume must be on a channel that is online. If the volume is on a channel that is offline, the program might enter a nonterminating wait state. For *ccuu*, specify the address in hexadecimal (3 or 4 digits) of the channel and unit for the volume.

For the CMS version specify the virtual address of the ATTACHed volume.

Abbreviations:

```
DDNAME|DNAME
UNITADDRESS|UNITADDR|UNIT
```

Default: None.

Optional Parameters

ALLOWWRITE: Clear a Storage Control

Explanation: **ALLOWWRITE** must be specified if you want to clear a storage control that has been WRITE INHIBITed.

ALLOWWRITE
Specifies that a storage control is to be cleared.

Abbreviations: ALLOWWRITE|ALLOWWR

Default: If you are running in the MVS/370, MVS/XA, MVS/ESA, or stand-alone version, ALLOWWRITE is the default.

If you want to execute ALLOWWRITE and CLEARFENCE, both parameters must be specified.

Restriction: Not valid for the VSE version.

The CONTROL command with the ALLOWWRITE parameter is valid only for DASD devices attached to an IBM 3880 or IBM 3990 Storage Control

CLEARFENCE: Clear a Fence Status

Explanation: **CLEARFENCE** must be specified if you want to clear a fence status of a path and/or a device that has been fenced off by the subsystem.

CLEARFENCE
Specifies that a fence status of a path and/or a device is to be cleared.

Abbreviations: CLEARFENCE|CLEARF|CLRF

Default: None. CLEARFENCE must be specified.

If you want to execute ALLOWWRITE and CLEARFENCE, both parameters must be specified.

Restriction: The CONTROL command with the CLEARFENCE parameter is valid only for DASD devices attached to an IBM 3990 Storage Control.

RESETICD: Reset Indefinite Status Condition

Explanation: **RESETICD** is an optional parameter which is used to reset a device *indefinite status condition.*

RESETICD is used when the status track of a device attached to an IBM 3990-3 is unreadable, and the device is flagged as *status cannot be determined.*

Abbreviations: None.

Default: None. You must specify RESETICD.

Restriction: Valid only for devices attached to an IBM 3990-3.

Examples of the CONTROL Command

The following examples illustrate how the CONTROL command can be coded.

The examples show the job control language statements you will need to use when invoking the CONTROL command in an operating system or the CONTROL command statement needed for a stand-alone version.

Clearing a WRITE INHIBITed storage control

In the following example, a WRITE INHIBITed IBM 3880 or IBM 3990 Storage Control, attached to an IBM 3380 (or 3390) DASD volume with a volume serial number of ABCDEF, is to be cleared. The DD statement identified in the input stream identifies an online DASD volume.

```
//jobname   JOB . . .
//stepname  EXEC PGM=ICKDSF
//SYSPRINT  DD SYSOUT=A
//DDCARD    DD UNIT=3380,DISP=OLD,VOL=SER=ABCDEF
//SYSIN     DD *
 CONTROL  ALLOWWR DDNAME(DDCARD)
/*
```

Clearing a Storage Path Fence Status

The following example shows the job control language and CONTROL command used to reset a fence status. It is assumed the path and/or the device which has been fenced off by the subsystem has been repaired. The DD statement identified in the input stream identifies an online DASD volume.

```
//jobname   JOB . . .
//stepname  EXEC PGM=ICKDSF
//SYSPRINT  DD SYSOUT=A
//DDCARD    DD UNIT=3380,DISP=OLD,VOL=SER=ABCDEF
//SYSIN     DD *
 CONTROL  CLEARFENCE DDNAME(DDCARD)
/*
```

Clearing a Storage Path Fence Status in the CMS or Stand-alone Version

The following example shows the CONTROL command used to reset a fence status. It is assumed the path and/or the device which has been fenced off by the subsystem has been repaired. The example is for the CMS or stand-alone version of ICKDSF

```
 CONTROL  CLEARFENCE UNITADDRESS(0162)
```

Resetting Indefinite Status Condition

The following example shows the job control language and CONTROL command used to reset the indefinite status condition on device 162 where the status track is unreadable. Device 162 is attached to an IBM 3990-3 Storage Control. It is assumed device 162 is offline to the MVS operating system.

```
//jobname   JOB . . .
//stepname  EXEC PGM=ICKDSF
//SYSPRINT  DD SYSOUT=A
//SYSIN     DD *
 CONTROL  UNIT(0162) RESETICD
/*
```

CPVOLUME Command—CKD

The CPVOLUME command is used to prepare a volume for use in a VM environment. It is used to perform the following functions associated with formatting VM volumes for CP use:

- FORMAT

  Write records required by CP on cylinder 0. Write 4096 byte CP page records on an entire volume or on a range of cylinders.

- ALLOCATE

  Update the allocation map to indicate how each cylinder on a CP formatted volume is used.

- EXAMINE

  Read a CP formatted volume to verify that it is properly formatted and that records can be read without error.

- LIST

  Display the allocation map, volume label and device information such as the number of cylinders.

- LABEL

  Rewrite the volume serial.

CPVOLUME writes 4096 byte records on all of the cylinders to be used by CP. These records are referred to as "CP pages." In addition to CP pages, cylinder zero is formatted with records that include the volume label and allocation map. The allocation map indicates how each cylinder on the volume is to be used by CP.

Cylinder Format

The unit for formatting and allocation is the cylinder. CPVOLUME formats a cylinder by writing as many 4096 byte records as possible on each track of a cylinder. Each record is sequentially numbered within the cylinder. For example, a 3380 volume has 10 records per track, therefore the first track contains records 1-10, the second track contains records 11-20, and the last track contains records 141-150.

The following table lists the number of records formatted on each of the CKD devices supported by the CPVOLUME command:

Figure 16. Number of CKD Records Formatted per Track by CPVOLUME Command

Device	Records per track	Tracks per cylinder	Records per cylinder	High cylinder*	Records per volume
3330	3	19	57	403	23028
3330-11	3	19	57	807	46058
3340-35	2	12	24	347	83528
3340-70	2	12	24	695	16704
3350	4	30	120	554	66480
3375	8	12	96	958	92064
3380-A, B, D, J	10	15	150	884	132750
3380-E	10	15	150	1769	265500
3380-K	10	15	150	2654	398250
3390-1	12	15	180	1112	199800
3390-2	12	15	180	2225	399600

* high cylinder is the highest address. Number of cylinders is one more.

CPVOLUME formats track 0 on cylinder 0 with the following records:

1. IPL record. CPVOLUME creates an IPL record that puts the system into a wait state if the volume is IPL'd before the CP nucleus is built.
2. Checkpoint record. CPVOLUME writes zeros in this record. The checkpoint record is used by CP to save and retrieve information for a warm start.
3. Volume Label record. The owner field of the label record contains "CP370" if the volume is formatted for use on a System/370 VM system. The owner field of the label record contains "CPVOL" if the volume is formatted for use on a VM/XA or VM/ESA system.
4. Allocation record. Each cylinder on the volume is represented by a byte in this record. Each byte contains a code that indicates how the cylinder is to be used by CP.
5. OS/VTOC Format 4 DSCB.
6. OS/VTOC Format 5 DSCB. The VTOC records created by CPVOLUME indicate that no space is available on the volume.

Using the CPVOLUME Command

When you use the CPVOLUME command, you select the function you require by specifying one of the parameters, FORMAT, ALLOCATE, EXAMINE, LABEL, or LIST.

You can format or examine an entire volume or you can limit the operation to part of a volume by specifying the RANGE parameter. If you omit the range parameter, CPVOLUME assumes that the range is for the entire volume. If you specify a range that does not begin with cylinder 0, then cylinder 0 must have been previously formatted.

The CPVOLUME command formats volumes for use on either System/370, VM/SP, VM/SP HPO, or VM/XA systems (includes VM/ESA). CPVOLUME defaults to the system which is executing. For example, if the virtual machine is in System/370 mode, CPVOLUME formats the volume for use on a System/370 VM system. Similarly, if the virtual machine is in VM/XA or VM/ESA mode, CPVOLUME formats the volume for use on a VM/XA or VM/ESA VM system. You can also specify which format is required. For example, if you are executing the CPVOLUME command from a System/370 mode virtual machine, and want to format a volume for use on a VM/XA or VM/ESA system, specify "MODE(XA)"

All of the cylinders on a volume do NOT have to be formatted with CP pages, only those cylinders that are to be used by CP must be formatted. However, cylinder zero must always be formatted, and cylinder zero must be formatted before any other cylinders are formatted.

The FORMAT Function

You specify a range of cylinders to be formatted, which may be the entire volume. CPVOLUME formats each cylinder by writing the required number of 4096 byte page records on each track of the cylinder. If you specify READCHECK, CPVOLUME will read check each cylinder to ensure there are no errors.

If you specify READCHECK and a data check is encountered on a track, the INSPECT function of ICKDSF is invoked to check the surface of the track for defects. The INSPECT operation performs skip displacement surface checking to eliminate data checks from the track, and will assign an alternate track if required. After the track has been inspected, it is formatted once more and the FORMAT operation continues.

When formatting is complete, the allocation map will be updated from any allocation "TYPE" statements that you specified in the CPVOLUME FORMAT command.

The ALLOCATE Function

The ALLOCATE function is used to update the allocation map on cylinder 0. If the volume has never been used before, all cylinders on a volume are initially allocated as PERM by CPVOLUME. You tell the ALLOCATE function how the allocation map should be changed by specifying a *type of allocation* followed by a range of cylinders. For example, (TEMP,100,199) indicates that the 100 cylinders from 100 to 199 should be allocated as TEMP.

The LABEL Function

The LABEL Function is used to rewrite the volume serial.

The LIST Function

The LIST function is used to display current volume information. Use this function to display the allocation map, volume label, and device information (for example, the number of cylinders).

The EXAMINE Function

You specify a range of cylinders to be examined, which may be the entire volume. CPVOLUME reads each track on each cylinder to be examined. Validation ensures that each track contains the correct number of 4096 byte page records, that each record has the correct record number, and that data contained in the record can be read without error.

Two types of errors are reported by the EXAMINE function, format errors and data checks. A format error occurs when a track does not have the correct number of 4096 byte records or if the records do not have the correct record number (record ID). Format errors are reported by cylinder range, all cylinders within the reported range are improperly formatted. Data checks are NOT reported for cylinders that are reported as format errors. For cylinders that are properly formatted, EXAMINE will report the CCHH of the first track that contains a data check.

The EXAMINE function is read-only and will not write over any user data. You can use the EXAMINE function to inspect any CP formatted volume for formatting or data check errors. For any errors reported by EXAMINE, you should take appropriate corrective action. For format errors you can use CPVOLUME to format the cylinders. For data check errors you can use the INSPECT command of ICKDSF to check the track surface.

Migration Support

On a CP formatted volume, the size of the allocation map must match the number of cylinders on the volume. The map contains a one byte allocation code for each cylinder, and following the last byte is an "end-of-volume" code indicating that no more cylinders can be allocated.

When different models of the same device type are copied from one to another, the allocation map that is copied will no longer match the number of cylinders on the volume. For example, if a 3380 with 885 cylinders is copied to a 3380 with 1770 cylinders the allocation map will indicate that only 885 cylinders are allocated (even though the new volume has 1770 cylinders). CPVOLUME will report such a mismatch and if you allow CPVOLUME to continue, the allocation map will be expanded from 885 to 1770 cylinders. The expanded cylinders will be allocated as "PERM" space. The expanded cylinders will not be formatted as part of the expansion process. In the example you would specify CPVOLUME FORMAT RANGE(885,1769) to format the expanded cylinders.

When data is copied from a large volume to a smaller volume, and cylinder zero is included in the copy operation, the allocation map will map more cylinders than are on the volume. Using the above example, the allocation map will indicate that 1770 cylinders are allocated, even though the new volume has only 885 cylinders. When CPVOLUME encounters a volume which has a mismatch it is reported and if you allow CPVOLUME to continue, the allocation map is reduced from 1770 to 885 cylinders. The allocation information for the last 885 cylinders is eliminated.

Minidisk Support

The allocation map that CPVOLUME creates for a minidisk will map the number of cylinders of the minidisk. For example, for a 10 cylinder minidisk, CPVOLUME will create an allocation map that maps 10 cylinders. Likewise, CPVOLUME will not allow you to format cylinders beyond the bounds of the minidisk.

CPVOLUME is able to determine the size of a minidisk, except when ICKDSF is executing the stand-alone version. In the stand-alone version, you use the MIMIC(MINI(n)) parameter to indicate the number of cylinders of the minidisk. If you do not specify MIMIC(MINI(n)) for a minidisk, CPVOLUME assumes that the device is an attached device. If you formatted a 3380 minidisk by specifying MIMIC(MINI(10)), and then attempt to update the allocation map specifying MIMIC(MINI(885)), you receive the following messages:

```
ICK03030I ALLOCATION MAP WILL BE EXPANDED FROM 10 to 885 CYLINDERS
ICK003D   REPLY U TO ALTER VOLUME CONTENTS, ELSE T
```

You should reply "T" to message ICK003D, then update the allocation map by specifying MIMIC(MINI(885)).

Syntax

Command	**Required Parameters**
CPVOLUME	**FORMAT|ALLOCATE|LABEL|LIST|EXAMINE** **UNITADDRESS(*ccuu*)** **VERIFY(*serial*)|NOVERIFY**
	Optional Parameters

	FILLER|NOFILLER
	MIMIC(MINI(*nnnn*))
	MODE(XA|370)
	RANGE(*start,end*)
	READCHECK|NOREADCHECK
	TYPE((*type of allocation,start,end*)...)
	VOLID(*serial*)

Required Parameters

FORMAT|ALLOCATE|LABEL|LIST|EXAMINE: Specifying the Function

Explanation: **FORMAT|ALLOCATE|LABEL|LIST|EXAMINE** are required parameters identifying the function you want to be performed.

FORMAT
Required when you want to format a volume. An entire volume or a range of cylinders can be formatted.

ALLOCATE
Specifies that the allocation map of a previously formatted volume is to be updated.

LABEL
Specifies that the volume label of a previously formatted volume is to be rewritten.

LIST
Specifies that volume information for a previously formatted volume is to be displayed.

EXAMINE
Specifies that an entire volume or range of cylinders on a previously formatted volume are to be inspected for errors.

Abbreviations:

```
FORMAT|FMT
ALLOCATE|ALLOC
EXAMINE|EXAM
```

Default: None.

Restrictions:FORMAT, ALLOCATE, LABEL, LIST and EXAMINE are mutually exclusive.

UNITADDRESS: Identifying the Device

Explanation: **UNITADDRESS** is a required parameter identifying the volume to be processed.

UNITADDRESS(*ccuu*)
Required to specify the address of the volume to be processed. For *ccuu*, specify the virtual address of the volume.

Abbreviations:

```
UNITADDRESS|UNITADDRUNIT
```

Default: None.

VERIFY|NOVERIFY: Verifying the Volume Serial Number

Explanation: **VERIFY(*serial*)|NOVERIFY** are required parameters specifying whether to verify the volume serial number before performing the requested function on the volume.

VERIFY
Required when you want to verify the volume serial number before performing the requested function on the volume. If the volume serial number does not match that found on the volume, the CPVOLUME command terminates.

For *serial*, substitute 1 to 6 alphameric characters for the volume serial number.

NOVERIFY
Required when you want to bypass verification of the volume serial number.

Abbreviations:

```
VERIFY|VFY
NOVERIFY|NOVFY|NVFY
```

Default: None. You must specify either VERIFY or NOVERIFY.

Restrictions: None, however, when you specify the VERIFY parameter and verification fails, execution of the command terminates.

Optional Parameters

FILLER|NOFILLER: Specify to Include Filler Records

Explanation: **FILLER|NOFILLER** specifies if filler records are included or excluded when IBM 3380 or 3390 volumes in 3380 track compatibility mode are formatted for CP.

FILLER
specifies that filler records are to be included when 3380 or 3390 volumes in 3380 track compatibility mode are formatted.

NOFILLER
specifies that filler records are to be excluded when 3380 or 3390 volumes in 3380 track compatibility mode are formatted.

Abbreviations:

```
FILLER|FILL
NOFILLER|NOFILL|NFILL
```

Default: FILLER is the default except for the following:

- you specify MODE(XA) and the input volume was not previously CP formatted
- you specify MODE(XA) and the input volume was previously formatted using MODE(XA) NOFILLER.

Restrictions: Applies to the IBM 3380 or 3390 volumes in 3380 track compatibility mode only. The parameters are ignored for other devices.

MIMIC(MINI): Specifying a Special Volume Usage

Explanation: **MIMIC(MINI(*nnnn*)** is an optional parameter for specifying the number of cylinders to be processed. For *nnnn* specify the number of cylinders for the device.

Abbreviations: None

Default: If MIMIC(MINI) is not specified, the device is assumed to be ATTACHed.

Restrictions: MIMIC(MINI) is valid in the stand-alone version only.

MODE: Specify VM System

Explanation: **MODE(XA|370)** is an optional parameter specifying whether the volume to be processed is to be formatted for a system other than that which is currently executing. To specify the volume is to be formatted for VM/XA(includes VM/ESA), use MODE(XA). To specify the volume is to be formatted for System/370 VM system, use MODE(370).

Abbreviations: None

Default: The default is the mode of the virtual machine that the command is executed under.

Restrictions: None.

RANGE: Specifying the range of cylinders

Explanation: **RANGE***(start,end)* is an optional parameter for specifying the range of cylinders that are to be formatted or examined. Use *start,end* to specify a range of cylinders.

Abbreviations: None.

Default: If RANGE is not specified, the default is the entire volume.

Restrictions: RANGE is only valid when you specify either FORMAT or EXAMINE.

READCHECK|NOREADCHECK: Specify Read-Back Check

Explanation: **READCHECK|NOREADCHECK** specifies if a read-back check is to be performed.

READCHECK
specifies that a read-back check is to be performed for each cylinder after it is formatted. If read-back check media errors are detected, the INSPECT command is invoked to repair the track.

NOREADCHECK
specifies that a read-back check is not to be performed.

Abbreviations:

```
READCHECK|READCHK|RDCHECK|READ
NOREADCHECK|NOREADCHK|NOREAD
```

Default: READCHECK is the default.

Restrictions: READCHECK is only valid when you specify FORMAT.

TYPE: Specify the Type of Allocation

Explanation: **TYPE((***type of allocation,start,end)...))* specifies the type of allocation.

Multiple statements of each *type of allocation* can be specified (up to 100). However, each succeeding statement modifies allocation without regard to the previous statement(s), so care must taken when you use multiple statements.

Use *start,end* to specify the cylinders required for the *type of allocation.*

Specify *type of allocation* as follows:

DRCT
specifies that directory space is to be allocated.

DUMP
specifies that dump space is to be allocated.

OVRD
specifies that override file space is to be allocated.

PAGE
specifies that paging space is to be allocated.

PERM
specifies that permanent space is to be allocated.

SPOL
specifies that spooling space is to be allocated for VM/XA (includes VM/ESA).

TDSK
specifies that temporary disk space is to be allocated.

TEMP
specifies that spooling space is to be allocated for System/370.

Abbreviations: None.

Default: None. You must specify the *type of allocation* you require.

You must specify *start,end.* There is no default.

Restrictions: The *TYPE* parameter is valid with the FORMAT and ALLOCATE functions only.

DRCT, DUMP, OVRD, PAGE, PERM, TEMP, and TDSK are valid *type of allocation* for use on a System/370.

DRCT, PAGE, PERM, TDSK,and SPOL are valid *type of allocation* for use on a VM/XA system (includes VM/ESA).

When a volume is formatted for the first time, any space not specified by TEMP, PERM, TDSK, DRCT, OVRD, PAGE, SPOL, and DUMP, parameters is allocated as PERM. Subsequently, the allocation does not change unless you specify the TYPE parameter.

VOLID: Specify the Volume Serial Number

Explanation: **VOLID** specifies the volume serial number that is to be written in the volume label.

Abbreviations: None.

Default: If VOLID is not specified, the existing volume serial number is used. If there is no current volume serial number, then VOLID must be specified.

Restrictions: VOLID is only valid when you specify FORMAT or LABEL.

Examples of the CPVOLUME Command

The following examples show different ways to code the CPVOLUME command. The device used in the examples is a 3380 with 885 cylinders.

Format an entire volume

In this example all 885 cylinders on the volume are formatted. A read-back check is specified to verify that all of the formatted records can be read without error. The allocation map will indicate that all 885 cylinders on the volume are allocated as PERM space.

Because NOVERIFY is specified, any existing volume label is ignored, and the volume is labelled "CPVOL1."

```
CPVOLUME FORMAT UNIT(0150) NOVERIFY VOLID(CPVOL1) READCHECK
```

Format part of a volume

In this example the first 100 cylinders on the volume are formatted. The allocation map will indicate that cylinder 0 is PERM space, cylinders 1-99 are TEMP space, and cylinders 100-884 are PERM space.

Because NOVERIFY is specified, any existing volume label is ignored, and the volume is labelled "CPVOL1."

```
CPVOLUME FORMAT UNIT(0150) NOVERIFY VOLID(CPVOL1) RANGE(0,99) TYPE(TEMP,1,99)
```

Change volume allocation

In this example the allocation map on a volume which has already been formatted is updated. All 885 cylinders are allocated as PERM space by the first allocation parameter, then the allocation for various cylinder ranges is changed to DUMP, PAGE, TEMP and TDSK space.

Because VERIFY is specified, CPVOLUME checks that the volume on unit address 0150 has a volume label of "CPVOL1."

```
CPVOLUME ALLOCATE UNIT(0150) VERIFY(CPVOL1) -
TYPE((PERM,0,884),-
     (DUMP,100,199),-
     (PAGE,200,299),-
     (TEMP,300,399),-
     (TDSK,400,499),-
     (TDSK,600,699))
```

INIT Command—CKD

The INIT command initializes a volume. A direct-access storage volume must be initialized before an operating system can use it. The INIT command writes a volume label and a VTOC (optionally, with an index) on the volume for use by MVS or VSE operating systems. This is the minimal level of initialization. Volume validation (medial initialization) and surface checking (maximal initialization) can also be performed. These levels are described in the sections that follow.

For INIT support of the Mass Storage System (MSS), minidisks, and emulated devices respectively, see:

- "MIMIC: Specifying a Special Volume Usage Format" on page 136
- Appendix B, "VM Support" on page 257
- "Emulated Devices" on page 66

Do not use the INIT command to initialize volumes which have been prepared for use in a VM environment by use of the CPVOLUME command. Use the CPVOLUME command for these functions.

When you initialize dual copy volumes minimal initialization is the only level supported. Medial initialization requires the volume to be in simplex state.

Processing in a Shared Environment

When running INIT on a volume shared between systems, follow these guidelines:

- Vary the device offline to the other systems.
- Run the INIT command.
- Vary the device back online to the other systems.

The other systems will then recognize the volume serial number and VTOC location of the volume. Should you choose **not** to follow these guidelines, other systems accessing the volume may experience unpredictable results.

Processing in a Shared DFSMS Environment

If the volume to be initialized is DFSMS-managed and shared between systems, then use one of the following methods:

- Spare or Empty Volume
  - Vary device offline to other systems.
  - Run the INIT command.
  - Vary device back online to the other systems.
  - Define volume to storage group for use.
- Volume in Use
  - Move data sets from volume, to be re-initialized, to other volumes in the storage group.
  - Change DFSMS status of storage group from ENABLE to DISNEW for all systems. This will only prevent new allocations to the storage group and, in particular, the volume to be re-initialized.
  - Vary device offline to other systems.

- Remove volume definition from storage group.
- Change DFSMS status of storage group from DISNEW to ENABLE for all systems.
- Run the INIT command specifying VTOC index.
- Vary device back online to the other systems.
- Define volume to storage group for use.

Initializing a Volume at the Minimal Level

A volume is always initialized at least to the minimal level. When both the NOVALIDATE and NOCHECK parameters are specified, minimal initialization is all that is performed.

Minimal initialization creates the contents of cylinder 0, track 0 by:

- Writing IPL bootstrap records as records 1 and 2
- Writing a volume label as record 3
- Optionally, writing the IPL text

Initialization also reserves and formats tracks for the VTOC at the location specified by the user and for the number of tracks specified. If no location is specified, tracks are reserved at the default location. The size and location can also be defaulted to the end of the volume. Access to a previous VTOC is destroyed by a minimal INIT, however residual data can remain from previous use.

If the INDEX parameter of the INIT command is specified, the default data set name of SYS1.VTOCIX.volser is used in the VTOC to identify the space. If the *volser* begins with a numeric character, the default data set name will be SYS1.VTOCIX.Vxxxxx, where xxxxx is the volser with the first character overlaid by V. For example, if the *volser* is 339001, the default data set name is SYS1.VTOCIX.V39001. Appendix D, "The VTOC Index" on page 347, contains more information about indexed format VTOCs.

If the IPLDD parameter is specified, the IPL text is added to the volume.

At the completion of the minimal initialization, defective primary tracks that were using an alternate are now assigned alternates in sequential order within the alternate track area.

Minimal initialization is the only level supported for dual copy volumes.

Initializing a Volume at the Medial Level

A volume is initialized at the medial level when both the VALIDATE and NOCHECK options are specified.

Medial initialization includes the actions of minimal initialization, as well as validation of the existence and content of the track's home address and record 0 for every track in the specified range. Validation ensures that the proper track address (cylinder and head) appears in both the home address and record 0 on the track, and that a standard record 0 exists on the track. Validation rewrites the home address and record 0.

At the completion of the medial initialization processing for the requested tracks, defective primary tracks that were using an alternate are now assigned alternates in sequential order within the alternate track area.

If a medial initialization does not run to completion, the CONTINUE function is provided to allow you to recover in a minimum amount of time, and to ensure the volume is usable. See "Resuming after a Job or System Failure" on page 122 for more information concerning continuing after a failure. concerning continuing after a failure.

When you are performing a medial initialization for a CKD device which is being emulated on an IBM 9313, 9332, or 9335, the CONTINUE function is not supported and range parameters are ignored.

Before running a medial initialization, (or any ICKDSF job) the devices must establish thermal stability. See "Device Thermal Stability Requirements Before Running ICKDSF" on page 65.

Medial initialization is not supported for dual copy volumes.

Initializing a Volume at the Maximal Level

A volume is initialized at the maximal level when the CHECK parameter is specified. Note that this level of surface checking is supported for the IBM 2305, 2314, 3330, 3340, 3344, and 3350 devices only.

Maximal initialization includes the actions of minimal and medial initialization, as well as checking of track surfaces for each track in the specified range.

If surface checking detects a data check on the volume, skip displacement checking is performed for supported devices. The primary track continues to be used until the number of defects exceeds the maximum skips allowed for the device, after which an alternate track is assigned. In addition, skip displacement checking is always performed for cylinder 0 track 0 and the first track of the VTOC (before they are written) if they are in the specified range.

See Appendix F, "Surface Checking" on page 353, for more information on surface checking.

At the completion of maximal initialization processing for the requested tracks, defective primary tracks that were using an alternate are now assigned alternates in sequential order within the alternate track area.

If a maximal initialization does not run to completion, the CONTINUE function is provided to allow you to recover in a minimum amount of time, and to ensure the volume is usable. See "Resuming after a Job or System Failure" on page 122 for more information concerning continuing after a failure.

Controlling the Level of Surface Checking

The SKIP/NOSKIP parameters specify the level of surface checking that is to be performed for a maximal initialization. Note that the SKIP parameter is valid for the IBM 3340, 3344, and 3350 devices only. See Appendix F, "Surface Checking" on page 353, for more information on surface checking.

NOSKIP indicates that primary surface checking is to be performed for all tracks in the specified range, and skip displacement surface checking is performed only if a data check is detected.

SKIP indicates that skip displacement surface checking is to be performed for *every* track in the specified range. Although SKIP provides a more extensive check of the surface of a track, it runs for long periods of time per track. If SKIP is specified, the total number of tracks in the specified range is limited to the number of tracks in a cylinder for the particular device type.

Resuming after a Job or System Failure

If for any reason a medial or maximal initialization does not run to completion, subsequent processing can start from a checkpoint location. ICKDSF checkpoints itself automatically during processing and remembers where to resume processing.

After a job or system failure, you can submit a new job:

- At the minimal, medial or maximal level
- For the entire volume, or for a different specified range, or the same specified range (for medial or maximal INIT)
- To resume from the point of failure, or to ignore the previous processing and start to process a different range

Regardless of the the job you choose to run after a failure, when processing completes, all tracks on the volume that ICKDSF might have operated on are in a usable condition. Note that, while ICKDSF will fix any tracks that were left unusable because of the failure, it cannot ensure the usability of any track that is not in the current specified range or that was not processed before the point of failure.

Because INIT processing always destroys the volume label, a subsequent invocation must include the VOLID parameter.

INIT checkpoints its current location not more than every five minutes. When INIT is run after a previous failure, it detects the checkpointed information, and then validates or skip analyzes (depending on the device type that failed) all the tracks from the last checkpoint. This is done for *all* levels of initialize, and regardless of the CONTINUE/NOCONTINUE parameters. This ensures that ICKDSF has not left any tracks in an unusable condition because of the failure. Note that this adds additional run time to INIT, and is most noticeable for minimal INIT.

After the tracks from the previous point of failure have been processed, if CONTINUE is specified, processing continues from the point of failure *in correlation with* the current specified range as follows:

- If the new range is totally before the previous point of failure, no new tracks are processed.
- If the new range is totally beyond the adjusted point of failure, then the entire new range is processed.

- The point of failure is adjusted if the new job specifies VALIDATE, since we have already validated the tracks to the next checkpoint location.
  - If the new job specifies a range that is entirely before where the next checkpoint should occur, there are no more tracks to process.
  - If the new job specifies a range that overlaps the point of failure, then processing begins from the point of failure.
- If NOCONTINUE is specified, processing begins with the first track in the current specified range.

RANGE Parameters: Specifying Part of a Volume

CYLRANGE/HEADRANGE and FROMRANGE/TORANGE are optional parameters, generally specified in pairs, to limit the areas of a volume that are to be processed. Use the CYLRANGE/HEADRANGE pair to specify the starting and ending cylinder(s) and the starting and ending head(s) to be examined before minimal initialization functions are performed. Use the FROMRANGE/TORANGE pair to specify the starting track (cylinder and head) and the ending track (cylinder and head) to be examined before standard volume initialization is performed.

Note that the VTOC and volume label are still written even when range parameters are specified.

Where the term "specified range" is used in this book, it describes the tracks that are the result of:

- The combination of FROMRANGE and/or TORANGE
- The combination of CYLRANGE and/or HEADRANGE
- The entire volume, if all the range parameters are omitted

The following notes apply to specifying part of a volume:

- CYLRANGE/HEADRANGE and FROMRANGE/TORANGE are mutually exclusive pairs of parameters.
- If you specify CYLRANGE and do not specify HEADRANGE, all the heads of the specified cylinders are processed.
- If you specify HEADRANGE and do not specify CYLRANGE, the specified heads for all the cylinders on the volume are processed.
- Both the starting and ending values are required for CYLRANGE and HEADRANGE. If you specify an ending value greater than the maximum for the device, the device maximum is used for the ending value.
- If you specify FROMRANGE and do not specify TORANGE, TORANGE is defaulted to the last alternate cylinder.
- If you specify TORANGE and do not specify FROMRANGE, FROMRANGE is defaulted to cylinder 0 track 0.
- If CHECK is specified, surface checking is performed only for those tracks within the range. (The SKIP parameter specifies the level of surface checking to be performed.)
- IF NOCHECK VALIDATE is specified, the home address and record zero are rewritten only for those tracks within the range.
- If NOCHECK NOVALIDATE is specified, the range parameters are ignored.

- If none of the range parameters are specified, medial and maximal initialize operate on the entire volume.
- Primary tracks within the range specified have alternate tracks assigned as necessary. Primary tracks outside the range specified are not read or validated and do not have their alternate track pointers verified.
- If there is a need to verify the alternate tracks on a volume (that is, primary/alternate pairs are valid), the range parameters can be specified for the alternate cylinders.

CMS Version Minidisk Support

When you are using the CMS version of ICKDSF you can use the INIT command as follows:

- Minimal INIT *only* is supported

When you initialize a minidisk at the minimal level, you can specify the minidisk volume label (VOLID), the VTOC, the index data set (INDEX), the owner identification (OWNERID), and whether you are supplying or the system is to supply the IPL bootstrap records.

The following parameters are supported when you are running the CMS version of ICKDSF

- UNITADDRESS, BOOTSTRAP/NOBOOTSTRAP, DOSVTOC, INDEX, IPLDD, LABELS, OWNERID, PASSWORD, PURGE, VERIFY, VOLID, and VTOC.

See Appendix B, "VM Support" on page 257 for more information.

Restoring Factory Functional Verification Data Patterns to a Volume

If there is a need to ensure that data exists on every track of an IBM 3375, 3380, or 3390 volume (for example, for a subsequent ANALYZE SCAN after a volume has been moved elsewhere), the DATA parameter can be used. When you specify DATA, records are written which correspond to the factory functional verification data patterns which are written on the volume at the factory.

Initializing a DFSMS-Managed Volume

You can initialize a volume which is to be managed by the Data Facility Storage Management Subsystem (DFSMS) by specifying the STORAGEGROUP parameter.

ICKDSF marks the volume as being managed by DFSMS during the initialization process and informs the operating system that the volume has been initialized for DFSMS use. If the volume you are initializing is online, ICKDSF will:

- Bypass RACF DASDVOL checks
- Check that there are no DFSMS data sets on the volume

Volumes which have been previously DFSMS managed, can be initialized as DFSMS managed again or initialized as non-DFSMS-managed volumes.

Dual Copy Volumes

Minimal initialization is the only level supported for dual copy volumes. The volume must be in duplex or suspended duplex state. Medial initialization requires the volume to be in simplex state.

Syntax

Command	Required Parameters
INIT	DDNAME(*dname*)|SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*) VERIFY(*serial*[,*owner*])|NOVERIFY
	Optional Parameters

	BOOTSTRAP|NOBOOTSTRAP
	CHECK(*n*)|NOCHECK
	CONTINUE|NOCONTINUE
	CYLRANGE(*cccc,cccc*)
	DATA|NODATA
	DEVICETYPE(*devtype*)
	DOS[VSE]VTOC(END|*cylinder,head*[,*extent*])
	FROMRANGE(*cccc,hhhh*)
	HEADRANGE(*hhhh,hhhh*)
	INDEX(*cylinder,head*[,*extent*])
	IPLDD({*dname*|*dlblname*}
	[,OBJFORMAT|,ABSFORMAT])
	LABELS(*n*)
	MAP|NOMAP
	MIMIC(*type*)
	OWNERID(*owner*)
	PASSWORDS((*dsname/password*),...)
	PURGE|NOPURGE
	RECLAIM|NORECLAIM
	SKIP|NOSKIP
	STORAGEGROUP
	TORANGE(*cccc,hhhh*)
	VALIDATE|NOVALIDATE
	VOLID(*serial*)
	VTOC(END|*cylinder,head*[,*extent*])

Required Parameters

Note that various combinations of parameters can cause INIT to function differently. These differences are outlined below.

DDNAME|SYSNAME|UNITADDRESS: Identifying the Volume

Explanation: **DDNAME(*dname*)|SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** are required parameters identifying the volume (or minidisk) that is to be initialized. When you initialize a volume for the first time under MVS, the volume must be mounted offline because it contains no volume label and is not acceptable to an operating system.

DDNAME

Required for an online MVS volume. The volume must be online and mounted as PRIVATE. For *dname*, specify the MVS JCL DD statement that identifies the volume.

SYSNAME

Required for a VSE volume. For *sysxxx*, specify the SYSNAME specified in the ASSGN control statement.

UNITADDRESS

Required for an offline MVS volume or a stand-alone or CMS version volume.

In MVS, the volume must be on a channel that is online. If the volume is on a channel that is offline, the program might enter a nonterminating wait state. For *ccuu*, specify the address, (3 or 4 hexadecimal digits) of the channel and unit of the volume.

For the CMS version specify the virtual address of an ATTACHed volume or minidisk.

Abbreviations:

```
DDNAME|DNAME
UNITADDRESS|UNITADDR|UNIT
```

Default: None.

VERIFY|NOVERIFY: Verifying the Volume Serial Number and Owner Identification

Explanation: **VERIFY(***serial*[*,owner*]**)|NOVERIFY** are required parameters specifying whether to verify the volume serial number and owner identification before initializing the volume or minidisk.

VERIFY

Required when you want to verify the volume serial number and owner identification before initializing the volume or minidisk. If the volume serial number or owner identification does not match that found on the volume or minidisk the INIT command terminates.

For *serial*, substitute 1 to 6 alphameric characters for the volume serial number.

For *owner*, substitute 1 to 14 alphameric characters for the owner identification.

NOVERIFY

Required when you want to bypass verification of the volume or minidisk serial number and owner identification.

Abbreviations:

```
VERIFY|VFY
NOVERIFY|NOVFY|NVFY
```

Default: None.

Restrictions: You cannot verify the owner identification separately from the volume serial number; both the volume serial number and the owner identification must be verified when you want to verify the owner identification.

When you specify the VERIFY parameter and verification fails, the command terminates.

Optional Parameters

BOOTSTRAP|NOBOOTSTRAP: Writing IPL Bootstrap Records on the Volume

Explanation: **BOOTSTRAP|NOBOOTSTRAP** are optional parameters specifying whether you are supplying the IPL bootstrap records that are to be written on the volume during initialization.

BOOTSTRAP
Indicates that you are supplying the IPL bootstrap records that are written on the volume or minidisk during initialization. These records must be the first four records in the IPL program text. The first text record must have IPL1 in the first four columns, followed by 24 bytes of data. These 24 bytes have the same format as the first IPL record described under ABSFORMAT in "IPLDD: Writing a User-Supplied IPL Program on the Volume" on page 132. The next three text records must have IPL2 in their first four columns, followed by 68 bytes of data each in the second and third records and 8 bytes of data in the last record. These 144 bytes of data have the same format as IPL record 2 described under ABSFORMAT.

NOBOOTSTRAP
Indicates that you want the system to supply the IPL bootstrap records that are written on the volume during initialization.

Abbreviations:

```
BOOTSTRAP|BOOT
NOBOOTSTRAP|NOBOOT|NBOOT
```

Default: The default is NOBOOTSTRAP.

Restrictions: The BOOTSTRAP and NOBOOTSTRAP parameters apply only when the IPLDD parameter is specified. This parameter is ignored when the IPL program is supplied in absolute format.

CHECK|NOCHECK: Surface Checking of the Volume

Explanation: **CHECK(*n*)|NOCHECK** are optional parameters specifying whether the tracks are to be checked for recording errors (maximal initialization).

If CHECK is specified, for each track, the home address and record zero are validated and rewritten, the track is surface checked by writing and reading specially patterned records (as a long record zero), and the standard record zero is then rewritten onto the track.

If errors occur that cannot be corrected with skip displacement, the track is flagged, and an alternate track is assigned to it. If an alternate track is identified as defective, it is flagged as defective.

CHECK
Indicates that maximal initialization is to take place. Each track surface is checked for recording errors during initialization. This parameter erases the contents of each track during initialization.

For *n*, substitute a decimal number from 1 through 10 for the number of times you want each track to be checked. See Appendix F, "Surface Checking" on page 353, for information about n values. The CHECK parameter is valid only for the IBM 2305, 2314, 3330, 3340, 3344, 3350.

NOCHECK
Indicates that you do not want the tracks to be surface checked for recording errors during initialization. Initialization will be done at the medial or minimal level only, depending on the VALIDATE/NOVALIDATE specification.

Abbreviations:

```
CHECK|CHK
NOCHECK|NOCHK|NCHK
```

Default: The default is NOCHECK.

Restrictions: The maximum number you can specify with the CHECK parameter is 10.

For minidisks in the stand-alone version, CHECK(n) is valid only for 2311, 2314, and 2319 device types.

The CHECK parameter is not valid for the IBM 3375, 3380, or 3390 devices.

Note that, if CHECK is specified, the functions of medial INIT have been included. The VALIDATE|NOVALIDATE parameter is ignored.

Use CHECK with SKIP/NOSKIP to control the level of surface checking.

CHECK is not valid for minidisks.

CONTINUE|NOCONTINUE: RESUME FROM A CHECKPOINT

Explanation: **CONTINUE|NOCONTINUE** are optional parameters specifying whether processing is to resume from the last checkpointed location (CONTINUE) or to start processing the specified range or full volume (NOCONTINUE).

These parameters are interrogated only if processing was previously interrupted during a medial or maximal initialization.

CONTINUE
Indicates that processing is to resume from the last checkpointed location.

A message is issued to indicate where processing is resumed.

NOCONTINUE
Indicates that you do not want to start from the last checkpointed location, but want to start processing the specified range or volume.

Note that ICKDSF still goes to the backup location even if NOCONTINUE is specified. This is done to ensure no tracks are left in a nonstandard format.

Default: The default is CONTINUE

Restriction: The CONTINUE function does not support the IBM 2305, 2311, 2314, 2319, or a CKD device emulated on an FBA device.

CONTINUE is ignored for minidisks.

CYLRANGE: Specify a Range of Cylinders

Explanation: **CYLRANGE**(*cccc,cccc*) is an optional parameter used to specify that part of a volume is to be surface checked. Use the CYLRANGE parameter to specify the starting and ending cylinder(s) to be examined before standard volume initialization is performed.

For *cccc,cccc*, substitute one to four decimal (n) or hexadecimal (X'n') digits to identify the starting and ending cylinders to be examined.

If you specify CYLRANGE and do not specify HEADRANGE, all the heads of the specified cylinders are processed.

For information on specifying the starting and ending heads (HEADRANGE) to go with the starting and ending cylinders, see "HEADRANGE: Specify a Range of Heads" on page 131.

For information on specifying part of a volume, see "RANGE Parameters: Specifying Part of a Volume" on page 123.

Abbreviations:

```
CYLRANGE|CYL
```

Default: None

Restrictions: Both the starting and ending values are required for CYLRANGE. By specifying an ending value greater than the maximum for the device, processing is performed to the maximum value for that device.

CYLRANGE cannot be specified with FROMRANGE/TORANGE.

CYLRANGE applies only when CHECK or VALIDATE is specified.

CYLRANGE is not valid when you are processing minidisks

DATA|NODATA: Writing factory functional verification data patterns on a Volume

Explanation: **DATA|NODATA** are optional parameters specifying whether the factory functional verification data patterns (FFVDP) are to be written during the validate process for the IBM 3375, 3380, or 3390 devices.

DATA
Indicates that factory functional verification data patterns are to be written on the specified tracks. When DATA is specified for devices other than the IBM 3375, 3380, or 3390 the parameter is ignored and no data is written.

NODATA
Indicates that you do not want to write factory functional verification data patterns on the volume.

Default: The default is NODATA

Restriction: The DATA parameter applies only when the VALIDATE parameter has been specified. If DATA is specified with NOVALIDATE, the function is terminated with a condition code of 12.

DATA is valid for the IBM 3375, 3380, or 3390 only.

DATA is not valid when you are processing minidisks.

DEVICETYPE: Identifying the Type of Device

Explanation: **DEVICETYPE**(*devtype*) is required in the stand-alone version when the MIMIC(MINI) or MIMIC(EMU) parameter is specified.

For *devtype*, substitute one to eight characters for the type of device on which the volume is mounted. See Figure 2 on page 6 for valid device types.

Abbreviations:

```
DEVICETYPE|DEVTYPE|DEVTYP
```

Default: None.

Restrictions: The DEVICETYPE parameter applies only when you are initializing a volume in the stand-alone version and MIMIC(MINI) or MIMIC(EMU) is specified. If DEVICETYPE is specified when it does not apply, it will be ignored.

When using an IBM 3350 Direct Access Storage volume in 3330-compatibility mode, the device type must be specified as 3330-1 or 3330-11, as required. The IBM 3333 Disk Storage and Control Models 1 and 11 must be specified as 3330-1 and 3330-11, respectively.

DOSVTOC|VSEVTOC: Specifying the Volume Table of Contents in VSE

Explanation: **DOSVTOC(END|***cylinder,head*[*,extent*]**)** and **VSEVTOC(END|***cylinder,head*[*,extent*]**)** are optional parameters specifying the location and size of the volume or minidisk VTOC for a VSE system. You can specify either parameter and the results are the same.

For *cylinder,head*, specify one to four decimal (n) or hexadecimal (X'n') numbers to identify the cylinder and one to four decimal (n) or hexadecimal (X'n') numbers to identify the head where the volume table of contents is to be placed.

For *extent*, specify one to five decimal (n) or hexadecimal (X'n') numbers for the number of tracks that are to be reserved for the volume or minidisk VTOC. If extent is omitted, one track is reserved.

When you specify DOSVTOC(END) or VSEVTOC(END), the VTOC is put on the last primary cylinder of the volume or minidisk and is one cylinder in length.

Abbreviations:

```
DOSVTOC|DVTOC
VSEVTOC
```

Default: If neither VTOC nor DOSVTOC (or VSEVTOC) is specified, the default taken is an MVS VTOC at cylinder 0, track 1, except for MSS, where it is cylinder 0, track 2.

If neither VTOC nor DOSVTOC (or VSEVTOC) is specified and the device is not a minidisk, the size is defaulted to the number of tracks in a cylinder minus one.

Restrictions: A VTOC cannot be placed at cylinder 0, track 0.

FROMRANGE: Specify a Specific Starting Location

Explanation: **FROMRANGE(*cccc,hhhh*)** is an optional parameter used to specify that part of a volume is to be surface checked. Use this parameter to specify the starting track (cylinder and head) to be examined before minimal volume initialization is performed.

For *cccc,hhhh*, substitute one to four decimal (n) or hexadecimal (X'n') digits to identify the cylinder and head, where processing is to start.

If you specify FROMRANGE and do not specify TORANGE, TORANGE is defaulted to the last alternate cylinder.

For information on specifying the ending track (TORANGE) to go with the starting track, see "TORANGE: Specify a Specific Ending Location" on page 140.

For information on specifying part of a volume to be examined, see "RANGE Parameters: Specifying Part of a Volume" on page 123.

Abbreviations:

```
FROMRANGE|FROM
```

Default: None

Restrictions: FROMRANGE cannot be specified with CYLRANGE/HEADRANGE.

FROMRANGE applies only when CHECK or VALIDATE is specified.

HEADRANGE: Specify a Range of Heads

Explanation: **HEADRANGE(*hhhh,hhhh*)** is an optional parameter used to specify that part of a volume is to be surface checked. Use the HEADRANGE parameter to specify the starting and ending head(s) to be examined before standard volume initialization is performed.

For *hhhh,hhhh*, substitute one to four decimal (n) or hexadecimal (X'n') digits to identify the starting and ending heads to be examined.

If you specify HEADRANGE and do not specify CYLRANGE, the specified heads for all the cylinders on the volume are processed.

For information on specifying the starting and ending cylinder(s) (CYLRANGE) to go with the starting and ending heads, see "CYLRANGE: Specify a Range of Cylinders" on page 129.

For information on specifying part of a volume, see "RANGE Parameters: Specifying Part of a Volume" on page 123.

Abbreviations:

```
HEADRANGE|HDRANGE|HD
```

Default: None

Restrictions: Both the starting and ending values are required for HEADRANGE. By specifying an ending value greater than the maximum for the device, processing is performed to the maximum value for that device.

HEADRANGE cannot be specified with FROMRANGE/TORANGE.

HEADRANGE applies only when CHECK or VALIDATE is specified.

HEADRANGE is not valid when you are processing minidisks.

INDEX: Creating a VTOC Index

Explanation: **INDEX(***cylinder,head*[*,extent*]**)** is an optional parameter specifying the starting location and size of the index data set. Values for subparameters *cylinder* and *head* are required; specification of *extent* is optional.

For *cylinder* and *head*, specify one to five decimal (n) or hexadecimal (X'n') digits to identify the cylinder number, and one to five decimal or hexadecimal digits to identify the track number within the cylinder where the index is to start.

For *extent*, specify one to five decimal (n) or hexadecimal (X'n') digits for the number of tracks that are to be reserved for the index data set.

The default name of SYS1.VTOCIX.volser is used as the VTOC index name . If the *volser* begins with a numeric character, the default data set name will be SYS1.VTOCIX.Vxxxxx. For example, if the *volser* is 339001, the default data set name is SYS1.VTOCIX.V39001. Appendix D, "The VTOC Index" on page 347 contains more information about indexed format VTOCs.

Example: INDEX(10,11,12) This specification will cause the index to be placed starting at cylinder 10, track 11 for a total of 12 tracks. Expressed in hexadecimal: INDEX(X'A',X'B',X'C')

Abbreviations: None.

Default: No default will be taken for *cylinder* or *track*. The default for *extent* is an internal calculation based on the number of tracks in the VTOC.

Restrictions: The 2311, 2314, and MSS staging volumes are not supported by the INDEX parameter. All other devices of the proper device type (including minidisks) are supported.

This parameter is invalid if you specify the VSEVTOC or DOSVTOC parameters.

When you specify the STORAGEGROUP parameter, INDEX must also be specified.

Note: The system generates SYS1.VTOCIX.volser as the name of VTOC index unless the volser begins with a numeric character, in which case the convention is SYS1.VTOCIX.Vxxxxx, where xxxxx is the volser with the first character overlaid by V.

IPLDD: Writing a User-Supplied IPL Program on the Volume

Explanation: **IPLDD (**{*dname*|*dlbIname*}[**,OBJFORMAT**|**,ABSFORMAT**]**)** is an optional parameter that allows you to supply an IPL program to be written on the volume or minidisk during initialization.

The IPLDD and BOOTSTRAP parameters are used to specify one of the following:

- If you do not specify IPLDD, ICKDSF writes special bootstrap records that cause the processing unit to be placed in a WAIT state if the volume or minidisk is specified during an attempt to load the system. Bit 12 of the wait state PSW is set on.

- If you specify IPLDD but do not specify BOOTSTRAP, ICKDSF supplies an IPL bootstrap which is written on the volume or minidisk during initialization together with the IPL text you supply.
- If you specify IPLDD and BOOTSTRAP, ICKDSF uses the IPL bootstrap and the IPL text you supply. If necessary, ICKDSF updates the bootstrap records to allow for possible user labels.

The maximum size permitted for the IPL program record depends upon the type of volume being initialized. The maximum sizes allowed are:

Volume Type	Maximum Bytes for IPL Program
2305-1	12,180
2305-2	13,616
2311	3,110
2314	6,514
2319	6,514
3330-1	12,117
3330-11	12,117
3340	7,286
3344	7,286
3350	17,902
3375	33,984
3380	44,948
3390 (3380 mode)	44,948
3390	53,450

Also, the number of additional user volume labels can further limit the size allowed for the IPL program. If you supply an IPL program that exceeds the size allowed, you receive an error message but initialization continues.

On the MVS, CMS, and stand-alone versions of ICKDSF, use *dname*.

In MVS, for *dname*, substitute one to eight alphameric characters for the DD statement identifying the data set that contains the IPL program you want written on the volume (or minidisk) being initialized. The IPL program can be included within the MVS JCL input stream (SYSIN). If the IPL program is in the MVS JCL input stream, the data must be included immediately after the INIT command.

In the CMS or stand-alone versions, *dname* must be specified as SYSIN, and must be the same device as the input device. The data must immediately follow the INIT command and be terminated by an ENDIPLTEXT card. In a VM environment, the IPLDD data must be contiguous to the INIT command.

On VSE systems, use *DLBL name*. For *DLBL name*, substitute 1 to 7 alphameric characters. These represent the file name that appears in the DLBL statement and identify the file that contains the IPL program you want written on the volume being initialized. The IPL program can be included in the VSE JCS input stream (SYSIN). It must then be included immediately after the INIT command.

OBJFORMAT

Specifies that IPL data is being supplied in object deck format; that is, cards will have one of the following strings of EBCDIC characters in columns 2 through 4:

```
TXT
RLD
ESD
END
```

Note that only cards with TXT will be processed. All others will be ignored.

OBJFORMAT may be abbreviated as OBJECT or OBJ.

OBJFORMAT is the default if IPLDD is specified.

ABSFORMAT

Specifies that IPL data is being supplied as variable-length records that contain executable instructions. When IPL data is supplied in this format, it is necessary to provide a minimum of three records. The maximum number of records supplied and their lengths are only limited by the track capacity of the volume or minidisk on which these records are to be written.

The first two records supplied must be the bootstrap records and are restricted to lengths of 24 and 144 bytes, respectively.

The contents of the IPL records and the contents of the program are not checked by ICKDSF. It is the user's responsibility to ensure that the IPL records can load an executable program. The first IPL record must contain a PSW followed by two CCWs (channel command words). The CCWs should have the following hexadecimal formats:

```
First CCW    06xxxxxx 60000090
Second CCW   08xxxxxx 00000000
```

The first CCW is a command to read in the second IPL record at main storage address xxxxxx. The second CCW is a transfer-in-channel command (a branch) to the CCW that begins the second IPL record.

The second IPL record must be 144 bytes long. Bytes 32 through 42 (starting from byte 0) cannot be used. Bytes 32 through 42 are used by ICKDSF for the seek address (bytes 32 through 37) and the CCHHR (bytes 38 through 42) of the third IPL record.

The 3rd through nth records that are supplied are assumed to be IPL program records and will be written on the volume, without any modification, after the standard volume label and any existing user volume labels. Note that the IPL program will only be written on the first track of the pack. If the records supplied exceed in length the remaining space on the first track, the function will terminate with an error message.

ABSFORMAT may be abbreviated as ABSOLUTE or ABS.

Abbreviations:

```
IPLDD|IPL
```

Default: The default is OBJFORMAT.

The system provides special IPL bootstrap records if you specify the IPLDD parameter without specifying the BOOTSTRAP parameter.

Restrictions: The IPLDD parameter is ignored when the MIMIC(MSS) parameter is specified.

In the CMS or stand-alone versions, the *dname* subparameter of IPLDD must be SYSIN.

When an IPL program is included in the SYSIN stream, it must immediately follow the INIT command and be terminated by an ENDIPLTEXT card. The ENDIPLTEXT card is optional when the IPL program is in a data set other than the one specified by SYSIN, or when the end-of-file indicator (/*) immediately follows the data for the IPL program.

LABELS: Reserving Space for Additional Volume Labels

Explanation: **LABELS**(*n*) is an optional parameter specifying that space on cylinder 0, track 0 is to be reserved for additional volume labels, also known as user volume labels. In addition to the label that must be written on the volume, a maximum of nine additional volume labels can be specified.

To specify *n*, substitute a decimal number from 1 through 9 for the number of additional user volume labels to be placed on the volume during initialization.

Abbreviations:

```
LABELS|LABEL|LBL
```

Default: None.

Restrictions: If LABELS is not specified, user volume labels that existed from a previous initialization are destroyed.

If a value greater than 9 is specified with the LABELS parameter, the INIT command terminates.

The LABELS parameter is ignored when the MIMIC(MSS) parameter is specified.

MAP|NOMAP: Printing a Volume Map

Explanation: **MAP|NOMAP** are optional parameters specifying whether to print a volume map during initialization. The volume map lists tracks that are found to be defective or inconsistent during initialization.

MAP
Indicates that you want to print a volume map during initialization.

NOMAP
Indicates that you do not want to print a volume map during initialization.

Abbreviations: None.

Default: The default is MAP.

Restrictions: Potential entries in the MAP are limited to the scope of tracks that were referenced during processing. For minimal initialization, referenced tracks include only the alternate tracks and any primary tracks that might be associated with them. For medial and maximal initialization, this also includes all tracks in the specified range. Note that if there are primary tracks incorrectly associated with alternates, that information is not available in a minimal initialization MAP.

MAP is ignored when processing minidisks.

MIMIC: Specifying a Special Volume Usage Format

Explanation: **MIMIC**(*type*) is an optional parameter specifying a special usage format for the volume being initialized. For *type* you can specify MINI(n), MSS, EMU(n), or EMUALL.

MINI(n)

Indicates that a minidisk is to be initialized. n represents the number of cylinders that are to comprise the minidisk. See "Stand-Alone Version of ICKDSF" on page 261 for more information.

The MINI(n) parameter is valid in the stand-alone version only, and requires the DEVICETYPE parameter to be specified. (MINI(n) should only be used with minimal INIT for all devices except 2311, 2314, and 2319).

If media maintenance functions are required on a device in the VM environment, **the device must be ATTACHed to the user ID** that is executing ICKDSF, and MIMIC(MINI(n)) should not be used.

MSS

Indicates that the volume is to be formatted as a Mass Storage System staging pack. A one-track volume table of contents is created on cylinder 0, track 2 indicating that no tracks are available for allocation.

When the MIMIC(MSS) parameter is specified, the VTOC, LABELS, and IPLDD parameters do not apply and are ignored.

With the MIMIC(MSS) parameter, 3330-1 and 3330-11 are the only valid device types.

When initializing a 3330-1 as a Mass Storage System staging pack, cylinders 0 through 408 are identified as primary cylinders, and cylinders 409 and 410 are identified as alternate cylinders.

When initializing a 3330-11 as a Mass Storage System staging pack, cylinders 0 through 808 are identified as primary cylinders, and cylinders 809 through 814 are identified as alternate cylinders.

Note: Before ICKDSF can be run against a staging device, and before the drive can be accessed, the device must be in offline real status. Also, all paths to the staging pack must be VARY'd offline (except for the path used to VARY the device offline). See *Operator's Library: IBM 3850 Mass Storage System (MSS) Under OS/VS* for details of the VARY OFFLINE, TEST command that is used to set up the device for nonstaging access.

EMU(n)

Indicates that a partial CKD disk emulated on a 3310 or 3370 FBA device is to be initialized. In the stand-alone version, you must also specify the DEVICETYPE parameter.

EMUALL

Indicates that a full CKD disk emulated on a 3310 or 3370 FBA device is to be initialized.

Abbreviations: None.

Default: None.

Restrictions: A volume being initialized as a Mass Storage System staging pack must be initialized offline at the maximal level with the RECLAIM parameter specified.

If EMU(n) or EMUALL is specified for an emulated 3330, validation and surface checking functions are bypassed. Data checks should be handled using the INIT command against the base FBA device.

MIMIC is not valid in the CMS version.

When you emulate a CKD device on the 9313, 9332, or 9335 do not use MIMIC(EMU) or MIMIC(EMUALL). See "Preparing to Emulate a CKD device on an IBM 9313, 9332, or 9335" on page 46.

Use INSTALL SETMODE, not the INIT command, to change the mode of an IBM 3390 to either 3390 mode or 3380 track compatibility mode.

OWNERID: Specifying the Owner Identification

Explanation: **OWNERID(*owner*)** is an optional parameter specifying the owner identification to be written in the volume or minidisk label.

For *owner*, substitute 1 to 14 alphameric characters for the owner identification to be written in the volume or minidisk label.

Abbreviations:

```
OWNERID|OWNER
```

Default: The default for *owner* during a first-time initialization is 14 blanks.

If you do not specify OWNERID when reinitializing a previously initialized volume, the owner identification remains unchanged.

PASSWORDS: Providing Passwords for Data Set Security

Explanation:: **PASSWORDS((*dsname/password*),...)** is an optional parameter specifying passwords for non-VSAM password-protected data sets. The supplied passwords will be used to determine if the user has authority to alter the data sets.

For *dsname*, substitute the fully qualified name of a password-protected data set. For *password*, substitute the password you wish to apply to this data set.

Abbreviations:

```
PASSWORD|PASSWD|PWD|PD
```

Default: None.

Restrictions: Up to a maximum of 512 passwords may be specified.

This parameter is ignored in the CMS, VSE, and stand-alone versions.

PURGE|NOPURGE: Writing Over Data on a Previously Initialized Volume

Explanation: **PURGE|NOPURGE** are optional parameters that specify whether you want to write over the data in the following types of data sets during initialization:

- Unexpired
- VSAM
- Password-protected
- RACF-protected

PURGE specifies that you want to write over the data. NOPURGE specifies that you do not want to write over the data. For more information on execution of the PURGE and NOPURGE parameters, see "Volume and Data Set Security" on page 33.

A volume that appears to contain real data cannot be initialized unless the PURGE parameter is specified.

PURGE
Indicates that you want to write over existing data during initialization. For more information about the actions taken when certain types of data are found on the volume, see "Volume and Data Set Security" on page 33.

NOPURGE
Indicates that you do not want to write over existing data. If a volume appears to contain real data, it cannot be initialized unless the PURGE parameter is specified.

Abbreviations:

```
PURGE|PRG
NOPURGE|NOPRG|NPRG
```

Default: The default is NOPURGE.

Restrictions: The NOPURGE parameter does not apply in offline mode or in the CMS or stand-alone versions. If you initialize a volume in offline mode or in the stand-alone version, all existing data on the volume is purged, regardless of the data set security attributes.

RECLAIM|NORECLAIM: Reclaiming Tracks Previously Flagged Defective

Explanation: **RECLAIM|NORECLAIM** are optional parameters specifying whether to reclaim primary or alternate tracks that were flagged as defective in input but appear usable after surface checking.

Reclamation occurs only if surface checking is performed without errors for that track. For devices that support it, skip displacement surface checking is done on all tracks that are currently flagged defective before reclamation takes place. For devices that do not have skip displacement areas, later use of a track that is reclaimed can show defects that were undetected in the primary checking process. See Appendix F, "Surface Checking" on page 353, for more information.

RECLAIM
Indicates that you want tracks that are identified as usable by surface checking to be reclaimed during initialization.

NORECLAIM
Indicates that you want to suppress track reclamation during initialization.

Abbreviations:

```
RECLAIM|RCLM
NORECLAIM|NORCLM|NRCLM
```

Default: The default is NORECLAIM.

Restrictions: The RECLAIM parameter applies only when the CHECK parameter has been specified. If RECLAIM is specified with NOCHECK, it will be ignored.

The RECLAIM parameter is not valid for the IBM 3375, 3380, or 3390

The RECLAIM parameter does not apply when initializing IBM 2305 Fixed Head Storage Models 1 and 2.

RECLAIM is not valid when using minidisks.

SKIP|NOSKIP: Specify the Level of Surface Checking

Explanation: **SKIP|NOSKIP** are optional parameters used to specify the level of surface checking to be performed when CHECK is specified. Appendix F, "Surface Checking" on page 353, describes surface checking.

SKIP
Specifies that skip displacement checking is to be performed on all tracks within the specified range.

IF SKIP is specified, the maximum total number of tracks within the combination of range parameters cannot exceed the number of tracks contained in one cylinder for the specified device type. Because of this limitation, when you specify SKIP, you must also use the range parameters to specify part of a volume.

Because SKIP does extensive surface checking for all tracks within the range, the run time can be excessive, even with the one cylinder limit. (Extensive surface checking can take up to 5 minutes per track or more, depending on the device type and system conditions.)

SKIP is valid for the IBM 3340, 3344, and 3350.

NOSKIP
Specifies that no skip displacement checking is to be performed. Primary checking only is to be performed on all tracks within the specified range.

If a data check is detected on a track during primary checking, skip displacement checking is performed for that track.

Default: NOSKIP

Restrictions: The SKIP/NOSKIP parameter is ignored if NOCHECK is specified

If SKIP is specified, the value of n in CHECK(n) is ignored.

SKIP is not valid for the IBM 3375, 3380, or 3390

Skip is not valid for minidisks.

STORAGEGROUP: Initialize a Volume that is managed by DFSMS

Explanation: **STORAGEGROUP** is an optional parameter which specifies that the volume to be initialized is to be a Data Facility Storage Management Subsystem (DFSMS) managed volume.

STORAGEGROUP
Specifies that the volume is to be initialized for use by DFSMS.

Abbreviations:

```
STGR|SG
```

Default: None

Restrictions: The STORAGEGROUP parameter and the INDEX parameter must both be specified to indicate a DFSMS-managed volume.

TORANGE: Specify a Specific Ending Location

Explanation: **TORANGE**(*cccc,hhhh*) is an optional parameter used to specify that part of a volume is to be surface checked. Use this parameter to specify the ending track (cylinder and head) to be examined before minimal volume initialization is performed.

For *cccc,hhhh* substitute the 1 to 4 decimal (n) or hexadecimal (X'n') digits to identify the cylinder and head where processing is to end.

If you specify TORANGE and do not specify FROMRANGE, FROMRANGE is defaulted to cylinder 0 track 0.

For information on specifying the starting track of part of a volume (FROMRANGE) see "FROMRANGE: Specify a Specific Starting Location" on page 131.

For information on specifying part of a volume, see "RANGE Parameters: Specifying Part of a Volume" on page 123.

Abbreviations:

```
TORANGE|TO
```

Default: None

Restrictions: TORANGE applies only when CHECK or VALIDATE is specified.

TORANGE is not valid when using minidisks.

VALIDATE|NOVALIDATE: Validating the Home Address and Record 0

Explanation: **VALIDATE|NOVALIDATE** are optional parameters specifying whether to validate the home address and record 0 for each track in the specified range. VALIDATE|NOVALIDATE determines if the device is to be initialized at the medial level (when NOCHECK is specified). Validation is less time-consuming than surface checking, but does read, validate, and rewrite the home address and record 0 on each track. Validation causes the remainder of the data on a track to be erased.

VALIDATE
Indicates that a medial initialization is to be performed. The home address and record 0 for each track in the specified range are read, validated, and rewritten. Primary tracks that are flagged defective when the home address is read will have an alternate assigned to them.

NOVALIDATE
Indicates that you do not want to validate the home address and record 0 for each track during initialization. When you specify NOVALIDATE with the NOCHECK parameter, you initialize the volume at the minimal level.

Abbreviations:

```
VALIDATE|VAL
NOVALIDATE|NOVAL|NVAL
```

Default: The default is NOVALIDATE.

Restrictions: The VALIDATE and NOVALIDATE parameters are ignored when the CHECK parameter is specified.

VALIDATE is not valid when using minidisks.

VOLID: Specifying the Volume Serial Number

Explanation: **VOLID**(*serial*) is an optional parameter specifying the volume serial number to be written in the volume or minidisk label.

For *serial*, substitute one to six alphameric characters for the volume serial number. If fewer than six characters are specified, the serial is left-justified, and the remainder of the field is padded with blanks (X'40').

Abbreviations: None.

Default: When you initialize a volume or minidisk that was previously initialized and do not specify the VOLID parameter, the old volume serial number remains unchanged.

Restrictions: When you initialize a volume or minidisk for the first time, you must specify the VOLID parameter, or the INIT command terminates.

If you change the volume serial number of a volume that is mounted online, thereafter you must reference the volume by the new volume serial number, even though the reference may occur in the same step.

VTOC: Specifying the Volume Table of Contents

Explanation: **VTOC(END|***cylinder,head*[,*extent*]**)** is an optional parameter specifying the location and size of the volume table of contents.

For *cylinder,head*, specify one to four decimal (n) or hexadecimal (X'n') numbers to identify the cylinder and one to four decimal (n) or hexadecimal (X'n') numbers to identify the head where the volume table of contents is to be placed.

For *extent*, specify one to five decimal (n) or hexadecimal (X'n') numbers for the number of tracks that are to be reserved for the volume table of contents. Refer to Appendix D, "The VTOC Index" on page 347 for information on specifying the size of the VTOC index.

The default for *extent* is one track.

When you specify VTOC(END), the VTOC is put on the last primary cylinder of the volume (or minidisk) and is one cylinder in length.

Abbreviations: None.

Default: The default for *cylinder,head* is 0,1; when initializing a Mass Storage System staging pack, however, the default is 0,2.

If neither VTOC nor DOSVTOC (or VSEVTOC) is specified, the default taken is an MVS VTOC at cylinder 0, track 1.

If neither VTOC nor DOSVTOC (or VSEVTOC) and the device is not a minidisk, the size is defaulted to the number of tracks in a cylinder minus one.

Restrictions: If VTOC is specified with the MIMIC(MSS) parameter, the VTOC parameter is ignored.

A VTOC cannot be placed at cylinder 0, track 0.

Examples of the INIT Command

The following examples show different ways to code the INIT command. Most are for the offline and online modes of MVS.

To initialize a volume in the stand-alone version, do the following:

- Eliminate the MVS JCL.
- Substitute the UNITADDRESS parameter for the DDNAME parameter.
- Specify the DEVICETYPE parameter if the MIMIC(MINI) or MIMIC(EMU) parameter is also specified.
- Substitute SYSIN for *dname* if the IPLDD parameter is specified.

To initialize a VSE version volume, do the following:

- Replace the MVS JCL statements with VSE system control statements.
- Substitute the SYSNAME parameter for the DDNAME parameter.
- Substitute DLBL name for *dname* if the IPLDD parameter is specified and the data set is located on a direct access volume. If the data set is included in stream, replace the *dname* with either SYSIN or SYSIPT.
- Introduce the VSEVTOC or DOSVTOC parameter if a VSE type VTOC is required on the volume.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Initializing a Volume for the First Time in Offline Mode (MVS)

In this example, a volume is initialized at the minimal level because neither the CHECK nor VALIDATE parameter is specified. Because the volume is being initialized for the first time, it must be mounted offline, and the volume serial number must be specified. Because the VTOC parameter is not specified, the program supplies a default volume table of contents at cylinder 0, track 1 that occupies one track.

```
//EXAMPLE   JOB
//          EXEC  PGM=ICKDSF
//SYSPRINT  DD    SYSOUT=A
//SYSIN     DD    *
 INIT UNITADDRESS(0353) NOVERIFY VOLID(VOL123) -
      OWNERID(PAYROLL)
/*
```

Initializing a Volume at the Minimal Level in Online Mode (MVS)

In this example, a volume is reinitialized at the minimal level because neither the CHECK nor VALIDATE parameter is specified. Because the VOLID and OWNERID parameters are not specified, the volume serial number and owner identification that exist on the volume remain unchanged on the reinitialized volume. Because the VTOC parameter is not specified, the program creates a default volume table of contents at cylinder 0, track 1 that occupies one track. By accepting the default parameter NOPURGE, the command terminates if unexpired or password-protected data sets are found. Volume PAY456 was previously mounted as PRIVATE.

```
//EXAMPLE   JOB
//          EXEC PGM=ICKDSF
//XYZ987    DD   UNIT=3380,DISP=OLD,VOL=SER=PAY456
//SYSPRINT  DD   SYSOUT=A
//SYSIN     DD   *
 INIT DDNAME(XYZ987) NOVERIFY
/*
```

Initializing a Stand-alone Version Volume at the Medial Level

In this example, a previously initialized volume is reinitialized at the medial level because the VALIDATE parameter is specified and the CHECK parameter is not. The home address and record 0 on each track are read and validated. The volume serial number and owner identification are verified before initialization continues and, because a new volume serial number or an owner identification is not specified, they remain unchanged on the reinitialized volume. Specification of the VTOC parameter causes a volume table of contents to be created at cylinder 42, track 12, that occupies three tracks. Because the volume is being reinitialized in the stand-alone version of ICKDSF, all data sets are purged, regardless of whether they are unexpired or password protected.

```
INIT UNITADDRESS(0272) -
    VERIFY(VOL123,PAYROLL) VALIDATE VTOC(42,X'C',3)
```

Initializing a Stand-alone Version Volume at the Medial Level

In this example, a previously initialized 3375, 3380, or 3390 volume is reinitialized at the medial level (VALIDATE is specified). DATA is also specified, causing the factory functional verification data patterns to be written on the volume. The home address and record 0 on each track are read and validated. The volume serial number and owner identification are verified before initialization continues and, because a new volume serial number or an owner identification is not specified, they remain unchanged on the reinitialized volume. Because the volume is being reinitialized in the stand-alone version of ICKDSF, all data sets are purged, regardless of whether they are unexpired or password protected.

```
INIT UNITADDRESS(0272) VOLID(338001) VALIDATE DATA -
    VERIFY(VOL222,MASTER)
```

Initializing a Stand-alone Version Volume at the Maximal Level

In this example, a 3350 volume is initialized at the maximal level because the CHECK parameter is specified. If the results of surface checking show tracks are nondefective but were previously marked defective, the tracks are reclaimed. The volume serial number and owner identification remain unchanged. The volume table of contents begin at cylinder 2, track 0 and occupy one track. Because the IPLDD parameter is specified and the IPL program data is supplied (indicated by the bullets in the example), the IPL bootstrap records will be supplied by the program by default. Because the volume is being reinitialized in the stand-alone version, all existing data is purged, regardless of whether it is unexpired or password protected.

Note that this example is not valid for the IBM 3375, 3380, or 3390.

```
INIT UNITADDRESS(0350) CHECK(3) RECLAIM -
    NOVERIFY IPLDD(SYSIN) VOLID(335010) VTOC(2,0,1)
    ●
    ●
    ●
```

Surface Checking Part of a Stand-alone Version Volume

In this example, primary surface checking is performed for a 3350 beginning at cylinder 4, head 6 and ending at cylinder 50, head 8. At the completion of surface checking, minimal initialization is performed.

```
INIT UNIT(ccuu) VOLID(335001) NOVFY CHECK(2) NOSKIP -
     FROMRANGE(4,6) TORANGE(50,8)
```

In this example, primary surface checking is performed on all heads of the 3350 volume, beginning at cylinder 50 and ending at cylinder 100.

```
INIT UNIT(ccuu) VOLID(335001) NOVFY CHECK(2) NOSKIP CYLRANGE(50,100)
```

In this example, primary surface checking is performed on head 4 only for all cylinders of the 3350 volume. Surface checking is performed beginning at cylinder 0, head 4, and ending at the last alternate cylinder, head 4.

```
INIT UNIT(ccuu) VOLID(335001) NOVFY CHECK(2) NOSKIP HEADRANGE(04,4)
```

Initializing Two Volumes in Offline Mode (MVS)

In this example, the VALIDATE parameter without the CHECK parameter in the first INIT command causes medial level initialization. The volume serial number is verified before initialization continues and is then replaced by the number supplied in the command. A default volume table of contents begins at cylinder 0, track 1 and occupies one track. Four user volume labels are written in addition to the volume label. Because the volume is being reinitialized in offline mode, all existing data is purged, regardless of whether it is unexpired or password protected. The IPLDD parameter specifies that a user-supplied IPL program is to be written, and the BOOTSTRAP parameter specifies that the bootstrap records are also user-supplied. (The IPL program and bootstrap records are indicated by the vertical ellipsis.)

The second INIT command initializes a volume at the minimal level. The volume serial number and owner identification remain unchanged. A default volume table of contents is written at cylinder 0, track 1 and occupies one track. Because the volume is being reinitialized in offline mode, all existing data is purged, regardless of whether it is unexpired or password protected.

```
//EXAMPLE  JOB
//         EXEC  PGM=ICKDSF
//IPLDECK  DD    *
•
•
•
/*
//SYSPRINT DD    SYSOUT=A
//SYSIN     DD    *
 INIT UNITADDRESS(0353) VALIDATE VOLID(AAA789) -
      OWNERID(SMITH) VERIFY(XYZ123) -
      IPLDD(IPLDECK) BOOTSTRAP LABELS(4) NOMAP
 INIT UNITADDRESS(0271) NOVERIFY
/*
```

Initializing a Volume at the Maximal Level in Offline Mode (MVS) as a Mass Storage System Staging Pack

In this example, the RECLAIM parameter with the CHECK parameter causes maximal level initialization. The volume serial number and owner identification are not changed. A default volume table of contents begins at cylinder 0, track 2 and occupies one track. Because the volume is being reinitialized in offline mode, all existing data is purged, regardless of whether it is unexpired or password protected.

```
//EXAMPLE  JOB
//         EXEC  PGM=ICKDSF
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
 INIT UNITADDRESS(0253) NOVERIFY CHECK RECLAIM -
      MIMIC(MSS)
/*
```

Initializing a Minidisk in the Stand-alone Version

In this example, a mini 3390 is initialized with an IPL program. It provides 30 primary and no alternate cylinders on unit 151. The VTOC is written on a default location of cylinder 0, track 1 for a length of one track. The volume is labeled 339000. The IPL program supplied as the input deck is written on cylinder 0, track 0. The label and VTOC are written in MVS format.

```
INIT  UNITADDRESS(0151) NOVERIFY DEVICETYPE(3390) -
    MIMIC(MINI(30)) VOLID(33900) IPLDD(SYSIN)
```

Initializing a Minidisk in the CMS Version

In this example, a minidisk is initialized at the minimal level. It establishes a VOLID, OWNERID, and the VTOC on a minidisk with a virtual address of 391. The VTOC is written at the default location of cylinder 0, track 1 of the minidisk for a length of one track. The minidisk is labeled 338012 and the owner ID is PAYROLL. The VTOC is written in MVS format.

After performing the INIT, the minidisk is ready for future use in an MVS operating system environment.

```
INIT  UNITADDRESS(0391) NOVERIFY VOLID(338012) OWNERID(PAYROLL)
```

Initializing a VSE Version Volume at the Minimal Level

In this example, a volume is initialized at a minimal level under VSE. A VSE format VTOC is written on cylinder 32, track 0 for a length of 20 tracks. The volume is labeled 338001.

```
//  JOB      jobname
//  ASSGN    SYS002,151
//  EXEC     ICKDSF,SIZE=AUTO
      INIT SYSNAME(SYS002) NOVERIFY -
           VSEVTOC(X'20',X'0',X'14') VOLID(338001)
/*
/&
```

Initializing a VSE Version Emulated Partial Disk at the Minimal Level

In this example, an emulated partial disk is initialized under VSE. A VSE format VTOC is written at cylinder 0, track 1 for a length of 1 track. The volume is labeled AA3380.

```
//  JOB      jobname
//  ASSGN    SYS000,353
//  EXEC     ICKDSF,SIZE=AUTO
    INIT SYSNAME(SYS000) NVFY VSEVTOC(0,1,1) -
         VOLID(AA3380) MIMIC(EMU(20))
/*
/&
```

Initializing a Volume with an Index (MVS)

This example performs an online minimal initialization, and as a result of the command, an index to the VTOC is created.

```
//         JOB
//         EXEC  PGM=ICKDSF
//XYZ987   DD    UNIT=3375,DISP=OLD,VOL=SER=PAY456
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
 INIT DDNAME(XYZ987) NOVERIFY INDEX(X'A',X'B',X'2')
/*
```

Initializing a Volume to Be Managed by DFSMS

In the following example, a volume which is to be managed by the Data Facility Storage Management Subsystem (DFSMS) is initialized. The volume is initialized in offline mode at the minimal level. The VTOC is placed at cylinder 2 track 1, and occupies ten tracks, and is followed by the VTOC index. The STORAGEGROUP parameter indicates the volume is to be DFSMS managed.

```
 INIT UNIT(0353) NOVERIFY VOLID(VOL123) STORAGEGROUP -
       OWNERID(PAYROLL) VTOC(2,1,10) INDEX(2,11,5)
```

Initializing a Previously DFSMS-Managed Volume

The following example initializes a volume which has been previously initialized for Data Facility Storage Management Subsystem (DFSMS) use. The volume is initialized at the minimal level in online mode. The VTOC is placed at cylinder 10 track 1, and is allotted twenty tracks. The VTOC index is placed at cylinder 20 track 1 and is allotted 10 tracks. The STORAGEGROUP parameter specifies that the volume is to be a DFSMS volume. When the VOLID and OWNERID are specified, the volume serial and owner are changed. If there are any data sets on the volume, a re-initialize cannot be performed.

To initialize a previously DFSMS-managed volume to a non-DFSMS-managed volume, do not include the STORAGEGROUP parameter in this example.

```
//EXAMPLE     job
//            EXEC   PGM=ICKDSF
//DDN1        DD     UNIT=3380,DISP=OLD,VOL=SER=XXX001
//SYSPRINT    DD     SYSOUT=A
//SYSIN       DD     *
  INIT DDNAME(DDN1) NOVERIFY VOLID(IMS123) STORAGEGROUP -
       OWNERID(DBGROUP) VTOC(10,1,20) INDEX(10,21,10)
/*
```

INSPECT Command—CKD

The INSPECT command inspects a subset of a volume and can:

- Check the surface of a track to determine if there is a defect
- Skip a defect (for specified devices)
- Assign an alternate track
- Reclaim a track that has been flagged defective
- Print a map of defective tracks on a volume.

Using the INSPECT Command

Several options are available for inspection:

- The range of tracks (CYLRANGE/HEADRANGE or FROMRANGE/TORANGE) and TRACKS parameters are provided to surface check individual tracks or groups of tracks.
- The CHECK parameter is provided to check each track surface and to permit optional specification of the number of checking cycles that are to be performed on each track being inspected. Alternate track assignment is done only after an inspection of the surface reveals defects. The NOCHECK parameter suppresses such checking and, unless alternate track assignment is suppressed, an alternate will be unconditionally assigned to the primary track.

  For the IBM 3340, 3344, 3350, 3375, 3380, and 3390, when CHECK is specified, surface checking locates and skips over defective areas on the track. Only when the primary track contains more than the maximum number of allowable defects is it considered defective.
- The SKIP parameter allows you to control the level of surface checking performed and, consequently, the total execution time involved with inspecting individual or groups of tracks.
- The PRESERVE, KEEPIT, and HOLDIT parameters are provided to save data that would normally be destroyed during track inspection. The NOPRESERVE parameter allows inspection of tracks when the data cannot be read.

  Data Loss Warning

  When the HOLDIT parameter is specified, the data is only kept in storage. If processing terminates before the data is rewritten, the track for which the data was preserved will **not** contain a standard record zero, and **the data will be lost**.

  When the PRESERVE option is specified, a copy of the data in storage is written at a backup location as well as kept in storage. If processing ends abnormally, the next use of INSPECT detects the data at the backup location and automatically restores the data to the track on which processing previously ended abnormally.
- The RECLAIM parameter is provided to reclaim a track that was previously flagged defective if track inspection has determined it is currently defect-free. The NORECLAIM parameter suppresses automatic track reclamation.
- The ASSIGN parameter allows alternates to be assigned if required. Assignment of alternates is suppressed by the NOASSIGN parameter.

- The MAP parameter provides printed output of the detailed status of each track being inspected. The NOMAP parameter suppresses the printed output.
  - Specify NOCHECK NOASSIGN ALLTRACKS for a map.
- When you are emulating CKD devices on IBM 0671, 9313, 9332, 9335, or 9336 the INSPECT command can be used only for functions other than surface checking.

Data Integrity When Using the INSPECT Command

This section describes data integrity when you are using DASD attached to other than an IBM 3990 control unit in an MVS environment. See "Preserving data under Concurrent Media Maintenance" on page 154 for information on DASD attached to an IBM 3990 control unit.

When an INSPECT is being performed, the RESERVE macro is issued to obtain control of the device. DEQ is issued to release the device after processing is completed.

When the INSPECT command is used to perform skip displacement processing (using the SKIP parameter), if a track is part of a data set, INSPECT will enqueue on the data set while processing that track.

Additionally, if the INSPECT command exposes user data for a relatively long period of time, ICKDSF enqueues for exclusive control of the data set containing the track which is to be processed. Data set enqueue takes place when:

- The device is online to the operating system.
- The track is part of a non-VSAM data set.
- The SKIP parameter is specified.
- NOSKIP is specified, but primary surface checking indicates that skip displacement processing is necessary for the track.

If exclusive control of a data set cannot be obtained, a message is issued, and processing continues on the next track.

The TOLERATE(ENQFAIL) parameter is provided to indicate that processing is to continue if the data set enqueue fails when SKIP is specified.

If the enqueue is performed as a result of primary surface checking indicating the need for skip displacement surface checking, TOLERATE(ENQFAIL) is assumed to be in effect.

For tracks in VSAM data sets, TOLERATE(ENQFAIL) must always be specified when processing online.

Controlling the Level of Surface Checking

When you specify CHECK(n) the level of surface checking which is performed for each track in a specified range is controlled by the SKIP/NOSKIP parameters. If you specify NOCHECK, no surface checking is performed. See Appendix F, "Surface Checking" on page 353, for more information on surface checking.

NOSKIP indicates that primary surface checking is to be performed for all tracks in the specified range, and skip displacement surface checking is performed only if a data check is detected. NOSKIP is the default if you specify any of the range parameters.

SKIP indicates that skip displacement surface checking is to be performed for *every* track in the specified range. Although SKIP provides a more extensive check of the surface of a track, it runs for long periods of time per track. If SKIP is specified, the total number of tracks in the specified range is limited to the number of tracks in a cylinder. SKIP is the default if you specify the TRACKS parameter.

RANGE Parameters: Specifying Discrete Tracks

CYLRANGE/HEADRANGE or FROMRANGE/TORANGE are optional parameters, generally specified as a pair, to limit the areas of a volume that are to be inspected. Use the CYLRANGE/HEADRANGE pair to specify the starting and ending cylinder(s) and the starting and ending head(s) to be inspected. Use the FROMRANGE/TORANGE pair to specify the starting track (cylinder and head) and the ending track (cylinder and head) to be inspected.

The following notes apply to specifying part of a volume:

- CYLRANGE/HEADRANGE and FROMRANGE/TORANGE are mutually exclusive pairs of parameters. Either pair is mutually exclusive with TRACKS.
- If you specify CYLRANGE and do not specify HEADRANGE, all the heads of the specified cylinders are processed.
- If you specify HEADRANGE and do not specify CYLRANGE, the specified heads for all the cylinders on the volume are processed.
- Both the starting and ending values are required for CYLRANGE and HEADRANGE. By specifying an ending value greater than the maximum for the device, processing is performed to the maximum value for that device.
- If you specify FROMRANGE and do not specify TORANGE, TORANGE is defaulted to the last alternate cylinder.
- If you specify TORANGE and do not specify FROMRANGE, FROMRANGE is defaulted to cylinder 0 track 0.
- If NOCHECK is specified with any of the range parameters, the home address and record zero of all tracks in the specified range are read. This can be used to verify alternate/primary track assignments of a subset of a volume.
- If you want to verify the alternate tracks on a volume (that is, primary/alternate pairs are valid), specify the range parameters for the alternate cylinders.
- Range parameters used with NOPRESERVE can destroy large areas of a volume.
- NOCHECK ASSIGN is not valid when used with the range parameters. For unconditional track assignment, TRACKS must be used.
- The total number of tracks that can be inspected is 2500 if NOSKIP is specified. If SKIP is specified, the total cannot exceed the number of tracks in a cylinder for the specified device type.

Recovering Data After a Job or System Failure

This section describes recovering data when you are using DASD attached to other than an IBM 3990 control unit. See "Preserving data under Concurrent Media Maintenance" on page 154 for information on DASD attached to an IBM 3990 control unit.

If an INSPECT command did not execute to completion, and PRESERVE was specified on the failing job, ICKDSF has saved the data; it will be automatically recovered on the next use of the INSPECT command.

After resolving the reason for the failure, you can submit:

- The same INSPECT job.

  This does a primary surface check of the track being processed at the time of failure, recovers the data, and inspects all the tracks in the specified range, including those tracks that were inspected prior to the previous failure.

- An INSPECT job for a totally different, or partially different range.

  This does a primary surface check of the track being processed at the time of failure, recovers the data, and processes all tracks in the new range.

- An ANALYZE job (for nonemulated nonremovable media devices only) to determine the track that failed.

  ANALYZE will print the cylinder and head of the track that was being processed at the point of failure.

  - Then you can execute a new INSPECT job with a modified range, according to the previous point of failure.

- Execute an INSPECT with neither TRACKS nor any of the range parameters specified.

  This does a primary surface check of the track being processed at the time of failure, and recovers the data.

Notes:

- Recovery is only possible if PRESERVE was specified on the job running at the time of failure. It is not possible if HOLDIT or NOPRESERVE were specified or if you were processing minidisks under CMS.
- It is possible that the track that is being processed at the time of failure contained no data. In that case, recovery consists of only doing a primary surface check of the track. This ensures that the track is usable (that is, that the track now contains just a home address and a standard record zero).
- It is possible that INSPECT was "between tracks" when the job failed, and there is no track or data to recover.
- *Caution*. Be careful about using the volume before recovering the data. In addition to the data being unavailable, the track may be unusable to the operating system, and any use of the track can cause I/O errors.
- **If you run INITialize on this volume before the next INSPECT, INITialize erases the data at the backup location**.
- The restore function is not optional. If data exists at the backup location, it is restored.

If there is data on the track being restored (that is, the track being processed at the point of failure), the operator is prompted either to restore the data or erase the data.

If the data cannot be restored, for whatever reason, the operator is prompted for the next action.

To put the restored data in storage, you can run a job that specifies HOLDIT.

- When you are processing minidisks, data is not saved at the backup location. Therefore, no recovery of data is possible.

Preserving Data during INSPECT

This section is in two parts. This part describes preserving data when you are using DASD attached to other than an IBM 3990 control unit. See "Preserving data under Concurrent Media Maintenance" on page 154 for information on DASD attached to an IBM 3990 control unit.

When you specify the PRESERVE parameter of the INSPECT command, a backup copy of the data on a track is stored at the backup location as well as held in storage. This backup location uses two tracks. One track (the "recovery" track) contains the control information, and another track (the "preserve" track) contains the actual data. This information resides on:

- The CE cylinder of the volume, if there is a uniquely addressable CE cylinder on the volume.
- The SA cylinder of the volume, if there is no CE cylinder, but there is an SA cylinder with unused tracks.
- An alternate track, if the device does not have a CE cylinder or an SA cylinder.

If processing ended abnormally, the next use of INSPECT will:

- Detect the data at the backup location, and determine the track to be recovered (the recovery track).
- The home address and record zero of the recovery track are checked for validity.
- The track to be restored is surface checked at the primary level unless a data check is detected. If a data check is detected, skip displacement surface checking is performed.
- The data is restored.

The restoration of the track from the preserved data is automatic, and is independent of the range specified in the current job. INSPECT can be run with no tracks specified and just the restore function is performed.

INSPECT allows you to choose from two levels of data preservation:

- HOLDIT specifies that a copy of the data on the track being processed is to be kept in storage only, with no copy being kept at the backup location.
- PRESERVE or KEEPIT specifies that a copy of the data on the track being processed is to be written at the backup location as well as kept in storage. The copy at the backup location is used only during the restore procedure.

The backup location and the copy of the data in storage are erased at the completion of the command.

Even when a track that contains no data is processed, the backup location is still accessed. This ensures that the integrity of the volume can be restored if a restart is necessary.

PRESERVE/KEEPIT is the default.

When PRESERVE/KEEPIT is specified, you might notice a performance degradation caused by the writing of the data at the backup location. The performance degradation depends on the total number of tracks being processed by the current INSPECT command.

Some cautions to be used for PRESERVE processing:

- When data is written at the backup location, it is read-back-checked to ensure it was written correctly. However, like any DASD write operation, at the time of recovery when the data is to be restored, **it cannot be guaranteed that the data is always retrievable from the backup location**.
- If the backup location is the CE cylinder, the ANALYZE command (which writes on the CE cylinder) will **NOT** destroy restore data if it exists. ANALYZE indicates the cylinder and head of the track that originally had the problem. **Note, however, that CE microdiagnostics may destroy the data at the backup location**. Therefore, if INSPECT processing does not run to completion, and it is determined to be a problem that will cause the volume to be turned over to the IBM customer engineer, the INSPECT command should be executed to restore the data.

Preserving data under Concurrent Media Maintenance

Concurrent media maintenance is automatically performed while preserving user data for DASD which is attached to an IBM 3990 control unit which supports concurrent media maintenance. Concurrent media maintenance allows user access to the data on a track while INSPECT is processing on that track. In addition, the entire volume is available for use by all users from all shared systems for the duration of the INSPECT job. This enhancement eliminates the need to only run INSPECT when there is no other activity on the volume, as the data is now always available.

Concurrent media maintenance is supported in all system environments, including standalone, for DASD attached to an IBM 3990 control unit which supports concurrent media maintenance.

Concurrent media maintenance is automatically invoked when you specify PRESERVE. INSPECT will no longer perform the hardware “reserve” or the VTOC ENQ for the volume. Data set ENQ is eliminated as well as all restrictions on VSAM data sets.

How Concurrent Media Maintenance is Performed

Concurrent media maintenance allows continued data availability on DASD while an INSPECT is processing on the track. It is supported for DASD attached to an IBM 3990 control unit which supports concurrent media maintenance. User data is moved to an alternate track, and is accessed from that track by any user while INSPECT operates on the primary track. When surface checking is complete, the data is returned to the primary track.

If execution of the INSPECT should terminate before completion, the following should be noted:

- User data remains on the alternate track and will be accessed from there until a subsequent INSPECT is run for that device.
- If a subsequent INSPECT is started from the same processor, processing will automatically continue for the track that received the failure.
- If a subsequent INSPECT is started from a different processor, the FORCE parameter is required to support recovery of a prior concurrent media maintenance failure from another processor. This is necessary in order to prevent multiple INSPECT jobs from different processors accessing the same track simultaneously.

  CAUTION: Only use the FORCE parameter to recover from a prior concurrent media maintenance failure on another processor. Misuse of this parameter can cause data integrity problems when two INSPECT jobs are running simultaneously.

For PRESERVE processing for DASD attached to other than an IBM 3990 see "Preserving Data during INSPECT" on page 153.

Assigning Alternate Tracks

A track can be flagged as defective, and an alternate assigned, either conditionally or unconditionally. The amount of surface checking done before an alternate is assigned is determined by multiple factors, including:

- The use of the CHECK or NOCHECK parameter
- The availability of skip displacement bytes for the device type
- The current condition of the track

For a detailed description of the type of checking performed, see Appendix F, "Surface Checking" on page 353. In general, you can control the assignment of alternate tracks as follows:

- Issue the INSPECT command and specify the CHECK and ASSIGN parameters to detect defective primary and alternate tracks. If a primary or alternate track is identified as defective by surface checking, the track surface is flagged as defective, and an alternate surface is assigned if the defective track is a primary one.
- Issue the INSPECT command and specify the NOCHECK and ASSIGN parameters to unconditionally assign alternate surfaces for the tracks specified.
- To inspect primary and alternate tracks, but to prevent assignment of alternates, issue the INSPECT command and specify the NOASSIGN and CHECK parameters.

  Note that if PRESERVE is specified and user data cannot be rewritten because of surface defects, an alternate is assigned regardless of the ASSIGN|NOASSIGN parameter value.

  This option will indicate, in the map, all defective tracks but alternates will not be assigned. Skip displacement *will* be assigned as required.
- If an inspected primary track is identified as defective, the data is rewritten on the alternate that is assigned. If an alternate track that is associated with a primary surface is identified as defective, the alternate is flagged as defec-

tive, and the data is rewritten to a different alternate. If a primary track that was previously flagged as defective is reclaimed, the data is copied from the alternate surface to the reclaimed primary surface, and the alternate surface is made available.

Dual Copy Volumes

When you INSPECT dual copy volumes you should specify the DIRECTIO parameter to select the primary or secondary volume or the default is selected depending on the mode of the device.

CMS Version Minidisk Support

Minidisk Support under CMS

When you are using the CMS version of ICKDSF you must have DEVMAINT authority (as defined in the CP directory) to use INSPECT and specify either the USERID or REALADDR parameter. This allows you to INSPECT another user's minidisk (USERID) or INSPECT a volume specifying the real address of the volume (REALADDR) as follows:

USERID: With DEVMAINT authority you can use the USERID parameter to INSPECT another user's minidisk. The following parameters are valid in this mode:

- ALLTRACKS, ASSIGN/NOASSIGN, CHECK/NOCHECK, CYLRANGE, FROMRANGE, HEADRANGE, HOLDIT, MAP/NOMAP, RECLAIM/NORECLAIM, SKIP/NOSKIP, TORANGE, TRACKS, and UNITADDRESS.

REALADDR: With DEVMAINT authority you can use the REALADDR parameter to INSPECT a volume using the the real device address.*:* The following parameters are valid when you specify REALADDR:

- ASSIGN/NOASSIGN, CHECK/NOCHECK, CYLRANGE, FROMRANGE, HEADRANGE, HOLDIT, MAP/NOMAP, RECLAIM/NORECLAIM, SKIP/NOSKIP, TORANGE, TRACKS.

  Note: The maximum number of cylinders you can INSPECT in this mode is one.

  See Appendix B, "VM Support" on page 257 for more information.

Syntax

<table>
<tr><th>Command</th><th>Required Parameters</th></tr>
<tr><td>INSPECT</td><td>DDNAME(*dname*)|SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)|REALADDR(*ccuu*)
VERIFY(*serial*[,*owner*])|NOVERIFY</td></tr>
<tr><td></td><td><b>Optional Parameters</b></td></tr>
<tr><td></td><td>ALLTRACKS
ASSIGN|NOASSIGN
AVAILABLE
CHECK(*n*)|NOCHECK
CYLRANGE(*cccc,cccc*)
DEVICETYPE(*devtype*)
DIRECTIO(PRIMARY|SECONDARY)
FORCE
FROMRANGE(*cccc,hhhh*)
HEADRANGE(*hhhh,hhhh*)
MAP|NOMAP
MIMIC(*type*)
PASSWORDS((*dsname/password*),...)
PRESERVE|KEEPIT|NOPRESERVE|HOLDIT
RECLAIM|NORECLAIM
SKIP|NOSKIP
TOLERATE(ENQFAIL|PRIFAIL)
TORANGE(*cccc,hhhh*)
TRACKS((*cylinder,head*)[,...])
USERID(*user's ID*)</td></tr>
</table>

Required Parameters

Note that various combinations of parameters can cause INSPECT to function differently. These differences are explained below.

DDNAME|SYSNAME|UNITADDRESS|REALADDR: Identifying the Volume

Explanation: **DDNAME|SYSNAME|UNITADDRESS|REALADDR** are required parameters identifying the volume (or minidisk) that is to be inspected.

DDNAME(*dname*)
Required for an online MVS volume. For *dname*, specify the MVS JCL DD statement that identifies the volume.

SYSNAME(*sysxxx*)
Required for a VSE volume. For *sysxxx*, specify the SYSNAME specified in the ASSGN system control statement.

UNITADDRESS(*ccuu*)
Required for an offline MVS volume or for a stand-alone or CMS version volume.

In MVS, the volume must be on a channel that is online. If the volume is on a channel that is offline, the program might enter a nonterminating wait state. For *ccuu*, specify the address (3 or 4 hexadecimal digits) of the channel and unit of the volume.

For the CMS version specify the virtual address of an ATTACHed volume or minidisk.

REALADDR(*ccuu*)

Required to specify the real address of a volume. This parameter is only valid when you are using the CMS version of ICKDSF and you have DEVMAINT authority. For *ccuu*, specify the real address in hexadecimal (3 or 4 digits) of the channel and unit of the volume.

The maximum number of cylinders that you can INSPECT using REALADDR is one.

REALADDR is mutually exclusive with UNITADDRESS, DDNAME, SYSNAME, and USERID.

Abbreviations:

```
DDNAME|DNAME
UNITADDRESS|UNITADDR|UNIT
REALADDR|RADDR
```

Default: None.

VERIFY|NOVERIFY: Verifying the Volume Serial Number and Owner Identification

Explanation: **VERIFY(*serial*[,*owner*])|NOVERIFY** are required parameters specifying whether to verify the volume serial number and owner identification before inspecting the volume.

VERIFY

Required when you want to verify the volume serial number and owner identification before inspecting the volume. If the volume serial number or owner identification does not match that found on the volume, the INSPECT command terminates.

For *serial*, substitute 1 to 6 alphameric characters for the volume serial number.

For *owner*, substitute 1 to 14 alphameric characters for the owner identification.

NOVERIFY

Required when you want to bypass verification of the volume serial number and owner identification.

Abbreviations:

```
VERIFY|VFY
NOVERIFY|NOVFY|NVFY
```

Default: None.

Restrictions: You cannot verify the owner identification separately from the volume serial number. Both the volume serial number and owner identification must be verified when you want to verify the owner identification.

When you specify the VERIFY parameter and verification fails, execution of the command terminates.

Optional Parameters

ALLTRACKS: Inspect the Total Volume

Explanation: **ALLTRACKS** is an optional parameter specifying all tracks on the volume (or minidisk) are to be processed.

ALLTRACKS is valid only when NOASSIGN and NOCHECK are specified.

NOCHECK NOASSIGN with ALLTRACKS reads all home address records and record zeros on a volume (or minidisk) and issues messages if any discrepancies are found. A primary/alternate track assignment map is also produced.

Abbreviations:

```
ALLTRACKS|ALLTRACK|ALLTRKS|ALLTRK
```

Default: None.

ASSIGN|NOASSIGN: Specifying Assignment of Alternate Tracks

Explanation: **ASSIGN|NOASSIGN** are optional parameters specifying whether alternates are to be assigned if defective primary tracks are detected.

ASSIGN

Indicates that the specified tracks can be flagged defective as required. If the specified track is a primary track, an alternate track is assigned to it. If the specified track is an alternate track that has a previously assigned primary track associated with it, then the primary track will have a new alternate assigned to it.

When used with CHECK(n), any track that is declared defective will undergo assignment. See Appendix F, "Surface Checking" on page 353, for an explanation of how a track is declared defective.

When used with NOCHECK, assignment takes place for all tracks being processed.

NOASSIGN

Indicates that you do not want alternate tracks assigned. When used with NOCHECK, this combination will cause ICKDSF to read the home address and record zero for the specified track(s) and issue a message if anything invalid is detected.

NOCHECK NOASSIGN with ALLTRACKS reads all home address records and record zeros on a volume. A primary/alternate track assignment map is also produced.

Notes:

1. If NOASSIGN is specified with the CHECK parameter, and the track is defective, the inspected track is not marked defective and an alternate is not assigned, regardless of the declared condition of the track. A message is issued for this condition.
2. If CHECK/PRESERVE or CHECK/HOLDIT is specified and user data cannot be rewritten because of surface defects, NOASSIGN is overridden and assignment takes place.

Abbreviations:

```
ASSIGN|ASGN
NOASSIGN|NOASGN|NASGN
```

Default: The default is ASSIGN.

Restrictions: The combination of ASSIGN NOCHECK cannot be specified with the range parameters (FROMRANGE/TORANGE or CYLRANGE/HEADRANGE).

The TRACKS parameter must be used for unconditional alternate track assignment.

AVAILABLE: Specify Processing is to Continue

Explanation: **AVAILABLE** is an optional parameter which allows you to ensure *concurrent media maintenance* is in effect during INSPECT processing. AVAILABLE specifies that INSPECT processing should continue only if the data for the track in process is continuously available during the INSPECT operation. For a simplex volume, if concurrent media maintenance cannot be performed for the track, processing for the track is not continued. For volumes which are part of a duplex pair, the AVAILABLE parameter is ignored, since a copy of the data is always available.

Use the AVAILABLE parameter when you are automating media maintenance procedures. It provides you the ability to control media maintenance being automatically invoked for a track if there is a possibility of the data becoming unavailable for a period of time.

Abbreviations:

```
AVAILABLE|AVAIL
```

Default: If the AVAILABLE parameter is not specified during PRESERVE processing, *concurrent media maintenance* is used if it is supported for the device. If concurrent media maintenance is not supported, then normal PRESERVE processing is performed.

Restrictions: AVAILABLE is ignored if you specify NOPRESERVE.

CHECK|NOCHECK: Surface Checking of the Volume

Explanation: **<u>CHECK</u>(*n*)|NOCHECK** are optional parameters specifying whether the tracks are to be checked for recording errors. Each track is surface checked by writing and reading specially patterned records. Upon completion of surface checking, the home address and a standard record 0 are rewritten on the track.

CHECK

Indicates that you want each track to be surface checked for recording errors during inspection and declared defective only if the checked track appears defective.

For *n*, substitute a decimal number from 1 through 10 for the number of times you want each track to be checked. See Appendix F, "Surface Checking" on page 353, for information on values of n.

The level of surface checking to be performed is determined by the SKIP/NOSKIP parameters. See "SKIP|NOSKIP: Specify the Level of Surface Checking" on page 169, for more information on these parameters.

NOCHECK

Indicates that you do not want each track to be surface checked for recording errors during inspection. Alternate tracks are unconditionally assigned when NOCHECK and ASSIGN are specified. NOCHECK ASSIGN cannot be specified with ALLTRACKS.

NOCHECK NOASSIGN with ALLTRACKS reads all home addresses and record zeros on a volume (or minidisk) to ensure validity. A primary/alternate track assignment map is also produced.

The TRACKS parameter must be used for unconditional alternate track assignment.

Abbreviations:

```
CHECK|CHK
NOCHECK|NOCHK|NCHK
```

Default: If you do not specify CHECK, the default is CHECK(1).

Restrictions: The maximum number you can specify with the CHECK(n) parameter is 10.

CYLRANGE: Specify a Range of Cylinders

Explanation: **CYLRANGE(*cccc,cccc*)** is an optional parameter used to specify that part of a volume (or minidisk) is to be inspected. Use the CYLRANGE parameter to specify the starting and ending cylinder(s) to be processed.

For *cccc,cccc*, substitute one to four decimal (n) or hexadecimal (X'n') digits to identify the starting and ending cylinders to be examined.

If you specify CYLRANGE and do not specify HEADRANGE, all the heads of the specified cylinders are processed.

For information on specifying the starting and ending heads (HEADRANGE) to go with the starting and ending cylinders, see "HEADRANGE: Specify a Range of Heads" on page 163.

For information on specifying part of a volume (or minidisk), see "RANGE Parameters: Specifying Discrete Tracks" on page 151.

Abbreviations:

```
CYLRANGE|CYL
```

Default: None

Restrictions: Both the starting and ending values are required for CYLRANGE. By specifying an ending value greater than the maximum for the device processing is performed to the maximum value for that device (or minidisk). However, if you specify REALADDR, the maximum is one cylinder.

CYLRANGE cannot be specified with FROMRANGE/TORANGE or TRACKS.

DEVICETYPE: Identifying the Type of Device

Explanation: **DEVICETYPE(*devtype*)** is required in the stand-alone version when the MIMIC(MINI) or MIMIC(EMU) parameter is specified.

For *devtype*, substitute one to eight characters for the type of device on which the volume is mounted. (See Figure 2 on page 6 for valid device types.)

Abbreviations:

```
DEVICETYPE|DEVTYPE|DEVTYP
```

Default: None.

Restrictions: The DEVICETYPE parameter applies only when you are inspecting a volume in the stand-alone version and MIMIC(MINI) or MIMIC(EMU) is specified. If DEVICETYPE is specified when it does not apply, it will be ignored.

When using a 3350 Direct Access Storage volume in 3330-compatibility mode, the device type must be specified as 3330-1 or 3330-11, as required. The 3333 Disk Storage and Control Models 1 and 11 must be specified as 3330-1 and 3330-11, respectively.

DIRECTIO: Identifying Primary or Secondary Volumes of a Dual Copy Pair

Explanation: **DIRECTIO(PRIMARY|SECONDARY)** is an optional parameter specifying whether I/O is to be directed to the primary or secondary volume of a dual copy pair.

DIRECTIO(PRIMARY)
Specifies that the primary volume of a dual copy pair is to be processed.

DIRECTIO(SECONDARY)
Specifies that the secondary volume of a dual copy pair is to be processed.

Abbreviations

```
DIO(PRI|SEC)
```

Default: If the DIRECTIO parameter is not specified when you are using a dual copy pair, the default operation is:

- the primary volume if the dual copy pair is in duplex state.
- the secondary volume if the dual copy pair is in suspended duplex state.

Restrictions: The DIRECTIO parameter is ignored if the subsystem does not support dual copy or the volume is in simplex state.

HOLDIT and MIMIC are not valid with the DIRECTIO parameter.

DIRECTIO(PRIMARY) is mutually exclusive with NOPRESERVE and DIRECTIO(SECONDARY) with PRESERVE.

Only DIRECTIO(PRIMARY) is allowed if the device is in duplex state.

FORCE: Specify Concurrent Processing

Explanation: **FORCE** is an optional parameter used *only* in the recovery of a prior concurrent media maintenance failure on another processor.

Abbreviations:

```
NONE
```

Default: None.

Restrictions: Only use the FORCE parameter to recover from a prior concurrent media maintenance failure on another processor. Misuse of the parameter can cause loss of data.

FROMRANGE: Specify a Specific Starting Location

Explanation: **FROMRANGE(***cccc,hhhh***)** is an optional parameter used to specify that part of a volume (or minidisk), is to be inspected. Use this parameter to specify the starting track (cylinder and head) to be processed.

For *cccc,hhhh*, substitute one to four decimal (n) or hexadecimal (X'n') digits to identify the cylinder and head where processing is to start.

If you specify FROMRANGE and do not specify TORANGE, TORANGE is defaulted to the last alternate cylinder (last cylinder of the minidisk).

For information on specifying the ending track (TORANGE) to go with the starting track, see "TORANGE: Specify a Specific Ending Location" on page 170.

For information on specifying part of a volume to be examined, see "RANGE Parameters: Specifying Discrete Tracks" on page 151.

Abbreviations:

```
FROMRANGE|FROM
```

Default: None

Restrictions: FROMRANGE cannot be specified with CYLRANGE/HEADRANGE or TRACKS.

In the CMS version, if you specify REALADDR the range must be contained within 1 cylinder.

HEADRANGE: Specify a Range of Heads

Explanation: **HEADRANGE(***hhhh,hhhh***)** is an optional parameter used to specify that part of a volume (or minidisk) is to be inspected. Use the HEADRANGE parameter to specify the starting and ending head(s) to be processed.

For *hhhh,hhhh*, substitute one to four decimal (n) or hexadecimal (X'n') digits to identify the starting and ending heads to be examined.

If you specify HEADRANGE and do not specify CYLRANGE, the specified heads for all the cylinders on the volume (or minidisk) are processed.

For information on specifying the starting and ending cylinder(s) (CYLRANGE) to go with the starting and ending heads, see "CYLRANGE: Specify a Range of Cylinders" on page 161.

For information on specifying part of a volume, see "RANGE Parameters: Specifying Discrete Tracks" on page 151.

Abbreviations:

```
HEADRANGE|HDRANGE|HD
```

Default: None

Restrictions: Both the starting and ending values are required for HEADRANGE. By specifying an ending value greater than the maximum for the device, processing is performed to the maximum value for that device.

HEADRANGE cannot be specified with FROMRANGE/TORANGE or TRACKS.

MAP|NOMAP: Printing a Volume Map

Explanation: **MAP|NOMAP** are optional parameters specifying whether to print a volume (or minidisk) map during inspection. The map lists tracks that are found to be defective during inspection. Regardless of the tracks being inspected, MAP will list the defective tracks that are currently assigned alternates.

MAP
Indicates that you want to print a map during inspection.

NOMAP
Indicates that you do not want to print a map during inspection.

Abbreviations: None.

Default: The default is MAP.

Note: At the completion of INSPECT processing, the alternate tracks are examined for availability and primary track assignment, regardless of which tracks have been inspected. This information is printed in the map, but no cross check is done to determine if the primary tracks accurately reflect the alternate assignments.

For a complete check of ALL primary and alternate tracks,

```
INSPECT ALLTRACKS NOCHECK NOASSIGN MAP
```

can be run.

MIMIC: Specifying a Special Volume Usage Format

Explanation: **MIMIC(*type*)** is an optional parameter specifying a special usage format for the volume being inspected. You can specify MINI(n), MSS, EMU(n), or EMUALL.

MINI(n)
Indicates that the volume to be inspected is a minidisk of "n" cylinders. The DEVICETYPE parameter is required when this parameter is specified.

Note that this parameter is valid in the stand-alone version only. See Appendix B, "VM Support" on page 257, for details of this support.

MSS

Indicates that the volume has been formatted as a Mass Storage System staging pack. This parameter is required when inspecting an MSS staging pack.

Note: Before ICKDSF can be run against a staging device, and before the drive can be accessed, the device must be in offline real status. See *Operator's Library: IBM 3850 Mass Storage System (MSS) Under OS/VS* for details of the VARY OFFLINE, TEST command that is used to set up the device for nonstaging access.

EMU(n)

Indicates that a partial CKD disk emulated on a 3310 or 3370 fixed block device is to be inspected. The DEVICETYPE parameter is required when this parameter is specified in the stand-alone version.

This subparameter cannot be specified on an emulated 3330.

EMUALL

Indicates that a full CKD disk is emulated on a 3310 or 3370 fixed block device.

This subparameter cannot be specified on an emulated 3330.

Abbreviations: None.

Default: None.

Restrictions:

MIMIC is not valid when processing minidisks under CMS. For the INSPECT command, the only device types valid for MINI(n) are: 2311, 2314, and 2319.

When you emulate a CKD device on the 9313, 9332, or 9335 do not use MIMIC(EMU) or MIMIC(EMUALL). See "Preparing to Emulate a CKD device on an IBM 9313, 9332, or 9335" on page 46.

Use of the EMU(n)|EMUALL subparameter is not recommended with the INSPECT command as this causes the device to operate inefficiently. Data checks should be handled using the INSPECT command against the base FBA device (refer to "Emulating a CKD Device on an FBA Device" on page 45).

MIMIC is not valid in the CMS version of ICKDSF.

PASSWORDS: Providing Passwords for Data Set Security

Explanation: PASSWORDS((*dsname/password*),...) is an optional parameter specifying passwords for nonVSAM password-protected data sets. The supplied passwords will be used to determine if the user has authority to alter the data sets.

For *dsname*, substitute the fully qualified name of a password-protected data set.

For *password*, substitute the password you want to apply to that data set.

Abbreviations:

```
PASSWORD|PASSWD|PWD|PD
```

Default: None.

Restrictions: Up to a maximum of 512 passwords may be specified.

PASSWORD is ignored in the CMS, VSE, and stand-alone versions.

PRESERVE|KEEPIT|NOPRESERVE|HOLDIT: Preventing Destruction of Data on the Tracks Inspected

Explanation: **PRESERVE|KEEPIT|NOPRESERVE|HOLDIT** are optional parameters specifying whether to read and save the data on the inspected tracks. Data read from the specified tracks is held in storage.

Data on a track can also be saved at a backup location as well as held in storage (the storage copy is used to rewrite the data). If processing ends abnormally, the next use of INSPECT detects the data at the backup location and restores the data to the track where processing ended abnormally.

When running online, certain security and integrity precautions are taken to prevent inadvertent destruction of data. When running offline (MVS) or in stand-alone, data destruction is not prevented. See "Volume and Data Set Security" on page 33, and "Data Integrity When Using the INSPECT Command" on page 150 for more information concerning security.

NOPRESERVE *always* destroys the current contents of the track if CHECK is specified, or if unconditional assignment of alternate tracks is taking place (ASSIGN NOCHECK).

When you specify CHECK with either PRESERVE, HOLDIT, or KEEPIT, the data is still at varying degrees of risk.

If a track is part of a data set, INSPECT will enqueue on the data set while processing that track.

PRESERVE or KEEPIT

Indicates that you want to save the data on the inspected tracks. It also indicates that a copy of each track is to be saved at a backup location as well as in storage (the storage copy is used to rewrite the data). If processing ends abnormally, the next use of INSPECT detects the data at the backup location and automatically restores the data to the track on which processing ended abnormally.

PRESERVE and KEEPIT are synonymous.

The recovery backup feature of PRESERVE or KEEPIT does not support IBM 2305, 2311, 2314, and 2319 or 3340 emulated on a 3370 FBA device. In this case, a warning message is issued and the job defaults to HOLDIT.

The backup location and the storage copy of the track are erased at the completion of a command.

A performance degradation may be noticed caused by the writing of the data at the backup location. The amount of degradation depends on the total number of tracks being processed for the current INSPECT.

When the data is written at the backup location, it is read-back-checked to ensure it was written correctly. However, when the backup location is used to restore the data at the next use of the INSPECT command, there is no guarantee that the data can be recovered.

For devices that use the CE cylinder as the backup cylinder, if data exists at the backup location, the ANALYZE command, which writes on the CE cylinder, does not destroy the data. ANALYZE does indicate the cylinder and head of the track for which data exists. **Note, however, that the CE microdiagnostics may destroy the data at the backup location**. Therefore, if INSPECT processing does not run to completion, and it is determined to be a problem that will cause the volume to be turned over to an IBM Customer Engineer, all attempts should be made to restore the data first, if necessary.

If permanent, uncorrectable data checks are occurring on a track, INSPECT cannot read the data from the track. Therefore, if PRESERVE or KEEPIT is specified, the command will cease processing on that track rather than destroy the data.

If an error occurs when writing the user data back onto the track (or an assigned alternate), INSPECT assigns an alternate to the primary track and writes the data on the alternate. No surface checking takes place at this time, but, if the write to the alternate fails, a new alternate is assigned (up to three times).

When you specify PRESERVE or KEEPIT and your DASD is attached to an IBM 3990 which supports concurrent media maintenance, concurrent media maintenance is automatically invoked. Concurrent media maintenance allows user access to the data on a track while INSPECT is processing on that track. This enhancement eliminates the need to only run INSPECT when there is no other activity on the volume as the data is now always available. See "Preserving data under Concurrent Media Maintenance" on page 154 for more information on concurrent media maintenance.

NOPRESERVE

Indicates that you do not want to save the data on the inspected tracks. NOPRESERVE *always* destroys the current contents of the track if CHECK is specified, or if unconditional assignment of alternate tracks is taking place (ASSIGN NOCHECK).

The NOPRESERVE option should be used only when the data is known to be nonexistent or unnecessary, or if data errors on a particular track preclude the preservation of the data.

When you specify NOPRESERVE, you cannot inspect tracks inside a VTOC or a VTOCIX data set in an online (MVS) mode. Also, cylinder 0 track 0 cannot be inspected with NOPRESERVE in an online mode.

HOLDIT

Indicates that you want to save the data on the inspected tracks.

Users of the HOLDIT option should make note of the following:

- **HOLDIT** reads the data and keeps it in storage. If processing for the track does not run to completion, the data is lost and record 0 for the track is in a nonstandard format. An INSPECT with NOPRESERVE can be run against the track to fix the record 0 condition. You can then restore the data from a user backup copy.
- You are cautioned against canceling a job that contains an INSPECT HOLDIT. If the job is inspecting multiple tracks, it is indeterminate which, if any, of the tracks have experienced the situation described above. In that case,

  ```
  INSPECT ALLTRACKS NOCHECK NOASSIGN
  ```

  can be run to determine the readability of the home address/record 0's on the volume. Expect message ICK31064I for any track that ICKDSF was processing when the previous job aborted. Recovery can then be done for that track, as described above.

- If permanent, uncorrectable data checks are occurring on a track, INSPECT cannot read the data from the track. Therefore, if HOLDIT is specified, the command will cease processing on that track rather than destroy the data.
- If an error occurs when writing the user data back onto the track (or an assigned alternate), INSPECT assigns an alternate to the primary track and writes the data on the alternate. No surface checking takes place at this time, but, if the write to the alternate fails, a new alternate is assigned (up to three times).

Abbreviations:

```
PRESERVE|PRSV
KEEPIT|KEEP
NOPRESERVE|NOPRSV|NPRSV
HOLDIT|HOLD
```

Default: The default is PRESERVE.

Minidisks are always processed as HOLDIT.

Restrictions: None.

RECLAIM|NORECLAIM: Reclaiming Tracks Previously Flagged Defective

Explanation: **RECLAIM|NORECLAIM** are optional parameters specifying whether to reclaim tracks that were flagged defective in input but appear to be usable after surface checking.

Reclamation occurs only if surface checking is performed without errors for that track.

If a track is currently flagged defective, the maximum available surface checking procedure is used. If the checking process indicates that the track has no errors, the track is reclaimed.

RECLAIM
Indicates that you want tracks that are identified as usable by surface checking to be reclaimed during inspection.

NORECLAIM
Indicates that you want to suppress track reclamation during inspection.

Abbreviations:

```
RECLAIM|RCLM
NORECLAIM|NORCLM|NRCLM
```

Default: The default is NORECLAIM.

Restrictions: The RECLAIM parameter applies only when the CHECK parameter has been specified. If RECLAIM is specified with NOCHECK, it is ignored.

You cannot reclaim tracks on 2305 Fixed Head Storage Models 1 and 2.

SKIP|NOSKIP: Specify the Level of Surface Checking

Explanation: **SKIP|NOSKIP** are optional parameters used to specify the level of surface checking to be performed when CHECK is specified. Appendix F, "Surface Checking" on page 353, describes surface checking.

SKIP

Specifies that skip displacement checking is to be performed on all tracks within the specified range.

IF SKIP is specified, the total number of tracks, specified by the TRACKS parameter or specified by the range parameters, cannot exceed the number of tracks in one cylinder for the specified device type. Because SKIP does extensive surface checking for all tracks within the range, the run time can be excessive, even with the one cylinder limit. (Extensive surface checking can take up to 5 minutes per track or more, depending upon the device type and system conditions).

When skip displacement processing is being performed for an INSPECT, for every track that is part of a nonVSAM data set, the data set is enqueued upon while processing the track.

When SKIP is specified, the value of *n* in CHECK(n) is ignored.

If the track is part of a data set, INSPECT will enqueue on the data set while processing that track.

For tracks in VSAM data sets, TOLERATE(ENQFAIL) must be specified when processing online.

NOSKIP

Specifies that no skip displacement checking is to be performed. Primary checking only is to be performed on all tracks within the specified range.

If a data check is detected on a track during primary checking, skip displacement checking is performed for that track.

The total number of tracks that can be inspected when NOSKIP is specified is 2500.

Default: If your job specifies TRACKS, the default is SKIP; if your job specifies a range of tracks, the default is NOSKIP.

Restrictions: The SKIP/NOSKIP parameter is ignored if NOCHECK is specified.

TOLERATE: Specify Continue Processing

Explanation: **TOLERATE(ENQFAIL|PRIFAIL)** is an optional parameter used to specify that processing is to continue when certain events occur.

TOLERATE(ENQFAIL)

Specifies that in the event exclusive access cannot be obtained for a data set, that processing is to continue for the track. If TOLERATE(ENQFAIL) is not specified, processing continues on the *next* track.

For tracks in VSAM data sets, TOLERATE(ENQFAIL) must be specified when processing online.

TOLERATE(PRIFAIL)

Specifies that when you are processing the secondary volume of a dual copy pair, you wish to continue processing (on the same track) when the same data on the primary volume cannot be read.

If TOLERATE(PRIFAIL) is not specified when you are processing the secondary volume of a dual copy pair and the corresponding track on the primary volume cannot be read, a warning message is issued and processing continues on the next track (current track is not processed).

Abbreviations:

```
TOLERATE|TOL
PRIFAIL|PRIF
ENQFAIL|ENQF
```

Default: TOLERATE(ENQFAIL) off.

Restrictions: TOLERATE(ENQFAIL) is ignored if NOSKIP is specified (MVS systems only). ICKDSF assumes TOLERATE(ENQFAIL) is in effect if NOSKIP is specified and a data check requires that an enqueue be performed.

TOLERATE(PRIFAIL) is not valid when DIRECTIO(PRIMARY) is specified and is ignored if the volume is a simplex volume (not part of a dual copy pair).

TOLERATE(PRIFAIL) is ignored for a simplex device.

TOLERATE is ignored under the CMS version.

TORANGE: Specify a Specific Ending Location

Explanation: **TORANGE(***cccc,hhhh***)** is an optional parameter used to specify that part of a volume (or minidisk) is to be inspected. Use this parameter to specify the ending track (cylinder and head) to be processed.

For *cccc,hhhh*, substitute the 1 to 4 decimal (n) or hexadecimal (X'n') digits to identify the cylinder and head where processing is to end.

If you specify TORANGE and do not specify FROMRANGE, FROMRANGE is defaulted to cylinder 0 track 0.

For information on specifying the starting track of part of a volume (FROMRANGE) see "FROMRANGE: Specify a Specific Starting Location" on page 163.

For information on specifying part of a volume, see "RANGE Parameters: Specifying Discrete Tracks" on page 151.

Abbreviations:

```
TORANGE|TO
```

Default: None

Restrictions: TORANGE cannot be specified with CYLRANGE/HEADRANGE or TRACKS.

TRACKS: Specifying Discrete Tracks

Explanation: **TRACKS(***cylinder,head***)** is an optional parameter used to specify discrete tracks to be inspected.

For *cylinder,head*, specify one to four decimal (n) or hexadecimal (X'n') digits to identify the cylinder, and one to four decimal (n) or hexadecimal (X'n') digits to identify the track to be inspected. To inspect more than one track at a time, specify:

```
TRACKS((cylinder,head) (cylinder,head))
```

Abbreviations:

```
TRACKS|TRACK|TRKS|TRK
```

Default: None.

Restrictions: The maximum number of individual tracks that can be specified with the TRACKS parameter is 20. However, unless NOSKIP is specified, the maximum number of tracks is the number of tracks in a cylinder.

TRACKS is mutually exclusive with the range parameters.

If you do not specify the TRACKS parameter or the range parameters, INSPECT checks for the existence of backup data and performs the recovery functions if backup data exists. If you are only trying to recover from a previous failure at this time, and have not specified tracks or a range, the track that was being processed at the time of failure is recovered. However, if you also want to perform an INSPECT function, you must specify the TRACKS parameter or a range.

USERID: Specify another User's Minidisk

Explanation: **USERID(***user's ID***)** is an optional parameter used to specify that the INSPECT function is to be performed on another user's minidisk. This parameter is *only* valid when you are running the CMS version of ICKDSF and you have DEVMAINT authority.

For *user's ID*, substitute the 1 to 8 characters of the user ID of the owner of the minidisk you want to inspect

Abbreviations:

```
USERID|UID
```

Default: If USERID is not specified your own minidisk is verified.

Restrictions: USERID can be specified in the CMS version of ICKDSF only if you have DEVMAINT authority. USERID is ignored in all other environments.

USERID is mutually exclusive with REALADDR

Examples of the INSPECT Command

The following examples show different ways to code the INSPECT command. Most illustrate the use of the command in offline and online mode under MVS. To inspect a volume in the stand-alone version, make the following changes to MVS examples:

- Eliminate the MVS JCL.
- Substitute the UNITADDRESS parameter for the DDNAME parameter.
- Specify the DEVICETYPE parameter if the MIMIC(EMU) or MIMIC(MINI) parameter is also specified.
- Substitute SYSIN for *dname* in the IPLDD parameter.

To inspect a VSE version volume, do the following:

- Replace the MVS JCL statements with VSE system control statements.
- Substitute the SYSNAME parameter for the DDNAME parameter.
- Substitute *dlblname* for *dname* if the IPLDD parameter is specified and the data set is located on a direct access volume. If the data set is included in the job stream, replace the *dname* with either SYSIN or SYSIPT.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Inspecting a Volume for Conditional Assignment of Alternate Tracks in Online Mode (MVS)

In this example, the assignment of alternate tracks depends on the results of surface checking. The data on each specified track is copied to an alternate track if the track is defective, or is written back to the primary track if the track is not defective. Volume PAY345 was previously mounted as PRIVATE.

```
//EXAMPLE  JOB
//       EXEC  PGM=ICKDSF
//VOLUMEG  DD    UNIT=3390,DISP=OLD,VOL=SER=PAY345
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
 INSPECT DDNAME(VOLUMEG) NOVERIFY CHECK(3) -
         TRACKS((1,3),(1,2),(2,0),(2,3),(3,2))
/*
```

Inspecting a Volume for Unconditional Assignment of Alternate Tracks in Offline Mode (MVS)

In this example, the next available alternate track is assigned for the specified primary track. If the primary track is already assigned an alternate track, it will be reassigned a different alternate track. The default parameter PRESERVE causes the contents of the specified primary track to be copied to the assigned alternate.

```
//EXAMPLE  JOB
//         EXEC  PGM=ICKDSF
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
 INSPECT UNITADDRESS(0273) NOVERIFY TRACKS(X'2',3) NOCHECK
/*
```

Inspecting an Entire Volume to Produce a Volume Map in a Stand-alone version

In this example, all the tracks on the volume are inspected to produce a volume map that lists all the defective tracks. No alternate tracks are assigned.

```
INSPECT UNITADDRESS(0353) NOVERIFY -
        ALLTRACKS NOASSIGN NOCHECK
```

Inspecting a Volume to Reclaim Tracks in Offline Mode (MVS)

In this example, a volume is inspected to reclaim tracks that were previously marked defective. The default parameter PRESERVE causes the contents of the alternate track to be copied to the primary track if the primary track is reclaimed. The alternate track then becomes available for future assignment.

```
//EXAMPLE  JOB
//         EXEC  PGM=ICKDSF
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
 INSPECT UNITADDRESS(0354) NOVERIFY TRACKS((2,3) (3,1) (1,3)) -
         RECLAIM
/*
```

Inspecting a Minidisk in the Stand-alone Version

In this example, a mini 3390 that has already been initialized is inspected. It provides an unconditional assignment of an alternate track for tracks 5,1 and 5,2. Note that the parameter MIMIC(MINI(20)) is specifying to ICKDSF that a minidisk is being inspected. If this parameter was not specified, I/O errors would occur.

Although alternate track assignment is available on these minidisks (because VM does not restrict as many I/O operations as on other devices), I/O errors on the device should be reported to the system administrator so that a permanent alternate track can be assigned to the "real" defective track.

```
INSPECT  UNITADDRESS(0150) NOVERIFY TRACKS((5,1),(5,2)) -
     DEVICETYPE(3390) MIMIC(MINI(20)) NOCHECK
```

Inspecting Another User's Minidisk in the CMS Version

In this example, a minidisk that is owned by another user is inspected. You specify the USERID parameter to inspect the minidisk of a user named BROWN. You must have DEVMAINT authority for this example.

```
INSPECT  UNITADDRESS(0391) NOVERIFY USERID(BROWN) TRACKS(3,1)
```

Inspecting a Minidisk Specifying a Real Address in the CMS Version

In this example, part of a volume with a real address of 290 is inspected. Cylinder 3 tracks 0-9 are inspected. If any of the inspected tracks are defective, an alternate is assigned. SKIP specifies that skip displacement checking is to be performed on the specified tracks. You must have DEVMAINT authority for this example.

```
INSPECT  REALADDR(290) NOVERIFY
          FROMRANGE(3,0) TORANGE(3,9) SKIP
```

Inspecting a Volume to Check Tracks for Defects (VSE)

In this example, a volume previously initialized under VSE is inspected. If any of the inspected tracks are defective, an alternate will be assigned. The SKIP parameter specifies that skip displacement surface checking is to be performed on the tracks specified.

```
// JOB      jobname
// ASSGN    SYS010,151
// EXEC     ICKDSF,SIZE=AUTO
   INSPECT SYSNAME(SYS010) NVFY TRKS((2,3) (3,1) (1,3)) -
          SKIP
/*
/&
```

Inspecting the Secondary Volume of a Duplex Pair in Online Mode(MVS)

In this example, an INSPECT is specified on the secondary volume of a dual copy pair in suspended duplex state with a primary volume serial of PAY345.

```
//EXAMPLE  JOB    jobname
//         EXEC   PGM=ICKDSF
//VOLUME1  DD     UNIT=3380, DISP=SHR,VOL=SER=PAY345
//SYSPRINT DD     SYSOUT=A
//SYSIN    DD     *
    INSPECT DDNAME(VOLUME1) NVFY CHK(1) -
            TRACKS(6,3) DIRECTIO(SECONDARY) NOPRESERVE
/*
```

Inspecting the Secondary Volume of a Duplex Pair in Offline Mode(MVS)

In this example, an INSPECT is specified on the secondary volume of a dual copy pair in suspended duplex state. The DIRECTIO and SECONDARY parameters are abbreviated.

```
//EXAMPLE  JOB    jobname
//         EXEC   PGM=ICKDSF
//SYSPRINT DD     SYSOUT=A
//SYSIN    DD     *
    INSPECT UNIT(0274) NVFY CHK(1) TRACKS(6,3) DIO(SEC) NOPRESERVE
/*
```

INSTALL Command—CKD

The INSTALL command performs the necessary verification procedures after installation, head-disk assembly (HDA) replacement, or some physical movement (see the product information) of IBM 3380, and 3390 DASD. It can be used whenever the validation functions of medial initialization are desirable. The INSTALL command is valid on IBM 3380 and 3390 volumes only.

The INSTALL command is an enhanced installation procedure which includes the writing of home addresses and record zero on every track of the volume. It is provided for use at installation, HDA replacement, and some physical movement (see the product information).

The INSTALL command is used to change the mode of IBM 3390 volumes(3390 mode or 3380 track compatibility mode). Use the SETMODE parameter for this option. If a volume is in a transition state due to a previous INSTALL command where part of the volume has been converted, ICKDSF will detect and complete the conversion.

After INSTALL, the volume is left in an uninitialized state and consequently is unusable in an MVS, VM or VSE environment. Alternate tracks are reset and reassigned if necessary. This command should be followed by a command that formats the volume for an operating system. For MVS and VSE volumes or minidisks, use the INIT command to perform a minimal initialization to write a volume label and a VTOC on the volume or minidisk. For VM volumes, use the CPVOLUME command to FORMAT/ALLOCATE cylinder 0 or the entire volume.

Resuming after a job or system failure

This command should be allowed to run to completion. If processing is interrupted the command should be restarted, otherwise the device may be left in an unusable state. Subsequent invocation of ICKDSF commands on behalf of the device will detect this condition and either suggest or force you to execute an INSTALL command to return the device to its proper condition.

If INSTALL command processing is interrupted when you are converting an IBM 3390 volume between 3390 mode and 3380 track compatibility mode (or vice-versa), the device is left in an **unusable** state. Subsequent I/O operations to the device will fail. **The INSTALL command must be run to complete the mode change before the volume can be used. Therefore, when you perform this function, you must check the messages carefully to be sure that the command completed.**

Processing in a Shared Environment

When running the INSTALL command on a volume shared between systems, follow these guidelines:

- Vary the device offline to the other systems.
- Run the INSTALL command.
- Run the INIT command to write the volume label and a VTOC on the volume.
- Vary the device back online to the other systems.

The other systems will then recognize the volume serial number and VTOC location of the volume. Should you choose **not** to follow these guidelines, other systems accessing the volume may experience unpredictable results.

Dual Copy Volumes

The INSTALL command does not support dual copy volumes.

CMS Version Minidisk Support

When you are using the CMS version of ICKDSF the INSTALL command is valid only with ATTACHed devices. See Appendix B, "VM Support" on page 257 for more information.

Syntax

Command	**Required Parameters**
INSTALL	**SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)**
	Optional Parameters
	SETMODE(3380|3390)

Required Parameters

SYSNAME|UNITADDRESS: Identifying the Volume

Explanation: **SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** are required parameters identifying the volume.

SYSNAME

Required for a VSE volume. For *sysxxx*, specify the SYSNAME specified in the ASSGN control statement.

UNITADDRESS

Required for an MVS volume or a CMS or stand-alone version volume.

In MVS, the volume must be on a channel that is online. If the volume is on a channel that is offline the program might enter a nonterminating wait state. For *ccuu*, specify the address, (3 or 4 hexadecimal digits), of the channel and unit of the volume. For the CMS version specify the virtual address of the ATTACHed volume.

Abbreviations:

```
UNITADDRESS|INITADDR|UNIT
```

Default: None.

Restrictions: The INSTALL command must be run offline.

Optional Parameters

SETMODE: Setting 3390 Mode

Explanation: **SETMODE(3380|3390)** is an optional parameter which specifies the IBM 3390 is to be set to 3390 mode or 3380 track compatibility mode.

3380
specifies the volume is to be set to 3380 track compatibility mode.

3390
specifies the volume is to be set to 3390 mode.

Abbreviations: None.

Default: If you do not specify the SETMODE parameter, the native mode of the device is the default.

If you specify the SETMODE parameter you must specify either 3380 or 3390.

Restrictions: Valid for IBM 3390 only.

Examples of the INSTALL Command

The following examples show how to code the INSTALL command. The example is for offline modes of MVS.

To perform INSTALL for a volume in the stand-alone version of ICKDSF, do the following:

- Eliminate the MVS JCL.

To perform INSTALL command on a VSE version volume, do the following:

- Replace the MVS JCL statements with VSE system control statements.
- Substitute the SYSNAME parameter for the UNITADDRESS parameter.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Using the INSTALL Command

In this example, a volume is to be processed by the INSTALL command. **Note that the volume is not initialized for MVS, VSE, or VM after INSTALL processing**. Use the CPVOLUME command to initialize the volume for VM, or the INIT command for the other environments. A minimal initialization is shown.

```
//EXAMPLE   JOB
//          EXEC  PGM=ICKDSF
//SYSPRINT  DD    SYSOUT=A
//SYSIN     DD    *
 INSTALL UNITADDRESS(0353)
   IF LASTCC<4 -
     THEN INIT UNIT(ccuu) NOVERIFY VOLID(ABCD4) NOVALIDATE
/*
```

Converting an IBM 3390 to 3380 track compatibility mode

In this example, an IBM 3390 volume is converted from 3390 mode to 3380 track compatibility mode. **Note that the volume is not initialized for an MVS, VM or VSE environment after INSTALL processing**. Use the CPVOLUME command for the VM environment, and the INIT command for the other environments. A minimal initialization is shown.

```
//EXAMPLE   JOB
//          EXEC  PGM=ICKDSF
//SYSPRINT  DD    SYSOUT=A
//SYSIN     DD    *
 INSTALL UNITADDRESS(0353) SETMODE(3380)
   IF LASTCC<4 -
     THEN CPVOLUME UNIT(ccuu) NOVERIFY VOLID(CPVOL1)
/*
```

IODELAY Command—CKD

ICKDSF issues very intensive I/O during processing. Sometimes this can degrade the performance of other users accessing the channel and impact your entire system throughput. The purpose of the IODELAY command is to "slow down" ICKDSF processing by allowing time in between I/O rather than issuing consecutive I/O operations.

The IODELAY command allows you to specify the number of consecutive I/Os that ICKDSF can issue and the time period to allow between issuing those I/Os.

When ICKDSF is invoked, the time delay is set to zero (same as current processing). Once you set the time delay, using the IODELAY command, it remains set for *that invocation* of ICKDSF until you reset it or set it to another value.

The IODELAY command affects CKD and FBA commands and is included in both sections for convenience.

Syntax

Command	Required Parameters
IODELAY	**SET|RESET**
	Optional Parameters

	PERIO(*n*)
	SECONDS(*n*)|MSECONDS(*n*)|USECONDS(*n*)

Required Parameters

SET|RESET: Set an I/O Delay

Explanation: **SET|RESET** are required parameters which allow you to set or reset a time delay.

SET
is used to set a timed delay which will apply to all ICKDSF functions

RESET
is used to reset the time delay. After issuing the RESET parameter, there is no time delay in effect.

Abbreviations: None

Default: None.

Restrictions: None.

Optional Parameters

PERIO: Number of I/Os Scheduled

Explanation: **PERIO(*n*)** is an optional parameter which allows you to specify the number of I/Os to be scheduled between each time delay. The number specified here is the number of I/Os ICKDSF initiates between each specified time delay.

PERIO(*n*)
specifies the number of I/Os ICKDSF will schedule before it will quiesce and allow other functions to gain control. Specify *n* as the number of I/Os (1 to 1000) allowed before the time interval is reactivated.

Abbreviations: None

Default: If PERIO is not specified with SET, PERIO defaults to 1.

Restrictions: None.

SECONDS|MSECONDS|USECONDS: Set the time period

Explanation: **SECONDS(*n*)|MSECONDS(*n*)|USECONDS(*n*)** are optional parameters which allow you to specify the time period of a time delay. The time specified here is the amount of time ICKDSF allows between issuing I/Os.

SECONDS(*n*)
specifies the amount of time in seconds which is allowed between ICKDSF issuing I/Os. Specify *n* as the number of seconds (1 to 60) delay.

MSECONDS(*n*)
specifies the amount of time in milliseconds which is allowed between ICKDSF issuing I/Os. Specify *n* as the number of milliseconds (1 to 1000) delay.

USECONDS(*n*)
specifies the amount of time in microseconds which is allowed between ICKDSF issuing I/Os. Specify *n* as the number of microseconds (1 to 1000) delay.

Abbreviations:

```
SECONDS|SEC
MSECONDS|MILLI|MSEC
USECONDS|MICRO|USEC
```

Default: None.

Restrictions: None.

Examples of the IODELAY Command

The following example shows how to code the IODELAY command. The example is for offline modes of MVS.

To perform IODELAY for a stand-alone version volume, do the following:

- Eliminate the MVS JCL.

To perform the IODELAY command on a VSE version volume, do the following:

- Replace the MVS JCL statements with VSE system control statements.
- Substitute the SYSNAME parameter for the UNITADDRESS parameter.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Using the IODELAY Command

In this example, the IODELAY command is used to set a delay of 100 milliseconds after every twenty ICKDSF I/O operations. This allows functions other than ICKDSF to perform during this delay. The first IODELAY command is followed by a medial initialization which has a delay of 100 milliseconds after every twenty ICKDSF I/O operations while it is processing. The second IODELAY command resets the delay resulting in the ANALYZE command having no delay set.

```
//EXAMPLE   JOB
//          EXEC  PGM=ICKDSF
//SYSPRINT  DD    SYSOUT=A
//SYSIN     DD    *
 IODELAY SET PERIO(20) MILLI(100)
 INIT UNITADDRESS(0151) CYLRANGE(50,51) VALIDATE NOVERIFY
 IODELAY RESET
 ANALYZE UNITADDRESS(0151) SCAN
/*
```

REFORMAT Command—CKD

The REFORMAT command updates portions of a previously initialized volume. After a volume has been initialized by a previous INIT command, it can be reformatted to change the volume serial number, owner identification, and IPL bootstrap and program records. Only volumes that have been initialized can be reformatted.

Do not use REFORMAT to update volumes which have been prepared for use in a VM environment by use of the CPVOLUME command. Use the CPVOLUME command for this function.

Dual Copy Volumes

The REFORMAT command supports dual copy volumes which are in duplex or suspended duplex state.

CMS Version Minidisk Support

When you are using the CMS version of , you can use the REFORMAT command to change the volume serial number, owner identification, and IPL bootstrap and program records of a minidisk.

The following REFORMAT parameters are supported for minidisks:

- BOOTSTRAP, IPLDD, OWNERID, PURGE, VERIFY, VOLID, and UNITADDRESS

See Appendix B, "VM Support" on page 257 for more information.

Syntax

The abbreviation for the REFORMAT command is RFMT.

Command	Required Parameters
REFORMAT	**DDNAME(*dname*)|SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** **VERIFY(*serial*[,*owner*])|NOVERIFY**
	Optional Parameters

	BOOTSTRAP|NOBOOTSTRAP
	IPLDD({*dname*|*dlbname*}[,OBJFORMAT|,ABSFORMAT])
	OWNERID(*owner*)
	PURGE|NOPURGE
	VOLID(*serial*)
	VTOCPTR(END|cylinder,head)

Required Parameters

DDNAME|SYSNAME|UNITADDRESS: Identifying the Volume

Explanation: **DDNAME(*dname*)|SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** are required parameters identifying the volume or minidisk that is to be reformatted.

DDNAME

Required for an online MVS volume. The volume must be online and PRIVATE. For *dname*, specify the MVS JCL DD statement that identifies the volume.

SYSNAME

Required for a VSE volume. For *sysxxx*, specify the SYSNAME specified in the ASSGN system control statement.

UNITADDRESS

Required for an offline MVS volume, or for a stand-alone or CMS version volume.

In MVS, the volume must be on a channel that is online. If the volume is on a channel that is offline, the program might enter a nonterminating wait state. For *ccuu*, specify the address (3 or 4 hexadecimal digits) of the channel and unit of the volume.

For the CMS version, specify the virtual address of an ATTACHed volume or a minidisk.

Abbreviations:

```
DDNAME|DNAME
UNITADDRESS|UNITADDR|UNIT
```

Default: None.

VERIFY|NOVERIFY: Verifying the Volume Serial Number and Owner Identification

Explanation: **VERIFY(*serial*[,*owner*])|NOVERIFY** are required parameters specifying whether to verify the volume serial number and owner identification before reformatting the volume or minidisk.

VERIFY

Required when you want to verify the volume serial number and owner identification before reformatting the volume or minidisk. If the volume serial number or owner identification does not match that found on the volume, the REFORMAT command terminates.

For *serial*, substitute 1 to 6 alphameric characters for the volume serial number.

For *owner*, substitute 1 to 14 alphameric characters for the owner identification.

NOVERIFY

Required when you want to bypass verification of the volume serial number and owner identification.

Abbreviations:

```
VERIFY|VFY
NOVERIFY|NOVFY|NVFY
```

Default: None.

Restrictions: You cannot verify the owner identification separately from the volume serial number; both the volume serial number and the owner identification must be verified when you want to verify the owner identification.

When you specify the VERIFY parameter and verification fails, execution of the command terminates.

Optional Parameters

BOOTSTRAP|NOBOOTSTRAP: Writing IPL Bootstrap Records on the Volume

Explanation: **BOOTSTRAP|<u>NOBOOTSTRAP</u>** are optional parameters specifying whether you are supplying the IPL bootstrap records that are to be written on the volume or minidisk during reformatting.

BOOTSTRAP
Indicates that you are supplying the IPL bootstrap records that are written on the volume or minidisk during reformatting. These records must be the first four records in the IPL program text. The first text record must have IPL1 in the first four columns, followed by 24 bytes of data. The 24 bytes of data have the same format as the first IPL record described above under ABSFORMAT. The next three text records must have IPL2 in their first four columns, followed by 68 bytes of data each in the second and third records and 8 bytes of data in the last record. The 144 bytes of data have the same format as IPL record 2 described above under ABSFORMAT.

NOBOOTSTRAP
Indicates that you are not supplying IPL bootstrap records and require that the necessary IPL bootstrap records be generated by the ICKDSF program.

Abbreviations:

```
BOOTSTRAP|BOOT
NOBOOTSTRAP|NOBOOT|NBOOT
```

Default: The default is NOBOOTSTRAP.

Restrictions: The BOOTSTRAP and NOBOOTSTRAP parameters apply only when the IPLDD parameter is specified. This parameter is ignored when the IPL program is supplied in absolute format.

IPLDD: Writing a User-Supplied IPL Program on the Volume

Explanation: **IPLDD(**{*dname*|*dlblname*}**[,OBJFORMAT|,ABSFORMAT])** is an optional parameter that allows you to supply an IPL program to replace an existing IPL program or add one to the volume or minidisk.

This parameter should not be used when reformatting a Mass Storage System staging pack.

The IPLDD and BOOTSTRAP parameters are used to specify one of the following:

- If you do not specify IPLDD, ICKDSF writes special bootstrap records that cause the processing unit to be placed in a WAIT state if the volume is specified during an attempt to load the system. Bit 12 of the wait state PSW is set on.
- If you specify IPLDD but do not specify BOOTSTRAP, ICKDSF supplies an IPL bootstrap record that is written on the volume or minidisk together with the IPL text you supply.
- If you specify IPLDD and BOOTSTRAP, ICKDSF uses the IPL bootstrap and the IPL text you supply. If necessary, ICKDSF updates the bootstrap records to allow for possible user labels.

The maximum size permitted for the IPL program record depends upon the type of volume being reformatted. The maximum sizes allowed are:

Volume Type	Maximum Bytes for IPL Program
2305-1	12180
2305-2	13616
2311	3110
2314	6514
2319	6514
3330-1	12117
3330-11	12117
3340	7286
3344	7286
3350	17902
3375	33984
3380	44948
3390 (3380 mode)	44948
3390	53450

Also, the number of existing user volume labels can further limit the size allowed for the IPL program if you specify the NOPURGE parameter. If you supply an IPL program that exceeds the size allowed, you receive an error message but the reformatting continues.

For *dname*, substitute 1 to 8 alphameric characters for the DD statement identifying the data set that contains the IPL program you want written on the volume or minidisk being reformatted. The IPL program can be specified within the MVS JCL input stream (SYSIN). If the IPL program is in the MVS JCL input stream, the data must be included immediately after the REFORMAT command. For reformatting in the CMS or stand-alone version of ICKDSF, the *dname* must be specified as SYSIN.

For *dlblname*, substitute 1 to 7 alphameric characters. These represent the file name that appears in the DLBL statement and identify the file that contains the IPL program you want written on the volume or minidisk being reformatted. The IPL program can be included in the VSE JCS input stream (SYSIN). It must then be included immediately after the REFORMAT command.

OBJFORMAT

Specifies that IPL data is being supplied in object deck format, that is, cards will have one of the following strings of EBCDIC characters in columns 2 through 4:

```
TXT
RLD
ESD
END
```

Note that only cards with TXT will be processed. All others will be ignored.

OBJFORMAT may be abbreviated as OBJECT or OBJ.

OBJFORMAT is the default if IPLDD is specified.

ABSFORMAT

Specifies that IPL data is being supplied in the form of variable-length records that contain executable instructions. When IPL data is supplied in this format, it is necessary to provide a minimum of three records. The maximum number of records supplied and their lengths are only limited by the track capacity of the volume on which these records are to be written.

The first two records supplied must be the bootstrap records and are restricted to lengths of 24 and 144 bytes, respectively.

The contents of the IPL records and the contents of the program are not checked by ICKDSF. It is the user's responsibility to ensure that the IPL records can load an executable program. The first IPL record must contain a PSW followed by two CCWs (channel command words). The CCWs should have the following hexadecimal formats:

```
First CCW     06xxxxxx 60000090
Second CCW    08xxxxxx 00000000
```

The first CCW is a command to read in the second IPL record at main storage address xxxxxx. The second CCW is a transfer-in-channel command (a branch) to the CCW that begins the second IPL record.

The second IPL record must be 144 bytes long. Bytes 32 through 42 (starting from byte zero) cannot be used. Bytes 32 through 42 are used by ICKDSF for the seek address (bytes 32 through 37) and the CCHHR (bytes 38 through 42) of the third IPL record.

The 3rd through nth records that are supplied are assumed to be IPL program records and will be written on the volume without any modification after the standard volume label and any existing user volume labels. Note that the IPL program will only be written on the first track of the pack. If the records supplied exceed in length the remaining space on the first track, the function will terminate with an error message.

ABSFORMAT may be abbreviated as ABSOLUTE or ABS.

Abbreviations:

```
IPLDD|IPL
```

Default: The system provides special IPL bootstrap records if you specify the IPLDD parameter without specifying the BOOTSTRAP parameter.

Restrictions: The IPLDD parameter is ignored when the MIMIC(MSS) parameter is specified.

When an IPL program is included in the SYSIN stream, it must immediately follow the REFORMAT command and be terminated by an ENDIPLTEXT card. The ENDIPLTEXT card is optional when the IPL program is in a data set other than the one specified by SYSIN, or when the end-of-file indicator (/*) immediately follows the data for the IPL program.

OWNERID: Specifying a New Volume-Owner Identification

Explanation: **OWNERID(*owner*)** is an optional parameter specifying a new volume-owner identification to be written in the volume label.

For *owner*, substitute 1 to 14 alphameric characters for a new volume-owner identification in the volume label.

Abbreviations:

```
OWNERID|OWNER
```

Default: When a volume or minidisk is reformatted and a new owner identification is not specified, the old owner identification remains unchanged.

PURGE|NOPURGE: Writing Over User Volume Labels on a Previously Initialized Volume

Explanation: **PURGE|<u>NOPURGE</u>** are optional parameters specifying whether existing user volume labels are to be written over by the specified IPL program.

PURGE
Indicates that you want to write over existing user volume labels during reformatting.

NOPURGE
Indicates that you do not want to write over any user volume labels. If a volume or minidisk contains user volume labels and the IPLDD parameter is specified, the IPL program record is written following the last user volume label.

Abbreviations:

```
PURGE|PRG
NOPURGE|NOPRG|NPRG
```

Default: The default is NOPURGE.

Restrictions: The PURGE parameter applies only when the IPLDD parameter is specified.

VOLID: Specifying a New Volume Serial Number

Explanation: **VOLID(*serial*)** is an optional parameter specifying a new volume serial number to be written in the volume label.

For *serial*, substitute one to six alphameric characters for the new volume serial number. If fewer than six characters are specified, the serial number is left-justified and the remainder of the field is padded with blanks (X'40').

Abbreviations: None.

Default: When you reformat a volume or minidisk and do not specify the VOLID parameter, the old volume serial number remains unchanged.

Restrictions: Any catalog that identifies the volume by its volume serial number must be changed to reflect the new volume serial number for any cataloged data sets that reside on the reformatted volume

No check is made to determine if the volume contains an indexed VTOC. If an indexed VTOC exists on the volume, the data set name of the index remains unmodified. (That is, the index may be named SYS1.IXVTOC.VOL001 but the new volume label is VOL002.) This does not cause any functional problems, but may have an impact on the uniqueness of indexed VTOC data set names.

VTOCPTR: Restoring a Destroyed Volume Serial

Explanation: **VTOCPTR(END|*cylinder,head*)** is an optional parameter which is used to restore the destroyed volume serial (*volser*) of a previously initialized volume (or minidisk).

Use *cylinder,head* to specify the original location of the VTOC on the volume. Specify one to four decimal (n) or hexadecimal (X'n') numbers to identify the cylinder and one to four decimal or hexadecimal numbers to identify the head.

When you specify VTOCPTR(END), the original VTOC is assumed to have been located on the last primary cylinder of the volume (or minidisk).

Abbreviations: None.

Default: None.

Restrictions: When you specify VTOCPTR, all the following must be true:

- the device must be a count-key-data device
- NOVERIFY, VOLID, and PURGE must be specified
- there must be no *volser* on the volume (the key field and the first 4 bytes of the data field of Record 3 of the format-4 DSCB are not "VOL1")
- in the MVS environment, the device must be offline.

  If any of these conditions are not true, the restore function is terminated.

REFORMAT checks the existence of a format-4 DSCB at the location you specify by examining the key field and the first 4 bytes of the data field. After the restore function is completed, the IPL1 and IPL2 records are re-written and the existing records beyond the *volser* (if any) are erased. If the IPL record is required, you can specify the IPLDD parameter.

RACF volume access authority checking is bypassed in the MVS environment.

Examples of the REFORMAT Command

The following examples show different ways to code the REFORMAT command in offline and online mode (MVS) and for VSE. To reformat a CMS or stand-alone version volume, take an example given for MVS and do the following:

- Eliminate the MVS JCL.
- Substitute the UNITADDRESS parameter for the DDNAME parameter.
- Substitute SYSIN for *dname* in the IPLDD parameter.

Any values specified here are examples only and should not be interpreted as the values for your system.

Reformatting a Volume to Change the Volume Serial Number in Offline Mode (MVS)

In this example, the volume serial number is being changed. Any catalogs that identify the volume by its old volume serial number must be modified. The VERIFY parameter is specified to ensure that the correct volume is being accessed before the volume serial number is changed.

```
//EXAMPLE  JOB
//         EXEC  PGM=ICKDSF
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
 REFORMAT UNITADDRESS(0353) VERIFY(OLDVOL) -
          VOLID(NEWVOL)
/*
```

Reformatting a Volume to Add an IPL Program in Online Mode (MVS)

In this example, an IPL program is added to the volume, and the owner identification is changed. Volume VOL123 was previously mounted as PRIVATE. If any user volume labels exist on the volume, the IPL program is written over them because the PURGE parameter is specified. ICKDSF will supply the appropriate IPL bootstrap records.

If IPL text already exists on the volume, the operator will be prompted as to whether or not to continue processing.

```
//EXAMPLE  JOB
//         EXEC  PGM=ICKDSF
//IPLDECK  DD    *
•
•
•
//VOLUMEL  DD    UNIT=3390,DISP=OLD,VOL=SER=VOL123
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    *
 REFORMAT DDNAME(VOLUMEL) IPLDD(IPLDECK) -
          OWNERID(BROWN) PURGE NOVERIFY
/*
```

Reformatting a Volume to Change the Volume Serial Number (VSE)

In this example, the volume serial number is verified and a new volume serial number is assigned.

```
// JOB      jobname
// ASSGN    SYS010,151
// EXEC     ICKDSF,SIZE=AUTO
  REFORMAT SYSNAME(SYS010) VERIFY(OLDVOL) VOLID(NEWVOL)
/*
/&
```

Reformatting a minidisk in the CMS Version

In this example, the volume serial number of a minidisk at virtual address 291 is being changed from OLDVOL to NEWVOL, and the owner identification from PAYROLL to NEWPAY. The VERIFY parameter is specified to ensure that the correct volume and owner is being accessed before the volume serial/owner ID is changed.

```
 REFORMAT UNITADDRESS(0291) VERIFY(OLDVOL,PAYROLL) -
          VOLID(NEWVOL) OWNERID(NEWPAY)
```

REVALidate Command—CKD

The REVALidate command combines the track validation functions of medial initialization with the problem determination and data verification functions of the ANALYZE command, and also the INSPECT functions, if required. This command is valid on IBM 3380 and 3390 volumes only. REVALidate, in one command, performs the following combination of functions:

- A drive test
- Home address and record zero validation
- Data verification of the factory functional verification data patterns (FFVDP)
- Surface checking on tracks if required.

ICKDSF Functions Performed by the REVALidate Command

The REVALidate command can be used as an alternative to the following procedure:

- ANALYZE with the DRIVETEST parameter
- INIT with the VALIDATE DATA parameters
- ANALYZE with the SCAN parameter
- INSPECT with the TRACKS SKIP parameters if required.

At the completion of this command, all tracks are formatted for use by IBM operating systems. Alternate tracks are reset and reassigned if necessary. **However, the volume label, VTOC, and all user data are destroyed**. This command should be followed by a command that formats the volume for an operating system. For MVS and VSE volumes or minidisks, use the INIT command to perform a minimal initialization to write a volume label and a VTOC on the volume or minidisk. For VM volumes, use the CPVOLUME command to FORMAT/ALLOCATE cylinder 0 or the entire volume. See "Initializing a Volume at the Minimal Level" on page 120 for more information on minimal initialization or "CPVOLUME Command—CKD" on page 109 for the CPVOLUMEcommand.

This command operates on the full volume and destroys all data. It should not be used as an alternative when media maintenance actions are required for the device. See *ICKDSF: Primer for the User of IBM Direct Access Storage* for more information on media maintenance.

Summary information regarding the results of ANALYZE SCAN and INSPECT processing is presented.

For more information on each of the above functions see the command description in "Part 2. ICKDSF Commands—Count-Key-Data (CKD) Devices" on page 73.

Resuming after a job or system failure

This command should be allowed to run to completion. If processing is interrupted the command should be restarted, otherwise the device may be left in an unusable state. Subsequent invocation of ICKDSF commands on behalf of the device will detect this condition and either suggest or force you to execute a REVALidate command to return the device to its proper condition.

Processing in a Shared Environment

When running the REVALidate command on a volume shared between systems, follow these guidelines:

- Vary the device offline to the other systems.
- Run the REVALidate command.
- Run the INIT command to write a volume label and a VTOC on the volume.
- Vary the device back online to the other systems.

The other systems will then recognize the volume serial number and VTOC location of the volume. Should you choose **not** to follow these guidelines, other systems accessing the volume may experience unpredictable results.

CMS Version Minidisk Support

When you are using the CMS version of ICKDSF the REVALidate command is valid only with ATTACHed devices. See Appendix B, "VM Support" on page 257 for more information.

Dual Copy Volumes

The REVALidate command does not support dual copy volumes.

Syntax

Command	**Required Parameters**
REVAL	**SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** **VERIFY(*serial*[*,owner*])|NOVERIFY**
	Optional Parameters
	None

Required Parameters

SYSNAME|UNITADDRESS: Identifying the Volume

Explanation: **SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** are required parameters identifying the volume.

SYSNAME

Required for a VSE volume. For *sysxxx*, specify the SYSNAME specified in the ASSGN control statement.

UNITADDRESS

Required for an MVS volume or for a CMS or stand-alone version volume.

In MVS, the volume must be on a channel that is online. If the volume is on a channel that is offline, the program might enter a nonterminating wait state. For *ccuu*, specify the address, (3 or 4 hexadecimal digits), of the channel and unit of the volume. For the CMS version specify the virtual address of the ATTACHed volume.

Abbreviations:

```
UNITADDRESS|UNITADDR|UNIT
```

Default: None.

Restrictions: The REVALidate command must be run offline.

VERIFY|NOVERIFY: Verifying the Volume Serial Number and Owner Identification

Explanation: **VERIFY(***serial*[,*owner*]**)|NOVERIFY** are required parameters specifying whether to verify the volume serial number and owner identification before processing the volume.

VERIFY

Required when you want to verify the volume serial number and owner identification before processing the volume. If the volume serial number or owner identification does not match that found on the volume, the REVALidate command terminates.

For *serial*, substitute 1 to 6 alphameric characters for the volume serial number.

For *owner*, substitute 1 to 14 alphameric characters for the owner identification.

NOVERIFY

Required when you want to bypass verification of the volume serial number and owner identification.

Abbreviations:

```
VERIFY|VFY
NOVERIFY|NOVFY|NVFY
```

Default: None.

Restrictions: You cannot verify the owner identification separately from the volume serial number; both the volume serial number and the owner identification must be verified when you want to verify the owner identification.

When you specify the VERIFY parameter and verification fails, the command terminates.

Optional Parameters

None

Examples of the REVALidate Command

The following example shows how to code the REVALidate command. The example is for offline modes of MVS.

To perform REVALidate for a stand-alone version volume, do the following:

- Eliminate the MVS JCL.

To perform REVALidate command on a VSE version volume, do the following:

- Replace the MVS JCL statements with VSE system control statements.
- Substitute the SYSNAME parameter for the UNITADDRESS parameter.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Using the REVALidate Command

In this example, a volume is to be processed by the REVALidate command. **Note that the volume is not initialized for an MVS or VSE environment after REVALidate processing. It must be followed by initialization at the minimal level specifying the volume identification and NOVERIFY**. A minimal initialization is shown.

```
//EXAMPLE   JOB
//          EXEC  PGM=ICKDSF
//SYSPRINT  DD    SYSOUT=A
//SYSIN     DD    *
 REVAL UNITADDRESS(0353) VERIFY(VOL123,PAYROLL)
   IF LASTCC<8 -
     THEN INIT UNIT(ccuu) NOVERIFY VOLID(ABCD4)
/*
```

Part 3. ICKDSF Commands—Fixed Block Architecture (FBA) Devices

This part of the book is intended as a reference when you specify the ICKDSF commands for fixed block architecture (FBA) devices. Valid FBA devices for ICKDSF are given in "Devices You Can Use" on page 7.

"Examples of ICKDSF Tasks—FBA Devices" on page 55 and this part of the book are a guide to help you determine why, when, and how to run ICKDSF.

This part describes the ICKDSF commands for FBA devices. The commands are listed in alphabetic order. "Syntax of the Device Support Facilities Commands" on page 69 describes the syntax of the commands. The presentation of each command includes:

- A general description of the command and its use
- A table summarizing the syntax of the command
- An explanation of required and optional parameters
- Examples

ICKDSF Functions

The following ICKDSF commands operate on fixed block architecture (FBA) devices: ANALYZE, CONTROL, INIT, INSPECT, IODELAY, MAPALT, and REFORMAT.

- ANALYZE helps to detect and differentiate recording surface and drive-related problems on a volume. It can also scan data to aid in detecting the existence of possible media errors.
- CONTROL allows you to reclaim the primary and alternate blocks associated with the System Reserved Area of IBM 9335 devices.
- CPVOLUME prepares a volume for use in the VM environment.
- INIT prepares a direct-access storage volume so that it can be used in a VSE operating system environment or it reinitializes a volume that was previously prepared. It can also be used to surface check a volume.
- INSPECT provides surface checking functions for defective blocks.
- IODELAY is used to allow functions other than ICKDSF more processing time. It affects CKD and FBA commands and is included in both sections of the book for convenience.
- MAPALT produces a report showing the assignment of primary blocks to alternate blocks on fixed block architecture devices.
- REFORMAT can be used to update or replace information on a previously initialized volume. The volume label and owner ID can be replaced.

ICKDSF performs two basic functions: volume formatting and disk surface maintenance.

- Volume formatting makes a volume usable by an operating system and provides a means of updating old volume formats. This is also known as "initializing" a volume.

  Newly installed volumes and replaced head disk assemblies (HDAs) will always require formatting.

- Disk surface maintenance aids in detecting problems with device operation and attempts to correct data errors that can be traced specifically to disk surface defects.

ANALYZE Command—FBA

The ANALYZE command is used to examine the drive and/or the user's data on a volume to help determine if errors exist. The output is intended to aid in distinguishing between drive problems and media problems, in addition to providing assistance in locating and fixing the problem.

The IBM 0671, 9313, 9332, and 9336 are not supported by the ANALYZE command.

There are two basic functions of the ANALYZE command: the drive test, and the data scan.

ANALYZE Processing

Two basic tests are performed by ANALYZE—the drive test and the data verification test. The drive test is a general exercising of the storage device by issuing LOCATE, READ, and WRITE commands. From the results, ANALYZE determines the drive's ability to perform expected actions.

The data verification test reads (without data transfer across the channel to the processor) every data record on the volume. This determines whether the data can be read correctly—that is, without data check errors.

In addition, a data verification option is provided that allows you to specify a portion of the volume for testing. One or more blocks can be specified. You may also perform data verification for the entire volume.

ANALYZE does not require exclusive control of the drive under test. Most of ANALYZE's CCW chains (that is, its channel programs) do not hold the drive busy for longer than 0.5 second. However, if the operating system executes its error recovery procedures as a result of I/O errors detected during ANALYZE processing, the error recovery procedures may hold the drive busy for a longer period of time.

ANALYZE supports fixed block devices in fixed block mode only. This mode is based on data transfers of 512-byte increments (blocks) for storing and retrieving data.

ANALYZE data verification testing allows you to control the duration of each I/O by specifying either SPEED or NOSPEED.

The Drive Test

ANALYZE determines that the drive is fully operational by performing I/O operations on the CE block that test the drive's functional capabilities. Each I/O operation, called a channel command word (CCW) chain, tests a specific function of the drive and logical volume. Tests are executed in order of increasing complexity.

Drive problems that can be detected during ANALYZE's initial tests are access arm positioning errors and the ability to read and write.

If PRESERVE or CONTINUE data exists on the CE cylinder, ANALYZE does not destroy this data. This data is written by an INSPECT or INIT. If this data exists, ANALYZE bypasses writing over the data, and reports the presence of the data.

The drive test is optional. It is controlled by the DRIVETEST|NODRIVETEST parameter.

The drive test is not supported if you are processing under CMS unless the device is ATTACHed.

The Data Verification Test

The ANALYZE data verification test determines the status of the drive's storage medium by reading (without data transfer to the processor) all data records on the volume (or minidisk). If a data check is detected during the test, both the address and relative block number are noted in a diagnostic message on the printer. When a block is found to be defective, you can bypass the defect by assigning an alternate block to it.

ANALYZE allows you options for the data verification tests:

- You may specify data verification of the whole volume or minidisk.
- You may select a range of data to be verified by blocks (LIMITS or BLOCKRANGE parameters).
- You may also select the SPEED or NOSPEED parameter on the data verification tests.

  NOSPEED specifies:

  - For the 3310, 3370, and 9335, the number of blocks read by each I/O is 32, 248, and 71, respectively.

  SPEED specifies:

  - Perform one I/O for the maximum number of blocks (352, 744, and 426, respectively) within the range specified for the 3310, 3370, and 9335.

ANALYZE Output

The ANALYZE command is designed to produce output that can be used to aid in problem determination for a current volume. Certain errors that might occur are correctable by the device (and/or its storage control) and are normally never seen by software. Other errors can be corrected by software (usually under the operating system error recovery procedures (ERPs)) and are never seen by the user. Some errors are unrecoverable under all procedures.

What ANALYZE Tests

Errors that are persistent and that cannot be corrected by the device's internal error-correction circuitry result in messages to the output device.

When you run ANALYZE, the following conditions are assumed to exist:

- Each block has a properly formatted ID field and 512-byte data area.
- The blocks used by ANALYZE in the CE area are defect-free.

ANALYZE performs two testing procedures to detect errors—the drive test and the data verification test.

Using ANALYZE Output

As part of an installation's operating procedure, ANALYZE output can assist in determining whether or not recovery procedures can or should be executed. However, the use of ANALYZE output by customer engineers or service representatives to isolate and to repair drive malfunctions should not replace the use of more detailed diagnostic tools and procedures available for that purpose. ANALYZE output in such instances should serve only as the initial reference material that shows the final problem symptom but does not specifically isolate the problem source.

CMS Version Minidisk Support

When you are using the CMS version of ICKDSF, you can use the ANALYZE command to perform the data verification test for a minidisk.

The following parameters are valid for minidisks:

- ALL, LIMITS/BLOCKRANGE, NODRIVETEST, SCAN/NOSCAN, SPEED/NOSPEED, and UNITADDRESS

Notes:

1. The drivetest is not supported under CMS.
2. You must have DEVMAINT authority to issue the ANALYZE command for the IBM 9335.

The following parameters are valid *only* when you are using the CMS version of ICKDSF and have DEVMAINT authority (as defined in the CP directory):

- USERID and REALADDR

USERID: When you are using the CMS version of ICKDSF and have DEVMAINT authority you can use the USERID parameter to perform the data verification test on another user's minidisk. The following parameters are valid in this mode:

- ALL, LIMITS/BLOCKRANGE, NODRIVETEST, SCAN/NOSCAN, SPEED/NOSPEED, and UNITADDRESS.

REALADDR: When you are using the CMS version of ICKDSF and have DEVMAINT authority you can use the REALADDR parameter to specify the real device address to perform the data verification test on a volume. The following parameters are valid when you specify REALADDR:

- ALL, LIMITS/BLOCKRANGE, NODRIVETEST, SCAN/NOSCAN, SPEED/NOSPEED,

See Appendix B, "VM Support" on page 257 for more information.

Syntax

Command	Required Parameters
ANALYZE	**SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)|REALADDR(*ccuu*)**
	Optional Parameters
	DRIVETEST|NODRIVETEST **LIMITS(*scanlo,scanhi*)|BLOCKRANGE(*bbbbbbbb,bbbbbbbb*)|ALL** **SCAN|NOSCAN** **SPEED|NOSPEED** **USERID(*user's ID*)**

Required Parameters

SYSNAME|UNITADDRESS: Identifying the Volume

Explanation: **SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)|REALADDR(*ccuu*)** are required parameters identifying the volume or minidisk that is to be analyzed.

SYSNAME

Required for a VSE volume. For *sysxxx*, specify the SYSNAME in the ASSGN system control statement.

UNITADDRESS

Required for a stand-alone or CMS version volume, or for a minidisk. For *ccuu*, specify the address (3 or 4 hexadecimal digits) of the channel and unit of the volume. For the CMS version, specify the virtual address of an ATTACHed volume or minidisk.

REALADDR

Required to specify the real address of a volume. This parameter is only valid when you are running the CMS version of ICKDSF and have DEVMAINT authority (as defined in the CP directory). For *ccuu*, specify the real address (3 or 4 hexadecimal digits) of the channel and unit of the volume.

REALADDR is mutually exclusive with UNITADDRESS, DDNAME, SYSNAME, and USERID.

Abbreviations:

```
UNITADDRESS|UNITADDR|UNIT
REALADDR|RADDR
```

Default: None

Optional Parameters

DRIVETEST|NODRIVETEST

Explanation: **DRIVETEST|NODRIVETEST** are optional parameters specifying whether or not the drive test function of the command should be executed.

DRIVETEST

Specifies that the drive test should be executed.

NODRIVETEST
Specifies that the drive test should be bypassed.

Abbreviations:

```
DRIVE
NODRIVE
```

Default: DRIVETEST

Restrictions: NODRIVE NOSCAN performs no functions but will complete without error.

When executing under VM, DRIVETEST is valid only for devices that are ATTACHed to the current userid. I/O errors will occur if the drive test is attempted for LINKed devices or minidisks. DRIVETEST is ignored when you are processing minidisks under the CMS version.

LIMITS|BLOCKRANGE|ALL: Specifying the Area of Data Verification

Explanation: **LIMITS(***scanlo,scanhi***)|BLOCKRANGE(***bbbbbbbb,bbbbbbbb***)|ALL** are optional parameters specifying the range of blocks to be read during the data verification tests.

LIMITS(*scanlo,scanhi***)**
scanlo,scanhi specifies the relative starting and ending block numbers of the data verification tests. The values can be expressed in decimal or hexadecimal, must be equal or in ascending order, and must fall within the device address limits. See Figure 18 on page 212 for device limits.

BLOCKRANGE(*bbbbbbbb,bbbbbbbb***)**
For *bbbbbbbb,bbbbbbbb*, specify the starting and ending relative block numbers to be verified. The values can be expressed in decimal or hexadecimal and must fall within the device limits. See Figure 18 on page 212 for device limits.

BLOCKRANGE is identical in function to LIMITS and is included for consistency with other ICKDSF commands.

ALL
specifies that all blocks of a volume (or minidisk) are to be read during the data verification tests.

Abbreviations:

```
LIMITS|LIMIT|LIMS|LIM
BLOCKRANGE|BLKRANGE|BLKR
ALL
```

Default: If you do not specify LIMITS or BLOCKRANGE, the default is ALL.

Restrictions: LIMITS, BLOCKRANGE, or ALL apply only when the SCAN parameter has been specified.

LIMITS, BLOCKRANGE, and ALL are mutually exclusive.

SCAN|NOSCAN: Run Data Verification Tests

Explanation: **SCAN|NOSCAN** are optional parameters specifying whether the data verification tests are to be run. Data verification is executed after the drive tests complete successfully or if NODRIVE is specified.

SCAN
Indicates that you want the data verification tests to be run.

NOSCAN
Indicates that you do not want the data verification tests to be run.

Abbreviations:

```
SCAN|SCN
NOSCAN|NOSCN|NSCAN|NSCN
```

Default: NOSCAN

Restrictions: None.

SPEED|NOSPEED: Specify Data Verification Tests

Explanation: **SPEED|NOSPEED** are optional parameters that specify how many blocks are read by each I/O for the data verification tests.

SPEED
For the 3310, 3370, and 9335, this parameter specifies that the maximum number of blocks is read for each I/O (352, 744, and 426, respectively).

NOSPEED
For the 3310, 3370, and 9335, NOSPEED specifies the minimum number of blocks for each I/O is 32, 248, and 71, respectively.

Abbreviations:

```
NOSPEED|NSPEED.
```

Default: NOSPEED.

Restrictions: You should not specify SPEED when you are running under VM, as this degrades the performance for other VM users.

USERID: Specify Another User's Minidisk

Explanation: **USERID(*user's ID*)** is an optional parameter used to specify that the ANALYZE data verification test is to be performed on another user's minidisk. This parameter is *only* valid when you are using the CMS version of ICKDSF and have DEVMAINT authority.

For *user's ID*, substitute the 1 to 8 characters of the user ID of the owner of the minidisk you want to verify.

See Appendix B, "VM Support" on page 257 for more information on processing minidisks.

Abbreviations:

```
USERID|UID
```

Default: If USERID is not specified your own minidisk is verified.

Restrictions: USERID can only be specified if you have DEVMAINT authority. USERID is ignored in all other system environments.

Examples of the ANALYZE Command

The following examples show different ways to use the ANALYZE command.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Analyzing a Stand-Alone Version Volume

In this example, the 3310 Direct Access Storage drive tests are performed.

```
ANALYZE UNITADDRESS(0141)
```

Using keyword abbreviations, you could have specified:

```
ANALYZE UNIT(0141)
```

Analyzing a Stand-Alone Version Volume

In this example, the 3370 Direct Access Storage drive tests are performed and are followed by the data verification tests for the entire 3370 volume. ALL is the default.

```
ANALYZE UNITADDRESS(0141) SCAN
```

Analyzing a Stand-Alone Version Volume

In this example, the 3310 Direct Access Storage drive tests are performed, followed by partial data verification tests starting at relative block number 25 and ending at relative block number 50. Abbreviations have been used.

```
ANALYZE UNIT(0141) LIMS(X'19',X'32') SCN
```

Analyzing a VSE Version Volume

In this example, drive tests are performed on the volume SYS001. Specification of the NOSCAN parameter indicates that data verification tests are not to be performed.

```
// JOB   jobname
// ASSGN SYS001,150
// EXEC  ICKDSF,SIZE=AUTO
   ANALYZE SYSNAME(SYS001) NOSCAN
/*
/&
```

Analyzing Another User's Minidisk under the CMS Version

In this CMS version example, the data verification test is performed for another user's minidisk. You specify the USERID parameter to ANALYZE the minidisk which is owned by user SMITH at the user's virtual address 0351. You must be have DEVMAINT authority (as defined in the CP directory) to specify the USERID parameter.

```
ANALYZE UNIT(0351) SCAN USERID(SMITH) NODRIVETEST
```

Analyzing a Volume Specifying a Real Address under the CMS Version

In this CMS version example, the data verification test is performed for a volume at real address 290 by using the REALADDR parameter. You must have DEVMAINT authority (as defined in the CP directory) to specify the REALADDR parameter.

```
ANALYZE REALADDR(290) SCAN NODRIVETEST
```

Diagnostic Messages

ANALYZE prints diagnostic messages to the output device. They can be used by a programmer (and by the customer engineer or service representative) to aid in determining if and what type of problem might exist on the volume.

The informational and diagnostic messages and their explanations are included in Appendix C, "Device Support Facilities Messages (ICK)" on page 265.

In addition, ANALYZE produces a movable head and/or fixed-head error table that summarizes errors associated with the read/write circuitry and/or data verification. See Figure 17 on page 205.

Movable Head Error Table

In addition to the diagnostic messages, if errors associated with the read/write circuitry occurred during the drive test, ANALYZE produces a movable head error table to summarize the errors. This table is printed on the system printer after all tests are completed. Figure 17 on page 205 shows the format of the movable head error table. The physical heads are listed in the first column on the left. A character 'X' is placed in the column corresponding to the type of error detected for a particular head.

```
                              MOVABLE HEAD ERROR TABLE
HEAD NUMBER   DATA CHK   SEEK VERIFY   WRITE CHK   DATA CHK   DATA COMP
                            CHECK                   CE CYL     ERROR
    00 -----|----------|-------------|-----------|----------|----------|
    01 -----|----------|-------------|-----------|----------|----------|
    02 -----|----------|-------------|-----------|----------|----------|
    03 -----|----------|-------------|-----------|----------|----------|
    04 -----|----------|-------------|-----------|----------|----------|
    05 -----|----------|-------------|-----------|----------|----------|
    06 -----|----------|-------------|-----------|----------|----------|
    07 -----|----------|-------------|-----------|----------|----------|
    08 -----|----------|-------------|-----------|----------|----------|
    09 -----|----UC----|-------------|-----------|----------|----------|
    10 -----|----U-----|------X------|-----X-----|----X-----|-----X----|
    11 -----|-----C----|------X------|-----X-----|----X-----|-----X----|
```

In the data check column:

"U"	indicates that at least one ECC uncorrectable error occurred on this head.
"C"	indicates that at least one ECC correctable error occurred on this head.
"UC"	indicates that at least one ECC correctable and one ECC uncorrectable error occurred on this head.
"X"	indicates that at least one error, as indicated by the column heading, has occurred on this head.

The actual number of errors that occurred for a specific head can be obtained by examining previous messages provided in the ANALYZE output.

Figure 17. The Movable Head Error Table—FBA

CONTROL Command—FBA

The FBA CONTROL command allows you to reclaim primary and alternate blocks which are associated with the System Reserved Area of the IBM 9335 devices. This command is provided for the VSE, stand-alone, and CMS versions only. Under CMS, the devices must be ATTACHed.

Warning: As the FBA CONTROL command destroys information in the system reserved area of the IBM 9335, you must be careful when you invoke this command.

This function should only be invoked if system messages, EREP reports, or Service Processor messages indicate that a System Reserved Area reclaim is necessary.

Using the FBA CONTROL Command

The FBA CONTROL command is designed to allow you to reclaim primary and secondary blocks associated with the system control area of the IBM 9335. You use this function by specifying the CONTROL command and the RECLAIM(SYSAREA) parameter. This function reclaims primary and alternate blocks that are not listed in the IBM 9335 Defective Sector Map. Also, the surface of each reclaimed block is checked, and if it is found defective an alternate is reassigned to the primary.

As the CONTROL command destroys information (microcode and information in the System Reserved Area of IBM 9335 devices is deleted) you receive a warning message requesting permission to proceed. If you give permission to proceed, a microcode alert subcommand diagnostic control CCW is issued to inform the processor that the information in the System Reserved Area of the 9335 device will be destroyed.

CMS Version VM Support

When you are using the CMS version of ICKDSF ATTACHed mode is the only CONTROL command support under VM. See Appendix B, "VM Support" on page 257 for more information.

Syntax

Command	Required Parameters

CONTROL	**SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)**
	RECLAIM(SYSAREA)

	Optional Parameters
	None

Required Parameters

SYSNAME|UNITADDRESS: Identifying the Volume

Explanation: **SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** are required parameters identifying the volume.

SYSNAME
Required for a VSE volume. For *sysxxx*, specify the SYSNAME in the ASSGN system control statement.

UNITADDRESS
Required for a stand-alone version volume or for a CMS version ATTACHed volume. For *ccuu*, specify the address (3 or 4 hexadecimal digits) of the channel and unit of the volume. For CMS, specify the virtual address of the volume.

Abbreviations:

```
UNITADDRESS|UNITADDR|UNIT
```

Default: None

RECLAIM(SYSAREA): Reclaiming Blocks

Explanation: **RECLAIM(SYSAREA)** is a required parameter that must be specified when you want to reclaim primary or alternate blocks associated with the System Reserved Area of an IBM 9335 device.

Note: Primary and alternate blocks listed in the IBM 9335 Defective sector Map are not reclaimed.

Abbreviations: None

Default: None

Restrictions: The CONTROL command RECLAIM(SYSAREA) function is only applicable to IBM 9335 devices.

This function must not be invoked unless system error messages, Service Processor messages, or EREP reports indicate that a System Reserved Area reclaim is necessary.

Optional Parameters

None

Examples of the FBA CONTROL Command

The following example illustrates a way to code the FBA CONTROL command.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Reclaiming the System Reserved Area of an IBM 9335 (VSE Version)

In this example, the primary and alternate blocks of the System Reserved Area of an IBM 9335 device are reclaimed.

```
// JOB   jobname
// ASSGN SYS001,150
// EXEC  ICKDSF,SIZE=AUTO
   CONTROL UNITADDRESS(0141) RECLAIM(SYSAREA)
/*
/&
```

CPVOLUME Command—FBA

The CPVOLUME command is used to prepare a volume for use in a VM environment. It is used to perform the following functions associated with formatting VM volumes for CP use:

- FORMAT

  Write records required by CP on blocks 0-15. Write zeros in pages on an entire volume or on a range of pages.

- ALLOCATE

  Update the allocation map to indicate how CP should use each page on the volume.

- EXAMINE

  Read a CP formatted volume to verify that it is properly formatted and that pages can be read without error.

- LIST

  Display the allocation map, volume label and device dependent information such as the number of pages.

- LABEL

  Rewrite the volume serial.

Data is stored on fixed block architecture (FBA) volumes in 512 byte blocks. Data is stored on a CP formatted volume in 4096 byte records (CP pages). Eight FBA blocks are used to hold one CP page record.

The unit of formatting or allocation for a CP formatted FBA volume is the page. FBA volumes are formatted by writing zeros on all of the pages to be used by CP. The first 16 blocks (pages 0 and 1) are reserved for system use and are formatted with records that include the volume label and allocation map. The allocation map indicates how each page on the volume is to be used by CP.

Page Format

The unit for formatting and allocation is the page. CPVOLUME formats a page by writing zeros in each of the 512 byte blocks assigned to the page. Pages are numbered sequentially beginning with page 0. Blocks are also numbered sequentially beginning with block 0. As an example, to format page 2, CPVOLUME writes zeros in blocks 16-23.

The maximum block/page numbers for fixed block architecture devices are as follows:

Figure 18. Maximum Block and Page Numbers for FBA devices

Device	High block	High page
0671-0	574559	71819
0671-4	615383	76922
0671-8	513071	64133
3310	126015	15751
3370-1	557999	69749
3370-2	712751	89093
9313	246239	30779
9332	360035	45003
9335	804713	100588
9336-0	920114	115013
9336-10	1672880	209109

CPVOLUME formats blocks 0-15 with the following records:

- BLOCK 0. IPL record. CPVOLUME creates an IPL record that puts the system into a wait state if the volume is IPL'd before the CP nucleus is built.
- BLOCK 1. Volume Label record. The owner field of the label record contains 'CP370'.
- BLOCK 2. OS/VTOC format 4 and format 5 DSCB's. The VTOC records created by CPVOLUME indicate that no space is is available on the volume.
- BLOCKS 3-4. Allocation Map. Consists of 12 byte entries, each of which describes a range of pages on the volume and the usage of those pages (PERM, TEMP, SPOL, etc.). The map can describe up to 85 allocation ranges.
- BLOCKS 5-12. Checkpoint record. CPVOLUME writes zeros in this record. The checkpoint record is used by CP to save and retrieve information for a warm start.
- BLOCKS 13-15. Reserved.

Using the CPVOLUME Command

When you use the CPVOLUME command, you select the function you require by specifying one of the parameters, FORMAT, ALLOCATE, EXAMINE, LABEL, or LIST.

You can format or examine an entire volume or you can limit the operation to part of a volume by specifying the RANGE parameter. If you omit the range parameter, CPVOLUME assumes that the range is for the entire volume. If you specify a range that does not begin with page 0, then pages 0-1 must have been previously formatted.

The CPVOLUME command formats FBA volumes for use on System/370 only. If you execute the CPVOLUME command from a System/370 mode virtual machine CPVOLUME formats volumes for use on a System/370 system. If you execute the CPVOLUME command from an XA mode virtual machine you must specify the MODE(370) parameter.

All of the pages on a volume do NOT have to be formatted, only those pages that you want initialized with zeros. However, pages 0-1 must always be formatted, and pages 0-1 must be formatted before any other pages are formatted.

The FORMAT Function

You specify a range of pages to be formatted, which may be the entire volume. CPVOLUME formats each page by writing zeros in all of the blocks associated with the page. If you specify READCHECK, CPVOLUME read-checks the pages to ensure that there are no errors.

If you specify READCHECK and a data check is encountered on a page, the INSPECT function of ICKDSF is invoked to check the surface of the blocks in the page. The INSPECT operation performs skip displacement surface checking to eliminate data checks from the blocks, and will assign an alternate block if required. After the blocks have been inspected, the page is formatted once more and the FORMAT operation continues.

When formatting is complete, the allocation map is updated from any allocation 'TYPE' statements that you specified in the CPVOLUME FORMAT command.

The ALLOCATE Function

The ALLOCATE function is used to update the allocation map. All pages on a volume are initially allocated as PERM by CPVOLUME. You tell the ALLOCATE function how the allocation map should be changed by specifying *type of allocation* followed by a range of pages. For example, (TDSK,100,1999) indicates that the 1900 pages from 100 to 1999 should be allocated as TDSK.

The LABEL Function

The LABEL function is used to rewrite the volume serial.

The LIST Function

The LIST function is used to display current volume information. Use this function to display the allocation map, volume label, and device information (for example, the number of pages).

The EXAMINE Function

You specify a range of pages to be examined, which may be the entire volume. CPVOLUME reads each page to be examined. Validation ensures that the data in each block of a page can be read without error. EXAMINE will report the block number of each block that contains a data check.

The EXAMINE function is read-only and will not write over any user data. You can use the EXAMINE function to inspect any CP formatted volume for data check errors. For any errors reported by EXAMINE, you should take appropriate corrective action. You can use the INSPECT command of ICKDSF to check the track surface for any blocks reporting data checks.

Migration Support

On a CP formatted volume, the size of the allocation map must match the number of pages on the volume. The map contains at least 1 and at most 85 entries. Each entry contains a starting and ending page number and a code indicating how the pages within the range are allocated.

When pages 0-1 (blocks 0-15) are copied from one device type to another, the allocation map that is copied may no longer match the number of pages on the volume. For example, if a 3370-1 with 69750 pages is copied to a 3370-2 with 89094 pages, the allocation map will indicate that only 69750 pages are allocated (even though the new volume has 89094 pages). CPVOLUME will report such a mismatch and if you allow CPVOLUME to continue, the allocation map will be expanded from 69750 to 89094 pages. The expanded pages will be allocated as 'PERM' space. The expanded pages will not be formatted with zeros as part of the expansion process. In the example you would specify CPVOLUME FORMAT RANGE(69750,89093) to format the expanded pages.

When data is copied from a large volume to a smaller volume, and pages 0-1 are included in the copy, the allocation map will map more pages than are on the volume. Using the above example, the allocation map will indicate that 89094 pages are allocated, even though the new volume has only 69750 pages. When CPVOLUME encounters a volume which has a mismatch it is reported and if you allow CPVOLUME to continue, the allocation map is reduced from 89094 to 69750 pages. The allocation information for the last 19344 pages is eliminated.

Minidisk Support

The allocation map that CPVOLUME creates for a minidisk will map the number of pages of the minidisk. For example, for a 100 page minidisk, CPVOLUME will create an allocation map that maps 100 pages. Likewise, CPVOLUME will not allow you to format or allocate pages beyond the bounds of the minidisk.

Syntax

Command	**Required Parameters**
CPVOLUME	**FORMAT|ALLOCATE|LABEL|LIST|EXAMINE** **UNITADDRESS(*ccuu*)** **VERIFY(*serial*)|NOVERIFY**
	Optional Parameters

	MODE(370)
	RANGE(*start,end*)
	READCHECK|NOREADCHECK
	TYPE((*type of allocation,start,end*)...)
	VOLID(*serial*)

Required Parameters

FORMAT|ALLOCATE|LABEL|LIST|EXAMINE: Specifying the Function

Explanation: **FORMAT|ALLOCATE|LABEL|LIST|EXAMINE** are required parameters identifying the function you want to be performed.

FORMAT
Required when you want to format a volume. An entire volume or a range of pages can be formatted.

ALLOCATE
Specifies that the allocation map of a previously formatted volume is to be updated.

LABEL
Specifies that the volume label of a previously formatted volume is to be rewritten.

LIST
Specifies that volume information for a previously formatted volume is to be displayed.

EXAMINE
Specifies that an entire volume or range of pages on a previously formatted volume are to be inspected for errors.

Abbreviations:

```
FORMAT|FMT
ALLOCATE|ALLOC
EXAMINE|EXAM
```

Default: None.

Restrictions:FORMAT, ALLOCATE, LABEL, LIST, and EXAMINE are mutually exclusive.

UNITADDRESS: Identifying the Volume

Explanation: **UNITADDRESS** is a required parameter identifying the volume that is to be processed.

UNITADDRESS(*ccuu*)
Required to specify the address of the volume to be processed.

For *ccuu*, specify the virtual address of the volume.

Abbreviations:

```
UNITADDRESS|UNITADDR|UNIT
```

Default: None.

VERIFY|NOVERIFY: Verifying the Volume Serial Number

Explanation: **VERIFY(*serial*)|NOVERIFY** are required parameters specifying whether to verify the volume serial number before performing the requested function on the volume.

VERIFY

Required when you want to verify the volume serial number before performing the requested function on the volume. If the volume serial number does not match that found on the volume, the CPVOLUME command terminates.

For *serial*, substitute 1 to 6 alphameric characters for the volume serial number.

NOVERIFY

Required when you want to bypass verification of the volume serial number.

Abbreviations:

```
VERIFY|VFY
NOVERIFY|NOVFY|NVFY
```

Default: None. You must specify either VERIFY or NOVERIFY.

Restrictions: None.

When you specify the VERIFY parameter and verification fails, execution of the command terminates.

Optional Parameters

MODE: Specify VM System

Explanation: **MODE(370)** is an optional parameter that allows you to prepare an FBA volume for use in a VM environment when the CPVOLUME command is executed from an XA mode virtual machine. For this option, specify MODE(370).

Abbreviations: None

Default: The system you executing on.

Restrictions: If you are executing from an XA mode virtual machine you must specify MODE(370) for FBA volumes.

RANGE: Specifying the range of pages

Explanation: **RANGE(*start,end*)** is an optional parameter for specifying the range of pages that are to be formatted or examined. Use *start,end* to specify the range of pages to be formatted or examined.

Abbreviations: None.

Default: If RANGE is not specified, the default is the entire volume.

Restrictions: RANGE is only valid when you specify either FORMAT or EXAMINE.

READCHECK|NOREADCHECK: Specify Read-Back Check

Explanation: READCHECK|**NOREADCHECK** specifies if a read-back check is to be performed for each page after it is formatted. If read-back check media errors are detected, the INSPECT command is invoked to repair the track.

Abbreviations:

```
READCHECK|READ|RDCHECK|READCHK
NOREADCHECK|NOREAD|NOREADCHK
```

Default: READCHECK is the default.

Restrictions: READCHECK is only valid when you specify FORMAT.

TYPE: Specify the Type of Allocation

Explanation: **TYPE((***type of allocation,start,end)...))* specifies the type of allocation and space to be allocated.

Multiple statements of each *type of allocation* can be specified (up to 100). However, each succeeding statement modifies allocation without regard to the previous statement(s), so care must taken when you use multiple statements.

Use *start,end* to specify the pages required for *type of allocation*

Specify *type of allocation* required as follows:

DRCT
specifies that directory space is to be allocated.

DUMP
specifies that dump space is to be allocated.

OVRD
specifies that override file space is to be allocated.

PAGE
specifies that paging space is to be allocated.

PERM
specifies that permanent space is to be allocated.

TDSK
specifies that temporary disk space is to be allocated.

TEMP
specifies that spooling space is to be allocated.

Abbreviations: None.

Default: None. You must specify the *type of allocation* you require.

You must specify *start,end.* There is no default.

Restrictions: None

When a volume is formatted for the first time, any space not specified by DRCT, DUMP, OVRD, PAGE, PERM, TDSK, and TEMP parameters is allocated as PERM. Subsequently, the allocation does not change unless you specify the TYPE parameter.

VOLID: Specify the Volume Serial Number

Explanation: **VOLID** specifies the volume serial number that is to be written in the volume label.

Abbreviations: None.

Default: If VOLID is not specified, the existing volume serial number is used if it exists. If there is no current volume serial number, 'NONE' is supplied by the system.

Restrictions: VOLID is only valid when you specify FORMAT or LABEL.

Examples of the CPVOLUME Command

The following examples show different ways to code the CPVOLUME command. The device used in the examples is a 3370-1 with 69750 pages.

Format an entire volume

In this example all 69750 pages on the volume are formatted. As READCHECK is specified, a read-back check is performed to verify that all of the formatted pages can be read without error. The allocation map indicates that all 69750 pages on the volume are allocated as PERM space.

Because NOVERIFY is specified, any existing volume label is ignored, and the volume is labelled 'CPVOL1'.

```
CPVOLUME FORMAT UNIT(0150) NOVERIFY VOLID(CPVOL1) READCHECK
```

Format part of a volume

In this example the first 100 pages on the volume are formatted. The allocation map indicates that pages 0-1 are PERM space, pages 2-99 are TEMP space, and pages 100-69749 are PERM space.

Because NOVERIFY is specified, any existing volume label is ignored, and the volume is labelled 'CPVOL1'.

```
CPVOLUME FORMAT UNIT(0150) NOVERIFY VOLID(CPVOL1) RANGE(0,99) TYPE(TEMP,2,99)
```

Change volume allocation

In this example the allocation map on a volume which has already been formatted is updated. All 69750 pages are allocated as PERM space by the first allocation parameter, then the allocation for various page ranges is changed to DUMP, PAGE, TEMP and TDSK space.

Because VERIFY is specified, CPVOLUME ensures that the volume on unit address 150 has a volume label of 'CPVOL1'.

```
CPVOLUME ALLOCATE UNIT(0150) VERIFY(CPVOL1) -
 TYPE((PERM,0,69749),-
     (DUMP,10000,19999),-
     (PAGE,20000,29999),-
     (TEMP,30000,39999),-
     (TDSK,40000,49999),-
     (TDSK,60000,69749))
```

INIT Command—FBA

The INIT command initializes a volume. A direct-access storage volume must be initialized before an operating system can use it. The INIT command can initialize fixed block architecture (FBA) volumes at minimal and maximal levels by specifying parameters that control the level of initialization. These two levels of initialization are described in the sections that follow.

For INIT support of minidisks see:

- "CMS Version Minidisk Support" on page 221 and Appendix B, "VM Support" on page 257

For the IBM 0671, 9313, 9332, and 9336, minimal initialization is the only level which can be performed. Also, the BLOCKRANGE, CHECK, CONTINUE, MAP, and RECLAIM parameters are not valid. They are ignored if specified for these devices.

Initializing a Volume at the Minimal Level

Initialization is performed at the minimal level when the NOCHECK option is specified. Minimal initialization formats the volume labels and VTOC. Note that minimal initialization does not delete any previous IPLTEXT that is on the volume.

The FBAVTOC parameter is used to specify the space for the VTOC for an FBA device. This parameter allows you to specify the starting block number, number of label records, and control interval size of the VTOC. You can default the location, or you can have ICKDSF determine the size and location by specifying FBAVTOC(END). See Appendix E, "The Fixed Block Architecture VTOC (FBAVTOC)" on page 351, for more information about the FBA VTOC.

For the IBM 0671, 9313, 9332, and 9336, minimal initialization is the only level which can be performed.

When you are processing minidisks, minimal initialization is the only level which can be performed.

Initializing a Volume at the Maximal Level

Initialization is performed at the maximal level when the CHECK parameter is specified and includes the minimal initialization functions. At this level, each block is surface checked for recording errors and any blocks that have errors have new alternates assigned. The volume labels and VTOC are then formatted as in minimal initialization.

If you specify RECLAIM with CHECK, an attempt is made to reclaim the primary surface of blocks that have had alternates assigned by prior INIT or INSPECT command executions. Any blocks that were previously marked defective by an INIT or INSPECT execution but pass the surface checking test in this run, are marked available. However, any primary or alternate blocks that were flagged defective by the factory will not be reclaimed by the INIT command.

If a maximal initialization does not run to completion, the CONTINUE function is provided to allow you to recover in a minimum amount of time, and to ensure the volume is usable. See "Resuming After a Job or System Failure," for more information concerning continuing after a failure.

For the IBM 0671, 9313, 9332, 9336, and minidisks, maximal initialization is not allowed.

Resuming After a Job or System Failure

If a maximal initialization does not run to completion for any reason, the job does not need to be restarted from the beginning of the volume. ICKDSF checkpoints itself automatically during processing and can determine where it is to resume.

After a job or system failure, you can submit a new job:

- At the minimal or maximal level.
- For the entire volume, or for a different specified range, or for the same specified range (maximal INIT).
- To resume from the point of failure, or to resume from the start of the current specified range (the job which was running when the job or system failed).

Because INIT processing always destroys the volume label, a subsequent invocation must include the VOLID parameter.

After a previous failure, if CONTINUE is specified, processing continues from the point of failure *in correlation with* the current specified range as follows:

- If the new range is totally before the previous point of failure, no new blocks are processed.
- If the new range is totally beyond the point of failure, then the entire new range is processed.
- If the new range specification overlaps the point of failure, then processing begins from the point of failure).
- If NOCONTINUE is specified, processing begins from the current specified range.
- If the previous INITialize specified RECLAIM:
  - If processing failed during the actual reclaim procedure, processing starts from the beginning of the reclaim procedure and executes for the entire volume.
  - If processing failed after the actual reclaim procedure was complete, processing begins from the continue location, but is forced to the end of the volume, to ensure that RECLAIM has processed to completion.
  - Note that this is true even for a minimal initialize.

RANGE Parameters: Specifying Part of a Volume

BLOCKRANGE is an optional parameter that gives you the ability to surface check a range of blocks when you specify the INIT command.

CMS Version Minidisk Support

When you are using the CMS version of ICKDSF, the following is supported for minidisks:

- Minimal INIT *only* is supported

When you initialize a minidisk at the minimal level, you can specify the minidisk volume label (VOLID) the VTOC, and the owner identification (OWNERID),

The following parameters are supported when you are running under CMS

- UNITADDRESS, FBAVTOC, LABELS, MAP, OWNERID, VERIFY, and VOLID.

See Appendix B, "VM Support" on page 257 for more information.

Syntax

Command	Required Parameters
INIT	SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*) VERIFY(*serial*[,*owner*])|NOVERIFY
	Optional Parameters

	BLOCKRANGE(*bbbbbbbb,bbbbbbbb*)
	CHECK(*n*)|NOCHECK
	CONTINUE|NOCONTINUE
	FBAVTOC(END|*rbn*[,*extent*[,*cisize*]])
	LABELS(*n*)
	MAP|NOMAP
	OWNERID(*owner*)
	PURGE|NOPURGE
	RECLAIM|NORECLAIM
	VOLID(*serial*)

Required Parameters

SYSNAME|UNITADDRESS: Identifying the Volume

Explanation: **SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** are required parameters identifying the volume or minidisk that is to be initialized.

SYSNAME

Required for a VSE volume. For *sysxxx*, specify the SYSNAME specified in the ASSGN control statement.

UNITADDRESS

Required for a CMS or stand-alone version volume.

For *ccuu*, specify the address in hexadecimal (3 or 4 digits) of the channel and unit of the volume. For CMS, specify the virtual address of an ATTACHed volume or minidisk.

Abbreviations:

```
UNITADDRESS|UNITADDR|UNIT
```

Default: None.

VERIFY|NOVERIFY: Verifying the Volume Serial Number and Owner Identification

Explanation: **VERIFY(***serial*[,*owner*]**)|NOVERIFY** are required parameters specifying whether to verify the volume serial number and owner identification before initializing the volume or minidisk.

VERIFY

Required when you want to verify the volume serial number and owner identification before initializing the volume or minidisk. If the volume serial number or owner identification does not match, the INIT command terminates.

For *serial*, substitute 1 to 6 alphameric characters for the volume serial number.

For *owner*, substitute 1 to 14 alphameric characters for the owner identification.

NOVERIFY

Required when you want to bypass verification of the volume serial number and owner identification.

Abbreviations:

```
VERIFY|VFY
NOVERIFY|NOVFY|NVFY
```

Default: None.

Restrictions: You cannot verify the owner identification separately from the volume serial number; both the volume serial number and the owner identification must be verified when you want to verify the owner identification.

When you specify the VERIFY parameter and verification fails, the command terminates.

Optional Parameters

BLOCKRANGE: Specifying Part of the Volume

Explanation: **BLOCKRANGE(***bbbbbbbb,bbbbbbbb***)** is an optional parameter specifying that part of a volume is to be surface checked before standard initialization is performed.

For *bbbbbbbb,bbbbbbbb* specify the starting and ending relative block numbers to be surface checked. The value can be expressed in decimal or hexadecimal and must fall within the device limits. See Figure 18 on page 212 for device limits.

Abbreviations:

```
BLOCKRANGE|BLKRANGE|BLKR
```

Restrictions: RECLAIM is not valid with BLOCKRANGE, because RECLAIM must operate on the entire volume.

BLOCKRANGE is not valid for the IBM 0671, 9313, 9332, or 9336.

BLOCKRANGE is ignored for minidisks.

CHECK|NOCHECK: Surface Checking of the Volume

Explanation: **CHECK(*n*)|NOCHECK** are optional parameters specifying whether the blocks are to be checked for recording errors. Each block is surface checked by writing and reading specially patterned records. If surface checking identifies a defective block, the block is flagged and an alternate is assigned.

CHECK

Indicates that you want each block to be checked for recording errors during (maximal) initialization. This parameter destroys the contents of each block that it processes.

For *n*, substitute a decimal number from 1 through 10 for the number of times you want each block to be checked. See Appendix F, "Surface Checking" on page 353, for information about n values.

NOCHECK

Indicates that you do not want the blocks to be surface checked for recording errors during (minimal) initialization.

Abbreviations:

```
CHECK|CHK
NOCHECK|NOCHK|NCHK
```

Default: The default is NOCHECK.

Restrictions: The maximum number you can specify with the CHECK parameter is 10.

CHECK(n) is not valid for minidisks.

CHECK(n) is not valid for the IBM 0671, 9313, 9332, or 9336.

CONTINUE|NOCONTINUE: RESUME FROM A CHECKPOINT

Explanation **CONTINUE|NOCONTINUE** are optional parameters specifying whether processing is to start from the last checkpointed location (CONTINUE) or to ignore the checkpointed information (NOCONTINUE) and to start processing from the start of the specified range or full volume.

These parameters are interrogated only if processing was previously interrupted during a maximal initialization.

CONTINUE

Indicates that processing is to start from the last checkpointed location.

A message is issued to indicate where processing is resumed.

NOCONTINUE

Indicates that you do not want to resume from the last checkpointed location, but want to resume processing at the start of the range or volume.

Default: The default is CONTINUE

Restrictions: CONTINUE is not valid for the IBM 0671, 9313, 9332, or 9336. CONTINUE is ignored for minidisks.

FBAVTOC: Specifying the Volume Table of Contents for a Fixed Block Architecture (FBA) Device

Explanation: **FBAVTOC(END|***rbn*[,*extent*[,*cisize*]]**)** is an optional parameter specifying the starting location, number of label records, and control interval size of the volume table of contents (VTOC). See Appendix E, "The Fixed Block Architecture VTOC (FBAVTOC)" on page 351, for more information on the FBA VTOC.

When you specify FBAVTOC(END), ICKDSF automatically determines the size and location of the VTOC. The VTOC is put on the last blocks of the volume or minidisk; it is 99 VTOC entries in length and has a control interval size of 1024.

For *rbn*, specify 1 to 8 decimal (n) or hexadecimal (X'n') characters for the relative block number of the start of the VTOC.

Note that blocks 0 and 1 are reserved for the IPL block and the volume label blocks (VLB) respectively.

For *extent*, specify one to three decimal (n) or hexadecimal (X'n') characters for the number of label records in the VTOC. The valid range is from 3 to 999; however, the number you specify is rounded up to an integral multiple of the number of labels per control interval.

For *cisize*, specify one to four decimal (n) or hexadecimal (X'n') characters for the size of the control interval in bytes. The value specified must be an integral multiple of the device's physical block size, and must not exceed a value of 8192.

See Appendix E, "The Fixed Block Architecture VTOC (FBAVTOC)" on page 351, for FBAVTOC format and size calculations.

Abbreviations: None

Default: FBAVTOC(2,56,1024)

Restrictions: A VTOC can not be placed at blocks 0 and 1, which are reserved for the IPL block and the volume label blocks (VLB) respectively.

LABELS: Reserving Space for Additional Volume Labels

Explanation: **LABELS(***n***)** is an optional parameter specifying that space on block 1 is to be reserved for additional volume labels, also known as user volume labels. In addition to the volume 1 label that must be written on the volume or minidisk, a maximum of five additional volume labels can be specified.

To specify *n*, substitute a decimal number from 1 through 5 for the number of additional user volume labels to be placed on the volume or minidisk, during initialization.

Abbreviations:

```
LABELS|LABEL|LBL
```

Default: None.

Restrictions: If LABELS is not specified, user volume labels that existed from a previous initialization are destroyed.

If a value greater than 5 is specified, 5 is used, a message is printed, and the command continues.

MAP|NOMAP: Printing an Alternate Block Map

Explanation: MAP|**NOMAP** are optional parameters specifying whether to print an alternate block map during initialization. The alternate block map lists the primary blocks on the volume that have alternates assigned.

MAP
Indicates that you want to print an alternate block map during initialization. The format of this map is the same as that printed by the MAPALT command when DETAIL is specified.

NOMAP
Indicates that you do not want to print a block map during initialization.

Abbreviations: None.

Default: The default is MAP.

| **Restrictions**: MAP is not valid for the IBM 0671, 9313, 9332, 9336, or minidisks.

OWNERID: Specifying the Volume-Owner Identification

Explanation: **OWNERID(*owner*)** is an optional parameter specifying the volume-owner identification to be written in the volume label.

For *owner*, substitute 1 to 14 alphameric characters for the volume-owner identification to be written in the volume label.

Abbreviations:

```
OWNERID|OWNER
```

Default: The default for *owner* during a first-time initialization is 14 blanks.

If you do not specify OWNERID when reinitializing a previously initialized volume (or minidisk), the owner identification remains unchanged.

PURGE|NOPURGE: Writing Over Data on a Previously Initialized Volume

Explanation: **PURGE|NOPURGE** are optional parameters that specify whether you want to write over the data in the following types of data sets during initialization:

- Unexpired
- VSAM
- Data secured

PURGE specifies that you want to write over the data. NOPURGE specifies that you do not want to write over the data. For more information on execution of the PURGE and NOPURGE parameters, see "Volume and Data Set Security" on page 33.

A volume that appears to contain real data cannot be initialized unless the PURGE parameter is specified.

PURGE
Indicates that you want to write over existing data during initialization. For more information about the actions taken when data is found on the volume see "Volume and Data Set Security" on page 33.

NOPURGE
Indicates that you do not want to write over existing data. If a volume appears to contain real data, it cannot be initialized unless the PURGE parameter is specified.

Abbreviations:

```
PURGE|PRG
NOPURGE|NOPRG|NPRG
```

Default: The default is NOPURGE.

Restrictions: The NOPURGE parameter does not apply in the CMS or stand-alone versions. If you initialize a volume in a in a CMS or stand-alone versions, all existing data on the volume is purged, regardless of the data set security attributes.

RECLAIM|NORECLAIM: Reclaiming Blocks Previously Flagged Defective

Explanation: **RECLAIM|NORECLAIM** are optional parameters specifying whether to reclaim primary or alternate blocks that were previously flagged defective but appear to be usable after surface checking. Fixed block architecture devices' blocks that were flagged at the factory are not reclaimed.

Should INIT RECLAIM remain incomplete, defective primary blocks might remain that do not have valid alternate pointers. Any subsequent INIT command forces the reclaim process to completion.

RECLAIM
Indicates that you want blocks that are identified as usable by surface checking to be reclaimed during initialization.

NORECLAIM
Indicates that you want to suppress block reclamation during initialization.

Abbreviations:

```
RECLAIM|RCLM
NORECLAIM|NORCLM|NRCLM
```

Default: The default is NORECLAIM.

Restrictions: The RECLAIM parameter applies only when the CHECK parameter has been specified. If RECLAIM is specified with NOCHECK, it is ignored.

RECLAIM is invalid for a minidisk.

RECLAIM is not valid with BLOCKRANGE, because RECLAIM must operate on the entire volume.

RECLAIM is not valid for the IBM 0671, 9313, 9332, or 9336.

VOLID: Specifying the Volume Serial Number

Explanation: **VOLID(*serial*)** is an optional parameter specifying the volume serial number to be written in the volume label.

For *serial*, substitute one to six alphameric characters for the volume serial number. If fewer than six characters are specified, the serial is left-justified, and the remainder of the field is padded with blanks (X'40').

Abbreviations: None.

Default: When you initialize a volume that was previously initialized and do not specify the VOLID parameter, the old volume serial number remains unchanged.

Restrictions: When you initialize a volume for the first time, you must specify the VOLID parameter, or the INIT command terminates.

If you change the volume serial number of a volume that is mounted online, thereafter you must refer to the volume by the new volume serial number, even though the reference may occur in the same step.

Examples of the INIT Command

The following examples show different ways to code the INIT command.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Initializing a Stand-Alone Version FBA Volume

In this example, a fixed block architecture device is initialized at a minimal level. The volume is labeled 331022. The owner ID of SMITH is written in the volume label. Space is reserved for 3 additional user volume labels starting at block 1, and a fixed block architecture VTOC starting at block 2 for 100 label records with a VTOC control interval size of 512. NOMAP suppresses the list of alternates.

```
INIT   UNITADDRESS(02E4) NOVERIFY NOCHECK VOLID(331022) -
     OWNERID(SMITH) LABELS(3) FBAVTOC(2,100,512) NOMAP
```

Initializing a VSE Version FBA Volume

In this example, a fixed block architecture device is initialized at a maximal level by specifying CHECK and VERIFY. The volume serial and owner ID are verified before initialization is continued. Surfaces are checked and, if any blocks are found to be defective, alternate blocks are assigned. An FBA VTOC is located starting at block 2 for 100 label records with a VTOC control interval size of 1024. MAP specifies a detail map is to be printed. Any blocks that were previously flagged defective but now appear to be usable after surface checking are reclaimed.

```
// JOB     jobname
// ASSGN   SYS005,353
// EXEC    ICKDSF,SIZE=AUTO
     INIT  SYSNAME(SYS005) VERIFY(337011,JONES) CHECK(3) -
           FBAVTOC(2,100,1024) MAP RECLAIM
/*
/&
```

Initializing a Stand-Alone Version FBA Minidisk

In this example, a fixed block architecture 3370 minidisk is initialized in the stand-alone version. The volume ID and owner ID are checked. Space is reserved for a fixed block architecture VTOC starting at block 2, for 100 label records with a VTOC control interval size of 512. The volume is labeled 337019. Space is reserved for 3 user volume labels. The size of the minidisk is obtained from VM.

```
INIT  UNITADDRESS(0151) VERIFY(337022,PSMITH) -
    FBAVTOC(X'2',X'64',X'200') VOLID(337019) LABELS(3)
```

Initializing a Minidisk in the CMS Version

In this example, a minidisk is initialized at the minimal level. It establishes a VOLID, OWNERID, and the VSE VTOC on a minidisk with a virtual address of 391. The minidisk is labeled 337012 and the owner ID is PAYROLL.

After performing the INIT, the minidisk is ready for future use in an VSE operating system environment.

```
INIT  UNITADDRESS(0391) NOVERIFY VOLID(337012) OWNERID(PAYROLL) FBAVTOC(END)
```

INSPECT Command—FBA

You can use the INSPECT command to surface check a volume for defective blocks and to assign alternate blocks without necessarily destroying existing data on the volume. Several options are available for inspection:

- The BLOCKS or BLOCKRANGE parameters are provided to identify which blocks are to be inspected.
- The CHECK parameter is provided to check each block surface and to permit optional specification of the number of checking cycles that are to be performed on each block being inspected. Normally, an alternate is assigned to a primary block only after an inspection of the surface reveals defects. The NOCHECK parameter suppresses such checking and, unless alternate block assignment is suppressed, an alternate will be unconditionally assigned to all specified blocks.
- The PRESERVE, KEEPIT, and HOLDIT parameters are provided to save data that would normally be destroyed during block inspection. Before a surface is inspected, its contents are read and saved. After a surface is inspected and found to be nondefective, the saved data contents are written back to the same area. If a block is found to be defective, the saved data contents are written to an assigned alternate.

  If you specify HOLDIT, the data is kept only in storage. If processing terminates before the data is rewritten, the data is lost.

  If you specify PRESERVE, or KEEPIT, a copy of the data in storage is written at a backup location as well as kept in storage. If processing ends abnormally, the next use of INSPECT detects the data at the backup location and automatically restores the data to the block on which processing ended abnormally.

  The NOPRESERVE parameter allows inspection to destroy the data content of a block. This allows inspection of blocks where data cannot be read.
- The ASSIGN parameter automatically assigns alternates for primary or alternate blocks that are found to be defective. Automatic assignment of alternates is suppressed by the NOASSIGN parameter.
- The MAP parameter provides a printed list of the inspected blocks that have alternates assigned. The NOMAP parameter suppresses the printed output.

For the IBM 0671, 9313, 9332, and 9336 *only* the following is allowed:

- Only unconditional assignment of alternate blocks (ASSIGN NOCHECK BLOCKS...) is allowed.
- The PRESERVE, KEEPIT, and HOLDIT parameters are all processed as HOLDIT. The data is lost if processing terminates before the data is rewritten.
- The CHECK or BLOCKRANGE parameters are invalid and cause command termination.
- MAP is ignored.

Inspecting a Volume to Assign Alternate Blocks

A block can be flagged as defective, and an alternate assigned, either conditionally or unconditionally. You can control the assignment of alternate blocks as follows:

- Issue the INSPECT command and specify the CHECK and ASSIGN parameters to detect defective blocks. If a surface is identified as defective by surface checking, the surface is flagged as defective, and an alternate surface is assigned to the defective block.
- Issue the INSPECT command and specify the NOCHECK and ASSIGN parameters to unconditionally assign alternate surfaces for the blocks inspected.
- To inspect primary and alternate blocks, but to prevent assignment of alternates, issue the INSPECT command and specify the NOASSIGN parameter. Note that if PRESERVE is specified and user data cannot be rewritten because of surface defects, an alternate is assigned regardless of the ASSIGN or NOASSIGN parameter specification.

RANGE Parameters: Specifying Part of a Volume

BLOCKRANGE is an optional parameter that allows you to inspect part of a volume. The BLOCKS parameter allows you to specify discrete blocks. BLOCKS and BLOCKRANGE are mutually exclusive.

Preserving Data during INSPECT

When you specify the PRESERVE or KEEPIT parameter of the INSPECT command, a backup copy of the data is stored on the same volume as well as held in storage. The backup location uses two blocks on the CE cylinder. One block (the "backup" block) contains the control information, and another block (the "preserve" block) contains the actual data.

If processing ends abnormally, the next use of INSPECT will:

- Detect the data at the backup location, and determine the block to be recovered (the recovery block)
- Surface check the block to be restored. If a data check is detected, skip displacement surface checking is performed.
- Restore the data from the preserve block.

The restoration of the block from the preserved data is automatic, and is independent of the range specified in the current job. INSPECT can be run with no blocks specified and only the restore function is performed.

INSPECT allows you to choose from two levels of data preservation:

- HOLDIT specifies that a copy of the data from the block being processed is to be kept in storage only, with no copy being kept at the backup location.
- PRESERVE or KEEPIT specifies that a copy of the data from the block being processed is to be written at the backup location as well as kept in storage. The copy at the backup location is used only during the restore procedure.

  The backup location and the copy of the data in storage are erased at the completion of the command.

When PRESERVE/KEEPIT is specified, you might notice a performance degradation caused by the writing of the data at the backup location. The performance degradation depends on the total number of blocks being processed by the current INSPECT command.

- For the IBM 0671, 9313, 9332, and 9336 the PRESERVE, KEEPIT, and HOLDIT parameters are processed as HOLDIT. The data is lost if processing terminates before the data is rewritten.

Some cautions to be used for PRESERVE processing:

- When data is written at the backup location, it is read-back-checked to ensure it was written correctly. However, at the time of recovery, when the data is to be restored, **it cannot be guaranteed that the data is always retrievable from the backup location**.
- Although the backup block and the preserve block are located on the CE cylinder, the ANALYZE command (which writes on the CE cylinder), does **NOT** destroy the restore data if it exists. ANALYZE will indicate the block number for which data exists. **Note, however, that CE microdiagnostics may destroy the data at the backup location**. Therefore, if INSPECT processing does not run to completion, and it is determined to be a problem that will cause the volume to be turned over to the IBM Customer Engineer, the INSPECT command should be executed to try to restore the data.
- When you are processing minidisks under the &cms, version, data is not saved at the backup location. Therefore, no recovery of data is possible.

Recovering Data After a Job or System Failure

If an INSPECT command did not execute to completion, and PRESERVE was specified on the failing job, ICKDSF has saved the data, and it will be automatically recovered on the next use of the INSPECT command.

After resolving the reason for the failure, you can submit:

- The same INSPECT job.

  This will do a primary surface check of the block being processed at the time of failure, recover the data, and then inspect all the blocks in the specified range, including those blocks that were inspected prior to the previous failure.

- An inspect job for a totally different, or partially different, range.

  This will do a primary surface check of the block being processed at the time of failure, recover the data, and then process all blocks in the new range.

- An ANALYZE job (for nonemulated nonremovable media devices only) to determine the block that failed.

  ANALYZE will print the cylinder and head of the block that is being processed at the point of failure.

  - Then execute a new INSPECT job with a modified range according to the previous point of failure.

    This will do a primary surface check of the block being processed at the time of failure, recover the data, and then process all blocks in the new range.

- An INSPECT with neither BLOCKS nor BLOCKRANGE specified.

This will do a primary surface check of the block being processed at the time of failure, and recover the data.

Notes:

- Recovery is only possible if PRESERVE was specified on the job running at the time of failure. It is not possible if HOLDIT or NOPRESERVE were specified.
- It is possible that INSPECT was "between blocks" when the job failed, and there is no block or data to recover.
- The data at the recovery block may be invalid. In this case, in addition to the data being unavailable, the block may be unusable to the operating system and any use of the block can cause I/O errors.
- If you run INIT on this volume before the next INSPECT, INIT will erase the recovery data.
- The restore function is not optional. If data exists at the backup location it is restored.

  If the data on the preserve block is different than the data on the block being restored (that is, the block being processed at the point of failure), the operator is prompted either to restore the data or erase the data.
- If the data cannot be restored, for whatever reason, the operator is prompted for the next action.

  To put the restore data in storage, you can run a job that specifies HOLDIT.
- When you are processing minidisks under the CMS version, data is not saved at the backup location. Therefore, no recovery of data is possible.

CMS Version Minidisk Support

When you are using the CMS version of ICKDSF, you must have DEVMAINT authority (as defined in the CP directory) and specify either the USERID or REALADDR parameter. This allows you to INSPECT another user's minidisk (USERID) or INSPECT a volume specifying the real address of the volume (REALADDR) as follows:

USERID: With DEVMAINT authority you use the USERID parameter to INSPECT another user's minidisk. The following parameters are valid in this mode:

- ASSIGN/NOASSIGN, BLOCKRANGE/BLOCKS, CHECK/NOCHECK, HOLDIT, MAP/NOMAP, PRESERVE/NOPRESERVE, VERIFY,NOVERIFY, and UNITADDRESS

REALADDR: With DEVMAINT authority you use the REALADDR parameter to INSPECT a volume using the real device address. The following parameters are valid in this mode:

- ASSIGN/NOASSIGN, BLOCKRANGE/BLOCKS, CHECK/NOCHECK, HOLDIT, MAP/NOMAP, PRESERVE/NOPRESERVE, VERIFY, NOVERIFY, and UNITADDRESS

  Note: The maximum number of blocks you can INSPECT in this mode is one.

See Appendix B, "VM Support" on page 257 for more information.

Syntax

Command	Required Parameters
INSPECT	SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)|REALADDR(*ccuu*) VERIFY(*serial*[,*owner*])|NOVERIFY
	Optional Parameters
	ASSIGN|NOASSIGN BLOCKRANGE(*bbbbbbbb*,*bbbbbbbb*)|BLOCKS(*rbn*[,...]) CHECK(*n*)|NOCHECK MAP|NOMAP PRESERVE|KEEPIT|HOLDIT|NOPRESERVE USERID(*user's ID*)

Required Parameters

SYSNAME|UNITADDRESS|REALADDR: Identifying the Volume

Explanation: **SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)|REALADDR(*ccuu*)** are required parameters identifying the volume that is to be inspected.

SYSNAME

Required for a VSE volume. For *sysxxx*, specify the SYSNAME specified in the ASSGN system control statement.

UNITADDRESS

Required for a stand-alone or CMS version volume.

For *ccuu*, specify the address (3 or 4 hexadecimal digits) of the channel and unit of the volume. For the CMS version, specify the virtual address of an ATTACHed volume or minidisk.

REALADDR(*ccuu*)

Required to specify the real address of a volume. This parameter is only valid when you are running the CMS version of ICKDSF with DEVMAINT authority. For *ccuu*, specify the real address (3 or 4 hexadecimal digits) of the channel and unit of the volume.

REALADDR is mutually exclusive with UNITADDRESS SYSNAME, and USERID.

The maximum number of blocks that you can INSPECT using REALADDR is one.

Abbreviations:

```
UNITADDRESS|UNITADDR|UNIT
REALADDR|RADDR
```

VERIFY|NOVERIFY: Verifying the Volume Serial Number and Owner Identification

Explanation: **VERIFY(*serial*[,*owner*])|NOVERIFY** are required parameters specifying whether to verify the volume serial number and owner identification before inspecting the volume or minidisk.

VERIFY

Required when you want to verify the volume serial number and owner identification before inspecting the volume or minidisk. If the volume serial number or owner identification does not match that found on the volume or minidisk the INSPECT command terminates.

For *serial*, substitute 1 to 6 alphameric characters for the volume serial number.

For *owner*, substitute 1 to 14 alphameric characters for the owner identification.

NOVERIFY
Required when you want to bypass verification of the volume serial number and owner identification.

Abbreviations:

```
VERIFY|VFY
NOVERIFY|NOVFY|NVFY
```

Default: None.

Restrictions: You cannot verify the owner identification separately from the volume serial number. Both the volume serial number and owner identification must be verified when you want to verify the owner identification.

When you specify the VERIFY parameter and verification fails, execution of the command terminates.

When you specify VERIFY, the volume label must exist for the volume.

Optional Parameters

ASSIGN|NOASSIGN: Specifying Assignment of Alternate Blocks

Explanation: **ASSIGN|NOASSIGN** are optional parameters specifying whether alternates are to be assigned when defective primary and assigned alternate blocks are detected.

ASSIGN
Indicates that you want alternates to be assigned when defective primary and assigned alternate blocks are detected.

NOASSIGN
Indicates that you do not want alternate blocks assigned. If PRESERVE is specified and user data cannot be rewritten because of surface defects, an alternate is assigned.

Abbreviations:

```
ASSIGN|ASGN
NOASSIGN|NOASGN|NASGN
```

Default: The default is ASSIGN.

Restrictions: If NOASSIGN is specified with the CHECK parameter, an inspected block is not marked defective and an alternate is not assigned.

The combination of ASSIGN NOCHECK cannot be specified with the BLOCKRANGE parameter.

BLOCKRANGE|BLOCKS: Specifying Which Blocks to Inspect

Explanation: BLOCKRANGE(*bbbbbbbb,bbbbbbbb*) |BLOCKS(*rbn*[,...]) are provided to identify which blocks are to be inspected. The BLOCKS parameter allows you to inspect discrete blocks and the BLOCKRANGE parameter allows you to inspect a range of blocks.

BLOCKRANGE

indicates that part of a volume is to be surface checked before the volume is processed.

For *bbbbbbbb,bbbbbbbb*, specify the beginning and ending relative block numbers to be surface checked. The value can be expressed in decimal or hexadecimal and must fall within the device limits. See Figure 18 on page 212 for device limits.

BLOCKS

specifies each block to be inspected.

For *rbn*, substitute the relative block number of each block to be inspected. Specify the block number(s) in decimal or hexadecimal. The number of *rbn* parameters specified cannot exceed 20.

Abbreviations:

```
BLOCKRANGE|BLKRANGE|BLKR
BLOCKS|BLOCK
```

Default: None.

Restrictions: BLOCKS and BLOCKRANGE are mutually exclusive.

BLOCKRANGE is not valid with ASSIGN NOCHECK.

| BLOCKRANGE is not valid for the IBM 0671, 9313, 9332, or 9336.

When you are processing minidisks under the CMS version, if you specify the USERID parameter you can INSPECT the whole minidisk. If you specify the REALADDR parameter, the maximum you can INSPECT is one block.

The number of blocks specified by the *rbn* of the BLOCKS parameter cannot exceed 20.

The maximum range of blocks that can be specified in the BLOCKRANGE parameter is 80,000.

Maximum block numbers for fixed block architecture devices are shown in Figure 18 on page 212.

CHECK|NOCHECK: Surface Checking of the Volume

Explanation: **CHECK**(*n*)|**NOCHECK** are optional parameters specifying whether the blocks are to be checked for recording errors. Each block is surface checked by writing and reading specially patterned records. If surface checking identifies a defective block, the block is flagged, and an available alternate block is assigned.

CHECK

Indicates that you want each block to be surface checked for recording errors during inspection and assigned an alternate only if the checked block appears defective.

For *n*, substitute a decimal number from 1 through 10 for the number of times you want each block to be checked. See Appendix F, "Surface Checking" on page 353, for information on values of n.

NOCHECK
Indicates that you do not want each block to be surface checked for recording errors during inspection. Alternate blocks are unconditionally assigned as a result of inspection when NOCHECK and ASSIGN are specified.

Abbreviations:

```
CHECK|CHK
NOCHECK|NOCHK|NCHK
```

Default: The default is CHECK(1).

Restrictions: The maximum number you can specify with the CHECK(n) parameter is 10.

CHECK is not valid for the IBM 0671, 9313, 9332, or 9336.

MAP|NOMAP: Printing an Alternate Block Map

Explanation: **MAP|NOMAP** are optional parameters specifying whether to print an alternate block map during inspection. The alternate block map lists inspected blocks that have alternates assigned.

If you specify MAP, the format of the printed list is the same as the alternate block map printed by the MAPALT command when DETAIL is specified.

MAP
Indicates that you want to print an alternate block map during inspection.

NOMAP
Indicates that you do not want to print an alternate block map during inspection.

Abbreviations: None.

Default: The default is MAP.

Restrictions: MAP is not valid for the IBM 0671, 9313, 9332, or 9336.

PRESERVE|KEEPIT|HOLDIT|NOPRESERVE: Preventing Destruction of Data on the Blocks Inspected

Explanation: **PRESERVE|KEEPIT|HOLDIT|NOPRESERVE** are optional parameters specifying whether to read and save the data on the inspected blocks. Data read from the specified blocks is held in storage. Data on a block can also be saved at a backup location as well as held in storage. If processing ends abnormally, the next use of INSPECT detects the data at the backup location and restores the data to the block at which processing ended abnormally.

PRESERVE or KEEPIT
Indicates that you want to save the data on the inspected blocks. It also indicates that a copy of the block is to be saved at the backup location as well as in storage (the storage copy is used to rewrite the data). If processing ends abnormally, the next use of INSPECT detects the data at the backup

location and automatically restores the data to the block on which processing ended abnormally.

PRESERVE and KEEPIT are synonymous.

The backup location and the storage copy of the block are erased at the completion of a command.

The backup location consists of two blocks on the CE cylinder. One of the blocks contains control information (backup block) and the other block contains the data that is being saved (preserve block).

A performance degradation may be noticed due to the writing of the data at the backup location. The amount of degradation depends on the total number of blocks being processed for the current INSPECT.

When the data is written at the backup location, it is read-back-checked to ensure it was written correctly. However, when the preserve block containing the data is to be restored at the next use of the INSPECT command, there is no guarantee that the data can be recovered.

When data exists at the backup location on the CE cylinder, the ANALYZE command (which writes on the CE cylinder) does not destroy the data. ANALYZE does indicate the cylinder and head of the block for which data exists. **Note however, that the CE microdiagnostics may destroy the data at the backup location**. Therefore, if INSPECT processing does not run to completion, and it is determined to be a problem that will cause the volume to be turned over to an IBM Customer Engineer, all attempts should be made to restore the data first, if necessary.

HOLDIT
Indicates that you want to save the data on the inspected blocks. HOLDIT reads the data and keeps a copy in storage only. If processing for the block does not run to completion, the data is lost and must be restored from a backup copy.

NOPRESERVE
Indicates that you do not want to save the data on the inspected blocks.

Caution: If you specify the NOPRESERVE parameter with either the CHECK or ASSIGN parameter, data on the volume will be destroyed.

Note that the VTOC is no exception to this rule. Special care must be taken with the volume table of contents in a VSE environment.

The NOPRESERVE option should be used only when the data is known to be unwanted, or if data errors on a particular block preclude the preservation of the data.

Abbreviations:

```
PRESERVE|PRSV
KEEPIT|KEEP
HOLDIT|HOLD
NOPRESERVE|NOPRSV|NPRSV
```

Default: The default is PRESERVE.

Restrictions: For the IBM 0671, 9313, 9332, 9336, and minidisks the PRESERVE, KEEPIT, and HOLDIT parameters are processed as HOLDIT.

USERID: Specify Another User's Minidisk

Explanation: **USERID(***user's ID***)** is an optional parameter used to specify that the INSPECT command is to be performed on another user's minidisk. This parameter is valid when you are running the CMS version of ICKDSF with DEVMAINT authority.

For *user's ID*, substitute the 1 to 8 characters of the user ID of the owner of the minidisk you want to verify.

Abbreviations:

```
USERID|UID
```

Default: If USERID is not specified when you are running ICKDSF under the VM operating system, your own minidisk is verified.

Restrictions: USERID can only be specified if you are using the CMS version of ICKDSF and have DEVMAINT authority.

When you specify the USERID parameter you can INSPECT the whole minidisk.

Examples of the INSPECT Command

The following examples show different ways to code the INSPECT command.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Inspecting a Stand-alone Version FBA Device

In this example, an FBA device is inspected for defective blocks. It provides surface checking of the blocks specified in the BLOCKS parameter and conditional assignment of alternate blocks for any blocks that are found defective. The data on the inspected blocks is preserved. A detail map of the inspected blocks is printed.

```
INSPECT  UNITADDRESS(0150) BLOCKS(50,55,57,58) CHECK(1) -
         ASSIGN PRESERVE MAP NOVERIFY
```

In this example, an FBA device that has already been initialized is inspected for defective blocks. The blocks specified in the BLOCKS parameter are surface checked for errors, but an inspected block is not marked defective and an alternate is not assigned.

```
INSPECT  UNITADDRESS(02E4) BLOCKS(2000,2020,2021,2022) -
         CHECK(1) NOASSIGN NOMAP NOVERIFY
```

Unconditional alternate block assignment for an FBA Volume

In this example, an inspection is performed on an FBA device that has already been initialized. The blocks specified in the BLOCKS parameter are unconditionally assigned the next available alternate blocks.

```
INSPECT  UNITADDRESS(0380) BLOCKS(X'FA',X'10E',X'118') -
         NOVERIFY NOCHECK ASSIGN
```

Unconditionally assigning alternate blocks for an FBA Volume (VSE)

In this example, an FBA volume previously initialized under VSE is inspected. The specified blocks are unconditionally assigned the next available blocks. PRESERVE specifies that data is to be saved at the backup location as well as in storage.

```
// JOB      jobname
// ASSGN    SYS010,151
// EXEC     ICKDSF,SIZE=AUTO
   INSPECT SYSNAME(SYS010) NVFY BLOCKS(100,200,300) -
           NOCHECK ASSIGN PRESERVE NOMAP
/*
/&
```

Inspecting an FBA Volume to Check Blocks for Defects (VSE)

In this example, an FBA volume previously initialized under VSE is inspected. It provides surface checking of the specified blocks and conditional assignment of alternate blocks that are found defective. PRESERVE specifies that data is to be saved at the backup location as well as in storage. A detail map of the inspected blocks is included.

```
// JOB      jobname
// ASSGN    SYS010,151
// EXEC     ICKDSF,SIZE=AUTO
   INSPECT SYSNAME(SYS010) NVFY BLOCKS(50,60,70) -
           CHECK(1) ASSIGN PRESERVE MAP
/*
/&
```

Inspecting Another User's Minidisk under the CMS Version

In this example, a minidisk that is owned by a another user is inspected. You specify the USERID parameter to inspect the minidisk of a user named BROWN at virtual address 391. You must have DEVMAINT authority to specify USERID.

Blocks 50 and 55 of the minidisk are inspected. If the inspected block is defective, an alternate is assigned.

```
INSPECT  UNITADDRESS(0391) NOVERIFY USERID(BROWN) BLOCKS(50,55)
```

Inspecting a Minidisk Specifying a Real Address under the CMS Version

In this example, part of a volume with a real address of 290 is inspected. You must have DEVMAINT authority to specify REALADDR.

Block 1000 is inspected. If the inspected block is defective, an alternate is assigned.

```
INSPECT  REALADDR(290) NOVERIFY BLOCKS(1000)
```

IODELAY Command—FBA

ICKDSF issues very intensive I/O during processing. Sometimes this can degrade the performance of other users accessing the channel and impact your entire system throughput. The purpose of the IODELAY command is to "slow down" ICKDSF processing by allowing time in between I/O rather than issuing consecutive I/O operations.

The IODELAY command allows you to specify the number of consecutive I/Os that ICKDSF can issue and the time period to allow between issuing those I/Os.

When ICKDSF is invoked, the time delay is set to zero (same as current processing). Once you set the time delay, using the IODELAY command, it remains set for *that invocation* of ICKDSF until you reset it or set it to another value.

The IODELAY command affects CKD and FBA commands. The information is included in both sections for convenience.

Syntax

Command	Required Parameters
IODELAY	SET|RESET
	Optional Parameters

	PERIO(*n*)
	SECONDS(*n*)|MSECONDS(*n*)|USECONDS(*n*)

Required Parameters

SET|RESET: Set an I/O Delay

Explanation: **SET|RESET** are required parameters which allow you to set or reset a time delay.

SET
is used to set a timed delay which will apply to all ICKDSF functions

RESET
is used to reset the time delay. After issuing the RESET parameter, there is no time delay in effect.

Abbreviations: None

Default: None.

Restrictions: None.

Optional Parameters

PERIO: Number of I/Os Scheduled

Explanation: **PERIO(*n*)** is an optional parameter which allows you to specify the number of I/Os to be scheduled between each time delay. The number specified here is the number of I/Os ICKDSF initiates between each specified time delay.

PERIO(*n*)
specifies the number of I/Os ICKDSF will schedule before it will quiesce and allow other functions to gain control. Specify *n* as the number of I/Os (1 to 1000) allowed before the time interval is reactivated.

Abbreviations: None

Default: If PERIO is not specified with SET, PERIO defaults to 1.

Restrictions: None.

SECONDS|MSECONDS|USECONDS: Set the time period

Explanation: **SECONDS(*n*)|MSECONDS(*n*)|USECONDS(*n*)** are optional parameters which allow you to specify the time period of a time delay. The time specified here is the amount of time ICKDSF allows between issuing I/Os.

SECONDS(*n*)
specifies the amount of time in seconds which is allowed between ICKDSF issuing I/Os. Specify *n* as the number of seconds (1 to 60) delay.

MSECONDS(*n*)
specifies the amount of time in milliseconds which is allowed between ICKDSF issuing I/Os. Specify *n* as the number of milliseconds (1 to 1000) delay.

USECONDS(*n*)
specifies the amount of time in microseconds which is allowed between ICKDSF issuing I/Os. Specify *n* as the number of microseconds (1 to 1000) delay.

Abbreviations:

```
SECONDS|SEC
MSECONDS|MILLI|MSEC
USECONDS|MICRO|USEC
```

Default: None.

Restrictions: None.

Examples of the IODELAY Command

The following example shows how to code the IODELAY command.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Using the IODELAY Command

In this example, the IODELAY command is used to set a delay of 100 milliseconds after every twenty ICKDSF I/O operations. This allows functions other than ICKDSF to perform during this delay. The first IODELAY command is followed by the formatting of a volume for VM which has a delay of 100 milliseconds after every twenty ICKDSF I/O operations while it is processing. The second IODELAY command resets the delay resulting in the ANALYZE command having no delay set.

```
IODELAY SET PERIO(20) MILLI(100)
CPVOLUME FORMAT UNIT(xxxx) NOVERIFY READCHECK
IODELAY RESET
ANALYZE UNITADDRESS(xxxx) SCAN
```

MAPALT Command—FBA

The MAPALT command maps alternate block assignments.

The MAPALT command, for exclusive use on fixed block architecture (FBA) direct access storage devices, produces a printed report, or map, of the primary blocks that have been assigned to alternate blocks on the device. MAPALT parameters allow you to specify a limited range of primary blocks to be mapped or to specify that the entire volume be mapped.

Execution of the MAPALT command is restricted to reading the identification fields of the primary blocks only. It is not necessary to create backup copies of the data on the volume before the command is invoked. Thus, the command may be executed against either a newly installed device or a device that already contains user data.

The MAPALT command can only be executed against the device address that defines the entire device in fixed block mode. **Emulated devices on fixed block architecture devices are not supported.**

The IBM 0671, 9313, 9332, and 9336 are not supported by the MAPALT command.

MAPALT is supported by the VSE, stand-alone, and CMS versions of ICKDSF.

CMS Version VM Support

When you are using the CMS version of ICKDSF, the MAPALT command is valid only with ATTACHed devices (that is, no minidisk support). See Appendix B, "VM Support" on page 257 for more information.

MAPALT Report Output

A two-part report is produced. The first part, which is optional, is as shown below:

```
PRIMARY
 BLOCK             BLOCK                  ALTERNATE
NUMBER            ADDRESS                  ADDRESS

nnnnnnnn       C=nnn  H=nn              C=nnn  H=nn
nnnnnnnn       C=nnn  H=nn              C=nnn  H=nn
nnnnnnnn       C=nnn  H=nn              C=nnn  H=nn
nnnnnnnn       C=nnn  H=nn              C=nnn  H=nn
nnnnnnnn       C=nnn  H=nn              C=nnn  H=nn
```

This is the detailed report that shows the relative block number of the defective primary block, its location on the volume (cylinder and head number), and the location of the alternate block that has been assigned to the primary (also in cylinder and head number). Depending on the device type, the primary and alternate block addresses can be the same on this report.

The second portion of the report, which is always printed, is a summary message showing the number of blocks (within the specified range) found to have been assigned to alternates.

MAPALT Diagnostic Output

I/O errors that cause interruption of program execution are reported by the program. The following information appears on the program output when such errors occur:

```
CSW = xxxxxx xxxxxx CCW = xxxxxxxx xxxxxxxx
SENSE = xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
        xxxxxxxx xxxxxxxx
```

This information should be used, in accordance with installation procedures, as an aid in isolating and correcting the cause of the problem.

If a data check is encountered, an error message is printed giving the relative block number of the block causing the error, and processing then continues with the next sequential block.

Syntax

Command	Required Parameters
MAPALT	SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)
	Optional Parameters
	DETAIL|<u>NODETAIL</u> LIMITS(*lorbn,hirbn*)|ALL

Required Parameters

SYSNAME|UNITADDRESS: Identifying the Volume

Explanation: **SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** are required parameters identifying the volume that is to be mapped.

SYSNAME
Required for a VSE volume. For *sysxxx*, specify the SYSNAME in the ASSGN control statement.

UNITADDRESS
Required for a stand-alone version volume. For *ccuu*, specify the address (3 or 4 hexadecimal digits) of the channel and unit of the volume.

Abbreviations:

```
SYSNAME|SNAME
UNITADDRESS|UNITADDR|UNIT
```

Default: None.

Optional Parameters

DETAIL|NODETAIL: Controlling the Program Output

Explanation: **DETAIL|NODETAIL** is an optional parameter that controls the level of detail in the program output report.

DETAIL
Causes printing of the detailed report that lists each defective block assigned to an alternate, gives its location on the disk, and gives the location of the assigned alternate block.

NODETAIL
Causes printing of the detailed report to be suppressed.

Abbreviations:

```
DETAIL|DTL
NODETAIL|NODTL
```

Default: NODETAIL

Restrictions: This parameter only controls printing of the detailed report and does not affect other output from the program. The summary message will be printed at all times upon termination of the program.

LIMITS|ALL: Specifying the Area to Be Mapped

Explanation: **LIMITS**(*lorbn,hirbn*)|**ALL** are optional parameters specifying the area of the disk where alternate block mapping is to be performed.

LIMITS(lorbn,hirbn)
lorbn, hirbn specify the relative block number for the start and end of mapping. *lorbn* must be lower than or equal to *hirbn*. The values can be expressed in decimal or hexadecimal and must be within the device limits. See Figure 18 on page 212 for device limits.

ALL
Indicates that the entire volume is to be mapped.

Abbreviations:

```
LIMITS|LIMIT|LIMS|LIM
```

Default: ALL

Examples of the MAPALT Command

The following examples illustrate ways you might code the MAPALT command in various situations.

Example 1: Mapping a Stand-Alone Version Volume

In this example, a full volume scan of a 3310 direct access storage volume is performed and a summary report is made of the total number of blocks found that have alternates assigned.

```
MAPALT  UNITADDRESS(0141) ALL NODETAIL
```

Using abbreviations and defaults, you could also have specified:

```
MAPALT  UNIT(0141)
```

Example 2: Mapping a Stand-Alone Version Volume

In this example, the range of blocks from 200,000 to 300,000 on a 3370 direct access storage volume is scanned. A detailed report is made of each block within that range that has an alternate assigned, and a summary report is made giving the total number of assigned alternates found.

```
MAPALT  UNITADDRESS(0142) LIMITS(200000,300000) DETAIL
```

Using abbreviations, you could have specified:

```
MAPALT  UNITADDR(0142) LIM(200000,300000) DTL
```

Example 3: Mapping a VSE Version Volume

In this example, a full volume scan is performed on the fixed block architecture device assigned to SYS001. A detailed report is made of each block on the volume that has an alternate assigned, and a summary report is made giving the total number of alternates found.

```
// JOB   jobname
// ASSGN SYS001,140
// EXEC  ICKDSF,SIZE=AUTO
  MAPALT  SYSNAME(SYS001) ALL DETAIL
/*
/&
```

REFORMAT Command—FBA

The REFORMAT command updates a portion of a volume which was previously initialized by the INIT command. For fixed block architecture devices, a volume can be reformatted to change the volume serial number and owner identification. Only volumes that have been initialized can be reformatted.

Do not use REFORMAT to update volumes which have been prepared for use in a VM environment by use of the CPVOLUME command. Use the CPVOLUME command for this function.

CMS Version Minidisk Support

When you are using the CMS version of ICKDSF you can use the REFORMAT command to change the volume serial number, and owner identification of a minidisk. Note that only previously initialized volumes can be reformatted.

The following REFORMAT parameters are supported for minidisks:

- OWNERID, VERIFY/NOVERIFY, VOLID, and UNITADDRESS

See Appendix B, "VM Support" on page 257 for more information.

Syntax

The abbreviation for the REFORMAT command is RFMT.

Command	Required Parameters
REFORMAT	**SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** **VERIFY(*serial*[*,owner*])|NOVERIFY**
	Optional Parameters

	OWNERID(*owner*)
	VOLID(*serial*)

Required Parameters

SYSNAME|UNITADDRESS: Identifying the Volume

Explanation: **SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)** are required parameters identifying the volume or minidisk that is to be reformatted.

SYSNAME

Required for a VSE volume. For *sysxxx*, specify the SYSNAME specified in the ASSGN system control statement.

UNITADDRESS

Required for a stand-alone or CMS version volume.

For *ccuu*, specify the address (3 or 4 hexadecimal digits) of the channel and unit of the volume.

For the CMS version specify the virtual address of an ATTACHed volume or minidisk.

Abbreviations:

```
UNITADDRESS|UNITADDR|UNIT
```

Default: None.

VERIFY|NOVERIFY: Verifying the Volume Serial Number and Owner Identification

Explanation: **VERIFY(***serial*[,*owner*]**)|NOVERIFY** are required parameters specifying whether to verify the volume serial number and owner identification before reformatting the volume or minidisk.

VERIFY
Required when you want to verify the volume serial number and owner identification before reformatting the volume or minidisk. If the volume serial number or owner identification does not match that found on the volume, the REFORMAT command terminates.

For *serial*, substitute 1 to 6 alphameric characters for the volume serial number.

For *owner*, substitute 1 to 14 alphameric characters for the owner identification.

NOVERIFY
Required when you want to bypass verification of the volume serial number and owner identification.

Abbreviations:

```
VERIFY|VFY
NOVERIFY|NOVFY|NVFY
```

Default: None.

Restrictions: You cannot verify the owner identification separately from the volume serial number; both must be verified when you want to verify the owner identification.

When you specify the VERIFY parameter and verification fails, execution of the command terminates.

Optional Parameters

OWNERID: Specifying a New Volume-Owner Identification

Explanation: **OWNERID(***owner***)** is an optional parameter specifying a new volume-owner identification to be written in the volume label.

For *owner*, substitute one to fourteen alphameric characters for a new volume-owner identification in the volume label.

Abbreviations:

```
OWNERID|OWNER
```

Default: When a volume is reformatted and a new owner identification is not specified, the old owner identification remains unchanged.

VOLID: Specifying a New Volume Serial Number

Explanation: **VOLID(*serial*)** is an optional parameter specifying a new volume serial number to be written in the volume label.

For *serial*, substitute one to six alphameric characters for the new volume serial number. If fewer than six characters are specified, the serial number is left-justified and the remainder of the field is padded with blanks (X'40').

Abbreviations: None.

Default: When you reformat a volume or minidisk and do not specify the VOLID parameter, the old volume seriai number remains unchanged.

Restrictions: The catalog must be changed to reflect the new volume serial number for any cataloged data sets that reside on the reformatted volume.

Examples of the REFORMAT Command

The following examples show different ways to code the REFORMAT command.

Any values specified here are examples only and should not necessarily be interpreted as the values for your system.

Example 1: Reformatting a Fixed Block Architecture Volume to change the Volume Serial Number (VSE)

In this example, the volume serial number and owner ID are verified and a new volume serial number and owner ID are assigned.

```
// JOB      jobname
// ASSGN    SYS010,380
// EXEC     ICKDSF,SIZE=AUTO
   REFORMAT SYSNAME(SYS010) VERIFY(OLDVOL,SMITH) -
            VOLID(NEWVOL) OWNERID(JONES)
/*
/&
```

Example 2: Reformatting a Fixed Block Architecture Volume to Change the Volume Serial and Blank Out the Owner-ID (VSE)

In this example, the volume serial number and owner ID are verified, a new volume serial number is assigned, and the owner ID is blanked.

```
// JOB      jobname
// ASSGN    SYS011,381
// EXEC     ICKDSF,SIZE=AUTO
   REFORMAT SYSNAME(SYS011) VERIFY(OLDVOL,JONES) -
            VOLID(NEWVOL) OWNERID('b')
/*
/&
```

where the b in 'b' is a blank character.

Reformatting a minidisk in the CMS Version

In this example, the volume serial number of a minidisk at virtual address 291 is being changed from OLDVOL to NEWVOL, and the owner identification from PAYROLL to NEWPAY. The VERIFY parameter is specified to ensure that the correct volume and owner is being accessed before the volume serial/owner ID is changed.

```
REFORMAT UNITADDRESS(0291) VERIFY(OLDVOL,PAYROLL) -
         VOLID(NEWVOL) OWNERID(NEWPAY)
```

Appendix A. Volume Layout and Record Formats on Count-Key-Data (CKD) Devices

Figure 19 shows that, immediately after its index point, each track on a count-key-data device begins with a home address that describes the track type and condition. The home address is followed by a record 0 that links defective primary tracks with their associated alternate tracks. After the home address and record 0, there are zero or more keyed or nonkeyed user-written records. (The IBM 2305 Fixed Head Storage Models 1 and 2 do not have home address records.)

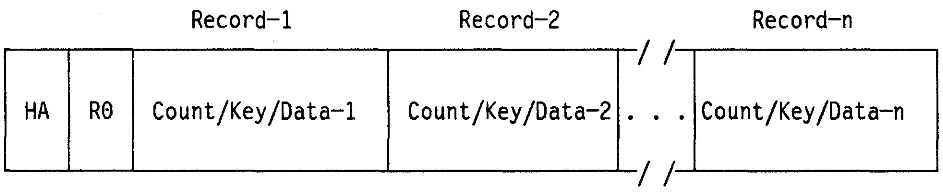


Figure 19. Standard Track Layout (Count-Key-Data Devices)

Figure 20 is an example of the volume map that can be received after processing a 3380 volume with ICKDSF with either the INIT or the INSPECT command.

```
ICKDSF - xxx DEVICE SUPPORT FACILITIES yyy TIME: 00:23:00  02/15/89  PAGE 1

 INIT UNIT(0127) NOVERIFY VOLID(TSTVOL) VTOC(1,1,1)

●
●
●
●

ICK01307I DEFECTIVE-TRACK LIST IN HEXADECIMAL FOR VOLUME TSTVOL

ICK01308I THE FOLLOWING PRIMARY TRACKS WERE FOUND DEFECTIVE:

  CCHH OF TRACK --- CCHH OF ALTERNATE --- FLAGGED DEFECTIVE
    0003 0003          0375 0001             YES
    0004 0004          0375 0002             YES
    0004 0005          0375 0003             YES
    0005 0005          0375 0004             YES
    0006 0006          0375 0005             YES
    0006 0007          0375 0006             YES
    000C 000A          0375 0000             YES

ICK01312I NO DEFECTIVE ALTERNATE TRACKS WERE FOUND.

ICK01313I VOLUME CONTAINS 15    ALTERNATE TRACKS -- 8     AVAILABLE.

ICK01314I VTOC IS LOCATED AT CCHH=X'0001 0001:ehex' AND IS     1 TRACKS.

ICK00001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
          00:26:00    02/15/89
```

Figure 20. Volume Map Output (Count-Key-Data Devices)

Notes to Figure 20:

1. **xxx**=Operating System.

   yyy=Release (for example, 13). See "Notes on Using Device Support Facilities" on page 63 for an explanation of how to determine System and Release.

2. Message ICK01307I is the first line of the volume map; it identifies the volume serial number for which the map is produced.

3. Message ICK01308I is printed as the second line of the volume map when one or more defective primary tracks were found.

   Note: Only as a result of medial and maximal initialization will all defective tracks be listed in the volume map. Minimal initialization and the INSPECT command result in a list of only those tracks that were checked during execution of the respective command, namely, the alternate tracks and the individual tracks inspected, respectively. Some of the listed tracks may not be defective, because the list may include tracks that are marked defective because of unconditional assignment of alternate tracks.

4. Four columns of information are provided:

   CCHH OF TRACK: The hexadecimal track address of the defective primary track.

   CCHH OF ALTERNATE: The hexadecimal track address of the alternate track assigned to the primary track. If a primary track is marked defective but does not have an associated alternate track, this column contains the primary track address.

   FLAGGED DEFECTIVE: A YES indicates that the home address flag byte has its defective-track flag on; a NO indicates that the defective-track flag is off.

   TRACK CONDITION: This column is printed only if the CHECK parameter was specified with the command or if an unrecoverable track was found. DEFECTIVE indicates that the track could not be read without a DATA CHECK occurring. NOT-DEFECTIVE indicates that the track could be read and written without difficulty. The NOT-DEFECTIVE condition appears only when the RECLAIM parameter is not specified, and indicates that the defective-track flag was on and, although the track did not appear to have defects, it was not reclaimed. UNRECOVERABLE indicates that surface checking could not be performed because I/O errors occurred, that prevented either the home address or the record 0 from being written on the track.

5. Message ICK01309I appears when one or more alternate tracks are found defective. The same information is provided for alternate tracks as is provided for primary tracks, but the second column identifies the primary track associated with the alternate track.

   Note: In some cases, the track address for the primary track is the same track address as that for the alternate track, which indicates that the alternate track is not associated with a primary track. When an alternate track is found unrecoverable, the "FLAGGED DEFECTIVE" column is blank, and the primary track address is set to NONE.

6. Message ICK01313I indicates the number of alternate tracks defined for the volume and the number of alternate tracks that are neither defective nor assigned.

7. Message ICK01314I identifies the track address where the volume table of contents begins and the number of tracks reserved for it.

Figure 21 shows the contents of cylinder 0, track 0 after the volume has been initialized. The first track of the first cylinder is reserved for system-defined records:

- Home address and record 0
- IPL bootstrap records
- Volume label
- Optional user-volume labels
- Optional IPL program

HA	R0	IPL Bootstrap-1	IPL Bootstrap-2	Volume Label	User-Volume Label-1	. . . .	IPL Program

Figure 21. Cylinder 0, Track 0 Layout (Count-Key-Data Devices)

Figure 22 shows the contents of the IPL bootstrap records as the system supplies them. Each bootstrap record has a count area and a 4-byte key area. The key of the first record is IPL1, and the count area indicates that its data area is 24 bytes long. The key of the second record is IPL2, and the count area indicates that its data area is 144 bytes long. Bootstrap record 1 causes bootstrap record 2 to be read, and bootstrap record 2 causes the IPL program to be read. The IPL program contains user-defined values.

IPL Bootstrap Record 1:

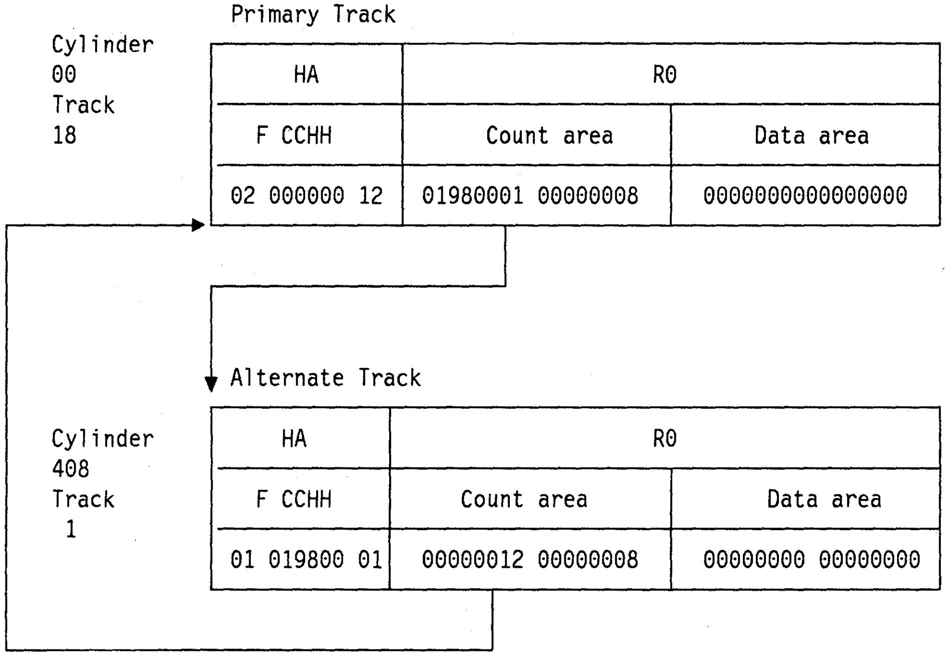
00000000 00000000	PSW
06003A98 60000060	CCW: Read
08003A98 00000000	CCW: TIC

IPL Bootstrap Record 2:

07003AB8 40000006	CCW: Seek
31003ABE 40000005	CCW: Search Id Equal
08003AA0 00000000	CCW: TIC
06000000 20000000	CCW: Read
000000000000	Seek Address—0:0
0000000004	Search Address—R 4
0000000000000000	Padding
0000000000000000	(101 Bytes)

Figure 22. IPL Bootstrap Records

Figure 23 shows how the primary and alternate track associations are recorded on the volume.



Primary Track

Cylinder 00 Track 18

HA	R0	
F CCHH	Count area	Data area
02 000000 12	01980001 00000008	0000000000000000

Alternate Track

Cylinder 408 Track 1

HA	R0	
F CCHH	Count area	Data area
01 019800 01	00000012 00000008	00000000 00000000

Figure 23. Primary/Alternate Track Association (Count-Key-Data Devices)

Appendix B. VM Support

ICKDSF operation and command support for VM users is determined by certain variables:

- Whether the operation is on a minidisk or a device ATTACHed to the user's virtual machine
- the version of ICKDSF that is being executed (that is, the CMS, stand-alone, MVS, or VSE version)

This section describes how operation differs by version for both minidisk and ATTACHed devices.

Minidisks

A minidisk is a portion of a disk that is LINKed to your virtual machine.

A full volume minidisk is treated the same as any other minidisk, since it may not contain alternate, CE, diagnostic and/or surface analysis cylinders which are neccessary for device support purposes. In addition, certain types of CCWs are restricted by the VM system.

Minidisks are supported only in the CMS and stand-alone versions of ICKDSF. Minidisk media maintenance functions are supported only in the CMS version.

ATTACHed Devices

An ATTACHed device is an entire device for your exclusive use. You can perform any ICKDSF function under VM, when the volume is ATTACHed to your virtual machine. However, your capability depends on the device type and VM system restrictions. Also, to perform device support functions you may require special authorization such as class F user authority for VM/XA systems, or MAINTCCW authority (as defined in the CP directory) for VM/ESA systems.

ICKDSF Versions Supported under VM

The following versions of ICKDSF are supported under VM:

- **The CMS Version of ICKDSF**

  The CMS version of ICKDSF provides support for all minidisks, and includes the ability to perform media maintenance as well as device initialization

- **The Stand-alone Version of ICKDSF**

  In the stand-alone version of ICKDSF, the support for minidisks is limited to the functions that are required to initialize a minidisk for operating system use. The support is provided by the MIMIC(MINI) parameter. All devices are treated as "ATTACHed" if MIMIC(MINI) is not specified. Media maintenance functions, such as INSPECT, will not operate correctly on minidisks,

- **VM Guest using the MVS or VSE Version of ICKDSF**

  The MVS or VSE version of ICKDSF does not support minidisks. All devices are treated as real devices since ICKDSF is unaware that it is running as a VM guest. If a minidisk is to be used by the operating system it should be initialized (using the INIT command) by the CMS or stand-alone version of

ICKDSF before IPLing the guest operating system. Media maintenance can not be performed on these minidisks.

Each of these versions is discussed in the following sections.

CMS Version of ICKDSF

The CMS version of ICKDSF runs in the CMS environment of VM/SP, VM/SP HPO, VM/XA, and VM/ESA (it supports bimodal CMS). The CMS version support is divided as follows:

- Minidisks
- ATTACHed devices

Minidisk Support

Minidisk support is divided into users who have DEVMAINT authority (as defined in the CP directory) and users who do not have DEVMAINT authority.

- **Users who do *not* have DEVMAINT authority**

  This is for the general user and is provided for those functions needed for minidisks that are to be used by guests for MVS or VSE operating systems. This includes the CPVOLUME, INIT, and REFORMAT commands, plus the data scanning function of the ANALYZE command. You operate only on your own minidisks.

- **Users who do have DEVMAINT authority**

  This is for the user concerned with media maintenance. In this mode you can perform all the functions provided above, and in addition you can perform the media maintenance functions of the INSPECT and ANALYZE command for either your own or another user's minidisks. In this mode, you can also specify the real address of a device for the ANALYZE and INSPECT commands.

  DEVMAINT authority is supported in the CMS version of VM/SP, VM/SP HPO, and VM/ESA. DEVMAINT authority is not supported in VM/XA.

  DEVMAINT authority gives you permission to perform problem determination and media maintenance functions to another user's minidisks. For information on how to obtain DEVMAINT authority see either:

  - *VM/SP System Facility for Programming.*
  - *VM/SP HPO System Facility for Programming.*

    Documentation for the above books to support the DEVMAINT option enhancement is included in GC24-5376.
  - *VM/ESA CP Planning and Administration for 370.*

Figure 24 on page 259 lists the ICKDSF supported commands and indicates the devices each command supports when you process minidisks under the CMS version.

Figure 24. Devices Supported by ICKDSF Commands (Minidisks under CMS)

	ANALYZE	INIT/CPVOL	INSPECT	REFORMAT
CKD Devices				
3330	N,D	N	D	N
3333	N,D	N	D	N
3340	N,D	N	D	N
3344	N,D	N	D	N
3350	N,D	N	D	N
3375	N,D	N	D	N
3380	N,D	N	D	N
3390	N,D	N	D	N
FBA Devices				
0671	-	N	D	N
3310	N,D	N	D	N
3370	N,D	N	D	N
9313	-	N	D	N
9332	-	N	D	N
9335	D	N	D	N
9336	-	N	D	N

Legend:

-	Not supported
N	Does not require DEVMAINT authority
D	Requires DEVMAINT authority
N,D	Indicates DEVMAINT authority is not required when you process your own minidisks. Otherwise, DEVMAINT authority is required.

Minidisk Support without DEVMAINT authority

This support allows you to use the ANALYZE, CPVOLUME, INIT, and REFORMAT commands against minidisks LINKed to your user ID as follows:

- **ANALYZE** command

  You can use the ANALYZE command to verify that the data on the media surface of your minidisks is readable.

  Notes:

  1. The ANALYZE drive test is not allowed for a minidisk.
  2. The IBM 9335 is not supported for ANALYZE

  For more information see "CMS Version Minidisk Support" on page 79 or "CMS Version Minidisk Support" on page 199.

- **CPVOLUME** command

  CPVOLUME prepares minidisks for use in the VM environment. For more information see Minidisk Support in "CPVOLUME Command—CKD" on page 109 or "CPVOLUME Command—FBA" on page 211.

- **INIT** command

  You can initialize minidisks at the minimal level for guest operating system use. This allows you to write the IPL bootstrap records, the volume label and the IPL text, the new owner identification, and reserve space for the VTOC (and index data set). For more information see "CMS Version Minidisk Support" on page 124 or "CMS Version Minidisk Support" on page 221.

- **REFORMAT** command

  You can change the volume serial number, owner identification, and IPL bootstrap records on a minidisk that was previously initialized by the INIT command. For more information see "CMS Version Minidisk Support" on page 183 or "CMS Version Minidisk Support" on page 249.

Minidisk Support with DEVMAINT authority

With DEVMAINT authority you can execute ICKDSF commands that perform problem determination and media maintenance functions.

With DEVMAINT authority you can perform the following (in addition to the functions which can be performed without DEVMAINT authority):

- Use the ANALYZE command with the USERID parameter to verify if the data of another user's minidisk is readable.

  Use the ANALYZE command with the REALADDR parameter to verify the data on a minidisk is readable when the real cylinder and head (or block) are known but the virtual cylinder and head (or block) are not known.

  For more information see "CMS Version Minidisk Support" on page 79 or "CMS Version Minidisk Support" on page 199.

- Use the INSPECT command with the USERID parameter to perform surface analysis of another user's minidisks

  Use the INSPECT command with the REALADDR parameter to perform surface analysis of a minidisk when the real cylinder and head (or block) are known but the virtual cylinder and head (or block) are unknown.

  For more information see "CMS Version Minidisk Support" on page 156 or "CMS Version Minidisk Support" on page 232.

ATTACHed Devices Support

An ATTACHed device is an entire for your exclusive. You can perform any ICKDSF function under VM, when the volume is ATTACHed to your virtual machine. Your capability may depend on the device type and VM system restrictions. You may require special authorization to perform device support functions such as class F user authority for VM/XA systems or MAINTCCW authority (as defined in the CP directory) for VM/ESA systems.

This is the process to perform for media maintenance when minidisk support is not available or the area of the real volume is not defined as a minidisk

Figure 2 on page 6 lists the ICKDSF commands and indicates the devices each command supports when you process ATTACHed devices under CMS

Stand-Alone Version of ICKDSF

The stand-alone version of ICKDSF supports certain functions to minidisks that enable future use in an operating system environment.

If diagnostic and/or media maintenance are required on a device in the stand-alone version, the device must be ATTACHed to the virtual machine. However, your capability may depend on the device type and the VM system restrictions, and sometimes you may require special authorization to perform device support functions.

Minidisk Support under Stand-alone

The commands supported are as follows:

- **ANALYZE**

  The SCAN option of the ANALYZE command can be executed on minidisks with the following restrictions:

  - NODRIVETEST must *always* be specified.
  - LIMITS (or the equivalent range parameters) must always be specified, and must be within the bounds of the minidisk.

  If you do not adhere to these restrictions, apparent I/O errors will occur.

- **CPVOLUME**

  The CPVOLUME command prepares minidisks for use in the VM environment using the MIMIC parameter. For more information see Minidisk Support in "CPVOLUME Command—CKD" on page 109 or "CPVOLUME Command—FBA" on page 211.

- **INIT**

  You can initialize minidisks at the minimal level for guest operating system use. The INIT command is supported at the minimal level for all devices that are supported as minidisks (see "Notes" below). This includes all current DASD devices. Also, if your minidisk is on an MSS, such that VM considers the device type to be a 3330V, ICKDSF INIT will operate as it would for any other 3330.

  Executing minimal INIT:

  - Count-key-data devices

    Minidisk processing for the INIT command for count-key-data devices is activated by

    ```
    MIMIC(MINI(n)) DEVTYPE(devicetype)
    ```

    where n = number of cylinders.

    The device type (DEVTYPE) parameter is required.

    If the MIMIC parameter is omitted and a minimal INIT is attempted, I/O errors occur because the device is being recognized as a real device.

- FBA Devices

  Minidisk processing for the INIT command for FBA devices is "automatic." ICKDSF can dynamically determine the number of blocks allocated to this minidisk, and can initialize the device accordingly. MIMIC(MINI(n)) should **not** be specified.

  MAP is not supported.

- **INSPECT**

  INSPECT is supported for 2311, and 2314/2319 minidisks only (see "Notes" below).

- **REFORMAT**

  The REFORMAT command operates on a minidisk exactly as it executes on a real volume.

  REFORMAT accesses only those areas where the volume serial number, owner identification, and IPL bootstrap records exist on the volume, and generally does not include any diagnostic type of CCWs. REFORMAT should complete without errors.

Notes:

1. The functions performed by ICKDSF are not always supported by the operating system under which it runs. For example, ICKDSF will initialize an FBA minidisk using the stand-alone version. You are cautioned to ensure that the VSE operating system will operate correctly against this device.
2. The last cylinder of the minidisk for 2311, 2314, and 2319 is always reserved for use as an alternate cylinder; therefore, these minidisks must have a minimum of two cylinders. Medial and maximal initialization and all functions of the INSPECT command are also provided for these count-key-data DASD devices.

   Although alternate track assignment is available on these minidisks (because VM does not restrict as many I/O operations as on other devices), I/O errors on the device should be reported to the system administrator so that a permanent alternate track can be assigned to the "real" defective track.

Guest Operating System (MVS, VSE) Version of ICKDSF

The MVS or VSE versions of ICKDSF treat all devices as "real." If a minidisk is to be used by a guest operating system, it should be initialized (by the INIT command) by a CMS or stand-alone version of ICKDSF before IPLing. Media maintenance functions cannot be performed on minidisks from a guest system.

Note: A full volume minidisk is treated the same as any other minidisk since it may not contain alternate, CE, diagnostic, and/or surface analysis cylinders which are neccessary for device support. In addition, certain types of CCWs are restricted by the VM system.

Media maintenance functions can be performed on a "real" device only, and the devices must be ATTACHed to the virtual machine. However, your capability may depend on the device type and VM system restrictions. You may require special authorization to perform device support functions.

Although all devices are being treated as "real," the following commands can operate on a minidisk from a guest operating system:

- **ANALYZE**

  The SCAN option of the ANALYZE command can be executed on minidisks with the following restrictions:

  - NODRIVETEST must *always* be specified.
  - LIMITS (or the equivalent range parameters) must always be specified, and must be within the bounds of the minidisk.

  If you do not adhere to these restrictions, apparent I/O errors will occur.

- **BUILDIX**

  BUILDIX accesses only those areas where the VTOC and IXVTOC exist on the volume, and generally does not issue any diagnostic type of CCWs. BUILDIX should complete without errors.

- **REFORMAT**

  REFORMAT accesses only those areas where the volume serial number, owner identification, and IPL bootstrap records exist on the volume, and generally does not include any diagnostic type of CCWs. REFORMAT should complete without errors.

Problem Determination under VM

When ICKDSF terminates with I/O error messages, the attempt should be made to determine if the error is generated by the VM system or the device under test. A CP TRACE CCW command is helpful to recreate and determine the problem.

If the error is generated by the VM system, the indication generally is an I/O error with the sense information indicating a command reject (byte 0 bit 0 on). Also, in most cases bytes 23 and 24 contain either X'0F00' or X'0F04'. Sometimes the CSW indicates channel program check. The error is most likely caused by one of the following:

1. The user ID does not have the required authorization and the CCW issued by ICKDSF is restricted by the VM system. The device can be a minidisk or an ATTACHed volume. In this case, the user should contact the VM system programmer to obtain authorization.
2. The area that ICKDSF was trying to access does not exist on the volume. When a device is a minidisk, it may not contain alternate, CE, diagnostic, and/or surface analysis cylinders which are neccessary for device support purposes. In this case, either the command is not supported in the current environment, or the user should use the MIMIC(MINI) parameter in the standalone version. Note that a full volume minidisk is still a minidisk.
3. The actual size of the primary area of the minidisk is smaller than the requested ICKDSF function. For example, MIMIC(MINI(50)) is specified for a 20 cylinder minidisk. In this case, the user should specify the correct size.

Appendix C. Device Support Facilities Messages (ICK)

This appendix contains all ICKDSF messages with the ICK prefix.

Introduction

Messages are detailed as fully as possible to permit you to understand a condition and to take necessary action. Information for each message includes, when appropriate:

- *Explanation*: What the message means, why it appears, what caused it, what its variable fields are.
- *System Action*: What is happening as a result of the condition causing the message. For example, is the system waiting for responses.
- *Operator and/or Programmer Response*: If a response is necessary, who performs it, what the pertinent responses are, and their effect on the system or program.

Notes:

1. Wherever the CE cylinder is referred to in the messages, this can be either the CE, device support, or diagnostic cylinder depending on the device.

Message Routing and Descriptor Codes

Routing codes provide the ability to route system operator messages to selected functional areas.

ICKDSF messages will be routed to default functional areas as defined by a specific installation or, in the absence of such definition, they will be routed to the master console.

Component Name ICK

Program Producing Message Device Support Facilities

Audience/Where Produced For operator: the operator's console. For system programmer: printed output.

Message Format ICK s nnnn t text or ICK nnn t text

s Condition code indicating severity of message received at the output printer. Messages received at the console do not have a condition code indicating severity.

0 Information: no effect upon execution

1 Warning: function might fail

2 Error: function probably failed

3 Serious Error: function failed

4 Terminal error: Device Support Facilities processor terminated

It is possible to determine which of several messages issued during execution of a command results in a specific condition code value: The highest condition code multiplied by four yields the command's setting of the LASTCC.

nnnn or nnn
Message serial number: 4 digits for printed messages, and 3 digits for messages that appear at the operator's console.

t Type code:

I Informational, no action required

E Eventual action required

D Decision required, processing waiting

A Operator action required

text
Message text

** Indicates a "second-level" message that further explains a preceding message. The track addresses (X'cccc:hhhh') in message text appear in hexadecimal format.

Associated Publications None

Messages Received at the Console

ICK001D **CONFIRM PURGING OF UNEXPIRED DATA SETS, REPLY "U" TO PURGE, ELSE "T"**

Explanation: When the INIT command is specified, if one or more data sets have been found on the volume, permission is being requested to **possibly** destroy the contents of one or more tracks of this data set.

When the INSPECT command is specified, if one or more unexpired data sets have been found on the volume, permission is being requested to **possibly** destroy the contents of one or more tracks of this data set. No check is made to determine if the tracks being inspected are actually within the data set. If the tracks specified in the INSPECT command are not within the unexpired data set, the data set is not affected by the INSPECT command. The data set is **not** purged from the VTOC. The message is requesting permission only to purge the tracks or blocks specified, unless recovery is in effect.

System Action: ICKDSF waits for your response.

Operator Response: For the INIT command, reply "U" to permit unconditional purging of the data set or reply "T" to stop purging and to terminate the function.

For the INSPECT command, reply "U" to permit INSPECT to proceed on the tracks specified in the command, or reply "T" to stop possible destruction of the tracks specified and to terminate the function.

Programmer Response: None.

ICK002D **ERROR IN REPLY, REPLY "U" OR "T"**

Explanation: When replying to messages whose only acceptable response is U or T, the operator responded with another character. Any other character will cause this request for reentry to be made.

System Action: ICKDSF waits for the operator's response.

Operator Response: Respond with U for unconditional purging, or T to terminate.

Programmer Response: None.

ICK003D **REPLY "U" TO ALTER VOLUME ccuu CONTENTS, ELSE "T"**

Explanation: When processing the volume ccuu offline, the operator is requested to confirm the processing because the offline volume is not checked by the operating system, and data on the volume might be lost or modified. Depending on the command and parameter used, this data might be as little as the volume serial (REFORMAT command with VOLID parameter), a track (INSPECT with NOPRESERVE), or the whole volume (INIT with CHECK).

System Action: ICKDSF waits for operator's reply.

Operator Response: Respond U to proceed with command processing; respond T to terminate the command.

Programmer Response: None.

ICK004D **READY DEVICE ccuu AND REPLY "U," ELSE "T"**

Explanation: The device ccuu is not in the READY state.

System Action: ICKDSF waits for the operator's response.

Operator Response: Ensure that the device is in the READY state, and respond U to continue processing the command or respond T to terminate the command.

Programmer Response: None.

ICK005E **DEFINE INPUT DEVICE: "dddd,ccuu" or "CONSOLE"**

Explanation: *dddd* is the device type and *ccuu* is the channel and unit address. This message appears only in the stand-alone version. The operator must specify the device type and location of the command input stream. You can specify the console by entering a null line.

System Action: ICKDSF waits for the operator's response.

Operator Response: Specify the input device type and its channel and unit address. You can specify the console by entering a null line. *ccuu* can be specified as 3 or 4 digits.

Programmer Response: None.

ICK006E **DEFINE OUTPUT DEVICE: "dddd,ccuu" or "CONSOLE"**

Explanation: *dddd* is the device type and *ccuu* is the channel and unit address. This message appears only in the stand-alone version. The operator must specify the device type and the location of the printed output. You can specify the console by entering a null line.

System Action: ICKDSF waits for a reply.

Operator Response: Specify the output device type and its channel and unit address. You can specify the console by entering a null line. *ccuu* can be specified as 3 or 4 digits.

Programmer Response: None.

ICK007E **INVALID INPUT DEVICE SPECIFIED**

Explanation: This message appears only in the CMS or stand-alone version. The operator specified an invalid device type to message ICK005E.

System Action: ICKDSF repeats message ICK005E.

Operator Response: Specify a correct input device type. See "Identifying the Input Device" on page 16.

Programmer Response: None. Save the job output and contact your IBM service representative

ICK008E **INVALID OUTPUT DEVICE SPECIFIED**

Explanation: This message appears only in the CMS or stand-alone version. The operator specified an invalid device type to message ICK006E.

System Action: ICKDSF repeats message ICK006E.

Operator Response: Specify a correct output device type. See "Identifying the Output Device" on page 16.

Programmer Response: None. Save the job output and contact your IBM service representative

ICK009I SVC INTERRUPT OCCURRED

Explanation: This message appears only in the CMS or stand-alone version. Probable program error. The SVC instruction cannot be used in the CMS or stand-alone version.

System Action: ICKDSF terminates.

Operator Response: Notify the system programmer.

Programmer Response: Save the job output and contact your IBM service representative

ICK010I PROGRAM INTERRUPT OCCURRED

Explanation: This message appears only in the CMS or stand-alone version. Probable program error. An instruction executed incorrectly.

System Action: ICKDSF terminates.

Operator Response: Notify the system programmer.

Programmer Response: Save the job output and contact your IBM service representative

ICK011E I/O ERROR -- error-type, ccuu, command, csw, sense

Explanation: This message appears only in the CMS or stand-alone version. An I/O error of the type indicated occurred on the device at address ccuu. The command in error is indicated as are the contents of the channel status word (CSW) and the results of a sense operation against the device.

System Action: ICKDSF terminates.

Operator Response: None.

Programmer Response: Correct the cause of the error, and restart ICKDSF. Save the job output and contact your IBM service representative

ICK012E INTERVENTION REQUIRED, ccuu

Explanation: This message appears only in the CMS or stand-alone version. The indicated device is not in the READY state.

System Action: ICKDSF waits for correction of the problem.

Operator Response: Ensure that the device is in a READY state.

Programmer Response: None.

ICK013E CONSOLE READ FAILED, REENTER LAST LINE

Explanation: This message appears only in the CMS or stand-alone version. An I/O error occurred when attempting to read a line that was entered at the operator's console.

System Action: ICKDSF waits for the line to be reentered.

Operator Response: Reenter the line.

Programmer Response: None. Save the job output and contact your IBM service representative

ICK014D SET DEVICE ccuu IN WRITE-MODE AND REPLY "U," ELSE "T"

Explanation: The device at address *ccuu* is set in read-only mode.

System Action: ICKDSF waits for operator's response.

Operator Response: Set the device to allow write operations and reply U. If write operations cannot be allowed, reply T, and the command terminates.

Programmer Response: None.

ICK015E TODAY'S DATE, REPLY "mm/dd/yy"

Explanation: This message appears only in the stand-alone version. If you want the date to appear as part of the output title line, respond with the month, day, and year as indicated; otherwise, press the ENTER key.

To bypass this message, set the CPU time and date before IPLing standalone ICKDSF.

System Action: The date appears in the title line of the output listing, or blanks are substituted if a date was not supplied.

Operator Response: Respond with the month, day, and year if you want the date to appear in the title line of the output listing. If you do not want the date, respond by pressing the ENTER key.

Programmer Response: None.

ICK016E SUPPLY TIME OF DAY, REPLY "hh:mm:ss"

Explanation: This message appears only in the stand-alone version. If you want the time of day to appear in the title line of the output listing, respond with the hour, minute, and second as indicated; otherwise, respond by pressing the ENTER key.

To bypass this message, set the CPU time and date before IPLing standalone ICKDSF.

System Action: The time of day appears in the title line of the output listing, or blanks are substituted if a time of day was not specified.

Operator Response: Respond by specifying the hour, minute, and second if you want the time of day to appear in the title line of the output listing. If you do not want it to appear, respond by pressing the ENTER key.

Programmer Response: None.

ICK017D filename IS A SECURED FILE

Explanation: The specified "filename" is a data-secured file and ICKDSF requests permission to purge this file in an associated message, ICK018D.

System Action: Processing continues, as the message is informational only.

Operator Response: None.

ICK018D **CONFIRM PURGING OF SPECIFIED FILE NAME, REPLY U TO PURGE, ELSE T**

Explanation: The filename is displayed in message ICK017D. If the INIT command is being executed, permission is being requested to purge the data set.

If the INSPECT command is executing, permission is being requested to **possibly** destroy the contents of one or more tracks of this data set. No check is made to determine if the tracks being inspected are actually contained in this data set. The data set is **not** purged from the VTOC.

System Action: Processing continues after the correct reply is obtained from the operator. If the operator replies T, the command terminates and ICKDSF continues processing with the next command. If the operator replies U, processing of the command continues.

Operator Response: The operator must reply to this message with either U or T.

Programmer Response: None.

ICK019D **CONFIRM PURGING OF ALL VSAM FILES, REPLY U TO PURGE, ELSE T**

Explanation: The volume is known to contain one or more VSAM data sets.

When the INIT command is specified, permission is being requested to purge all the VSAM data sets on the volume.

When the INSPECT command is specified, if one or more VSAM data sets have been found on the volume, permission is being requested to **possibly** destroy the contents of one or more tracks of VSAM data set(s). No check is made to determine if the tracks being inspected are actually within the VSAM data set(s). If the tracks specified in the INSPECT command are not within the VSAM data set, the VSAM data set is not affected by the INSPECT command. The data set(s) is **not** purged from the VTOC. The message is requesting permission only to purge the tracks or blocks specified, unless recovery is in effect.

System Action: Processing continues after a correct reply is received. If you reply "T," the command terminates and ICKDSF continues with the next command. If you reply "U," command processing continues.

Operator Response: You must reply either "U" or "T" to this message.

Programmer Response: None.

ICK020D **DEVICE ccuu IS SHARED. REPLY U OR T**

Explanation: The volume addressed by the "ccuu" is being shared, and ICKDSF requests permission to operate on the subject volume.

System Action: Processing continues after the correct reply is obtained from the operator. If the operator replies T, the command terminates and ICKDSF continues processing with the next command. If the operator replies U , processing of the command continues.

Operator Response: The operator must reply to this message with either U or T.

Programmer Response: None.

ICK024I **UNABLE TO OPEN VOLUME**

Explanation: The volume that was specified cannot be opened. This could be caused by:

- The DD statement is missing or invalid.
- The channel/unit address is invalid.
- When processing in a shared environment, the device is not in an offline status on the system executing ICKDSF
- I/O errors associated with the volume.

System Action: The command terminates. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: The status of the volume should be checked. Previous messages should be examined to aid in determining the volume status. Save the job output and contact your IBM service representative

ICK030E **DEFINE INPUT DEVICE: fn ft fm, OR "CONSOLE," OR "READER"**

Explanation: The system requires you to specify the input device.

System Action: ICKDSF waits for your response.

Programmer Response: None.

Operator Response: If the console is to be used as the ICKDSF input command stream, enter CONSOLE or press the ENTER key. If the ICKDSF input command stream is contained in a CMS file, enter fn ft fm. If the ICKDSF input command stream is contained in your virtual reader file, enter READER (the file must be the first file in the reader). Type "?" to invoke the online help panels.

ICK031E **DEFINE OUTPUT DEVICE: fn ft fm, OR "CONSOLE," OR "PRINTER"**

Explanation: The system requires you to specify the output device.

System Action: ICKDSF waits for your response.

Programmer Response: None.

Operator Response: If the console is to be used as the ICKDSF output device, enter CONSOLE or press the ENTER key. If the output device is to be a CMS file, enter fn ft fm. If ICKDSF output device is a printer, enter PRINTER. Type "?" to invoke the online help panels.

ICK033E **ENTER CYL OR BLOCK SIZE FOR THE SPECIFIED MINIDISK**

Explanation: The system requires you to specify the size of the minidisk in cylinders for CKD devices or blocks for FBA devices. No check is made to determine the accuracy of the size of the minidisk. This message follows ICK12316I.

System Action: ICKDSF waits for your response.

Programmer Response: None.

Operator Response: Specify the minidisk size (1-8 decimal digits) in cylinders for CKD devices or blocks for FBA devices.

ICK035I INVOCATION PARAMETER LIST LENGTH IS INVALID.

Explanation: ICKDSF was invoked by the CMS invocation parameter list and the number of the items in the list is invalid. The valid numbers are: 2,4, or 6:

- Valid parameters with a length of two are:
  - CONSOLE CONSOLE
  - CONSOLE PRINTER
  - READER CONSOLE
  - READER PRINTER
- Valid parameters with a length of four are:
  - CONSOLE fn ft fm
  - READER fn ft fm
  - fn ft fm CONSOLE
  - fn ft fm PRINTER
- Valid parameters with a length of six are:
  - fn ft fm fn ft fm

System Action: Processing terminates.

Operator Response: Specify valid INPUT and OUTPUT device parameters.

Programmer Response: None.

ICK036I INVOCATION PARAMETER LIST IS INVALID.

Explanation: ICKDSF was invoked by the invocation parameter list and the list is invalid. Valid parameters for INPUT DEVICE are: CONSOLE,READER or *fn ft fm*. Valid parameters for OUTPUT DEVICE are: CONSOLE,PRINTER or(fn ft fm).

System Action: Processing terminates.

Operator Response: Specify valid INPUT and OUTPUT DEVICE parameters.

Programmer Response: None.

ICK037I FILE MODE PARAMETER LENGTH INVALID

Explanation: ICKDSF was invoked using the CMS invocation parameter list and the length of the file mode parameter is invalid. The maximum length for file mode is two characters.

System Action: Processing terminates.

Operator Response: Specify a valid file mode parameter

Programmer Response: None.

ICK057I INVALID DEVICE TYPE: VTOC INDEX NOT SUPPORTED ON THIS DEVICE

Explanation: The device type is not a valid device type for initialization with a VTOC index.

System Action: The creation of the VTOC index is not attempted. INIT command processing continues.

Operator Response: None.

Programmer Response: None.

ICK058I ccuu I/O ERROR DETECTED DURING INDEX CREATION: ERROR CODE= *

Explanation: An I/O error occurred during VTOC index creation processing. Error codes:

```
1 - Error occurred reading volume
    label
2 - Error occurred reading VTOC
3 - Error occurred writing VTOC
4 - Error occurred writing index
    records
5 - Index extent violated; increase
    index size
```

System Action: VTOC index creation processing is terminated. The VSE volume indicator is turned on in the VTOC. INIT command processing continues.

Operator Response: Refer the error indication to the system coordinator for problem determination.

Programmer Response: None.

ICK059I INDEX STARTING LOCATION INVALID AS SPECIFIED

Explanation: The INDEX parameter on the INIT command statement is invalid. The starting location, as specified, is not valid for one of the following reasons:

1. It caused an overlap with the VTOC.
2. It defined cylinder zero, track zero as the starting location of the index data set.
3. It was outside the physical limits of the device.
4. The relative track specified is invalid for the device.

System Action: Execution of the command is terminated.

Operator Response: None.

Programmer Response: Check the values specified for the INDEX parameter and correct the value in error. Resubmit the job.

ICK061I ccuu VTOC INDEX CREATION SUCCESSFUL: VOLUME NOW IN INDEX FORMAT

Explanation: The VTOC index was successfully created on the volume.

System Action: None.

Operator Response: None.

Programmer Response: None.

ICK062I ccuu VTOC INDEX CREATION FAILED: RETURN CODE= 8

Explanation: Index creation was unsuccessful.

System Action: None.

Operator Response: None.

Programmer Response: Check the job output for additional information on the reason for job failure.

ICK126D **DATA ALREADY EXISTS FOR TRACK X'cccc hhhh' REPLY "R" TO RECOVER, "E" TO ERASE THE RECOVERY DATA, OR "T" TO TERMINATE**

Explanation: This message is issued if recovery data exists for a track (ICK2115I), but there already exists data on that track.

This situation might occur if the original data on the track had not yet been erased at the point of failure.

This situation can occur if an INSPECT did not run to completion, but the volume was available for user use before this invocation of the INSPECT command.

System Action: The operator is prompted for a reply to this message.

If "R" is specified, the data will be recovered from the recovery information. (The new data on the track is erased).

If "E" is specified, the recovery data is destroyed. The current data on the track remains.

If "T" is specified, processing terminates. The recovery data remains intact. The next invocation of the INSPECT command will again attempt to process the recovery data.

ICK130D **DATA CANNOT BE RECOVERED FOR TRACK X'cccc hhhh' REPLY "C" TO ERASE AND CONTINUE, "I" TO IGNORE, T TO TERMINATE.**

Explanation: The previous INSPECT command did not complete execution during PRESERVE backup processing. **Note**: The data cannot be recovered from the backup location.

System Action: The operator is prompted for a reply to this message. The ignore option is provided if HOLDIT is specified on the current invocation of the INSPECT command.

If "c" is specified, the data is erased at the backup location, and processing begins from the start of the specified range. This should be specified if the user has no need to recover data from the backup location.

If "i" is specified, the recovery data is ignored, and processing continues for the current invocation. Note that this response is allowed only if HOLDIT was specified. The recovery data remains intact. The next invocation of the INSPECT command will again attempt to process the recovery data.

If "t" is specified, processing terminates. The recovery data remains intact. This should be specified if the user wishes to retry the recovery process, or examine the situation before allowing the data to be erased. The next invocation of the INSPECT command will again attempt to process the recovery data.

ICK158D **DATA CANNOT BE RECOVERED FOR BLOCK xxxxxxxx REPLY "C" TO ERASE AND CONTINUE, "I" TO IGNORE, T TO TERMINATE.**

Explanation: The previous invocation of the INSPECT command did not execute to completion during PRESERVE backup processing. ***Note***: The data cannot be recovered from the backup location.

System Action: The operator is prompted for a reply to this message. The ignore option is provided if HOLDIT is specified on the current invocation of the INSPECT command.

If "c" is specified, the data is erased from the backup location, and processing begins from the start of the specified range. This should be specified if the user has no need to recover data from the backup location.

If "i" is specified, the recovery data is ignored, and processing continues for the current invocation. Note that this response is allowed only if HOLDIT was specified. The recovery data remains intact. The next invocation of the INSPECT command will again attempt to process the recovery data.

If "t" is specified, processing terminates. The recovery data remains intact. This should be specified if the user wishes to retry the recovery process, or examine the situation before allowing the data to be erased. The next invocation of the INSPECT command will again attempt to process the recovery data.

ICK159D **DATA ALREADY EXISTS FOR BLOCK xxxxx REPLY "R" TO RECOVER, "E" TO ERASE THE RECOVERY DATA, OR "T" TO TERMINATE**

Explanation: This message is issued if recovery data exists for a block (ICK12157), but there already exists data on that block that is not ICKDSF data and is not the original user data.

This situation can occur if an INSPECT did not run to completion, but the volume was available for user use before this invocation of the INSPECT command.

System Action: The operator is prompted for a reply to this message.

If "r" is specified, the data will be recovered from the recovery information. (The new data on the block is erased).

If "e" is specified, the recovery data is destroyed. The current data on the block remains.

If "t" is specified, processing terminates. The recovery data remains intact. The next invocation of the INSPECT command will again attempt to process the recovery data.

ICK177D **REPLY U TO ERASE CONTENTS OF SYSTEM RESERVED AREA ON ccuu, ELSE T**

Explanation: When a CONTROL command with the RECLAIM(SYSAREA) parameter is issued, the operator is requested to confirm the processing before ICKDSF starts the reclaim process which will destroy the contents of the System Reserved Area. ccuu is the address of the device that will be modified if the command continues.

System Action: ICKDSF waits for the operator's response.

Programmer Response: None.

Operator Response: Respond U to permit the command to start system reserved area reclaim processing or respond T to terminate and prevent destruction of system reserved area contents.

ICK316I **INSTALL FUNCTION COMPLETED SUCCESSFULLY**

Explanation: The INSTALL command processing completed successfully.

System Action: ICKDSF terminated normally. Processing continues with your next command.

Programmer Response: None.

Operator Response: None.

ICK401I ccuu SUSPECTED DRIVE PROBLEM

Explanation: An error has been detected during the drive tests.

System Action: Command processing terminates.

Programmer Response: If you are running under VM (either CMS or stand-alone, VSE, MVS, MVS/XA, or MVS/ESA running under VM), this message can be an indication that a diagnostic function was attempted against a device that was a minidisk and/or LINKed to the userid. Diagnostic functions must be done on devices that are ATTACHed to the userid.

If this is determined to be the case, and if a scan was to be performed as the primary purpose of this ANALYZE command invocation, NODRIVE can be specified. Otherwise, the device must be ATTACHed to the user. For more information on VM support, see Appendix B, "VM Support" on page 257.

Operator Response: Depending on your installation's procedures, you might do the following:

- Restore the entire volume to another drive from a backup volume.
- Discontinue using the drive.

Save the output, which contains further information about the hardware problems.

Take the action appropriate to your installation's procedures for handling suspected equipment problems. If the problem recurs, contact your IBM hardware service representative. Save the job output and contact your IBM hardware service representative

ICK404I ccuu VOLUME HAS UNFORMATTED DATA BLOCKS

Explanation: An attempt was made to read a data block which was not initialized (data field not written).

System Action: After 504 data checks, the ANALYZE command is terminated.

Operator Response: Perform appropriate procedures to recover all desired data from the volume and then run the VSE utilities INTDK or INTDSK with the "IQ" option to initialize all data blocks.

ICK407I ccuu NO DRIVE PROBLEMS FOUND

Explanation: Drive test successfully completed executing and did not detect any problems.

System Action: Processing continues.

Operator Response: None. (If a data problem prompted you to run this command, and if the problem persists, run the data verification test. If a drive problem prompted you to run this command, and if the problem persists, further analysis is needed according to your installation's procedures.)

ICK411I FUNCTIONAL VERIFICATION DATA WRITE/READ TEST STARTED

Explanation: Full volume HA/R0 validation and functional data verification test for the REVALidate command process has started.

System Action: Processing continues.

Programmer Response: None.

Operator Response: None.

ICK412I FUNCTIONAL VERIFICATION DATA WRITE/READ TEST ENDED

Explanation: Full volume HA/R0 validation and functional data verification test for the REVALidate command process has ended.

System Action: Processing continues.

Programmer Response: None.

Operator Response: None.

ICK416D CHPID = XX, RESERVED, REPLY R TO RETRY, B TO BYPASS

Explanation: This message is issued to the system operator if the processing encounters a path that remains reserved for all of its retries. "XX" will specify the path (CHPID). If the reply is R, the I/O operation is reissued to the device. If the reply is B, further processing will be bypassed on this path.

System Action: See explanation.

Operator Response: See explanation.

Programmer Response: None.

ICK417D X, Y, RESERVED, REPLY R TO RETRY, B TO BYPASS

Explanation: This message is issued to the system operator if the processing encounters a path that remains reserved for all of its retries. "X" will specify the channel number and "Y" will specify the channel set (CPU affinity). If the reply is R, the I/O operation is reissued to the device. If the reply is B, further processing will be bypassed on this path.

System Action: See explanation.

Operator Response: See explanation.

Programmer Response: None.

ICK501I INVALID DEVICE TYPE SPECIFIED FOR BUILDIX COMMAND

Explanation: A request was made to change the format of a VTOC on a volume whose device type is not supported by the BUILDIX command (for example, a 2314 DASD).

System Action: Execution of the command is terminated.

Operator Response: None.

ICK502I BUILDIX FUNCTION STARTED

Explanation: Execution of the BUILDIX command has begun.

System Action: None.

Operator Response: None.

ICK503I ccuu REQUEST RECEIVED TO CONVERT VTOC TO **FORMAT

Explanation: This message verifies the request for a change of VTOC format. "***" specifies the format requested—either OS or IX.

System Action: Processing continues.

Operator Response: None.

ICK504I ccuu VTOC FORMAT IS CURRENTLY **FORMAT, REQUEST ACCEPTED

Explanation: This message verifies that the BUILDIX function specified on the command statement is valid for the current format of the VTOC on the volume. "***" identifies the format of the VTOC, either OS or IX.

System Action: Processing continues.

Operator Response: None.

ICK505I ccuu VTOC FORMAT IS CURRENTLY **FORMAT, REQUEST REJECTED

Explanation: The format of the VTOC is currently the same as the format requested in the BUILDIX command statement. "***" identifies the format of the VTOC, either OS or IX.

System Action: Execution of the command is terminated.

Operator Response: None.

ICK508A ccuu SHOULD VTOC CONVERSION PROCEED? REPLY "U" TO CONTINUE, ELSE "T"

Explanation: This message permits the operator to verify that the user is authorized to request the BUILDIX function before execution of the command begins.

System Action: The system waits for the operator's reply.

Operator Response: Verify that the user is authorized to issue the command, and reply "U" to continue or "T" to terminate. Any reply other than "U" or "T" causes this message to be issued again.

ICK509I ccuu DIRF FLAG SET IN VTOC, BUILDIX CANNOT PROCEED

Explanation: An error occurred during VTOC processing on a previous job, causing the DADSM interrupt flag to be set in the VTOC. The VTOC is not accurate.

System Action: Execution of the command is terminated.

Operator Response: Prepare a job that will cause reconstruction of the VTOC and run it against the volume. (For example, run an IEFBR14 job to allocate a temporary data set to the volume.) On conclusion of this job, resubmit the BUILDIX command.

ICK510I ccuu BUILDIX REQUEST CANCELLED DUE TO OPERATOR ACTION

Explanation: The operator replied "CANCEL" to a message requiring a response.

System Action: Execution of the command is terminated.

Operator Response: None.

ICK511I ccuu CVAF ERROR: RETURN CODE=** ERROR CONDITION= ***

Explanation: The common VTOC access facility returned to ICKDSF
with a return code indicating either a logical error or a physical error. Return codes have the following meanings:

4, 12
Indicate logical errors

8 Indicates an invalid index structure

16 Indicates an I/O error

The error condition will be printed only for a return code of 4 or 8. For more information on these error conditions, see *CVAF Diagnosis Reference* or *MVS/Enterprise System Architecture System-Data Administration.*

System Action: Execution of the command terminates with the following conditions existing, depending on the return code:

4, 8, 12
The volume is left in OSVTOC format.

16 The volume is left as it was before the command was issued.

Operator Response: None.

ICK512I ccuu ERROR: SYS1.VTOCIX. IS A VIO DATASET. BUILDIX TERMINATED.

Explanation: The index data set was allocated as a VIO data set and is not supported by the BUILDIX command.

System Action: Execution of the command terminates with a return code of 12. The VTOC is left unchanged.

Operator Response: None.

ICK513I ccuu BUILDIX PROCESSING COMPLETED: VTOC IS NOW IN **FORMAT.

Explanation: The BUILDIX command completed successfully. "***" shows the new VTOC format, either OS or IX.

System Action: ICKDSF is terminated normally.

Operator Response: None.

ICK514I INDEXED VTOC FACILITY NOT ON SYSTEM. BUILDIX TERMINATED.

Explanation: A request was made to change a VTOC to IXVTOC format, but the system does not contain indexed VTOC programming support.

System Action: Execution of the command is terminated.

Operator Response: None.

ICK515I ccuu BUILDIX COMMAND FAILED.

Explanation: An error occurred that caused execution of the command to be terminated.

System Action: Execution of the command is terminated.

Operator Response: None.

ICK516I ccuu I/O ERROR DETECTED DURING VTOC CONVERSION: ERROR CODE= *

Explanation: An I/O error occurred during BUILDIX processing. Error codes:

```
1 - Error occurred in reading the
    volume label
2 - Error occurred in reading the
    VTOC
3 - Error occurred in writing the
    VTOC
4 - Error occurred in writing
    index records
5 - Index extent was violated;
    increase index size
```

System Action: Execution of the BUILDIX command is terminated.

Operator Response: Refer the error indication to the system coordinator for problem determination.

ICK517I ccuu ERROR: VOLUME IS A DOS STACKED PACK

Explanation: The volume being processed has a VTOC on the first track of the volume. VTOC conversion is not possible on such a volume.

System Action: Execution of the command is terminated.

Operator Response: None.

ICK518I ccuu ERROR: VOLUME CONTAINS SPLIT CYLINDER EXTENTS

Explanation: It was found that the volume contains one or more shared extent data sets. These are not supported by the BUILDIX command.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

ICK519I ccuu ERROR: SYS1.VTOCIX. DATASET NOT FOUND ON VOLUME

Explanation: The index data set could not be found on the volume.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

ICK520I ccuu ERROR: DUPLICATE INDEX DATASET NAME FOUND ON VOLUME

Explanation: Two data sets were found on the volume that had names beginning with SYS1.VTOCIX. Only one per volume is allowed.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

ICK521I ccuu ERROR: INDEX DATASET EXTENT NOT CONTIGUOUS

Explanation: The index data set was found to occupy more than one extent. This data set must occupy one, and only one, extent.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

ICK522I INVALID UNITADDRESS OR DDNAME SPECIFIED

Explanation: The UNITADDRESS or DDNAME is incorrect in the command statement.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: Correct the job control statement and resubmit the job.

ICK523I VTOC ENQUEUE FAILURE

Explanation: ENQ RET=HAVE returned higher than a return code 8 (task does not have resources).

System Action: The command terminates. Processing continues with the next command.

Operator Response: None.

Programmer Response: Resubmit the job when ENQ can be obtained.

ICK524I UNABLE TO OPEN VOLUME

Explanation: The volume specified cannot be opened. The DD statement could be missing or invalid.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: Correct the error, and resubmit the job.

ICK526I CONVERSION TO OSFORMAT COULD NOT COMPLETE SUCCESSFULLY

Explanation: At the conclusion of BUILDIX processing to convert to OSFORMAT, the VTOC indicates an error condition.

System Action: BUILDIX terminates abnormally.

Operator Response: None.

Programmer Response: This message is usually an indication that the OS VTOC on the volume contains an error. The VTOC should be examined to determine the nature of the error.

ICK528I INDEX DATA SET CANNOT START AT CYLINDER 0, TRACK 0

Explanation: You specified cylinder zero track zero for the index data set location. This is an invalid location.

System Action: BUILDIX processing terminates. None

Operator Response: None.

Programmer Response: Respecify the command using a valid location.

ICK529I **ALLOCATE ERROR: RETURN CODE = xxxx**

Explanation: DADSM allocate returned to ICKDSF with a return code other than expected.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

Programmer Response: Refer to the DADSM Diagnosis Reference for a full explanation of DADSM allocate return codes.

ICK600I **MAPALT STARTED**

Explanation: Execution has started for the MAPALT command.

System Action: None.

Operator Response: None.

ICK602I **INCORRECT DEVICETYPE, MAPALT TERMINATED**

Explanation: The device type specified is not supported by the MAPALT command.

System Action: Execution of the MAPALT command is terminated.

Operator Response: MAPALT can only be executed on fixed block devices in fixed block mode.

Programmer Response: None.

ICK603I **UNABLE TO OPEN VOLUME**

Explanation: The volume that was specified cannot be opened. The ASSGN statement could be missing or invalid, or the channel and unit address could be invalid.

System Action: Execution of the MAPALT command is terminated.

Operator Response: Correct the error and resubmit the job.

Programmer Response: None.

ICK604I **ccuu LIMITS PARAMETER INVALID AS SPECIFIED, MAPALT TERMINATED**

Explanation: The relative block numbers(s) specified by the LIMITS parameter are invalid.

System Action: Execution of the MAPALT command is terminated.

Operator Response: Correct the value(s) in the LIMITS parameter, and resubmit the job.

Programmer Response: None.

ICK605I **ccuu UNRECOVERABLE I/O ERROR DETECTED, MAPALT TERMINATED**

Explanation: An unrecoverable I/O error (other than a data check) was encountered.

System Action: Execution of the MAPALT command is terminated.

Operator Response: Check the job output, which will contain diagnostic information to aid in analyzing the error. Execute the ICKDSF ANALYZE command as a problem determination aid, and follow installation procedures for recovery from this type of error.

Programmer Response: None

ICK606I **nnnnn BLOCKS ASSIGNED TO ALTERNATES IN LIMITS SPECIFIED**

Explanation: This summary message shows the number of blocks that were assigned to alternates within the limits specified on the command statement.

System Action: None.

Operator Response: None.

Programmer Response: None.

ICK607I **ccuu MAPALT ABNORMALLY ENDED, REPORT MAY BE INCOMPLETE**

Explanation: This message is printed after an error has been encountered that caused execution of the command to be terminated. The report may be incomplete.

System Action: None.

Operator Response: Check previous messages on job output, and follow installation procedures.

Programmer Response: None.

ICK608I **ccuu MAPALT ENDED NORMALLY, RETURN CODE= n**

Explanation: Execution of the command ended without any errors detected that would have caused termination of execution. A return code of 0 or 4 will be indicated in the message. A return code of 0 means no errors were encountered. A return code of 4 means one or more recoverable errors were encountered.

System Action: None.

Operator Response: None.

Programmer Response: None.

ICK609I **PERMANENT DATA CHECK FOUND READING ID FOR BLOCK nnnnnn**

Explanation: A permanent data check was encountered while attempting to read the ID field of the primary block shown in the message.

System Action: Diagnostic information is printed on the output device, and execution of the command continues.

Operator Response: None.

Programmer Response: Save the job output for the system coordinator, and follow installation procedures for data recovery and/or assignment of an alternate block.

ICK610I **TEMPORARY DATA CHECK FOUND READING ID FOR BLOCK nnnnnn**

Explanation: A temporary data check while attempting to read the ID field of the primary block shown in the message.

System Action: Diagnostic information is printed on the output device and execution of the command continues.

Operator Response: None.

Programmer Response: Save the job output for the system coordinator and follow installation procedures for logging and tracking temporary error conditions.

ICK611I **MAIN STORAGE NOT AVAILABLE, MAPALT TERMINATED**

Explanation: Dynamic acquisition of storage for control blocks and work areas failed.

System Action: Execution of the MAPALT command is terminated.

Operator Response: Increase main storage size, and resubmit the job.

Programmer Response: None.

ICK705I **VOLUME SERIAL NUMBER FOR DEVICE ccuu IS xxxxxx**

Explanation: Informational message concerning the volume serial and/or VTOC of the volume at ccuu. If the volume serial was changed, you also receive one or both of the following:

CHANGED FROM xxxxxx - The volume serial number of the ccuu was changed.

The following message could also be received:

VOLUME SERIAL DUPLICATE FOR DEVICE ccuu. VOLUME MADE UNAVAILABLE - The new volume serial on the ccuu is a duplicate of one already known to the operating system. The device has been unloaded.

If the VTOC location was changed, you also receive the following:

VTOC LOCATION MOVED - The VTOC location of the volume at ccuu has moved.

System Action: ICKDSF continues processing.

Operator Response: None.

Programmer Response: None.

Messages Received at the Output Printer

ICK00001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS nn hh:mm:ss mm/dd/yy

Explanation: A command has been executed; the value *nn* is the last condition code (LASTCC) generated during execution of the command. *hh:mm:ss* and *mm/dd/yy* are the hours, minutes, seconds and month, day, year respectively of the date and time of the message.

Note: The LASTCC value is the highest condition code found in the messages printed during execution of the command.

System Action: LASTCC is set to *nn*; MAXCC is set to *nn* if *nn* is greater than the current value of MAXCC.

Operator Response: None.

Programmer Response: None.

ICK00002I ICKDSF PROCESSING COMPLETE. MAXIMUM CONDITION CODE WAS nn

Explanation: This message is issued upon completion of a ICKDSF job step. The highest condition code (MAXCC) set during the job step is printed (see message ICK00001I) and returned to the ICKDSF invoker in register 15.

System Action: None.

Operator Response: None.

Programmer Response: None.

ICK00100I I/O DELAY IS SET TO nnnn AFTER EVERY m I/O INVOCATION

Explanation: The message is issued after the time delay is set for the following ICKDSF command(s).

System Action: The specified time delay is observed after the specified number of ICKDSF I/O operations complete. It is active for succeeding ICKDSF commands.

Operator Response: None.

Programmer Response: None.

ICK00101I I/O DELAY IS SET TO NONE

Explanation: The message is issued after the time delay is reset to none.

System Action: No time delay will be provided for the following ICKDSF commands.

Operator Response: None.

Programmer Response: None.

ICK00204I PRECEDING COMMAND BYPASSED DUE TO CONDITION CODES

Explanation: The IF-THEN-ELSE command sequence that was specified caused the command to be bypassed. When specifying an IF-THEN-ELSE command sequence, either the THEN or the ELSE clause is executed, and the one not executed is bypassed.

System Action: The bypassed portion of the command sequence is checked for syntax errors but is not executed. ICKDSF processing continues.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative

ICK00206I IMPROPERLY PLACED COMMA HAS BEEN FOUND AND IGNORED

Explanation: A redundant comma was encountered when scanning the command. It is ignored. The omission of positional parameters cannot be indicated by commas; the omission of leading positional parameters is not permitted.

System Action: The command is executed.

Operator Response: None.

Programmer Response: Correct the syntax error to prevent the message from occurring. Save the job output and contact your IBM service representative

ICK00215I MINIDISK INFORMATION FOR DEVICE ccuu
RELOCATION FACTOR = nnnnn
SIZE = mmmmm
OWNER = owner-id
FPO LINK ADDRESS = xxxx

Explanation: This message indicates where the user minidisk is located on the real volume. (that is, for CKD devices, cylinder zero of the mini-disk located at cylinder nnnn of the real volume). Relocation factor and minidisk size are in decimal. The user's minidisk is full-pack overlay LINKed to the invoker as virtual address xxxx by ICKDSF.

System Action: The command continues processing.

Programmer Response: None.

Operator Response: None.

ICK00222I WARNING: COMMAND-END DELIMITER APPEARS WITHIN APOSTROPHES

Explanation: The optional command delimiter, a semicolon, was found within a quoted string. A closing single quotation mark may have been omitted.

System Action: The usage is accepted, and the semicolon is treated as a valid character instead of as a delimiter.

Operator Response: None.

Programmer Response: Check the usage of the semicolon, and correct if necessary. Save the job output and contact your IBM service representative

ICK00233I TOO MANY RIGHT PARENTHESES FOUND. EXCESS IGNORED

Explanation: Too many closing parentheses were found at the end of the command or following a first-level parameter.

System Action: The excess is ignored, and the command continues processing.

Operator Response: None.

Programmer Response: Remove the excess parentheses. Save the job output and contact your IBM service representative

ICK00700I DEVICE INFORMATION FOR ccuu IS CURRENTLY AS FOLLOWS: PHYSICAL DEVICE=yyyy LOGICAL DEVICE=yyyy STORAGE CONTROLLER=aaaa STORAGE CONTROL DESCRIPTOR=bb DEVICE DESCRIPTOR=cc

Explanation: where

PHYSICAL DEVICE=yyyy identifies the physical device type for the unit being processed. This message is always issued.

LOGICAL DEVICE=yyyy identifies the logical device This line is displayed only if the logical device is different from the physical device.

STORAGE CONTROLLER=aaaa identifies the storage control type for the unit being processed. This is issued if the sense-id CCW is supported.

STORAGE CONTROL DESCRIPTOR=bb describes the features associated with the storage controller. It contains the information present in sense-id byte 3. See the storage control document for the device for more information concerning the specific meaning of this byte. This message is issued if the sense-id CCW is supported.

DEVICE DESCRIPTOR=cc describes the features associated with the device. It contains the information present in sense-id byte 6. See the storage control document for the device for more information concerning the specific meaning of this byte. This message is issued if the sense-id CCW is supported.

System Action: ICKDSF
processing of the command continues.

Operator Response: None.

Programmer Response: None.

ICK00701I EQUIPMENT CHECK RETRY SUCCESSFUL

Explanation: The system has successfully recovered from an equipment check.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None. The CCW, CSW, and sense information are provided to help determine the cause of the error if the assistance of a service representative is required.

ICK00702I
SECONDARY VOLUME DEVICE DESCRIPTOR = cc

Explanation: You receive this message when you execute ANALYZE or INSPECT on the secondary volume of a dual copy pair and the primary and secondary volumes are different model devices. For more information, see the explanation of the *DEVICE DESCRIPTOR* for message ICK00700I.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01016I ALTERNATE TRACK CCHH=X'cccc hhhh' ASSIGNED TO PRIMARY TRACK CCHH=X'cccc hhhh'

Explanation: An alternate track was assigned to a primary track because the primary track was marked defective, or was found to be defective by surface checking, or an unconditional alternate track assignment was requested for the primary track.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01018I ALTERNATE CCHH=X'cccc hhhh' RE-ASSIGNED FOR PRIMARY CCHH=X'cccc hhhh'

Explanation: The alternate track originally assigned to the indicated primary track was either marked defective or was found defective through surface checking. Another alternate track was assigned in place of the original alternate track. If the PRESERVE option was specified, the data found on the original alternate track was copied to the new alternate track.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01020I ALTERNATE TRACK CCHH=X'cccc hhhh' WAS RECLAIMED

Explanation: An alternate track that was previously marked defective appeared to be nondefective when surface checking was performed. The track is added to the set of available alternate tracks.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01021I PRIMARY TRACK CCHH=X'cccc hhhh' WAS RECLAIMED

Explanation: A primary track that was previously marked defective appeared to be nondefective when surface checking was performed. The primary track is marked available, and the assigned alternate track is added back into the set of available alternate tracks. If the PRESERVE parameter was specified, any data written on the alternate track is copied back onto the reclaimed primary track.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01022I DEFECTIVE PRIMARY TRACK STATUS WILL BE RESET FOR TRACK X'cccc hhhh'

Explanation: During the INSTALL/REVALidate command process, the defective primary track status for the specified track will be disassociated from the alternates. Surface checking function will be performed to the specified primary track later to determine if the track is defective.

System Action: Processing continues

Programmer Response: None.

Operator Response: None.

ICK01135I **PRESERVE INFORMATION EXISTS ON CE CYLINDER FOR TRACK X'cccc hhhh'**

Explanation: During ANALYZE DRIVETEST processing, it was determined that the PRESERVE function of the INSPECT command did not execute to completion for the specified track. The track might be unusable. Data may be saved for this track.

System Action: This information is not erased. ANALYZE processing continues with the remainder of the drive test.

Programmer Response: Execute the INSPECT command for this device to ensure the usability of the specified track, and to recover the data if necessary.

ICK01136I **CONTINUE INFORMATION EXISTS ON CE CYLINDER FOR TRACK X'cccc hhhh'**

Explanation: During ANALYZE DRIVETEST processing, it was determined that a previous invocation of the INIT command did not execute to completion. X'cccc hhhh' represents the last track for which a checkpoint was taken. It is likely a track beyond this checkpoint is unusable.

System Action: This information is not erased. ANALYZE processing continues with the remainder of the drive test.

Programmer Response: Execute the INIT command for this device to ensure the usability of the tracks since the previous checkpoint.

ICK01305I **ccuu ALL DATA "MACHINE READABLE"**

Explanation: This is an information message indicating that all data on the volume can be read successfully.

System Action: Processing continues.

Operator Response: None

Programmer Response: None

ICK01306I **SKIP DISPLACEMENTS ASSIGNED**

Explanation: This is an information message indicating that the skip displacement process occurred and skip displacement(s) have been successfully assigned.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01307I **DEFECTIVE TRACK LIST IN HEXADECIMAL FOR VOLUME volid**

Explanation: This message is the first line of the volume map. Following this line is a list (in hexadecimal) of any tracks that were found defective during execution of the command.

System Action: The command completed successfully.

Operator Response: None.

Programmer Response: None.

ICK01308I **THE FOLLOWING PRIMARY TRACKS WERE FOUND DEFECTIVE:**

Explanation: This message is a line in the volume map that identifies (in hexadecimal) any primary tracks that were found defective during execution of the command.

System Action: The command completed successfully.

Operator Response: None.

Programmer Response: None.

ICK01309I **THE FOLLOWING ALTERNATE TRACKS WERE FOUND DEFECTIVE:**

Explanation: This message is a line in the volume map that identifies (in hexadecimal) any alternate tracks that were found defective during execution of the command.

System Action: The command completed successfully.

Operator Response: None.

Programmer Response: None.

ICK01310I **NO DEFECTIVE TRACKS WERE FOUND**

Explanation: This message is a line in the volume map that indicates that no defective tracks were found during execution of the command. If the command did not specify that all the tracks were to be checked, tracks that were not checked could be defective.

System Action: The command completed successfully.

Operator Response: None.

Programmer Response: None.

ICK01311I **NO DEFECTIVE PRIMARY TRACKS WERE FOUND**

Explanation: This message is a line in the volume map that indicates that no defective primary tracks were found during execution of the command. This does not mean that no defective primary tracks exist if the command did not specify that all the primary tracks are to be checked.

System Action: The command completed successfully.

Operator Response: None.

Programmer Response: None.

ICK01312I **NO DEFECTIVE ALTERNATE TRACKS WERE FOUND**

Explanation: This message is a line in the volume map that indicates that no defective alternate tracks were found during execution of the command. This message does not mean that no defective alternate tracks exist on the volume if the command did not specify that all of the alternate tracks are to be checked.

System Action: The command completed successfully.

Operator Response: None.

Programmer Response: None.

ICK01313I VOLUME CONTAINS nnnn ALTERNATE TRACKS -- mmmm AVAILABLE

Explanation: This message is a line in the volume map. The volume is defined as having *nnnn* alternate tracks reserved; *mmmm* tracks have not been assigned to defective primary tracks nor have been found to be defective and unavailable for assignment.

System Action: The command completed successfully.

Operator Response: None.

Programmer Response: None.

ICK01314I VTOC IS LOCATED AT CCHH=X'cccc hhhh' AND IS xxxx TRACKS

Explanation: This message is a line in the volume map that indicates the cylinder and track where the volume table of contents begins and the number of tracks it occupies.

System Action: The command completed successfully.

Operator Response: None.

Programmer Response: None.

ICK01315I VOLUME IS IN UN-INITIALIZED STATE

Explanation: Volume label and VTOC information were erased during the INSTALL/REVALidate command process. The volume has no volume label or VTOC.

System Action: None.

Programmer Response: If the INSTALL/REVALidate command process was successful, use the INIT command to initialize the volume. For VM, use the CPVOLUME command. to initialize the volume.

Operator Response: None

ICK01316I INSTALL FUNCTION COMPLETED SUCCESSFULLY

Explanation: The INSTALL command processing completed successfully.

System Action: ICKDSF terminated normally. Processing continues with your next command.

Programmer Response: None.

Operator Response: None.

ICK01318I REVALidate FUNCTION COMPLETED SUCCESSFULLY

Explanation: The REVALidate command processing completed successfully.

System Action: ICKDSF terminated normally. Processing continues with your next command.

Programmer Response: None.

Operator Response: None.

ICK01319I VOLUME IS NOT AVAILABLE FOR IPL

Explanation: Surface checking is performed on cylinder 0 head 0 during the Concurrent Media Maintenance process. The track is flagged as defective and the data is preserved on an alternate track. The volume cannot be used to IPL during this process.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01320I LOGICAL DEVICE TYPE IS NOW SET TO : xxxx

Explanation: The mode change function of the INSTALL command has completed and the logical device type is now equal to type xxxx.

System Action: Processing continues.

Programmer Response: None

Operator Response: None.

ICK01328I SURFACE ANALYSIS PROCESSING ON TRACK X'XXXX XXXX'

Explanation: Skip displacement processing has been invoked for the specified track.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01331I TRACK X'cccchhhh' MAY REQUIRE INSPECTION

Explanation: INIT or INSPECT, during CHECK NOSKIP processing for 3350 detected a data check on track X'cccchhhh'. Further processing, however, did not detect a defect. This message indicates that if an INSPECT TRACKS (X'cccc', X'hhhh') CHECK(n) is done subsequently for this track, a defect might be detected (and skipped).

System Action: INIT or INSPECT processing continues with the next track.

Operator Response: None.

Programmer Response: After completion of the INIT or INSPECT command, the programmer may want to run an INSPECT CHECK(n) TRACKS(...) for any track indicated in the message.

ICK01332I SURFACE ANALYSIS CYLINDER COULD NOT BE UPDATED

Explanation: After assigning a skip displacement to a track, ICKDSF
could not update the delta map on the surface analysis cylinder with the current skip displacement data for this track.

The CCW, CSW, and sense information associated with the message is printed.

System Action: Processing for the track that contains the defect has completed successfully. Subsequent invocations for this track may have to reanalyze the entire track to locate the defect if the home address becomes unreadable. This message is for information only. There is no user consequence resulting from this condition.

Operator Response: None.

Programmer Response: None. Since the usability of the track is not affected, there is no need to examine this information any further. If there is concern, the failing CCW, CSW, and sense information can be examined in detail.

ICK01334I CURRENTLY PROCESSING TRACK CCHH=X'cccc hhhh'

Explanation: Information message given when ICKDSF is performing full volume processing. The message is issued to indicate ICKDSF progress.

System Action: Processing continues with the next track.

Operator Response: None.

Programmer Response: None.

ICK01336I TRACK X'cccchhhh' EXPERIENCED NON-RECURRING DATA CHECK X'cccc hhhh'.

Explanation: Skip displacement analysis processing for this track detected more than one discrete data check that was not repeatable.

System Action: Processing continues with the next track.

Operator Response: None.

Programmer Response: This condition might arise from too much random noise on a track. If this message is issued for multiple tracks, or many tracks under the same head, this could indicate a potential hardware problem. Save the job output and contact your IBM hardware service representative.

ICK01380I THE FOLLOWING TRACKS ARE UNRECOVERABLE:

Explanation: This message is a line in the volume map that identifies tracks that were found unrecoverable during execution of the command. An unrecoverable track is a track where the home address and/or record zero could not be read successfully after all recovery attempts were made. This message is followed by one or more indications of a track in error as follows: CCHH of track =

System Action: If the track is not recoverable because of a data error, the command runs to completion with an error return code. If the track is not recoverable because of anything other than a data error, command processing stops after detection of the error.

Operator Response: None.

Programmer Response: Prior messages should be examined (including the CCW, CSW, and sense that caused the I/O) to determine the cause of the failure. This message may be caused if the read/write mode switch is set to READ mode, or some other condition is causing the inability of ICKDSF to write on the volume.

Assistance may be required from the IBM hardware service representative. Save the job output contact your IBM hardware service representative

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ICK01381I RECURRING CORRECTABLE ERRORS ON TRACK

Explanation: This message is a line in the volume map that identifies tracks where ICKDSF detected recurring correctable data checks. This message is issued only for those count-key-data devices that do not have skip displacement areas. The message is followed by one or more instances of: CCHH of track = X'cccc hhhh'.

System Action: The command completed successfully.

Operator Response: None.

Programmer Response: If the existence of a correctable data check on the indicated track(s) is determined to be detrimental to the installation, an alternate track can be unconditionally assigned to the indicated track using the INSPECT command. Save the job output and contact your IBM service representative

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ICK01400I ccuu ANALYZE STARTED

Explanation: ANALYZE has started to execute its tests on the logical volume identified in the message (that is, on the volume whose unit address is ccuu).

System Action: Processing continues.

Operator Response: None

ICK01405I ccuu ALL DATA "MACHINE READABLE" WITHOUT ERRORS

Explanation: The volume was successfully read during the data verification test (SCAN option).

System Action: Processing terminates normally.

Operator Response: None. (If a data problem prompted you to run ANALYZE, and if the problem persists, further analysis is needed according to your installation's procedures.)

ICK01406I ccuu ANALYZE ENDED

Explanation: ANALYZE command has completed processing.

System Action: Processing terminates.

Operator Response: None.

ICK01407I ccuu NO DRIVE PROBLEMS FOUND

Explanation: Drive tests successfully completed executing and did not detect any problems.

System Action: Processing continues.

Operator Response: None.

ICK01408I ccuu DATA VERIFICATION TEST STARTED

Explanation: ANALYZE has started to execute its data verification tests.

System Action: Processing continues.

Operator Response: None.

ICK01409I DRIVE TEST STARTED

Explanation: Drive test processing is beginning.

System Action: Drive test processing continues.

Operator Response: None.

Programmer Response: None.

ICK01410I **DRIVE TEST: TESTING SUCCESSFUL ON :**
CHPID = XX
CHANNEL NUMBER = X
CHANNEL SET = X
STORAGE DIRECTOR ID = XX
SUBSYSTEM ID = XXXX
CLUSTER = X
STORAGE PATH = X

Explanation: The drive test successfully completed processing on the indicated path, where:

CHPID = XX identifies the CHPID for the path being processed. This line is not displayed if it does not apply to the operating system environment.

CHANNEL NUMBER = X identifies the channel number for the path being processed. This line is not displayed if it does not apply to the operating system environment.

CHANNEL SET = X identifies the channel set (CPU affinity) for the path being processed. This line is not displayed if it does not apply to the operating system environment.

STORAGE DIRECTOR ID = XX identifies the Storage Director Id for the path being processed. It contains the information present in sense byte 21. This line is not displayed if it does not apply to the control unit being processed.

SUBSYSTEM ID = XXXX identifies the Subsystem Id for the path being processed. It contains the information present in sense bytes 20 & 21. This line is not displayed if it does not apply to the control unit being processed.

CLUSTER = X identifies the Cluster for the path being processed. This line is not displayed if it does not apply to the control unit being processed.

STORAGE PATH = X identifies the Storage Path of the Cluster being processed. This line is not displayed if it does not apply to the control unit being processed.

System Action: ICKDSF processing of the command continues.

Operator Response: None.

Programmer Response: None.

ICK01411I **FUNCTIONAL VERIFICATION DATA WRITE/READ TEST STARTED**

Explanation: Full volume HA/R0 validation and functional data verification test for the REVALidate command process has started.

System Action: Processing continues.

Programmer Response: None.

Operator Response: None.

ICK01412I **FUNCTIONAL VERIFICATION DATA WRITE/READ TEST ENDED**

Explanation: Full volume HA/R0 validation and functional data verification test for the REVALidate command process has ended.

System Action: Processing continues.

Programmer Response: None.

Operator Response: None.

ICK01413I **IN THIS ENVIRONMENT PATH CONTROL WILL ONLY PROCESS ON CHANNEL: X**

Explanation: When using path control in a Stand-alone/370 environment, only the channel indicated is processed on the first channel set located. Refer to the path control parameters for restrictions when operating in this environment.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01414I **THE FOLLOWING ERRORS WERE ALSO DETECTED**

Explanation: This message provides sense data for use by the service representative when a drivetest failure occurs. This message follows messages ICK21407 and/or ICK21409. Please refer to these messages.

System Action: Processing continues.

Programmer Response: Contact your IBM hardware service representative.

Operator Response: None.

ICK01415I **CORRECTABLE DATA CHECK OCCURRED ON CE CYLINDER, HEAD = X'hhhh', RECORD = X'rr'**

Explanation: An I/O error occurred on the customer engineer (CE) cylinder on the head and record indicated. The message is followed by CCW, CSW, and sense bytes describing the error on the failing record.

System Action: ICKDSF command processing continues. Eventual termination may occur.

Operator Response: None.

Programmer Response: The CCW, CSW, and sense information are provided for use by the service representative if termination occurs.

ICK01416D
CHPID = XX, RESERVED, REPLY R TO RETRY, B TO BYPASS

Explanation: This message is issued to the system operator if the processing encounters a path that remains reserved for all of its retries. "XX" will specify the path (CHPID). If the reply is R, the I/O operation is reissued to the device. If the reply is B, further processing will be bypassed on this path.

System Action: See explanation.

Operator Response: See explanation.

Programmer Response: None.

ICK01417D
X, Y RESERVED, REPLY R TO RETRY, B TO BYPASS

Explanation: This message is issued to the system operator if the processing encounters a path that remains reserved for all of its retries. "X" will specify the channel number and "Y" will specify the channel set (CPU affinity). If the reply is R, the I/O operation is reissued to the device. If the reply is B, further processing will be bypassed on this path.

System Action: See explanation.

Operator Response: See explanation.

Programmer Response: None.

ICK01501I **INVALID DEVICE TYPE SPECIFIED FOR BUILDIX COMMAND**

Explanation: A request was made to change the format of a VTOC on a volume whose device type is not supported by the BUILDIX command (for example, a 2314 DASD).

System Action: Execution of the command is terminated.

Operator Response: None.

Programmer Response: Verify that the volume is on a device type supported by the BUILDIX command, and change the JCL or command statement.

ICK01502I **BUILDIX FUNCTION STARTED**

Explanation: Execution of the BUILDIX command has begun.

System Action: None.

Operator Response: None.

Programmer Response: None.

ICK01503I **ccuu REQUEST RECEIVED TO CONVERT VTOC TO **FORMAT**

Explanation: This message verifies the request for a change of VTOC format. "***" specifies the format requested—either OS or IX.

System Action: Execution of the command continues.

Operator Response: None.

Programmer Response: None.

ICK01504I **ccuu VTOC FORMAT IS CURRENTLY **FORMAT, REQUEST ACCEPTED**

Explanation: This message verifies that the BUILDIX function specified on the command statement is valid for the current format of the VTOC on the volume. "***" identifies the format of the VTOC, either OS or IX.

System Action: Execution of the command continues.

Operator Response: None.

Programmer Response: None.

ICK01508A **ccuu SHOULD VTOC CONVERSION PROCEED? REPLY "U" TO CONTINUE, ELSE "T"**

Explanation: This message permits the operator to verify that the user is authorized to request the BUILDIX function before execution of the command begins.

System Action: The system waits for the operator's reply.

Operator Response: Verify that the user is authorized to issue the command, and reply "U" to continue or "T" to terminate. Any reply other than "U" or "T" causes this message to be issued again.

Programmer Response: None.

ICK01513I **ccuu BUILDIX PROCESSING COMPLETED: VTOC IS NOW IN **FORMAT.**

Explanation: The BUILDIX command completed successfully. "***" shows the new VTOC format, either OS or IX.

System Action: ICKDSF is terminated normally.

Operator Response: None.

Programmer Response: None.

ICK01600I **MAPALT STARTED**

Explanation: Execution has started for the MAPALT command.

System Action: None.

Operator Response: None.

ICK01606I **nnnnn BLOCKS ASSIGNED TO ALTERNATES IN LIMITS SPECIFIED**

Explanation: This summary message shows the number of blocks assigned alternates, on this or previous runs, within the limits specified on the command statement.

System Action: None.

Operator Response: None.

Programmer Response: None.

ICK01608I **ccuu MAPALT ENDED NORMALLY, RETURN CODE= n**

Explanation: Execution of the command ended without any errors detected that would have caused termination of execution. A return code of 0 or 4 will be indicated in the message. A return code of 0 means no errors were encountered. A return code of 4 means one or more recoverable errors were encountered.

System Action: None.

Operator Response: None.

Programmer Response: None.

ICK01609I **PERMANENT DATA CHECK FOUND READING ID FOR BLOCK nnnnnn**

Explanation: A permanent data check was encountered while attempting to read the ID field of the primary block shown in the message.

System Action: Diagnostic information is printed on the output device, and execution of the command continues.

Operator Response: None.

Programmer Response: Save the job output for the system coordinator, and follow your installation,s procedures for data recovery. If this message is received for up to 3 blocks, the ICKDSF INSPECT command can be used to assign an alternate block for the block(s) experiencing the data checks. If this message is received for more than 3 blocks, contact your IBM hardware or software service representative. Save the job output and contact your IBM hardware service representative

ICK01701I ONLY 5 USER LABELS ALLOWED

Explanation: Only five user volume labels are allowed for fixed block architecture devices. In the LABEL parameter, you have asked for space for more than five labels.

System Action: Space is reserved for six labels, and processing continues.

Operator Response: None.

Programmer Response: None.

ICK01704I ALTERNATE ASSIGNED FOR BLOCK xxxxxxxx

Explanation: Block xxxxxxxx was found defective during surface analysis. The block has been assigned an alternate.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01708I RECLAIM SUCCESSFUL FOR BLOCK xxxxxxxx

Explanation: BLOCK xxxxxxxx has been successfully reclaimed.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01714I RECLAIM UNSUCCESSFUL FOR BLOCK xxxxxxxx

Explanation: The defective block xxxxxxxx failed surface analysis and could not be reclaimed.

System Action: An alternate is assigned to the block. Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01715I TOTAL NUMBER OF ALTERNATES ASSIGNED = number

Explanation: Gives the total number of alternate blocks assigned in this run.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01725I EXCESSIVE NUMBER OF ALTERNATES ASSIGNED FOR A CYLINDER

Explanation: During initialization of a 3370 volume, more than 24 alternates were assigned on one cylinder. This is more than the number of alternates on a cylinder.

System Action: Processing continues.

Operator Response: None.

Programmer Response: This could cause performance degradation on the volume. You may need to contact your IBM hardware service representative. Save the job output and contact your IBM service representative

ICK01726I nnnnnn FACTORY FLAGGED BLOCKS.

Explanation: Final message of INIT reclaim processing. nnnnnn is the number of factory-flagged blocks assigned an alternate.

System Action: INIT processing surface analysis phase is started

Operator Response: None.

Programmer Response: None.

ICK01727I RECLAIM SPECIFIED WITH NOCHECK. NO RECLAIM DONE

Explanation: RECLAIM function was not performed, because NOCHECK was specified or defaulted. CHECK is required for RECLAIM.

System Action: Processing continues without RECLAIM.

Operator Response: None.

Programmer Response: Specify CHECK and rerun your job if RECLAIM is wanted.

ICK01729I SPECIFIED CISIZE ADJUSTED TO NEXT HIGHER MULTIPLE OF DEVICE BLOCKSIZE

Explanation: When you specify a CISIZE which is not a multiple of 512, ICKDSF rounds the value up to the next higher multiple.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01730I RECLAIM AND/OR CHECK NOT SUPPORTED FOR FBA MINI-DISKS

Explanation: The CHECK and/or RECLAIM function requested is not supported for fixed block architecture (FBA) minidisks.

System Action: Processing continues without CHECK or RECLAIM.

Operator Response: None.

Programmer Response: None. If CHECK or RECLAIM is needed, the full volume must be initialized.

ICK01731I MAP FUNCTION NOT SUPPORTED FOR MINI-DISKS

Explanation: The MAP parameter was specified on the command, but MAP is not supported for fixed block architecture (FBA) minidisks.

System Action: Processing continues without MAP function.

Operator Response: None.

Programmer Response: None

ICK01732I MAP FUNCTION NOT SUPPORTED FOR THIS DEVICE TYPE

Explanation: The MAP parameter was specified or defaulted on a device where MAP is not supported.

System Action: Processing continues bypassing the MAP function.

Operator Response: None.

Programmer Response: None Save the job output and contact your IBM service representative

ICK01754I xx OF THE INSPECTED BLOCKS HAVE ALTERNATES ASSIGNED

Explanation: This is the summary message printed when MAP is specified. xx is the number of blocks inspected that have alternates assigned.

System Action: None.

Operator Response: None.

Programmer Response: None.

ICK01759I USER DATA ON BLOCK xxxxxxxx RESTORED

Explanation: Processing of the command failed with a permanent error, and ICKDSF was able to restore the data on block xxxxxxxx before terminating the command.

System Action: The command is terminated because of a previously reported error. Processing continues with the next command.

Operator Response: None.

Programmer Response: None.

ICK01760I SURFACE OF BLOCK xxxxxxxx DEFECTIVE

Explanation: The check function found the surface of BLOCK xxxxxxxxxx defective.

System Action: If ASSIGN is specified, an alternate is assigned.

Operator Response: None.

Programmer Response: None.

ICK01761I SURFACE OF BLOCK xxxxxxxx NOT DEFECTIVE

Explanation: The check function found the surface of block xxxxxxxx not defective.

System Action: Processing continues with the next block.

Operator Response: None.

Programmer Response: None.

ICK01765I NEW ALTERNATE ASSIGNED TO BLOCK xxxxxxxx

Explanation: BLOCK xxxxxxxx has been assigned a new alternate.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01781I dataset IS A PASSWORD PROTECTED DATA SET BUT USER EXIT DIRECTS BYPASS CHECK

Explanation: The user security exit module has directed ICKDSF to bypass password verification of the named password-protected data set on the volume.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01795I TRACK X'cccchhhh' IS CONTAINED IN DATA SET dataset

Explanation: The track specified in the INSPECT command is contained in the named data set. This message may be followed by others such as ICK31780I.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK01832I PATH xxxx,y HAS BEEN WRITE ALLOWED

Explanation: This in an informational message indicating to the operator and the programmer which path ids have been write-allowed by the CONTROL command. "xxxx" is the unit address, "y" is the path ID (CHPID).

System Action: Processing continues.

Operator Response: All devices on that path have been cleared. However, the operator must vary the required paths back online before they are accessible.

Programmer Response: None.

ICK01833I DEVICE ccuu FENCE STATUS CLEARED

Explanation: This is an information message indicating that the fence status for the device *ccuu* has been cleared by the CONTROL command.

System Action: Processing continues

Operator Response: None

Programmer Response: None

ICK01841I RESET INDEFINITE CONDITION OF DEVICE ccuu COMPLETE

Explanation: The device *reset indefinite condition* completed successfully.

System Action: The command terminates.

Operator Response: None.

Programmer Response: None.

ICK02100I LAST INVOCATION CHECKPOINTED AT X'cccc hhhh', RECOVERY IN PROCESS

Explanation: A previous use of the INIT command did not complete. The track specified in this message is the last checkpointed location.

System Action: Depending on the device type and the nature of the failure of the previous use of the INIT command, appropriate action is taken to ensure that the track that was being processed at the time of the failure is returned to its proper condition.

After the recovery process is complete, processing begins for this use of the INIT command.

Programmer Response: None

Operator Response: None

ICK02101I **INITIALIZE IS CONTINUING FROM TRACK X'cccc hhhh'.**

Explanation: CONTINUE data existed when INITialize was invoked.

System Action: Processing begins at track X'cccc hhhh' for the remainder of the CURRENT specified range.

ICK02103I **INITIALIZE IS CONTINUING FROM BLOCK xxxxxxxx.**

Explanation: CONTINUE data existed when INITialize was invoked. xxxxxxxx indicates the last checkpointed block.

System Action: Processing begins with BLOCK xxxxxxxxxx for the remainder of the CURRENT specified range.

ICK02104I **NO ADDITIONAL TRACKS REMAIN IN THE SPECIFIED RANGE**

Explanation: CONTINUE processing was previously activated. (ICK02101I) After verification of the tracks necessary to ensure the validity of the volume, there were no additional tracks to process in the specified range.

System Action: Processing continues with the minimal initialization functions.

ICK02105I **PROCESSING IS CONTINUING FROM LAST CHECKPOINT**

Explanation: The previous invocation of this command did not complete processing. The current command has detected that situation and will continue processing from the last checkpoint.

System Action: The command process continues from the last checkpoint.

Programmer Response: None.

Operator Response: None.

ICK02129I **RECOVERY COMPLETE FOR TRACK X'cccc hhhh'.**

Explanation: The backup recovery function is complete for the specified track.

System Action: Processing continues with the current invocation parameters.

Programmer Response: None.

ICK02150I **INITIALIZE IS CONTINUING WITH RECLAIM PROCESSING**

Explanation: A previous use of the INIT command failed during reclaim processing and the reclaim process is being restarted.

System Action: The reclaim process is restarted.

Operator Response: None.

Programmer Response: None.

ICK02156I **INITIALIZE PREVIOUSLY INTERRUPTED AT BLOCK xxxxxxxx**

Explanation: A previous use of the INIT command did not complete. The block specified in the message is the last checkpointed location.

System Action: The CONTINUE data and specified parameters are examined to determine what processing should be done.

Operator Response: None.

Programmer Response: None.

ICK02163I **CONTINUE INFORMATION EXISTS ON CE CYLINDER FOR BLOCK xxxxxxxx**

Explanation: During ANALYZE DRIVETEST processing, it was determined that a previous invocation of the INIT command did not execute to completion. xxxxxxxx represents the last block for which a checkpoint was taken.

System Action: This information is not erased. ANALYZE processing continues with the remainder of the drive test.

Programmer Response: This message is presented for informational purposes. The INIT command can be restarted if necessary, with CONTINUE or NOCONTINUE specified, depending upon the circumstances surrounding the previous INIT interruption.

ICK02164I **PRESERVE INFORMATION EXISTS ON CE CYLINDER FOR BLOCK xxxxxxxx**

Explanation: During ANALYZE DRIVETEST processing, it was determined that the PRESERVE function of the INSPECT command did not execute to completion for the specified block. Data has been saved for this block.

System Action: This information is not erased. ANALYZE processing continues with the remainder of the drive test.

Programmer Response: Execute the INSPECT command for this device to ensure the usability of the specified block, and to recover the data.

ICK02166I **RECOVERY COMPLETE FOR BLOCK xxxxxxxx**

Explanation: The backup recovery function is complete for the specified block.

System Action: Processing continues with the current invocation parameters.

Programmer Response: None.

ICK02174I **VOLUME CONTAINS xxxxx ALTERNATE TRACKS -- AVAILABLE ALTERNATES UNDETERMINED**

Explanation: The VTOC for this volume cannot be read, or does not exist. Therefore, the current number of available alternate tracks cannot be determined. Previous message(s) indicate why the VTOC is inaccessible. xxxxx is the total number of alternate tracks on the volume.

System Action: Processing continues

Programmer Response: Previous messages indicate why the VTOC is inaccessible.

Operator Response: None

ICK03000I

```
CPVOL REPORT FOR CCUU
FOLLOWS:
 VOLUME SERIAL = volid
 CYL|PAGE RANGE TO BE FOR-
MATTED IS xxx - yyy
 FORMATTING OF CYLINDER xxx
STARTED AT hh:mm:ss
 TDSK CYLINDER(S) xxxx-yyyy NOT
EXAMINED
 FORMATTING OF CYLINDER yyy
STARTED AT hh:mm:ss
 FORMATTING OF CYLINDER zzz
ENDED   AT hh:mm:ss
 VOLUME SERIAL NUMBER IS NOW
= volid
 CYL|PAGE ALLOCATION IS AS
FOLLOWS:
 TYPE    START    END   TOTAL


 ____    _____    ____  ____
 type    xxxx     yyyy  zzzz
```

Explanation: where

VOLUME SERIAL=volid identifies the volume serial of the unit being processed.

CYL|PAGE RANGE TO BE FORMATTED IS xxx - yyy identifies the starting and ending values for the range of cylinders or FBA pages to be formatted. If the EXAMINE function was specified, this message will state "CYL|PAGE RANGE TO BE EXAMINED IS xxx - yyy."

FORMATTING OF CYL|PAGE xxx STARTED AT hh:mm:ss displays the time when formatting or examination was started.

FORMATTING OF CYL|PAGE yyy STARTED AT hh:mm:ss displays the time when formatting or examination started for cylinder/page yyy. This is a progress message that is repeated periodically (approximately every 100 cylinders or 10000 pages).

TDSK CYLINDER(S) xxxx-yyyy NOT EXAMINED displays the starting and ending cylinders that were "skipped" by the EXAMINE process. TDSK cylinders are not always in a format that can be read by EXAMINE and consequently are bypassed.

FORMATTING OF CYL|PAGE zzz ENDED AT hh:mm:ss displays the time when formatting or examination ended.

VOLUME SERIAL NUMBER IS NOW = volid identifies the new volume serial of the unit being processed if VOLID(serial) was specified in the CPVOLUME command.

CYL|PAGE ALLOCATION IS AS FOLLOWS: displays the contents of the allocation map.

System Action: ICKDSF processing of the command continues.

Operator Response: None.

Programmer Response: None.

ICK03010I **type(xxxx,yyyy) END RANGE LIMITED TO nnnn**

Explanation: A formatting range or allocation type statement specified an ending range value "yyyy" that exceeds the capacity "nnnn" of the volume.

System Action: CPVOLUME replaces "yyyy" with "nnnn" and processing continues.

Operator Response: None, if the resulting range is acceptable. Otherwise rerun CPVOLUME using the correct range value.

Programmer Response: None.

ICK03011I **CYLINDER|PAGE RANGE TO BE FORMATTED IS xxxx-yyyy CYLINDER|PAGE RANGE TO BE EXAMINED IS xxxx-yyyy**

Explanation: xxxx is the starting cylinder or page to be formatted or examined by the CPVOLUME command. yyyy is the ending cylinder to be formatted or examined by the CPVOLUME command.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK03020I **CPVOL IS OPERATING IN VM/XA|VM/370 MODE**

Explanation: CPVOLUME has determined that its operating mode is either VM/XA (includes VM/ESA) or VM/370. Mode is specified in the MODE parameter. If the MODE parameter is omitted, the mode will be that of the VM system in which ICKDSF is executing.

System Action: processing continues.

Operator Response: None, if the MODE is acceptable. Otherwise rerun CPVOLUME using the correct MODE specification.

Programmer Response: None.

ICK03022I **FORMATTING THE DEVICE with/without FILLER RECORDS**

Explanation: The volume will be formatted with/without filler records depending on the device status and your parameter specification.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK03024I **DEVICE IS CURRENTLY FORMATTED with/without FILLER RECORDS**

Explanation: The volume you specified is currently formatted with/without filler records.

System Action: Command processing continues.

Operator Response: None.

Programmer Response: Not applicable.

ICK03030I **ALLOCATION MAP MUST BE CHANGED FROM xxxx TO yyyy CYLS|PAGES**

Explanation: The volume specified by the UNIT parameter was previously formatted with an allocation map that no longer matches the actual number of cylinders contained on the device. The value xxxx is the highest cylinder defined in the allocation map. If the unit is an attached device, yyyy is the number of cylinders for the native device. If the unit is a mini-disk, yyyy is the number of cylinders for the mini-disk.

This condition can occur when a CP formatted volume is copied or restored to a volume than contains more cylinders. For example, if a 3380D is copied to a 3380E the message will indicate that the allocation map must be expanded from 885 to 1770 cylinders. This condition can occur when a previously formatted mini-disk is re-defined with a different number of cylinders. This condition can also occur when the MIMIC(MINI(xxx)) parameter specifies a value xxx that does not agree with the allocation map.

If the operation is FORMAT or ALLOCATE, the allocation map will be changed if the reply to message ICK003D is "U." The map is EXPANDED by adding PERM space to the end of the allocation map. The map is REDUCED by deleting space from the end of the allocation map.

If the operation is LABEL, LIST or EXAMINE the message is informational - the function will be performed and the allocation map will not be modified.

System Action: ICKDSF continues processing.

Operator Response: None, if the change is acceptable. Otherwise reply "T" to message ICK003D.

Programmer Response: None.

ICK03040I **PERMANENT READ ERROR ON CCHH|BLOCK**

Explanation: While performing the EXAMINE function an uncorrectable data check occurred.

System Action: The EXAMINE function continues processing.

Operator Response: When EXAMINE completes, re-format the indicated cylinder.

Programmer Response: None.

ICK03050I **FORMAT ERROR ON CYL(S) xxxx-yyyy**

Explanation: While performing the EXAMINE function a cylinder (or range of cylinders) were found that were not properly formatted.

System Action: The EXAMINE function continues processing.

Operator Response: When EXAMINE completes, re-format the indicated cylinder(s).

Programmer Response: None.

ICK03060I **INVALID TRACK FORMAT ON CCHH**

Explanation: While performing the FORMAT function an INVALID TRACK FORMAT or NO RECORD FOUND error was encountered while searching for R0 on the track.

System Action: The INSPECT function is initiated to surface check the track and rewrite the R0. If the INSPECT is successful, formatting continues, otherwise the operation is terminated. Message ICK03070I will report the results of the track surface check operation.

Operator Response: None, if the operation continues. If the operation is terminated, refer to message ICK03070I or ICK33110I which may be received.

Programmer Response: None.

ICK03070I **SURFACE CHECK IN PROGRESS ON CCHH|BLOCK**
SURFACE CHECK COMPLETED SUCCESSFULLY ON CCHH|BLOCK

Explanation: While formatting, a device error was encountered that requires that the CKD track or FBA block be inspected. CPVOLUME invokes the "INSPECT" function to attempt to correct the error. Message ICK03070I is issued when INSPECT is started and is issued again to report the results of the INSPECT.

System Action: Formatting is suspended until the INSPECT operation completes. If the INSPECT operation is successful, formatting continues. If the INSPECT operation fails, formatting is terminated.

Programmer Response: None.

Operator Response: None if the INSPECT operation is successful. If the INSPECT fails, refer to additional messages issued by INSPECT.

ICK03080I **CYL0/TRK0 REFORMATTED WITH NEW ALLOCATION MAP**

Explanation: Message ICK03030I was issued indicating that the allocation map must be changed. This message indicates that the records on cylinder 0 track 0 have been rewritten to accommodate the changed size of the allocation map record.

System Action: ICKDSF continues processing.

Programmer Response: None.

Operator Response: None.

ICK03090I **VOLUME SERIAL = vvvvvv**

Explanation: vvvvvv is the volume serial obtained from the volume label record. If there is no volume label record then vvvvvv will be displayed as "......."

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK04000I **DEVICE IS IN SIMPLEX STATE**

Explanation: The device is in simplex state and not part of a dual copy pair.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK04001I **DEVICE IS IN DUPLEX STATE**

Explanation: The device is part of a dual copy pair and is in duplex state.

System Action: Processing continues. Later termination may occur if the ICKDSF command being processed does not support volumes in duplex state.

Operator Response: None.

Programmer Response: None.

ICK04002I DEVICE IS IN SUSPENDED DUPLEX STATE

Explanation: The device is part of a dual copy pair and is in suspended duplex state.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK04003I PROCESSING ON PRIMARY VOLUME OF DUAL COPY PAIR

Explanation: Command processing is being directed to the primary volume of a dual copy pair.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK04004I PROCESSING ON SECONDARY VOLUME OF DUAL COPY PAIR

Explanation: Command processing is being directed to the secondary volume of a dual copy pair.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK10705I VOLUME SERIAL NUMBER FOR DEVICE ccuu IS xxxxxx

Explanation: Informational message concerning the volume serial and/or VTOC of the volume at ccuu. If the volume serial was changed, you also receive one or both of the following:

CHANGED FROM xxxxxx - The volume serial number of the ccuu was changed.

The following message could also be received:

VOLUME SERIAL DUPLICATE FOR DEVICE ccuu. VOLUME MADE UNAVAILABLE - The new volume serial on the ccuu is a duplicate of one already known to the operating system. The device has been unloaded.

If the VTOC location was changed, you also receive the following:

VTOC LOCATION MOVED - The VTOC location of the volume at *ccuu* has moved.

System Action: Processing continues.

Operator Response: If the device is being shared by other systems, this volume may need to be remounted at the sharing systems.

Programmer Response: None.

ICK10710I I/O ERROR OCCURRED ON DEVICE ccuu

Explanation: An I/O error occurred on the device with address *ccuu*. The nature of the I/O error is described on the next two lines, where the failing channel command word (CCW), the channel status word (CSW), and the sense bytes are printed. If you are executing ICKDSF under VM, see "Problem Determination under VM" on page 263 under Appendix B, "VM Support" on page 257.

System Action: Processing continues. Eventual termination of the command may occur, but such a termination is generally followed with a terminating message.

Operator Response: None.

Programmer Response: Make sure that the problem is, indeed, with the device. Correct the device problem, and retry the command.

ICK10711I SIM INFORMATION: CCUU=ccuu,
errortype,severity,
MT=xxxx-xx,SER=xxxx-xxxxx,
REFCODE=xxx-xxxx-xxxx,
VOLSER=xxxxxx,ID=xx,
CCHH=X'cccc hhhh',
BLOCK=xxx xxxxx,REPEATED
SIM=xxxxxxxxxxxxxxxxxxxxxx

Explanation: Information from a service information message(SIM). The CCHH or BLOCK fields are only printed if they are applicable to the error type. Other fields that are not applicable to the error type are printed with N/A in the variable portion of the message.

System Action: Processing continues.

Operator Response: None.

Programmer Response: See *Maintaining IBM Storage Subsystem Media* for further information regarding SIMs.

ICK10720I UNABLE TO DETERMINE IF DUPLICATE VOLSER EXISTS
RETURN CODE = xxxxxxxx
REASON CODE = xxxxxxxx

Explanation: ICKDSF termination processing attempted to determine if another UCB exists with a duplicate *volser* of this volume. Because the UCBLOOK service returned with an unexpected error condition, ICKDSF is unable to determine if a duplicate exists, and the UCB for the device has been marked offline. The hexadecimal UCBLOOK return and reason code are printed if applicable.

System Action: Termination processing continues.

Operator Response: None.

Programmer Response: Examine the previous messages to determine if the requested ICKDSF function completed successfully. Examine the UCBLOOK return and reason code to determine the cause the error. See *MVS/ESA Planning: Dynamic I/O Configuration*, for a description of the UCB services and the corresponding return and reason codes. If no other online device exists with the same volser, then the volume can be varied back online.

ICK10721I ccuu VOLUME MADE UNAVAILABLE

Explanation: The device has been unloaded during ICKDSF termination processing, because either an error occurred or a duplicate volser was found.

System Action: Termination processing continues.

Operator Response: None.

Programmer Response: Examine the previous messages to determine the reason the volume was made unavailable.

ICK10722I **UCBLOOK FAILED**
RETURN CODE = xxxxxxxx
REASON CODE = xxxxxxxx

Explanation: The UCB service, UCBLOOK was unsuccessful.

System Action: Processing terminates. The hexadecimal UCBLOOK return and reason code are printed if applicable.

Operator Response: None.

Programmer Response: Examine the UCBLOOK return and reason code to determine the cause of the error. See *MVS/ESA Planning: Dynamic I/O Configuration* for more information concerning UCB services and the corresponding return and reason codes.

ICK10723I **UCBPIN FAILED**
RETURN CODE = xxxxxxxx
REASON CODE = xxxxxxxx

Explanation: The UCB service, UCBPIN was unsuccessful. The hexadecimal UCBPIN return and reason code are printed if applicable.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Examine the UCBPIN return and reason code to determine the cause of the error. See *MVS/ESA Planning: Dynamic I/O Configuration* for more information concerning UCB services and the corresponding return and reason codes.

ICK10724I **UCBPIN FAILED, UNABLE TO UNPIN UCB**
RETURN CODE = xxxxxxxx
REASON CODE = xxxxxxxx

Explanation: The UCB for this device could not be unpinned. The hexadecimal UCBPIN return and reason code are printed if applicable. ICKDSF termination processing was unable to complete successfully. End of Task processing will also attempt to unpin the UCB.

System Action: The command terminates.

Operator Response: None.

Programmer Response: Examine the UCBPIN return and reason code to determine the cause of the error. See *MVS/ESA Planning: Dynamic I/O Configuration* for more information concerning UCB services and the corresponding return and reason codes.

ICK10725I **UCB SERVICE FAILED**
RETURN CODE = xxxxxxxx
REASON CODE = xxxxxxxx

Explanation: The UCB service failed when ICKDSF was attempting to determine the path status. The hexadecimal UCB Service return and reason code are printed if applicable.

System Action: ICKDSF will either terminate, or continue processing but bypass some functions.

Operator Response: None.

Programmer Response: Examine the UCB service return and reason code to determine the cause of the error. See *MVS/ESA Planning: Dynamic I/O Configuration* for more information concerning UCB services and the corresponding return and reason codes. Examine the subsequent messages to determine if ICKDSF will continue processing, bypassing some functions, or whether processing will be terminated.

ICK10726I **UNABLE TO DETERMINE PATH STATUS**

Explanation: The path status could not be determined.

System Action: Processing continues, bypassing the functions that require path control.

Operator Response: None.

Programmer Response: Examine the previous messages to determine the reason the path status could not be determined.

ICK11005I **VTOC DOES NOT EXIST**

Explanation: A volume table of contents was not found on the volume during execution of the command.

System Action: Processing continues.

Operator Response: None.

Programmer Response: The volume must be initialized before being used in an MVS or VSE environment.

Note: A VTOC is not required for CP volumes.

ICK11009I **IPL PROGRAM SUPPLIED FOR MSS -- IGNORED**

Explanation: A volume being formatted as an MSS staging pack cannot contain IPL records.

System Action: The IPL program specified is ignored, and the command continues processing.

Operator Response: None.

Programmer Response: Remove the IPLDD parameter from the command.

ICK11010I **UNABLE TO CLOSE VOLUME**

Explanation: A system error occurred that prevents the volume from being closed properly.

System Action: The command probably did not complete successfully because the volume did not close when the command completed. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative

ICK11019I **NEXT-AVAILABLE-ALTERNATE POINTER OR COUNTER IN VTOC IS INVALID**

Explanation: The value of the pointer to the next available alternate track or the count of the number of alternate tracks that are available is in error.

System Action: Processing continues. If it is possible, the value in the VTOC is updated when processing completes.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative

ICK11038I NO VALID TRACKS WERE SPECIFIED

Explanation: If the TRACKS parameter specifies only invalid track addresses, this message indicates that the command was not processed.

System Action: The command terminates. However, PRESERVE data is processed before termination. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: Reissue the command, and specify one or more valid track addresses. Save the job output and contact your IBM service representative

ICK11050I VTOC LOCATION SPECIFIED FOR MSS STAGING PACK -- IGNORED

Explanation: You cannot specify a VTOC location for a Mass Storage System staging pack.

System Action: The VTOC parameter is ignored, and the command continues processing.

Operator Response: None.

Programmer Response: Remove the VTOC parameter from the command.

ICK11051I LABELS PARAMETER SPECIFIED FOR MSS STAGING PACK -- IGNORED

Explanation: You cannot place user volume labels on a Mass Storage System staging pack.

System Action: The LABELS parameter is ignored, and the command continues processing.

Operator Response: None.

Programmer Response: Remove the LABELS parameter from the command.

ICK11065I DATA PRESERVED FOR TRACK CCHH=X'cccc hhhh' ON ALTERNATE TRACK CCHH=X'cccc hhhh'

Explanation: This message follows message ICK21047I if the preserved data is successfully written to an alternate track.

System Action: Processing continues with the next track. The return code is set to 4.

Programmer Response: Further inspection of the failing track might be required to determine the reason for the failure.

ICK11066I DATA RESTORED FROM ALTERNATE TRACK CCHH=X'cccc hhhh' TO PRIMARY TRACK CCHH=X'cccc hhhh'

Explanation: This is an informational message that user data has been restored from the alternate track to the primary track. However, due to an I/O error preceding or following this message, the process has to terminate.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: The failing CCW, CSW and SENSE information should be examined to determine the cause of the error.

ICK11095I UNABLE TO READ VOLUME LABEL - PROCESS CONTINUING

Explanation: An inspect has been requested on a volume that does not contain an OS volume label.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK11130I CAN NOT DETACH LINKED DEVICE ccuu RC= nnnn

Explanation: The DIAGNOSE 08 allows the user program to issue a CP command. The "DETACH" command is used to detach the specified address that was full-pack overlay linked by ICKDSF during the media maintenance processing. The operation failed with CP return code nnnn.

System Action: The command terminates. ICKDSF continues with the next command.

Programmer Response: For more information on DETACH, refer to *CP Command Reference for General Users.*

Operator Response: None.

ICK11305 NO STORAGE AVAILABLE

Explanation: Dynamic acquisition of storage for work areas failed.

System Action: The function is bypassed.

Operator Response: Increase main storage size

ICK11306I NO STORAGE AVAILABLE FOR PACK MAP

Explanation: During initialization or inspection of a volume, storage is dynamically acquired for data elements that are collected later to format the pack map. A data element was being allocated, but storage was not available.

System Action: The command is completed, but without a pack map.

Operator Response: None.

Programmer Response: Specify a larger region size, and reissue the command. Save the job output and contact your IBM service representative

ICK11315I UNABLE TO READ VOLUME LABEL

Explanation: An I/O error occurred when attempting to read the volume label. Because the number of user volume labels cannot be determined, the IPL program record could be written over existing records.

System Action: The command continues processing, but does not write the IPL program records.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative

ICK11328I SKIP DISPLACEMENTS CHANGED FOR TRACK X'cccc hhhh'

Explanation: Skip displacement surface checking detected at least one area on the track that is potentially defective. The defective area(s) have been skipped. The surface of the track is defect free if no subsequent messages are issued.

System Action: Processing continues.

Operator Response: None.

Programmer Response: None.

ICK11329I SURFACE ANALYSIS CYLINDER COULD NOT BE READ FOR TRACK X'cccc hhhh'

Explanation: The surface analysis cylinder is accessed for skip displacement devices when there is a need to restore the skip displacement information on a track to the factory level.

This message can occur if there is no factory map information on the surface analysis cylinder, or if an uncorrectable I/O error occurred.

The CCW, CSW, and sense information that caused the error is printed.

System Action: Depending upon the input track condition and the device type being processed, the home address may be rewritten without any factory skip displacement information before surface checking of the track occurs. If the factory skip displacement information might be overridden, subsequent messages will be issued.

Programmer Response: Because the usability of this track is not affected, there is no need to examine the information any further. If there is concern, the failing CCW, CSW, and sense information can be examined in detail.

ICK11390I INVALID DATA ON SA CYLINDER

Explanation: The data on the surface analysis cylinder for this volume (which contains skip displacement information for this volume) is not in the expected format.

System Action: This is an informational message only. ICKDSF will provide other messages for any other actions that it might take as a result of this situation. Processing continues.

Operator Response: None.

Programmer Response: None.

ICK11392I SKIP DISPLACEMENT DATA DEFAULTED FOR TRACK X'cccc hhhh'

Explanation: The skip displacement data for the specified track could not be read.

System Action: The track is processed as though there were no skip displacements assigned to it, and a complete surface check is done on this track.

New skip displacements are assigned as required.

Note that if there had been factory assigned skip displacements for this track, they have been reset.

Operator Response: None.

Programmer Response: None. When ICKDSF processing completes for this track, the specified condition of the track (that is, not defective or defective) is valid.

ICK11400I SUSPECTED PATH PROBLEM

Explanation: A path that was initially operational became not operational during execution of the drivetest.

System Action: Processing continues.

Operator Response: None.

Programmer Response: Correct the cause of the path not operational status and rerun the job.

ICK11411I ccuu INCORRECT DEVICE TYPE FOR DRIVE TEST, DRIVE TEST BYPASSED

Explanation: The device type for the volume indicated by device "ccuu" is not for a fixed media device, but drive test was specified (or defaulted).

System Action: ANALYZE processing continues with the data verification test. The ANALYZE return code is set to 4.

Operator Response: None.

Programmer Response: See Figure 2 for valid device types for the drive test (ANALYZE command).

ICK11412I DRIVE TEST NOT SUPPORTED FOR MINIDISK, DRIVE TEST BYPASSED

Explanation: You specified the ANALYZE DRIVETEST function which is not supported for minidisks.

System Action: The drive test is bypassed.

Programmer Response: none

Operator Response: none

ICK11414I WRITE INHIBIT SWITCH ON, WRITE TESTS BYPASSED

Explanation: An error was detected when the ANALYZE drive test attempted to write on the CE cylinder and the device was in a "write inhibited" condition.

System Action: All tests that attempt to write on the CE cylinder are bypassed, but processing continues.

Operator Response: If the device has an "R/W" or "READ" switch, check that the switch is in the "READ/WRITE" position, and/or is functioning properly.

This condition can also exist if the storage control has been "write inhibited" by the operating system. See the explanation of the CONTROL command to determine further action.

ICK11417I HOME ADDRESS READ FROM C.E. CYLINDER IS INCORRECT: SHOULD BE X'cccc hhhh', IS X'cccc hhhh'.

Explanation: The cylinder and head information in the home address for the specific track on the C.E. cylinder is incorrect.

System Action: ANALYZE attempts to rewrite the home address with the correct cylinder and head information. If the rewrite is successful, processing continues with the write tests. If the rewrite is unsuccessful, this message is followed by the failing CCW, CSW, and sense, and an indication that the write tests will be bypassed. Processing continues, bypassing the write tests.

Operator Response: None.

Programmer Response: If ANALYZE was being run because of a suspected write problem, and the rewrite of the home address on the C.E. cylinder is unsuccessful, further investigation of the situation is required.

ICK11418I **HOME ADDRESS MARKED DEFECTIVE ON CE CYLINDER CCHH = X'cccc hhhh'**

Explanation: The home address on track X'cccc hhhh' on the CE cylinder was found with the defect bit set on in the home address. ICKDSF will attempt to rewrite the home address without the defect bit on, unless this is one of the backup tracks and backup data exists. If the correction attempt fails, then the message will be followed by another ICK10710I or ICK20100I with the ccw, csw, and sense information. The existence of backup data will be indicated in a prior message.

System Action: Eventual termination may occur.

Operator Response: None.

Programmer Response: If message ICK10710I or ICK20100I is issued, examine the ccw, csw, and sense to determine the cause of the error. Assistance from your IBM hardware service representative may be required to correct the cause of the problem. If a prior message indicates that backup data exists for a previous command that did not complete, the command that did not complete should be rerun first.

ICK11425I **OPERATOR SPECIFIED B TO BYPASS RESERVED PATH**

Explanation: The operator replied "B" in response to message ICK416D or ICK417D.

System Action: Further processing is bypassed on this path.

Operator Response: None.

Programmer Response: None.

ICK11426I **DRIVE TEST: PATH UNAVAILABLE ON :**
CHPID = XX
CHANNEL NUMBER = X
CHANNEL SET = X
STORAGE DIRECTOR ID = XX
SUBSYSTEM ID = XXXX
CLUSTER = X
STORAGE PATH = X

Explanation: The drive test attempted to start an I/O operation to a path that was not operational or was inaccessible.

CHPID = XX identifies the CHPID for the path being processed. This line is not displayed if it does not apply to the operating system environment.

CHANNEL NUMBER = X identifies the channel number for the path being processed.

CHANNEL SET = X identifies the channel set (CPU affinity) for the path being processed. This line is not displayed if it does not apply to the operating system environment.

STORAGE DIRECTOR ID = XX identifies the Storage Director Id for the path being processed. It contains the information present in sense byte 21. This line is not displayed if it does not apply to the control unit being processed, or if the error occurs before the Storage Director Id has been determined.

SUBSYSTEM ID = XXXX identifies the Subsystem Id for the path being processed. It contains the information present in sense bytes 20 & 21. This line is not displayed if it does not apply to the control unit being processed, or if the error occurs before the Subsystem ID has been determined.

CLUSTER = X identifies the Cluster for the path to be processed. This line is not displayed if it does not apply to the control unit being processed, or if the error occurs before the Cluster has been determined.

STORAGE PATH = X identifies the Storage Path of the Cluster to be processed. This line is not displayed if it does not apply to the control unit being processed, or if the error occurs before the Storage Path has been determined.

System Action: Drive test processing terminates on this path.

Operator Response: None.

Programmer Response: Correct the cause of the path not operational status.

ICK11427I **PATH PARAMETER(S) IGNORED**

Explanation: The path control parameters are only valid for drive test functions on 3380 and 3390 devices, and are not supported in the VSE and CMS/370 versions. This message may also be issued following message ICK10710I when processing on a 3990 control unit if the 3990 control unit does not support the Guarantee Storage Path operation.

System Action: Processing continues without Path control.

Operator Response: None.

Programmer Response: If the device is not a 3380 or 3390 or the device is being processed in the VSE or CMS/370 versions, no further action is necessary. If this message is issued following ICK10710I when processing on a 3990 control unit, contact your IBM hardware service representative.

ICK11428I **STORAGE PATH STATUS CANNOT BE DETERMINED**

Explanation: An I/O error occurred while attempting to determine the storage path status.

System Action: If the Analyze command is being executed, path control functions will be bypassed. If the CONTROL CLEARFENCE command has been issued, the fence status cannot be determined.

Operator Response: None

Programmer Response: Take action appropriate to your installation's procedures for handling suspected equipment problems.

ICK11429I **FENCED/DISABLED PATH(S) WILL BE BYPASSED**

Explanation: A fenced or disabled condition was detected on one or more paths.

System Action: Processing will be bypassed on the path(s) with the existing fenced or disabled condition. The Path Status Table will indicate the path(s) where the fenced or disabled condition exists.

Operator Response: None

Programmer Response: Examine the Path Status Table that was previously printed to determine the paths that have a fenced or disabled condition. If the path is disabled, determine the cause of the disabled path. If the fence condition exists, contact your IBM software service representative to resolve the fenced condition.

ICK11430I PATH INFORMATION CANNOT BE DETERMINED

Explanation: Path information cannot be determined because of an error. ICKDSF functions which require path control cannot be executed.

System Action: Subsequent messages indicate whether command processing terminates or can continue without using path control.

Programmer Response: Examine the previous messages to find why path information cannot be determined.

Operator Response: None.

ICK11431I PATH MAP ROUTINE FAILED RC = xxxxxxxx

Explanation: The system path map routine returned with an error. *RC=xxxxxxxx* is the return code (in hexadecimal) in the message as follows:

Code	Meaning
4	The target subchannel is in permanent error and cannot be accessed.
8	The UCB is not connected to a subchannel.

System Action: Subsequent messages indicate if the command terminates or continues without path control.

Operator Response: None

Programmer Response: Return code 8 indicates *not connected subchannels*. This means there is a UCB, but no subchannel. This happens when:

1. you over genned to software
2. you used CONFIG CHIPID to move the last channel path from the partition (under PR/SM) to another partition. When the last channel path is taken away, all the subchannels are also taken away, and the UCBs become *not connected*
3. under VM, you detached the device from MVS and the subchannels became *not connected*.

For (1), you can dynamically add a new subchannel or re-iml with an IOCDS that matches the software. For (2) you should reconfigure the CHIPID into the partition. For (3) you should attach the device to the guest.

ICK11450I DIRECT I/O IS NOT SUPPORTED FOR THIS DEVICE, PARAMETER IGNORED.

Explanation: The DIRECTIO parameter was specified and the subsystem does not support dual copy or the device is in simplex state

System Action: Processing continues without DIRECTIO.

Operator Response: None.

Programmer Response: None.

ICK11451E ***WARNING*** ALTERNATE TRACK ASSIGNMENT EXISTS ON SECONDARY VOLUME

Explanation: One or more alternate track assignments exist on the secondary volume of a dual copy pair. It is not recommended to use a volume as a secondary volume when there is an alternate track assigned.

System Action: Processing continues.

Operator Response: None.

Programmer Response: Reestablish duplexing with another volume having no alternate track assigned. This volume may be used as a simplex volume or as a primary volume of a dual copy pair.

ICK11452I UNABLE TO READ DATA ON SECONDARY VOLUME FOR TRACK CCHH = X'cccc hhhh'

Explanation: When processing on the primary volume of a dual copy pair, INSPECT attempts to determine if the corresponding track on the secondary volume is readable. The specified track on the secondary volume was not readable. The previous ICK10710I message contains the CCW, CSW, and sense information for the error.

System Action: Processing continues.

Operator Response: None.

Programmer Response: Examine the CCW, CSW, and sense information to determine the cause of the error on the secondary volume. Take action appropriate to your installation procedures for handling problems on the secondary volume.

ICK11453I UNABLE TO READ DATA ON PRIMARY VOLUME FOR TRACK CCHH = X'cccc hhhh'

Explanation: During processing of the primary volume, data on the primary volume of the dual copy pair could not be read. The previous ICK10710I message contains the CCW, CSW, and sense information for the error on the primary volume.

System Action: If the corresponding track on the secondary volume is readable, processing will continue with the data being preserved from the secondary volume. If the corresponding track on the secondary volume is unreadable, message ICK11452I is issued for the secondary volume and message ICK21044I will be issued and processing continues with the next track.

Operator Response: None.

Programmer Response: Examine the CCW, CSW, and sense information to determine the cause of the error on the primary volume and take action appropriate to your installation's procedures for handling errors on the primary volume of a dual copy pair.

ICK11454I UNABLE TO READ DATA ON PRIMARY VOLUME FOR TRACK CCHH = X'cccc hhhh', PROCESS CONTINUING

Explanation: When you are processing the secondary volume of a dual copy pair, INSPECT attempts to determine if the corresponding track on the primary volume is readable. The specified track on the primary volume was unreadable. The previous ICK10710I message contains the CCW, CSW, and sense information for the error.

System Action: Because TOLERATE(PRIFAIL) was specified, processing continues for this track on the secondary volume

Operator Response: None.

Programmer Response: Examine the CCW, CSW, and sense information to determine the cause of the error on the primary volume and take action appropriate to your installation's procedures for handling errors on the primary volume of a dual copy pair.

ICK11455I **PREVIOUS INSTALL|REVAL|INIT|INSPECT COMMAND DID NOT COMPLETE ON PRIMARY|SECONDARY VOLUME**

Explanation: The current process found that checkpoint data exists because a previous command prematurely terminated on the primary or secondary volume of a dual copy pair.

System Action: Depending on the current function and the dual copy volume state, the action taken by ICKDSF may be different. See the message following.

Operator Response: None.

Programmer Response: See the message following. Determine the reason why did the previous ICKDSF command did not complete.

ICK11456I **CHECKPOINT DATA BEING ERASED**

Explanation: See the explanation for previous message(s) you received. Based on the current ICKDSF function you specified and status of the dual copy volume, ICKDSF determined that either:

- you did not request the checkpoint recovery process
- the checkpoint data must be erased in order to perform the current function.

System Action: ICKDSF erases the checkpoint data.

Operator Response: None.

Programmer Response: It is strongly recommended that you do not establish or fail a dual copy pair (change the volume state) or invoke a different function if a previous ICKDSF function did not complete.

ICK11457I **PROCESSING CONTINUES WITHOUT RECOVERY ACTION**

Explanation: See the explanation of previous message(s). It is unclear if or how ICKDSF should perform the recovery process based on the current volume state, the intent of the current ICKDSF function and the content of the checkpoint data. Since the volume is a dual copy volume, the current function take precedence.

System Action: The current function continues without checkpoint recovery.

Operator Response: None.

Programmer Response: It is strongly recommended that you complete the previous function to ensure the volume is in a usable condition. Place the dual copy pair in simplex state if neccessary. The checkpoint data may or may not be erased (see ICK11456).

ICK11458I **UNABLE TO USE ALTERNATE TRACK CCHH=X'cccc hhhh' TO ESTABLISH TRACK ASSOCIATION**

Explanation: The alternate track indicated can not be used to establish a primary/alternate track association on the secondary volume.

System Action: INSPECT processing continues.

Operator Response: None.

Programmer Response: Run INSPECT SKIP to surface check the alternate track.

ICK11459I **NOPRESERVE PARAMETER IGNORED ON PRIMARY VOLUME OF DUAL COPY PAIR**

Explanation: The NOPRESERVE parameter is invalid on the primary volume of a dual copy pair.

System Action: The NOPRESERVE parameter is ignored and processing continues with PRESERVE in effect.

Operator Response: None.

Programmer Response: None.

ICK11460I **PRESERVE PARAMETER IGNORED ON SECONDARY VOLUME OF DUAL COPY PAIR**

Explanation: The PRESERVE parameter is invalid on the secondary volume of a dual copy pair.

System Action: The PRESERVE parameter is ignored and processing continues.

Operator Response: None.

Programmer Response: None.

ICK11461I **NON-STANDARD RECORD ZERO EXISTS ON PRIMARY VOLUME FOR TRACK CCHH = X'cccc hhhh', PROCESS CONTINUING**

Explanation: A non-standard record zero condition exists on the primary volume of the dual copy pair.

System Action: Since TOLERATE(PRIFAIL) was specified, processing continues on the secondary volume.

Operator Response: None.

Programmer Response: The primary volume should be put in simplex state and INSPECT NOPRESERVE run on the track of the primary volume.

ICK11462I **NON-STANDARD RECORD ZERO EXISTS ON SECONDARY VOLUME FOR TRACK CCHH = X'cccc hhhh', CORRECTION IN PROGRESS**

Explanation: A non-standard record zero condition exists on the secondary volume of the dual copy pair.

System Action: INSPECT attempts to write a standard home address and record zero on the track of the secondary volume.

Operator Response: None.

Programmer Response: None.

ICK11741I **DATA CHECK ON ID OR DATA FIELD ORIENTATION ADDR = nnnnn.**

Explanation: This message is printed for each block that fails the data verification test phase of ANALYZE with a data check that indicates that data synchronization on the block's ID or data field was unsuccessful. nnnnn is the relative block number in error. This message is followed by a printout of the failing CCW, CSW and sense information.

System Action: ANALYZE processing continues.

Operator Response: None.

Programmer Response: Normally, this error is an indication of a media surface problem that can be resolved either by assigning an alternate to the failing block with the INSPECT command, or by using the INIT command with the CHECK parameter to reinitialize the FBA device.

Note: A large number of these messages occurring for a newly installed device may be an indication of an incorrectly formatted device. In this case, assistance from your IBM hardware service representative will probably be necessary.

ICK11743I **DATAVER UNCORRECTABLE ERROR ADDR BLOCK nnnnn**

Explanation: This message is printed for each block that fails the data verification test phase of ANALYZE with an ECC uncorrectable data check. This message is followed by a printout of the failing CCW, CSW, and sense information. nnnnn is the relative block number of the failing block.

System Action: ANALYZE processing continues. The return code is set to a 4.

Operator Response: None.

Programmer Response: Normally, this error is an indication of a media surface problem that can be resolved either by assigning an alternate to the failing block with the INSPECT command, or by using the INIT command with the CHECK parameter to reinitialize the FBA device. If repeated attempts to resolve the problem using the INSPECT or INIT command fail, assistance from your IBM hardware service representative should be sought to aid in resolving the problem.

ICK11745I **DATAVER CORRECTABLE ERROR ADDR BLOCK = nnnnn**

Explanation: This message is printed for each block that fails the data verification test phase of ANALYZE with an ECC correctable data check. This message is followed by a printout of the failing CCW, CSW, and sense information. nnnnn is the relative block number of the failing block.

System Action: ANALYZE processing continues. The return code is set to a 4.

Operator Response: None.

Programmer Response: Normally, this error is an indication of a minor media surface defect and should not be considered a problem if the device is being used with systems such as VSE and VM, which have error recovery procedures that do ECC correction. The performance impact of fixing the data in storage is less than that of the device reading the data from an alternate block. If it is deemed necessary to eliminate this type of error, the INSPECT command can be used to unconditionally assign an alternate to the failing block.

Note: If an excessive number of these errors occur, assistance from your IBM hardware service representative should be sought to aid in determining if a hardware problem exists.

ICK11752I **BLOCK xxxxxxxx OUTSIDE DEVICE LIMITS**

Explanation: Block number xxxxxxxx specified by the BLOCKS parameters is invalid.

System Action: The command continues. The invalid block number is ignored.

Operator Response: None.

Programmer Response: Resubmit the job, specifying the correct block number in the BLOCKS parameter. See "BLOCKRANGE|BLOCKS: Specifying Which Blocks to Inspect" on page 235. Save the job output and contact your IBM service representative

ICK11782I **DATAVER UNCORRECTABLE ERROR ADDR CCHH = X'cccc hhhh'**

Explanation: This message is printed for each track that fails the data verification test with an apparent ECC uncorrectable data check. If the error is of the type that could have been corrected by storage control retry, or if the record that experienced the error contained two non adjacent ECC correctable data checks, this error would appear as ECC uncorrectable (including correctable errors in the key or data fields subsequent to record 1). In either of the above cases, subsequent I/O against the same data might perceive the error as correctable. This message is followed by a printout of the failing CCW, CSW, and sense information. *cccc hhhh* is the hexadecimal cylinder and head address of the failing track.

System Action: Processing continues. The return code is set to a 4.

Operator Response: None.

Programmer Response: Normally, this error is an indication of a media surface problem that can be resolved by either performing a skip displacement to skip the defect, or (if necessary) assigning an alternate track. You can use the INSPECT command to perform skip displacement or assign an alternate track, or you can use the INIT command with the CHECK parameter to reinitialize the CKD device.

Note: If repeated attempts to resolve the problem using the INSPECT or INIT command fail, contact your IBM hardware service representative.

ICK11784I **DATAVER CORRECTABLE ERROR ADDR CCHH = X'cccc hhhh'**

Explanation: This message is printed for each track that fails the data verification test phase with an ECC correctable data check. This message is followed by a printout of the failing CCW, CSW, and sense information. *cccc hhhh* is the hexadecimal cylinder and head address of the failing track.

System Action: Processing continues. The return code is set to 4.

Operator Response: None.

Programmer Response: Normally, this error is an indication of a media surface problem that can be resolved by skip displacing over the error with either the INSPECT command, or by using the INIT command with the CHECK parameter to reinitialize the CKD device. This error is an indication of a minor media surface defect and need not be skip displaced if the device is being used with any IBM operating system (which have error recovery procedures that do ECC correction). After skip displacement of the error is performed, no performance impact is experienced, and all ECC correctable errors are gone from the track.

Note: If repeated attempts to resolve the problem using the INSPECT or INIT command fail, contact your IBM hardware service representative.

ICK11826I **DATAVER INVALID TRACK FORMAT ON CCHH=X'cccc hhhh'**

Explanation: An invalid track format condition was detected when scanning data on the specified track. This is usually an indication that data was written to the track beyond the track capacity. It is generally a user error.

System Action: Processing continues. At the completion of the command, the return code is set to 4.

Operator Response: None.

Programmer Response: Determine the data set containing the track specified. Determine how, where, and when the data on the specified track was written, in order to determine how the invalid track format condition occurred.

ICK11827I POTENTIAL DRIVE PROBLEM EXPERIENCED ON TRACK CCHH = X'xxxx xxxx'

Explanation: The INSPECT PRESERVE|HOLDIT process detected the possibility of a potential drive problem.

System Action: The process continues and provides a possible fix for the situation.

Operator Response: None.

Programmer Response: If this message is issued on multiple tracks, during multiple invocations of ICKDSF, or recurs on the same track, contact your IBM hardware service representative.

ICK11841I DEVICE IS NOT IN "STATUS CANNOT BE DETERMINED" STATE

Explanation: You issued a "Reset Indefinite Condition for Device" (RESETICD parameter of the CONTROL command) for a device which is not currently in the "Status can not be determined" state.

System Action: Processing terminates

Programmer Response: None.

Operator Response: None.

ICK12105I NO BLOCKS REMAIN IN THE SPECIFIED RANGE

Explanation: CONTINUE processing was previously activated. (ICK02103I) There are no blocks to process in the specified range subsequent to the last checkpointed location.

System Action: Processing continues with the minimal initialization functions.

ICK12107I CONTINUE FUNCTION CANCELLED

Explanation: The continue function of the INITialize command has been cancelled. The reason for the cancellation has been presented in previous message(s).

System Action: Processing continues for the specified range. Checkpointing no longer is taking place.

Programmer Response: If processing completes normally, this message can be disregarded.

If processing does not run to completion for FBA devices, this message can be disregarded unless RECLAIM is specified. For FBA devices where RECLAIM is specified, the RECLAIM job should be restarted.

For CKD devices that do not run to completion, there may exist a track on the device that contains an invalid format.

After the reason for the abnormal termination has been resolved, at least a medial INIT should be run for the entire volume.

Note: Subsequent invocations of the INIT command may or may not experience the same error, and may or may not attempt to CONTINUE from a previously recorded location. This will depend on the reason that the function was cancelled, as well as the nature of the failure. If multiple initializes are necessary, NOCONTINUE can be specified to ensure that processing never resumes from an unwanted location.

As long as processing successfully completes for each invocation, the persistence of this message can be ignored.

ICK12108I CONTINUE TRACK CANNOT BE USED

Explanation: The track normally used to contain checkpoint information is in use by this device. This message is followed by ICK12107I.

System Action: See ICK12107I.

Programmer Response: See ICK12107I

ICK12109I CONTINUE DATA COULD NOT BE RESET

Explanation: An error occurred while checkpoint data was being written. This message is followed by ICK12107I.

System Action: See ICK12107I.

Programmer Response: See ICK12107I

ICK12110I LAST INSPECT PROCESS FROM ANOTHER CPU CHECKPOINTED AT X'xxxx xxxx'

Explanation: The current INSPECT process detected that checkpoint data for the specified track exists from another processor. This indicates that a prior INSPECT process prematurely terminated from another processor or there is an INSPECT process currently working on the same device and same track from another processor.

System Action: See message ICK12111I or ICK33105.

Operator Response: None.

Programmer Response: See message ICK12111I or ICK33105.

ICK12111I SURFACE CHECKING BYPASSED FOR X'xxxx xxxx'

Explanation: This message is preceded by ICK12110. This message is only given when the FORCE parameter is specified. The INSPECT process is bypassed for the specified track.

System Action: The command continues processing on next track.

Operator Response: None.

Programmer Response: You should avoid more than one INSPECT process working on the same device concurrently. If it is determined that a prior INSPECT process prematurely terminated, re-submit the INSPECT job for the specified track.

ICK12112I UNABLE TO SET/RESET/READ CHECKPOINTED DATA, PROCESSING CONTINUES

Explanation: The current INSPECT process is unable to set/reset/read the checkpoint data because of an I/O error. The recovery process for the error is exhausted.

System Action: Because the FORCE parameter is specified, the current INSPECT process continues, by bypassing any future checkpoint data function.

Operator Response: None.

Programmer Response: None

ICK12115I DATA BEING RECOVERED FOR TRACK X'cccc hhhh'

Explanation: The previous INSPECT command did not complete execution during PRESERVE backup processing.

System Action: Primary surface checking functions are to be done for the specified track, and data is recovered if data exists.

ICK12116I PRESERVE DATA CANNOT BE BACKED UP FOR THIS DEVICE TYPE

Explanation: The PRESERVE recovery function is not supported for this device type.

System Action: Processing continues as for HOLDIT.

ICK12117I PRESERVE RECOVERY TRACK CANNOT BE USED. USE "HOLDIT"

Explanation: The track normally used to contain recovery information is in use by this device and PRESERVE was specified.

System Action: Processing terminates.

Programmer Response: Resubmit the job, specifying HOLDIT instead of PRESERVE or KEEPIT.

ICK12118I ERROR READING BACKUP TRACK

Explanation: An I/O error occurred while INSPECT was determining the existence of recovery data for this volume.

System Action: The CCW, CSW and sense information are printed. This message is followed by another message describing the system action.

ICK12119I PRESERVE BACKUP DATA IGNORED

Explanation: This message follows ICK12118I if HOLDIT is specified. Any recovery data that might exist is left intact, and processing continues.

System Action: Processing continues.

ICK12123I PRESERVE BACKUP DATA CANNOT BE ESTABLISHED OR RESET

Explanation: An I/O error was encountered while performing the PRESERVE backup function.

System Action: If the data was being reset, this message is issued as a warning. Processing continues.

ICK12124I ERROR TRYING TO ACCESS RECOVERY TRACK X'cccc hhhh' --RECOVERY IN PROGRESS

Explanation: An I/O error was encountered trying to determine the current disposition of the track we are attempting to recover.

System Action: Standard ICKDSF track recovery operations take place for this track. If recovery is successful, the backup recovery process continues.

Programmer Response: If track recovery is unsuccessful, subsequent messages are issued.

ICK12125I NO PRESERVE BACKUP DATA EXISTS FOR TRACK X'cccc hhhh'

Explanation: The track backup recovery is attempting to recover is unrecoverable. Standard ICKDSF track recovery operations failed for this track. However, no data exists for that track.

System Action: Processing continues as if backup recovery is complete.

Programmer Response: Standard installation procedures should be followed regarding unrecoverable tracks.

ICK12126D DATA ALREADY EXISTS FOR TRACK X'cccc hhhh' REPLY "R" TO RECOVER, "E" TO ERASE THE RECOVERY DATA, OR "T" TO TERMINATE

Explanation: This message is issued if recovery data exists for a track (message ICK1215I), but there already exists data on that track.

This situation might occur if the original data on the track had not yet been erased at the point of failure.

This situation can occur if an INSPECT did not run to completion, but the volume was available for user use before this invocation of the INSPECT command.

System Action: The operator is prompted for a reply to this message.

If "r" is specified, the data will be recovered from the recovery information. (The new data on the track is erased).

If "e" is specified, the recovery data is destroyed. The current data on the track remains.

If "t" is specified, processing terminates. The recovery data remains intact. The next invocation of the INSPECT command will again attempt to process the recovery data.

ICK12128I RECOVERY DATA HAS BEEN ERASED

Explanation: This message is issued if you reply "c" to ICK22158D or ICK22130D, or reply "e" to ICK12126D or ICK12159D.

ICK12130I UNABLE TO RESET RECOVERY DATA

Explanation: An I/O error occurred while the command checkpoint data is being updated to indicate that command processing is complete.

System Action: Processing continues. All required functions have been completed.

Programmer Response: The volume should be used as normal. The I/O error occurred on a track that is not a user track, and this message can be ignored. Subsequent invocations of the INIT command will issue a warning message. If desired, take action appropriate to your installation's procedures for handling the I/O error problems. If the problem cannot be resolved call your IBM software service representative.

Operator Response: None.

ICK12151I RECLAIM PROCESSING PREVIOUSLY INTERRUPTED, RECLAIM FORCED

Explanation: A previous use of the INIT command failed during reclaim processing and the RECLAIM parameter has not been specified with the CONTINUE parameter. Reclaim processing is being forced to ensure that factory defects are properly flagged and that all primary and alternate pairs are properly connected.

System Action: The reclaim processing is restarted.

Operator Response: None.

Programmer Response: None.

ICK12153I BLOCKRANGE IGNORED

Explanation: The BLOCKRANGE specification is being ignored because a previous use of the INIT command with the RECLAIM parameter failed. Full volume processing is forced to insure the data integrity of the device.

System Action: Surface analysis will continue from the last checkpointed block to the end of the volume.

Operator Response: None.

Programmer Response: None.

ICK12157I DATA BEING RECOVERED FOR BLOCK xxxxxxxx

Explanation: The previous invocation of the INSPECT command did not execute to completion during PRESERVE processing.

System Action: Surface checking functions will be completed for the specified block, and data will be be recovered.

ICK12159D DATA ALREADY EXISTS FOR BLOCK xxxxx REPLY "R" TO RECOVER, "E" TO ERASE THE RECOVERY DATA, OR "T" TO TERMINATE

Explanation: This message is issued if recovery data exists for a block (ICK12157), but there already exists data on that block that is not ICKDSF data and is not the original user data.

This situation can occur if an INSPECT did not run to completion, but the volume was available for user use before this invocation of the INSPECT command.

System Action: The operator is prompted for a reply to this message.

If "r" is specified, the data will be recovered from the recovery information. (The new data on the block is erased).

If "e" is specified, the recovery data is destroyed. The current data on the block remains.

If "t" is specified, processing terminates. The recovery data remains intact. The next invocation of the INSPECT command will again attempt to process the recovery data.

ICK12161I ERROR READING RECOVERY BLOCK - DATA IGNORED

Explanation: The block which backup recovery is attempting to recover currently cannot be read successfully.

System Action: Whatever data currently exists on the block is ignored, and normal surface checking procedures are done for this block.

Programmer Response: None

ICK12162I ERROR READING BACKUP BLOCK

Explanation: An I/O error occurred while INSPECT was determining the existence of recovery data for this volume.

System Action: The CCW, CSW and sense information are printed. This message is followed by another message describing the system action.

ICK12168I SPEED IGNORED BECAUSE HEADRANGE SPECIFIED

Explanation: Because SPEED operates on a cylinder at a time, it is not valid with HEADRANGE, and is ignored if both HEADRANGE and SPEED is specified..

System Action: Processing continues with NOSPEED.

Programmer Response: None.

Operator Response: None.

ICK12171I PRESERVE DATA BEING ERASED FOR TRACK X'cccc hhhh'

Explanation: During execution of the INIT command, it has been determined that a previous use of the INSPECT command did not run to completion. Because this is an initialize, it is assumed that the data saved from that track (*cccc hhhh*) is no longer needed.

System Action: The preserved data is erased, and processing continues.

Programmer Response: None.

Operator Response: None.

ICK12172I PRESERVE DATA BEING ERASED FOR BLOCK xxxxxxxx

Explanation: During execution of the INIT command, it has been determined that a previous use of the INSPECT command did not run to completion. Because this is an initialize, it is assumed that the data saved by block xxxxxxxx is no longer needed.

System Action: The preserved data is erased, and processing continues.

Programmer Response: None.

Operator Response: None.

ICK12173I WARNING PREVIOUS PROCESS DID NOT COMPLETE

Explanation: Checkpoint data has been detected that indicates that an INSTALL or REVALidate command did not complete processing. This could be an indication that the volume is in an unusable state.

System Action: This message is followed by ICK12107. The CONTINUE function is cancelled. Processing continues.

Programmer Response: If this message is issued during a medial initialization the condition will be corrected and this message can be ignored. Otherwise, it is recommended that a command is run to ensure the device is returned to a usable condition (for example, medial initialization or REVALidate). If it can be determined that message ICK12130 was issued during by a previous command, this message can be ignored.

Operator Response: None

ICK12200I **ENQUEUE FAILED ON TRACK X'cccc hhhh'. PROCESS CONTINUING**

Explanation: The enqueue for the data set which contains track X'cccc hhhh' was unsuccessful. Because TOLERATE(ENQFAIL) was specified, processing continues.

System Action: INSPECT continues on this track.

Programmer Response: None.

ICK12202I **INSUFFICIENT STORAGE AVAILABLE FOR DATA SET ENQUEUE -- TOLERATE(ENQFAIL) IS IN EFFECT FOR ALL TRACKS**

Explanation: GETMAIN failed while obtaining the storage necessary to process the data set enqueue procedures. Because TOLERATE(ENQFAIL) was specified, processing continues as if the enqueue failed.

System Action: INSPECT continues for all tracks without the enqueue function.

Programmer Response: None.

ICK12204I **UNABLE TO ENQUEUE VSAM DATA SET FOR TRACK X'cccc hhhh', PROCESS CONTINUING**

Explanation: The specified track is part of a VSAM data set. ICKDSF does not support data set enqueue for VSAM data sets. Because TOLERATE(ENQFAIL) is specified or assumed, processing continues for this track.

System Action: Processing continues for this track.

Programmer Response: None.

Operator Response: None.

ICK12316I **UNABLE TO DETERMINE MINIDISK SIZE**

Explanation: The system support code for the requested command does not exist in VM or the minidisk is a T-disk. This message is followed by ICK033E.

System Action: The system requests you to specify the size of the minidisk.

Programmer Response: None

Operator Response: None

ICK13010I **ALLOCATION MAP NOT UPDATED**

Explanation: A function was requested that should have updated the allocation map. An error condition was detected that caused CPVOLUME to bypass the update of the allocation map.

System Action: Processing continues.

Operator Response: Review all messages for the operation and correct the reported error.

Programmer Response: None

ICK13015I **PARAMETER FILLER/NOFILLER IS IGNORED FOR DEVICE TYPE**

Explanation: The device type specified does not support the FILLER/NOFILLER parameter.

System Action: Command processing continues and FILLER or NOFILLER is ignored.

Operator Response: None.

Programmer Response: None.

ICK13020I **CYLINDER(S) xxxx-yyyy WAS FORMATTED with/without FILLER RECORDS**

Explanation: While performing the EXAMINE function of the CPVOLUME command, a cylinder (or range of cylinders) was found that was previously CPVOLUME formatted with a different method (filler or nofiller).

System Action: Command processing continues.

Operator Response: None.

Programmer Response: Not applicable.

ICK20011I **FUNCTION CANNOT BE EXECUTED. INSUFFICIENT MAIN STORAGE**

Explanation: There is not enough virtual storage available to execute a command.

System Action: The command terminates. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: Increase the amount of virtual storage available to ICKDSF, and reissue the command. Save the job output and contact your IBM service representative

ICK20100I **I/O ERROR OCCURRED DURING DRIVE TEST**

Explanation: An I/O error occurred during the basic drive tests. The message is followed by the ccw, csw, and sense for the error.

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and processing continues with the next available path specified.

Operator Response: None.

Programmer Response: Take action appropriate to your installation's procedures for handling suspected equipment problems.

ICK20101I **I/O ERROR OCCURRED DURING DRIVE TEST ON CCHH = X'cccc hhhh'**

Explanation: An I/o error occurred on the indicated track while executing the drive test. The message is followed by the ccw, csw and sense for the error.

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and processing continues with the next available path specified.

Operator Response: None.

Programmer Response: The failing ccw, csw and sense should be examined to determine the cause of the error.

ICK20800I UNABLE TO SCRATCH dsname

Explanation: An error occurred while attempting to scratch the identified data set. A subsequent second-level message identifies the error.

System Action: The data set is not scratched. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: See the associated message. Save the job output and contact your IBM service representative

ICK20801I ** NO VOLUME MOUNTED

Explanation: Volume not mounted.

System Action: The data set is not scratched. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: Reissue the command and make sure the correct volume is mounted. Save the job output and contact your IBM service representative

ICK20802I ** PASSWORD VERIFICATION FAILED

Explanation: The data set to be scratched is password protected, and the operator did not supply the proper password.

System Action: The data set is not scratched. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: Reissue the command, and specify the correct password when prompted. Save the job output and contact your IBM service representative

ICK20803I ** DATA SET HAS NOT EXPIRED ON VOLUME volser

Explanation: The PURGE parameter was not specified, and the data set's retention period has not expired.

System Action: The data set is not scratched. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: Specify the PURGE parameter if you want to destroy the data set, and reissue the command. Save the job output and contact your IBM service representative

ICK20804I ** PERMANENT I/O ERROR ON VOLUME

Explanation: Because of an I/O error condition, the volume table of contents cannot be read.

System Action: The data set is not scratched. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: Either restore the volume or initialize the volume offline. Save the job output and contact your IBM service representative

ICK20805I ** UNABLE TO MOUNT VOLUME volser

Explanation: An appropriate device was not available for mounting the volume.

System Action: The data set was not scratched. ICKDSF processing continues with the next command.

Operator Response: Ensure that a device is available for mounting, and reissue the command.

Programmer Response: None. Save the job output and contact your IBM service representative

ICK20806I ** DATA SET WAS IN USE

Explanation: The data set to be scratched was being used by another program.

System Action: The data set is not scratched, and the command continues processing.

Operator Response: Ensure that no other job is using the data set (do not specify DISP=SHR), and reissue the command.

Programmer Response: None. Save the job output and contact your IBM service representative

ICK20810I ** INVALID RACF AUTHORIZATION

Explanation: A RACF-protected data set resides on the volume. The volume cannot be purged, because the user does not have the correct authorization to scratch the data set.

System Action: The data set is not scratched, and the command terminates. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative

ICK20950I INVALID FORMAT STRUCTURE

Explanation: An element of one of the static text structures is incorrect. Probable program error.

System Action: The request to print a line is ignored. The command continues processing, but no output is printed.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative

ICK20951I OUTPUT COLUMN SPECIFIED OUT OF RANGE

Explanation: An output column specification is outside the allowed print line width, for example, beyond column 120. Probable program error.

System Action: This field and subsequent fields for the same line are ignored. The command continues processing, but no output is printed.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative

ICK20952I **EXCESSIVE FIELD LENGTH FOR BD OR PU CONV**

Explanation: A binary-to-decimal or packed-to-unpacked conversion length was specified greater than 15. Probable program error.

System Action: The default of 15 was used, and the command continues processing.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative

ICK20953I **A REDO SUB-STRUCTURE IS NESTED**

Explanation: A redo structure cannot be defined within a set of structures to be redone. Probable program error.

System Action: The current redo operation is terminated. All structures are treated only once.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative

ICK20954I **STATIC TEXT ENTRY REQUESTED NOT IN MODULE**

Explanation: A request for a specific static text entry in a specified static text module could not be resolved. The static text index is incorrect, or the programmer has neglected to enter a message into the static text module. Probable program error.

System Action: The request is ignored, and the command continues processing.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative

ICK20955I **INVALID PACKED DECIMAL FIELD**

Explanation: A conversion request for packed-to-unpacked decimal encountered a digit that was not in the range of 0 to 9. Probable program error.

System Action: Conversion stops for the current request. The command continues processing without the packed-to-unpacked conversion.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative

ICK21000I **ALTERNATE TRACK CCHH=X'cccc hhhh' FOUND UNRECOVERABLE**

Explanation: While checking the track surface, error conditions were encountered that prevented the alternate track's home address or record 0 from being rewritten to indicate that it is a defective track. Since the track cannot be marked defective, it cannot be used by the operating system.

System Action: If the inability to recover the track is caused by a data error, the command runs to completion with an error return code. If the cause is anything other than a data error, command processing stops after detection of the error.

Operator Response: None.

Programmer Response: Prior messages should be examined (including the CCW, CSW, and sense that caused the I/O) to determine the cause of the failure. This message may be caused if the the read/write mode switch is set to READ mode, or some other condition is causing the inability of ICKDSF to write on the volume.

If running under VM (either stand-alone or an operating system version running under VM), this message can be an indication that a diagnostic or media maintenance function was attempted against a device that was a minidisk and/or LINKED to the userid. Diagnostic and media maintenance functions must be done on devices that are ATTACHed to the userid. For more information on VM support, see Appendix B, "VM Support" on page 257.

Assistance may be required from the IBM service representative. Save the job output and contact your IBM hardware service representative.

ICK21001I **PRIMARY TRACK CCHH=X'cccc hhhh' FOUND UNRECOVERABLE**

Explanation: While checking the track surface, error conditions were encountered which prevented the primary track's home address or record 0 from being rewritten, to indicate that it is a defective track. Since the track cannot be marked defective, it cannot be used by the operating system. This message may appear if, during execution of a command, the read/write mode switch is inadvertently set to READ mode.

System Action: ICKDSF continues, unless the unrecoverable track threshold is met (see message ICK31013I).

Operator Response: None.

Programmer Response: Prior messages should be examined (including the CCW, CSW, and sense that caused the I/O) to determine the cause of the failure. This message may be caused if the the read/write mode switch is set to READ mode, or some other condition is causing the inability of ICKDSF to write on the volume.

If running under VM, (either stand-alone or an operating system version running under VM), this message can be an indication that a diagnostic or media maintenance function was attempted against a device that was a minidisk and/or LINKED to the userid. Diagnostic and media maintenance functions must be done on devices that are ATTACHed to the userid. For more information on VM support, see Appendix B, "VM Support" on page 257.

Assistance may be required from the IBM service representative. Save the job output and contact your IBM hardware service representative.

ICK21002I **INVALID VTOC ORIGIN SPECIFICATION FOR TRACK CCHH=X'cccc hhhh'**

Explanation: The VTOC parameter specifies an invalid track location for the volume table of contents. The VTOC cannot begin on cylinder 0, track 0 or encroach on the alternate track area.

System Action: The command is terminated. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Either accept the default location, or reissue the command with a correct location specified. Save the job output and contact your IBM service representative.

ICK21003I **INVALID VTOC EXTENT SPECIFICATION: xxxx**

Explanation: The VTOC parameter specifies an invalid extent (number of tracks) for the VTOC area. The VTOC cannot have an extent of 0 or encroach on the alternate track area.

System Action: The command is terminated. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Either accept the default extent, or reissue the command with a correct extent specified. Save the job output and contact your IBM service representative.

ICK21007I **R-ZERO INCORRECT**
-- a CCHH=X'cccc hhhh'
(X'cccc hhhh')
b CCHH=X'cccc hhhh'

Explanation: This message indicates the existence of an invalid primary/alternate track association on a volume. See Figure 23 on page 256 for an example of a proper association.

"a CCHH=cccc hhhh" indicates the cylinder/head of the primary track in error. If that track is flagged defective, "a" is set to "D"; otherwise, "a" is set to "N." The "cccc hhhh" in parentheses is the cylinder/head of the track pointed to in record zero of the primary track in error.

"b CCHH=cccc hhhh" indicates the cylinder/head for the alternate track in error. If that track is flagged defective, the "b" is set to "D"; otherwise, "b" is set to "N." See Figure 23 on page 256 for an example of a proper association.

If a primary track is detected that contains an unknown alternate track pointer (the cylinder/head in record zero does not indicate a valid track address), the "b CCHH=cccc hhhh" portion of the message is printed "N CCHH=FFFF FFFF."

System Action: If you are performing an INITialize command, processing stops. If you are performing an INSPECT command, ICKDSF continues with the next track.

Operator Response: None.

Programmer Response: For INITialize processing, this message is only issued for a minimal INIT. INITialize the volume at the medial level or INSPECT the primary or alternate track to to correct the problem.

For INSPECT processing, this message is issued when an inconsistency exists for a track, and ICKDSF is not permitted to fix the problem. Retry the problem with ASSIGN specified. Sometimes, specifying RECLAIM can solve the problem. Save the job output and contact your IBM service representative.

ICK21008I **UNABLE TO WRITE IPL RECORDS**

Explanation: The IPL program records could not be written. Messages printed just prior to this message indicate the kind of the error.

System Action: The IPL program records are not written, but the command continues processing.

Operator Response: None.

Programmer Response: Correct the error, and reissue the command. Save the job output and contact your IBM service representative.

ICK21011I **CRITICAL TRACK CCHH=X'cccc hhhh' DESCRIPTOR INCORRECT**

Explanation: The critical tracks are those tracks that are reserved for the volume table of contents and cylinder 0, track 0. The contents of the record 0 on the identified track are in error.

System Action: None.

Operator Response: None.

Programmer Response: Reinitialize the volume at the medial level or INSPECT the track at X'cccc hhhh'. Save the job output and contact your IBM service representative.

ICK21014I **SURFACE CHECK FUNCTION FAILS ON TRACK CCHH=X'cccc hhhh'**

Explanation: While writing or reading the indicated track, a channel program failure other than DATA CHECK occurred.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: The CCW, CSW, and sense information associated with the message should be examined to determine the kind of I/O error. If operating under VM (either stand-alone or an operating system version running under VM), this message can be an indication that a diagnostic or media maintenance function was attempted against a device that was a minidisk and/or LINK to the userid. Diagnostic and media maintenance functions must be done on devices that are ATTACHed to the userid. For more information on VM support, see Appendix B, "VM Support" on page 257. Save the job output and contact your hardware service representative

ICK21015I **ALTERNATE TRACK CCHH = X'cccc hhhh' FOUND DEFECTIVE**

Explanation: The specified alternate track was found defective during the Concurrent Media Maintenance process while preserving the user data.

System Action: The alternate track is flagged as defective and ICKDSF continues by using the next alternate track to preserve user data.

Operator Response: None.

Programmer Response: None.

ICK21016I **UNABLE TO USE ALTERNATE TRACK CCHH = X'cccc hhhh' TO PRESERVE DATA**

Explanation: The specified alternate track can not be used to preserve user data. It was either found defective or had an I/O error.

System Action: If an I/O error occurred, processing terminates. If the alternate track was found defective, ICKDSF continues by using the next alternate track.

Operator Response: None.

Programmer Response: For an I/O error, the failing CCW, CSW and SENSE information should be examined to determine the cause of the error.

ICK21017I NO MORE ALTERNATE TRACKS LEFT ON PACK

Explanation: All nondefective alternate tracks have been assigned to primary tracks.

System Action: Assignment of alternate tracks ends; execution of the command continues.

Operator Response: None.

Programmer Response: Use the RECLAIM function of the INSPECT command to attempt to reclaim primary and alternate tracks. For the IBM 3375, 3380, and 3390 only the INSPECT command can be used.

The assistance of an IBM service representative might be necessary to determine the cause of the alternate track assignments. Save the job output and contact your IBM service representative.

ICK21028I NOT ALLOWED TO CHANGE VOLUME LABEL

Explanation: Only an authorized user can change the volume label on a volume in a system that has Resource Access Control Facility (RACF) installed.

System Action: The contents of the volume label are not changed, but the command continues processing.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative.

ICK21030I NOT ALLOWED TO WRITE IPL RECORDS

Explanation: Only an authorized user can change the IPL records on a volume in a system that has Resource Access Control Facility (RACF) installed.

System Action: The IPL records are not written, but the command continues processing.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative.

ICK21031I UNABLE TO RECLAIM ALTERNATE TRACK CCHH=X'cccc hhhh'

Explanation: An I/O error occurred when attempting to rewrite the home address and record 0 on the indicated alternate track.

System Action: The alternate track is not reclaimed. The command continues processing.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative.

ICK21032I UNABLE TO RECLAIM PRIMARY TRACK CCHH=X'cccc hhhh'

Explanation: An I/O error occurred when attempting to rewrite the home address and record 0 on the indicated primary track.

System Action: The primary track is not reclaimed. The command continues processing.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative.

ICK21033I TRACK DISSOCIATION FAILED: CCHH=X'cccc hhhh'

Explanation: When reclaiming a primary or alternate track, the track addresses associating the primary and alternate tracks could not be removed because an error occurred that prevented correct rewriting of the record 0.

System Action: The alternate track is marked defective, and the command continues processing.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative.

ICK21037I INVALID TRACK ADDRESS SPECIFIED: CCHH=X'cccc hhhh'

Explanation: Only tracks within the defined primary or alternate track areas of a volume can be inspected. The error is caused either by specifying a track beyond these areas or by a syntax error when specifying the track address.

System Action: The requested action on the invalid track is ignored, but the remainder of the command continues processing for any tracks that were correctly specified.

Operator Response: None.

Programmer Response: Correct the invalid specification, and reissue the command. Save the job output and contact your IBM service representative.

ICK21039I PRIMARY TRACK CCHH=X'cccc hhhh' DEFECTIVE, NO ALTERNATE -- DATA SAVED

Explanation: Surface checking found the indicated primary track to be defective, but no alternate track is available to be assigned to it.

System Action: The contents of the primary track are saved and rewritten on the primary track, if possible. The command continues processing.

Operator Response: None.

Programmer Response: Reinitialize the volume. Save the job output and contact your IBM service representative.

ICK21040I PRIMARY TRACK CCHH=X'cccc hhhh' DEFECTIVE, NO ALTERNATE -- DATA LOST

Explanation: Surface checking found the indicated track to be defective, but no alternate track is available to be assigned to it.

System Action: The contents of the primary track are lost and not rewritten on the primary track. The command continues processing.

Operator Response: None.

Programmer Response: Reinitialize the volume. Save the job output and contact your IBM service representative.

ICK21041I **ALTERNATE TRACK CCHH=X'cccc hhhh' DEFECTIVE -- DATA SAVED**

Explanation: Surface checking found the indicated alternate track to be defective, but no alternate track is available to be reassigned to it.

System Action: The contents of the alternate track are saved and rewritten to the alternate track, if possible. The command continues processing.

Operator Response: None.

Programmer Response: Reinitialize the volume. Save the job output and contact your IBM service representative.

ICK21042I **ALTERNATE TRACK CCHH=X'cccc hhhh' DEFECTIVE -- DATA LOST**

Explanation: Surface checking found the indicated alternate track to be defective, but no alternate track is available to be reassigned to it.

System Action: The contents of the alternate track are lost and not rewritten on the alternate track. The command continues processing.

Operator Response: None.

Programmer Response: Reinitialize the volume. Save the job output and contact your IBM service representative.

ICK21044I **UNABLE TO PRESERVE -- UNABLE TO READ TRACK CCHH=X'cccc hhhh'**

Explanation: A record on the indicated cylinder and track could not be read because of I/O errors.

If the sense information in the subsequent message is all zeros and the CSW only indicates Channel End, Device End, and Incorrect Length (0C40 in the first two bytes of the second word), it is usually an indication that previous ICKDSF processing has caused a nonstandard record zero to remain on the volume. An INSPECT of the track, with NOPRESERVE CHECK(1) should be specified to correct the situation. Be aware that there is no user data on the track.

System Action: The record on the indicated track is not lost, and the track is not marked defective. The specified track is not surface-checked. The command continues processing with the next track.

Operator Response: None.

Programmer Response: Start error recovery procedures for the data set containing the track in error, and rerun the command for the track in error with NOPRESERVE specified.

If the volume is part of a dual copy pair, put the volume in simplex state to perform an INSPECT with NOPRESERVE. Save the job output and contact your IBM service representative.

ICK21045I **UNABLE TO RESTORE -- UNABLE TO READ TRACK CCHH=X'cccc hhhh'**

Explanation: During the Concurrent Media Maintenance process, the user data on the specified alternate track can not be reread and restored back to the original primary track due to an I/O error.

System Action: Processing terminates. The user data remains on the alternate track.

Operator Response: None.

Programmer Response: The failing CCW, CSW and SENSE information should be examined to determine the cause of the error.

ICK21047I **PRESERVED DATA CANNOT BE REWRITTEN TO TRACK CCHH=X'cccc hhhh'**

Explanation: An I/O error occurred that prevented successful write operations while attempting to write preserved records back to the original track or its assigned alternate track.

System Action: Regardless of the current value of the ASSIGN command, a (new) alternate track is assigned and the data is rewritten. This is tried up to three times in an attempt to write the data correctly.

Operator Response: None.

Programmer Response: Subsequent messages will indicate the final status of the data.

ICK21048I **CYL-0 TRK-0 DEFECTIVE, PACK UNUSABLE FOR IPL**

Explanation: Cylinder 0, track 0 has been found defective. The track has been assigned an alternate track, but the volume cannot be used as an IPL volume.

System Action: The command continues processing.

Operator Response: None.

Programmer Response: Call the IBM hardware service representative if you must use this volume as an initial-program-load volume. Save the job output and contact your IBM service representative.

ICK21055I **VTOC IS LOCATED ON CYLINDER 0 HEAD 0**

Explanation: The volume table of contents exists on the first track of the volume. This prevents the writing of IPL program records on the first track of the volume.

System Action: The IPL program records are not written on the first track of the volume as requested by the user. ICKDSF continues.

Operator Response: None

Programmer Response: If it is necessary to have IPL records on the volume, reinitialize the volume with the VTOC on any other track other than the first track of the volume.

ICK21080I **ALTERNATE TRACK INSPECTION NOT VALID FOR DEVICE TYPE**

Explanation: The user requested to inspect an alternate track on a 2305-1 or 2305-2. The alternate track cannot be inspected directly for these devices. Inspection of the primary track that is associated with the alternate track automatically inspects the alternate track.

System Action: ICKDSF continues with the next track.

Operator Response: None.

Programmer Response: If inspection of the alternate track is required, examine the map to determine the address of the primary track associated with the alternate track and rerun the job using the primary track address.

ICK21316I **UNABLE TO OPEN IPL INPUT DATA SET**

Explanation: The data set specified by the IPLDD parameter cannot be opened. An associated message identifies the reason for the failure.

System Action: The command continues processing, but the IPL program record is not written.

Operator Response: None.

Programmer Response: Correct the error that was identified in the associated message, and reissue the command. Save the job output and contact your IBM service representative.

ICK21317I **IPL INPUT RECORD-1 FORMAT IMPROPER**

Explanation: The first user-specified IPL bootstrap record did not contain IPL1 as the first four characters of the record.

System Action: The system-defined IPL bootstrap records are written on the volume and processing continues. The remainder of the user-specified IPL bootstrap records and IPL program records are ignored.

Operator Response: None.

Programmer Response: Correct the IPL bootstrap record format and reissue the command, or accept the system-defined IPL bootstrap records. Save the job output and contact your IBM service representative.

ICK21318I **IPL INPUT RECORD-2 FORMAT IMPROPER**

Explanation: The second user-specified IPL bootstrap record did not contain IPL2 as the first four characters of the record.

System Action: The system-defined IPL bootstrap records are written on the volume and processing continues. The user-specified IPL bootstrap records and IPL program records are ignored.

Operator Response: None.

Programmer Response: Correct the IPL bootstrap record format and reissue the command, or accept the system-defined IPL bootstrap records. Save the job output and contact your IBM service representative.

ICK21319I **UNABLE TO WRITE BOOTSTRAP-1 RECORD ON VOLUME**

Explanation: An I/O error occurred when attempting to write the first IPL bootstrap record on cylinder 0, track 0. The volume is unusable for IPL.

System Action: The command continues processing, but the IPL bootstrap records are not written on the volume.

Operator Response: None.

Programmer Response: Issue the INSPECT command to attempt to reclaim the track, or reinitialize the volume. Save the job output and contact your IBM service representative.

ICK21320I **UNABLE TO WRITE BOOTSTRAP-2 RECORD ON VOLUME**

Explanation: An I/O error occurred when attempting to write the second IPL bootstrap record on cylinder 0, track 0. The volume is unusable for IPL.

System Action: The command continues processing, but the IPL bootstrap records are not written on the volume.

Operator Response: None.

Programmer Response: Issue the INSPECT command to attempt to reclaim the track, or reinitialize the volume. Save the job output and contact your IBM service representative.

ICK21321I **UNABLE TO WRITE IPL PROGRAM ON VOLUME**

Explanation: An I/O error occurred when attempting to write the IPL program record on the volume. The volume is unusable for IPL.

System Action: The command continues processing, but the IPL program record is not written on the volume.

Operator Response: None.

Programmer Response: Issue the INSPECT command to attempt to reclaim the track, or reinitialize the volume. Save the job output and contact your IBM service representative.

ICK21322I **CALCULATED IPL PROGRAM LENGTH IS EXCESSIVE**

Explanation: The total number of bytes required by the user-specified IPL program exceeds the maximum permitted for the volume being initialized.

System Action: The command continues processing, but the IPL program is not written on the volume.

Operator Response: None.

Programmer Response: Determine the cause of the excessive size, recompile, or reassemble the IPL program; then reissue the command. Save the job output and contact your IBM service representative.

ICK21323I **IPL PROGRAM INPUT CONTAINS NO TXT CARDS**

Explanation: The input records specified for the IPL program source were read, but contained no records that were identified as standard text (TXT) records.

System Action: The IPLDD parameter is ignored, and the command continues processing.

Operator Response: None.

Programmer Response: Be sure the correct input is supplied in the input stream or in the specified data set. Save the job output and contact your IBM service representative.

ICK21394I **EXCESSIVE DATA CHECKS OCCURRING FOR TRACK X'cccc hhhh'.**

Explanation: During skip displacement processing for the specified track the number of data checks exceeded the device threshold for this device type.

System Action: Processing has completed for this track. ICKDSF continues with the next track.

Operator Response: None.

Programmer Response: This message is an indication that an abnormal amount of data checks have occurred for this track. Although this message is intended as a warning, the system programmer might want to seek the aid of the IBM hardware service representative especially if this message is issued for multiple tracks.

ICK21398I RECORD ZERO MAY BE INVALID ON TRACK X'cccc hhhh'

Explanation: At the completion (successful or otherwise), of surface checking for the specified track, the rewriting of a standard record zero could not be verified.

System Action: If this message is issued during an INIT or an INSPECT NOPRESERVE, ICKDSF continues with the next track.

Operator Response: None.

Programmer Response: This message is often accompanied by an indication that surface checking failed on the specified track. The accompanying messages, including the I/O error messages, should be examined to aid in determining the cause of the failure. Support from your IBM representative might be required.

When the source of the error is established and removed, an INSPECT of the track should be run to fix the bad record zero situation. If the accompanying messages indicate a data loss during INSPECT PRESERVE processing, data recovery actions may be required.

ICK21401I ccuu SUSPECTED DRIVE PROBLEM

Explanation: Error detected during the drive test.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Previous messages should aid in giving an indication of the problem. Save printer output. Take the action appropriate to your installation's procedures for handling suspected equipment problems. If the problem cannot be explained, contact your IBM hardware or software service representative.

In the interim, depending on your installation's procedures, you might do the following:

- Restore the entire volume to another drive from a backup volume.
- Discontinue using the drive.

ICK21402I ccuu ERROR READING DATA

Explanation: This message is issued if any data checks are detected during the data scan portion of the command.

System Action: ICKDSF continues.

Operator Response: None.

Programmer Response: Previous messages should be examined to determine the nature and location of the data checks, and appropriate action should be taken based on the previous messages.

ICK21403I TEMPORARY EQUIPMENT CHECK LIMIT EXCEEDED, ERROR INFORMATION FOLLOWS

Explanation: During the write and read test portion of the drive test, more temporary equipment checks were detected than are considered reasonable for this device type. The message will be followed by the failing channel status word (CSW), channel command word (CCW), and sense bytes for each temporary equipment check that occurred.

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and ICKDSF continues with the next available path specified.

ICK21404I WRT TST: FORMAT WRITE OF CE CYLINDER FAILED ON HEAD = X'hhhh'

Explanation: An error was detected during the format write to the customer engineer (CE) cylinder.

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and ICKDSF continues with the next available path specified.

Operator Response: None.

Programmer Response: Examine previous messages to determine the cause of the error.

ICK21405I WRT TST: UPDATE WRITE OF CE CYLINDER FAILED ON HEAD = X'hhhh'

Explanation: An error was detected during the update write to the customer engineer (CE) cylinder.

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and ICKDSF continues with the next available path specified.

Operator Response: None.

Programmer Response: Examine previous messages to determine the cause of the error.

ICK21406I CLEANUP TEST: CLEANUP OF CE CYLINDER FAILED ON HEAD = X'hhhh'

Explanation: An error was detected during the attempt to cleanup the tracks on the customer engineer (CE) cylinder after the drive test has completed its testing.

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and ICKDSF continues with the next available path specified.

Operator Response: None.

Programmer Response: Examine previous messages to determine the cause of the error.

ICK21407I UNCORRECTABLE DATA CHECK OCCURRED ON CE CYLINDER, HEAD = X'hhhh', RECORD = X'rr'

Explanation: An uncorrectable data check was detected during the read test portion of the drive test. The message is followed by the failing CSW, CCW, and sense bytes.

System Action: ICKDSF continues. Eventual termination may occur.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative to aid in resolving the problem.

ICK21408I **CE CYLINDER DATA CHECK THRESHOLD EXCEEDED**

Explanation: During read testing from the customer engineer (CE) cylinder, more data checks were detected than are considered reasonable for this device type.

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and ICKDSF continues with the next available path specified.

Operator Response: None.

Programmer Response: Examine the error information contained in message(s) ICK01415 and/or ICK21407 to determine the failing head(s) and record(s). Contact your IBM hardware service representative to aid in resolving the problem.

ICK21409I **CORRECTABLE DATA CHECK LIMIT EXCEEDED ON CE CYLINDER, HEAD = X'hhhh'**

Explanation: During the read test portion of the drive test, this head exceeded the error criterion. The message will be preceded by ICK01415 for each record on this head that experienced a correctable data check.

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and ICKDSF continues with the next available path specified.

Operator Response: None.

Programmer Response: Examine the error information contained in message ICK01415 to determine the failing records. Contact your IBM hardware service representative for aid in resolving the problem.

ICK21410I **READ TEST: READ TEST ON CE CYLINDER FAILED ON HEAD = X'hhhh'**

Explanation: An error other than a data check occurred during the read test portion of the drive test.

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and ICKDSF continues with the next available path specified.

Operator Response: None.

Programmer Response: Examine previous messages to determine the cause of the problem.

ICK21420I **DRIVE TEST: TESTING UNSUCCESSFUL ON :**
CHPID = XX
CHANNEL NUMBER = X
CHANNEL SET = X
STORAGE DIRECTOR ID = XX
SUBSYSTEM ID = XXXX
CLUSTER = X
STORAGE PATH = X

Explanation: The drive test was unable to complete successfully on the indicated path where:

CHPID = XX identifies the CHPID for the path being processed. This line is not displayed if it does not apply to the operating system environment.

CHANNEL NUMBER = X identifies the channel number for the path being processed. This line is not displayed if it does not apply to the operating system environment.

CHANNEL SET = X identifies the channel set (CPU affinity) for the path being processed. This line is not displayed if it does not apply to the operating system environment.

STORAGE DIRECTOR ID = XX identifies the Storage Director Id for the path being processed. It contains the information present in sense byte 21. This line is not displayed if it does not apply to the control unit being processed.

SUBSYSTEM ID = XXXX identifies the Subsystem Id for the path being processed. It contains the information present in sense bytes 20 & 21. This line is not displayed if it does not apply to the control unit being processed.

CLUSTER = X identifies the Cluster for the path being processed. This line is not displayed if it does not apply to the control unit being processed.

STORAGE PATH = X identifies the Storage Path of the Cluster being processed. This line is not displayed if it does not apply to the control unit being processed.

System Action: Drive test processing terminates on this path.

Operator Response: None.

Programmer Response: Examine previous messages to determine the cause of the error on the specified path.

ICK21421I **DRIVE TEST: I/O ERROR ON :**
CHPID = XX
CHANNEL NUMBER = X
CHANNEL SET = X
STORAGE DIRECTOR ID = XX
SUBSYSTEM ID = XXXX
CLUSTER = X
STORAGE PATH = X

Explanation: An I/O error occurred on the indicated path. The csw, ccw, and sense bytes for the error are printed with the message.

CHPID = XX identifies the CHPID for the path being processed. This line is not displayed if it does not apply to the operating system environment.

CHANNEL NUMBER = X identifies the channel number for the path being processed.

CHANNEL SET = X identifies the channel set (CPU affinity) for the path being processed. This line is not displayed if it does not apply to the operating system environment.

STORAGE DIRECTOR ID = XX identifies the Storage Director Id for the path being processed. It contains the information present in sense byte 21. This line is not displayed if it does not apply to the control unit being processed, or if the error occurs before the Storage Director Id has been determined.

SUBSYSTEM ID = XXXX identifies the Subsystem Id for the path being processed. It contains the information present in sense bytes 20 & 21. This line is not displayed if it does not apply to the control unit being processed, or if the error occurs before the Subsystem ID has been determined.

CLUSTER = X identifies the Cluster for the path to be processed. This line is not displayed if it does not apply to the control unit being processed, or if the error occurs before the Cluster has been determined.

STORAGE PATH = X identifies the Storage Path of the Cluster to be processed. This line is not displayed if it does not apply to the control unit being processed, or if the error occurs before the Storage Path has been determined.

System Action: No further processing occurs on this path.

Operator Response: None.

Programmer Response: Examine the ccw, csw, and sense to determine the cause of the error.

ICK21422I **CHPID/ALLCHPID INVALID FOR THIS ENVIRONMENT**

Explanation: The CHPID and ALLCHPID parameters are only valid in the MVS/ESA, MVS/XA, CMS/XA, CMS/ESA, and Stand-alone/XA mode environments.

System Action: Drive test processing is bypassed.

Operator Response: None.

Programmer Response: Correct the parameters and rerun the job.

ICK21423I **CHANNUM/ALLCHAN/CHANSET INVALID FOR THIS ENVIRONMENT**

Explanation: The CHANNUM, ALLCHAN, and CHANSET parameters are only valid in the MVS/370 and Stand-alone/370 mode environments.

System Action: Drive test processing is bypassed.

Operator Response: None.

Programmer Response: Correct the parameters and rerun the job.

ICK21424I **UNKNOWN PATH SPECIFIED**
CHPID = XX
CHANNEL NUMBER = X

Explanation: The CHPID or CHANNEL specified in the parameters does not match any of the valid paths determined by ICKDSF. Either: CHPID = XX or CHANNEL NUMBER = X will be displayed depending on the parameters specified.

System Action: ICKDSF continues with the next valid path specified.

Operator Response: None.

Programmer Response: Correct the parameters and rerun the job.

ICK21425I **INVALID SPECIFICATION FOR PATH PARAMETERS: xx**

Explanation: The CHPID or channel specified in the parameters is an invalid value. XX is the value that is invalid. The valid values for CHPID are 00 thru FF. The valid values for CHANNUM are 0 thru F.

System Action: Drive test processing is bypassed.

Operator Response: None.

Programmer Response: Correct the parameters and rerun the job.

ICK21454I **UNABLE TO READ DATA ON PRIMARY VOLUME FOR TRACK CCHH = X'cccc hhhh', PROCESS TERMINATING**

Explanation: The secondary volume of a dual copy pair is being processed and INSPECT attempts to determine if the corresponding track on the primary volume is readable. In this case, the track on the primary volume is not readable. The previous ICK10710I message contains the CCW, CSW, and sense information for the error.

System Action: Because TOLERATE(PRIFAIL) is *not* specified, the track on the secondary volume is not inspected. Processing terminates on this track and continues with the next track.

Operator Response: None.

Programmer Response: Examine the CCW, CSW, and sense information to determine the cause of the error on the primary volume and take action appropriate to your installation's procedures for handling errors on the primary volume of a dual copy pair.

ICK21461I **NON-STANDARD RECORD ZERO EXISTS ON PRIMARY VOLUME FOR TRACK CCHH = X'cccc hhhh' PROCESS TERMINATING**

Explanation: A non-standard record zero condition exists on the primary volume of a dual copy pair.

System Action: Since TOLERATE(PRIFAIL) is not specified, processing terminates for the track on the secondary volume.

Operator Response: None.

Programmer Response: The primary volume should be put in simplex state and an INSPECT NOPRESERVE run on the track on the primary volume.

ICK21601I **I/O ERROR ON PATH XX**

Explanation: An I/O error occurred on the indicated path while attempting to determine the potential paths to the device. The csw, ccw, and sense bytes for the error are printed with the message.

System Action: No further processing occurs on this path.

Operator Response: None.

Programmer Response: Examine the ccw, csw, and sense to determine the cause of the error.

ICK21721I **FIXED BLOCK WRITE C.E. AREA TEST: BWRCE**

Explanation: An error was detected during the write to the CE cylinder.

System Action: Processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21723I **FIXED BLOCK CALIBRATION SEEK TEST: BCALSK**

Explanation: An error was detected during an attempt to move the access arm from block 244 to a specified location and back again to read.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21725I MULTIPLE BLOCK WRITE TEST: BHDSK

Explanation: An error was detected during an attempt to write multiple blocks and seek to the next sequential track.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21727I FIXED BLOCK INCREMENTAL SEEK TEST: BINCSK

Explanation: An error was detected during an attempt to move the access arm incrementally to read.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21729I FIXED BLOCK SERVO SEEK TEST: BSRVOSK

Explanation: An error was detected during an attempt to write and read back block 244 of the CE area.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative.

ICK21731I FIXED BLOCK RANDOM SEEK TEST: BRANSK

Explanation: An error was detected during an attempt to switch heads randomly to read.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21733I FIXED BLOCK READ PREFORMATTED BLOCK TEST: BWRNFPS

Explanation: An error was detected during an attempt to read block 296 of the CE area.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21735I FIXED BLOCK WRITE PRESELECTED BLOCKS TEST: BWRNFP

Explanation: An error was detected during an attempt to write multiple blocks in the CE area.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21736I FIXED BLOCK WRITE/READ PRESELECTED BLOCKS TEST: BWRRDRV

Explanation: An error was detected during the write/read tests on preselected blocks on a track in the CE cylinder.

System Action: ANALYZE drive test continues processing by testing blocks on the next track of the CE cylinder.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21737I FIXED BLOCK ERROR READING ID FIELD, TESTING TERMINATED

Explanation: An error was detected reading the ID field on the CE cylinder.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21738I FIXED BLOCK DATA COMPARE FAILED: BWRRDRV

Explanation: An error was detected where the data in the data record read did not compare equally with the data previously written to the same record.

System Action: ANALYZE drive test continues processing by testing blocks on the next track of the CE cylinder.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21739I FIXED BLOCK DATA COMPARE FAILED: BWRCE

Explanation: An error is detected when the record read did not compare equally with the same record previously written.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21750I **SNS TEST: ERROR IN SENSE CCW**

Explanation: An error was detected when ANALYZE attempts to obtain sense information and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21752I **RECAL TEST: RECALIBRATE TO CYL 0 HEAD 0**

Explanation: An error was detected when ANALYZE attempts to recalibrate the access arm to cylinder 0, head 0. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21754I **RHAMH TEST: READ HOME ADDRESS UNDER MOVABLE HEADS FAILED.**

Explanation: An error was detected when ANALYZE attempts to read home addresses under all the movable heads, and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21755I **READ FOR PRESERVE OF BLOCK xxxxxxxx FAILED: NON-CORRECTABLE DATA CHECKS PROCESSING OF BLOCK TERMINATED**

Explanation: The user data on block xxxxxxxx could not be read because of permanent data checks.

System Action: Diagnostic information is printed on the output device. Processing of the block is terminated to prevent the loss of the user data on the block. ICKDSF continues with the next valid block specified in the BLOCKS parameter.

Operator Response: None.

Programmer Response: Start error recovery procedures for the data set containing the block in error, and rerun the command for the block in error with NOPRESERVE specified. Save the job output and contact your IBM service representative.

ICK21756I **RHAFH TEST: READ HOME ADDRESS UNDER FIXED HEADS FAILED.**

Explanation: An error was detected when ANALYZE attempts to read home addresses under all the fixed heads, and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21758I **SKINCR TEST: INCREMENTAL MOVEMENT OF ACCESS ARM FAILED.**

Explanation: An error was detected when ANALYZE attempts to move the access arm incrementally and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21760I **SKRAN TEST: RANDOM CYLINDER ACCESS FAILED.**

Explanation: An error was detected when ANALYZE attempts to move the access arm randomly from one cylinder address to another, and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21762I **SKMAX TEST: SEEK FROM CYLINDER 0 TO MAXIMUM CYLINDER AND FAILED.**

Explanation: An error was detected when ANALYZE attempts to move the access arm from cylinder 0 to the maximum cylinder address, and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21764I **RHA TEST: READ HOME ADDRESS ON C.E. CYLINDER FAILED. WRITE TEST BYPASSED.**

Explanation: An error was detected when ANALYZE attempts to read the CE cylinder's home address, and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing continues, but does not execute the write tests on the CE cylinder. The return code is set to 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21765I UNABLE TO WRITE HOME ADDRESSES ON CCHH = X'cccc hhhh'

Explanation: An error occurred trying to write the home address on the CE cylinder. This message is followed by the failing CCW, CSW, and sense.

System Action: If path control is in effect, ICKDSF continues with the next path to be processed. If path control is not in effect, processing terminates.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative to aid in resolving the problem.

ICK21766I WRT TEST: WRITE RECORDS R0 AND R1 ON C.E. CYLINDER FAILED.

Explanation: An error was detected when ANALYZE attempts to write records 0 and 1 on the CE cylinder, and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21768I RDMT TEST: MULTI-TRACK READ ON C.E. CYLINDER FAILED

Explanation: An error was detected when ANALYZE attempts to read records on the CE cylinder, and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21770I RMDT DATA COMPARE TEST: WRONG RECORD READ

Explanation: An error was detected when a drive error caused the wrong record to be read. This message is followed by a printout of the failing CCW, CSW, and sense information, although the sense information will be zero if no unit check is indicated in the CSW.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21772I WRTPAD READ WRONG RECORD--EXP=xxxxxxx, REC=yyyyyyy

Explanation: An error was detected when ANALYZE attempts to write a record using the write count, key, data CCW, and read it back. The record read back was not as expected. xxxxxxx is the description of the record that was expected (that is, the data that was written). yyyyyyy is the description of the record that was received.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21774I WRTPAD TEST: WRITE COUNT, KEY, DATA FAILED

Explanation: An error was detected when ANALYZE attempts to write a record using the write count, key, data CCW, and fails. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21775I DATAVER: DATA CHECKS EXCEEDED THRESHOLD - PROCESS CONTINUING

Explanation: The number of data checks exceeded the limit set for the specified device. For CKD devices, this limit is equivalent to 50.

System Action: INSTALL command processing will complete the mode change before terminating.

Operator Response: None.

Programmer Response: Run the Analyze command with the scan parameter on the volume. Save the console and printer output for the INSTALL and ANALYZE commands and take action appropriate to your installation procedures for determining if an equipment problem is suspected. If the problem is determined to be equipment- related, contact your IBM hardware or software service representative.

ICK21776I DATAVER TEST: ERROR DURING DATA VERIFICATION

Explanation: A drive error was detected during the data verification test. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: Processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative for the drive error.

ICK21778I CLEANUP TEST: CLEANUP OF C.E. CYLINDER TRACK 0 FAILED

Explanation: An error was detected when ANALYZE has completed its test and an error occurs during the cleanup of track 1 on the CE cylinder. This message is followed by a printout of the failing CCW, CSW, and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Check subsequent messages for status of drive.

ICK21786I RPS ERROR: READ SECTOR OR SET SECTOR FAILED

Explanation: An error was detected when ANALYZE attempts to read sector or to set sector, and fails. This message is followed by a printout of the failing CCW, CSW and sense information.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative.

ICK21798I INVALID TRACK FORMAT ON CYLINDER = xxxx HEAD x

Explanation: A track was encountered during reclaim processing with a format which is not consistent with the information in the factory defect map for the track.

System Action: Reclaim processing of the indicated track is terminated. Reclaim processing continues with the next sequential track.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative. Save the job output and contact your IBM service representative.

ICK21826I INVALID TRACK FORMAT ON TRACK CCHH = X'cccc hhhh'

Explanation: An invalid track format condition has been detected while attempting to preserve data on the specified track. This is usually an indication that data has been written to the track beyond the track capacity. This is generally a user error.

System Action: The record on the specified track is not lost, and the track is not marked defective. The specified track is not surface-checked. ICKDSF continues with the next track. The return code is set to 8.

Operator Response: None.

Programmer Response: Determine the data set containing the specified track. Determine how, when, and where the data on the specified track was written, in order to determine how the invalid track format condition occurred. Start to recover the data on the track using your installation's procedures. Inspection of the failing track can then take place with NOPRESERVE specified.

ICK21831I NO PATHS HAVE BEEN WRITE ALLOWED

Explanation: During execution of the CONTROL command to allow write access to the paths to a device, the write-allow was unsuccessful for all paths.

System Action: The return code is set to 8.

Operator Response: None.

Programmer Response: Rerun the job for a device that is known to go through the storage control that has been write-prevented.

This condition can also arise if the required path has been reserved too long and the operator requested that retry be terminated. If this condition exists, action must be taken to ensure that the path is released, and the job can be rerun.

ICK21832I FENCE STATUS INDETERMINATE

Explanation: A CONTROL command (with the CLEARFENCE parameter) to reset a fence status is unsuccessful. The device fence status cannot be determined at this time.

System Action: The return code is set to 8 and ICKDSF continues.

Operator Response: None.

Programmer Response: This condition can arise if the required path has been reserved too long and the operator requests that retry is terminated. If this condition exists, action must be taken to ensure that the path is released and the job can be rerun

If it is established that a fence condition exists for this device, other methods may have to be used to unfence the device. Contact your IBM service representative.

ICK21833I DEVICE ccuu FENCE STATUS STILL EXISTS ON CLUSTER x STORAGE PATH y

Explanation: The CONTROL command (with CLEARFENCE parameter) has successfully issued the CCW to reset the fence status. However, the device fence status still exists on the storage path indicated when the allowable time period expired.

Operator Response: None

Programmer Response: Contact your IBM hardware service representative.

ICK21834I PATH xxxx,y RESERVED-REPLY U TO RETRY WRITE ALLOW, T TO IGNORE

Explanation: This message is issued to the system operator if the CONTROL command encounters a path that remains reserved for all of its retries. "xxxx" is the unit address, "y" is the path ID (CHPID). If the reply is U, the write-allow is reissued to the device. If the reply is T, this path is ignored and CONTROL continues with the next path.

System Action: See Explanation.

Operator Response: See Explanation.

Programmer Response: None.

ICK21835I **DEVICE ccuu RESERVED-REPLY U TO RETRY CLEAR FENCE, ELSE T**

Explanation: This message is issued if a device or path remains reserved for the duration of CONTROL command (with the CLEARFENCE parameter) processing. If you reply "U," the CONTROL command is re-issued. If you reply "T," this path is ignored and the CONTROL command processing continues with the next path.

System Action: The system waits for your response

Operator Response: Reply either "U" or "T."

Programmer Response: None.

ICK21836I **IPL TEXT EXISTS ON volid. REPLY U TO OVERLAY, ELSE T.**

Explanation: An attempt is made to replace the IPL text on a volume that already contains IPL text.

System Action: If the reply is U, the new IPL text will be placed on the volume. If the reply is T, the command terminates.

Operator Response: See Explanation.

Programmer Response: None.

ICK21837I **SP FENCE STATUS STILL EXISTS ON CLUSTER x STORAGE PATH y THROUGH CHANNEL-SWITCH z**

Explanation: The CONTROL command (with CLEARFENCE parameter) has successfully issued the CCW to reset the fence status. However, the SP fence status still exists on the storage path through the specified channel-switch when the allowable time period expired.

Operator Response: None

Programmer Response: Contact your IBM hardware service representative.

ICK21850I **EXTENDED CKD FUNCTIONS CANNOT BE ACTIVATED - MINIMAL INIT FORCED**

Explanation: The device has never been online to the operating system and the operating system cache logic has not been activated. ICKDSF surface checking functions cannot be performed.

System Action: Processing continues as if a minimal initialization has been requested. This enables the volume label and the VTOC to be written to the volume.

Operator Response: The device must be varied online and varied offline (or varied online and the job can be run online) in order to activate the operating system cache logic.

Programmer Response: If the device cannot be varied online in its current state (that is, the volume label is the same as a volume label that is already online), the INIT or the REFORMAT command can be run to change the volume label.

After the device has been varied online (and offline again if necessary), the job can be re-executed.

ICK22130D **DATA CANNOT BE RECOVERED FOR TRACK X'cccc hhhh' REPLY "C" TO ERASE AND CONTINUE, "I" TO IGNORE, T TO TERMINATE.**

Explanation: The previous INSPECT command did not complete execution during PRESERVE backup processing. **Note**: The data cannot be recovered from the backup location.

System Action: The operator is prompted for a reply to this message. The ignore option is provided if HOLDIT is specified on the current invocation of the INSPECT command.

If "C" is specified, the data is erased at the backup location, and processing begins from the start of the specified range. This should be specified if the user has no need to recover data from the backup location.

If "I" is specified, the recovery data is ignored, and processing continues for the current invocation. Note that this response is allowed only if HOLDIT was specified. The recovery data remains intact. The next invocation of the INSPECT command will again attempt to process the recovery data.

If "T" is specified, processing terminates. The recovery data remains intact. This should be specified if the user wishes to retry the recovery process, or examine the situation before allowing the data to be erased. The next invocation of the INSPECT command will again attempt to process the recovery data.

ICK22131I **ALTERNATE TRACK CANNOT BE ASSIGNED FOR RECOVERY TRACK**

Explanation: The track for which backup recovery is processing is defective, but there are no available alternate tracks.

System Action: An attempt is made to write the backup recovery data to the recovery track without an alternate track assigned. If that procedure fails, subsequent messages will indicate the system action.

Programmer Response: It is recommended that INSPECT RECLAIM be executed for tracks that have alternates assigned to attempt to make alternate tracks available for future use.

ICK22158D **DATA CANNOT BE RECOVERED FOR BLOCK xxxxxxxx REPLY "C" TO ERASE AND CONTINUE, "I" TO IGNORE, T TO TERMINATE.**

Explanation: The previous invocation of the INSPECT command did not execute to completion during PRESERVE backup processing. **Note**: The data cannot be recovered from the backup location.

System Action: The operator is prompted for a reply to this message. The ignore option is provided if HOLDIT is specified on the current invocation of the INSPECT command.

If "C" is specified, the data is erased from the backup location, and processing begins from the start of the specified range. This should be specified if the user has no need to recover data from the backup location.

If "I" is specified, the recovery data is ignored, and processing continues for the current invocation. Note that this response is allowed only if HOLDIT was specified. The recovery data remains intact. The next invocation of the INSPECT command will again attempt to process the recovery data.

If "T" is specified, processing terminates. The recovery data remains intact. This should be specified if the user wishes to retry the recovery process, or examine the situation before allowing the data to be erased. The next invocation of the INSPECT command will again attempt to process the recovery data.

ICK22176I DATA CHECK THRESHOLD EXCEEDED ON ONE OR MORE HEADS

Explanation: The ANALYZE SCAN function found that the data error rate on one or more heads exceeded the data check error rate threshold criterion for the device.

System Action: A moveable head error table is printed on the ICKDSF output device with a "T" in the "DATA CHK" column indicating which head or heads exceeded the data check error rate threshold.

Operator Response: None.

Programmer Response: The moveable head error table and previous messages will aid in giving an indication of the problem. Save the printer output from the ANALYZE run and take action appropriate to your installation's procedures for handling suspected equipment problems. If your problem cannot be determined contact your IBM service representative.

ICK22201I TRACK X'cccc hhhh' WAS NOT INSPECTED DUE TO ENQUEUE FAILURE ON -- xxxxxx

Explanation: The data set enqueue for track X'cccc hhh' failed. xxxxxx is the data set name. TOLERATE(ENQFAIL) was not specified. The track was not INSPECTed.

System Action: INSPECT continues on the next track.

Programmer Response: The job should be rerun for this track at a time when the data set may be available. If you know that the data set will never be available for exclusive control and the track must be inspected, the job can be rerun for this track with TOLERATE(ENQFAIL) specified.

ICK22205I TRACK X'cccc hhhh' WAS NOT INSPECTED -- VSAM DATA SET CANNOT BE ENQUEUED

Explanation: The specified track is part of a VSAM data set. ICKDSF does not support data set enqueue for VSAM data sets. Because TOLERATE(ENQFAIL) was *not* specified or assumed, the track was not inspected.

System Action: ICKDSF continues on the next track.

Programmer Response: An INSPECT for this track should be done with the device mounted offline, or specifying TOLERATE(ENQFAIL).

ICK30003I FUNCTION TERMINATED. CONDITION CODE IS nn hh:mm:ss mm/dd/yy

Explanation: A command has encountered a terminating error condition during execution. The value *nn* is the last condition code (LASTCC) generated during execution of the command. Messages printed just prior to this message indicate the nature of the error.

Note that the LASTCC value is the highest condition code found in the messages printed during execution of the command.

hh:mm:ss and *mm/dd/yy* are the hours, minutes and seconds, and month, day, and year, respectively, of the date and time of the message.

System Action: ICKDSF continues with the next command. LASTCC is set to *nn*; MAXCC is set to *nn* if *nn* is greater than the current value of MAXCC.

Operator Response: None.

Programmer Response: Correct the cause of the error, and reissue the command. Save the job output and contact your IBM service representative.

ICK30004I FUNCTION TERMINATED. INSUFFICIENT MAIN STORAGE

Explanation: The size of allocated virtual storage is too small.

System Action: ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Increase the allocated size of virtual storage, and reissue the command. Save the output and contact your IBM service representative.

ICK30008I FUNCTION NOT SUPPORTED IN THIS ENVIRONMENT

Explanation: The system adapter was entered with a request to perform a command not supported in the current operating system environment.

System Action: ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: The version of ICKDSF is not appropriate for the operating system environment. Ensure that the appropriate version is installed. Save the job output and contact your IBM service representative.

ICK30009I CPU CLOCK IS NOT SET OR NOT OPERATIONAL

Explanation: The processor clock has not been set or is not operational.

System Action: Processing terminates with an ICKDSF return code of 12.

Operator Response: Set the clock.

Programmer Response: Set the clock.

ICK30101I NO PATHS AVAILABLE TO EXECUTE DRIVE TEST

Explanation: ICKDSF was unable to locate any available paths that match the specified path parameters because one or more of the following conditions were detected:

- The user specified path did not match any of the paths found by ICKDSF. Message ICK21424I has previously been issued for the path that does not match. The PATH STATUS table will indicate the paths found by ICKDSF. Correct the parameters to specify a valid path and rerun the job.
- The user specified path was found to be not operational. The PATH STATUS table will indicate the path is unavailable. Determine the cause of the path not operational condition.

- The user specified path encountered an error that prevents further testing on the path. Previous error message(s) must be examined to determine the cause of the error. Take action appropriate to your installation's procedures for handling suspected equipment problems.

The message relates only to paths specified in the parameters. Paths that may be available but were not specified are not considered.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: See explanation.

ICK30111I DEVICE SPECIFIED IS THE SECONDARY OF A DUPLEX PAIR

Explanation: The specified device is the secondary device address of a duplex pair and you must specify the primary device address.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Specify the primary device address and re-submit the job. When you are processing the secondary device of a duplex pair, you must specify the primary device address in the UNIT parameter or the DD statement.

ICK30112I DEVICE SPECIFIED IS IN DUPLEX PENDING STATE

Explanation: The specified device of a duplex pair is in a temporary state. The subsystem is in the process of synchronizing the two devices.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Resubmit the job when the duplexing operation completes.

ICK30113I DEVICE SPECIFIED IS NOT IN SIMPLEX STATE

Explanation: The device specified is a duplex pair and ICKDSF function can not be performed.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: If the specified function is to be performed, place the device in simplex state and re-submit the job. Note that limited ICKDSF functions support the device in dual copy mode.

ICK30200I TOO MANY POSITIONAL PARAMETERS AFTER xxxx

Explanation: A parameter list has too many positional parameters specified, specifically those following the characters *xxxx*.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Remove the excess parameters from the command, and reissue the command. Save the output and contact your IBM service representative.

ICK30201I CONSTANT xxxx EXCEEDS LENGTH LIMIT

Explanation: The constant *xxxx* contains more characters than the maximum permitted by the command syntax.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the constant, and reissue the command. Save the output and contact your IBM service representative.

ICK30202I ABOVE TEXT BYPASSED UNTIL NEXT COMMAND. CONDITION CODE IS 12.

Explanation: A syntax error has been encountered; the remainder of the command is ignored. Messages printed just prior to this message indicate the nature of the error.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the syntax error, and reissue the command. Save the output and contact your IBM service representative.

ICK30203I ITEM xxxx DOES NOT ADHERE TO RESTRICTIONS

Explanation: An indicated parameter does not conform to the naming conventions required. For example, :hpKA5U2AC2ehp1. may be misspelled.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the parameter error, and reissue the command. Save the output and contact your IBM service representative.

ICK30205I DELIMITER xxxx IS NOT PROPERLY PRECEDED BY A CONSTANT OR KEYWORD

Explanation: A delimiter was found where a subparameter list or data was expected. The delimiter is improperly used: Parentheses may be improperly positioned, or a positional parameter may be missing.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the syntax error, and reissue the command. Save the output and contact your IBM service representative.

ICK30207I REMAINDER OF COMMAND INPUT STREAM IGNORED

Explanation: An error has occurred that prohibits further scanning of the command stream. Messages printed just prior to this message indicate the nature of the error.

Note: The condition code (MAXCC) is always set to 16 when this situation is encountered.

System Action: ICKDSF processing terminates.

Operator Response: None.

Programmer Response: Correct the error, and reissue the command. Save the output and contact your IBM service representative.

ICK30208I LEFT PARENTHESIS MISSING FOLLOWING KEYWORD xxxx

Explanation: The keyword *xxxx* is not followed by an opening parenthesis, which should begin the required subparameter list or value associated with the command keyword.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Check the requirements of the keyword, correct the syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK30209I RIGHT PARENTHESIS MISSING AFTER xxxx

Explanation: A closing parenthesis was not found where expected, or a subparameter list was not properly delimited.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK30210I INVALID PARENTHESES FOR SPECIFYING REPEATED SUBPARAMETER LIST

Explanation: Parentheses that are used for delimiting repeated subparameter lists are missing or not matched.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK30211I KEYWORD xxxx IS IMPROPER

Explanation: A misspelled, improperly specified, or inapplicable keyword was encountered in the command.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK30212I INVALID LEFT PARENTHESIS AFTER xxxx

Explanation: An opening parenthesis was found which appeared to delimit the positional parameter *xxxx*, but the positional parameter was not a constant or a list of constants.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK30213I KEYWORD xxxx APPEARS TOO OFTEN

Explanation: The keyword *xxxx* has appeared too often in the command. A parameter list may be incorrectly specified.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax by removing the keyword, and reissue the command. Save the output and contact your IBM service representative.

ICK30214I HEX OR BINARY CONSTANT SPECIFIED IMPROPERLY

Explanation: A hexadecimal or binary constant is not specified in the correct format: X'*n*' or B"*n*," respectively.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK30216I ABOVE TEXT BYPASSED UNTIL NEXT COMMAND

Explanation: An error was encountered during the syntax check of this command, and syntax checking was terminated. Messages printed just prior to this message indicate the nature of the error.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK30217I PASSWORD IMPROPER AFTER xxxx

Explanation: A password, denoted by a slash (/), was encountered where a password is not allowed.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Remove the password from the parameter, and reissue the command. Save the output and contact your IBM service representative.

ICK30218I TOO MANY REPEATED SUBPARAMETER LISTS APPEAR

Explanation: Too many repeated subparameter lists appear in the command.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Check the command syntax, correct the error, then reissue the command. Save the output and contact your IBM service representative.

ICK30219I VERB NAME xxxx UNKNOWN

Explanation: The verb *xxxx* is not recognized as a command.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reissue the command with the correct command name. Save the output and contact your IBM service representative.

ICK30220I IMPROPER NUMERIC DIGIT FOUND IN xxxx

Explanation: An invalid character was encountered in the constant *xxxx*. A decimal number can only be specified with the symbols 0 through 9; a hexadecimal number can only be specified with the symbols 0 through 9 and A through F; and a binary number can only be specified with the symbols 0 and 1.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax error, and reissue the command. Save the output and contact your IBM service representative.

ICK30221I CONSTANT xxxx NOT WITHIN VALUE RANGE

Explanation: The value of the constant *xxxx* is outside the range of values allowed for the associated parameter.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Check the command syntax for allowed values, correct the error, then reissue the command. Save the output and contact your IBM service representative.

ICK30223I TOO MANY CONSTANTS IN LIST BEGINNING AT xxxx

Explanation: Too many constants were specified in the command beginning at the characters *xxxx*.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK30225I REQUIRED (SUB)PARAMETER OF xxxx IS MISSING

Explanation: A required parameter or subparameter, identified by *xxxx*, is missing.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Add the missing parameter, and reissue the command. Save the output and contact your IBM service representative.

ICK30226I INCONSISTENT PARAMETERS INVOLVING xxxx

Explanation: Some commands contain parameters that are defined as mutually exclusive. If one parameter is specified, the other parameter is not allowed.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK30234I WARNING: TOO FEW RIGHT PARENTHESES FOUND AT END OF COMMAND

Explanation: Too few closing parentheses were found at the end of the command to properly close the subparameter lists.

System Action: Command processing is terminated.

Operator Response: None.

Programmer Response: Correct the command syntax. Save the output and contact your IBM service representative.

ICK30300I ERROR OPENING dsname | ddname

Explanation: An error occurred when attempting to open the indicated data set or volume. See the associated message for the cause of the error.

System Action: See the associated message.

Operator Response: None.

Programmer Response: See the associated message. Save the job output and contact your IBM service representative.

ICK30301I ERROR CLOSING dsname

Explanation: An error was encountered while attempting to close the data set. See the associated message for the cause of the error.

System Action: See the associated message.

Operator Response: None.

Programmer Response: See the associated message. Save the job output and contact your IBM service representative.

ICK30302I ACTION ERROR ON dsname

Explanation: This message identifies the name of the data set that was processing when the error occurred. See the associated message for an explanation of the error.

System Action: None.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative.

ICK30304I **JCL STATEMENT MISSING**

Explanation: The DD statement that was identified in the DDNAME parameter is missing (MVS/370).

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Be sure the DD statement is in the job stream as specified in the command. Check the DDNAME for correct spelling. Save the job output and contact your IBM service representative.

ICK30309I **RECORD xxxxx NOT WRITTEN. LENGTH INVALID**

Explanation: The record *xxxxx* was not written for one of the following reasons:

- The record length was greater than LRECL of the output data set.
- The record length was less than the LRECL of the output data set and RECFM was F (fixed).

Note: *xxxxx* is the first five bytes of the record in hexadecimal format.

System Action: ICKDSF continues processing until four such errors occur. After four errors, the command continues to execute, but no further records are written to the output data set.

Operator Response: None.

Programmer Response: Redefine the data set with the correct LRECL value. Save the job output and contact your IBM service representative.

ICK30312I **SYSTEM UNABLE TO OPEN**

Explanation: The DCBOFLG was not set ON following an OPEN SVC (MVS), or the OPEN system macro failed (VSE). See the associated messages for the cause of the error.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative.

ICK30313I **synad.text**

Explanation: An I/O error occurred. The contents of the MVS Data Management Services SYNADAF error message are written.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Check the explanation of the SYNADAF message. Correct the error, and reissue the command. Save the job output and contact your IBM service representative.

ICK30315I **RECORD SIZE GREATER THAN 32767 NOT SUPPORTED**

Explanation: The system cannot process a logical record whose size is greater than 32,767 bytes.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Change the DD statement to specify a LRECL length that is less than 32,767 bytes. Save the job output and contact your IBM service representative.

ICK30317I **PERMANENT I/O ERROR**

Explanation: An error was detected while performing an I/O operation. The data set name is given in the associated message.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Check the MVS JCL statements to be sure the data set was correctly defined. If the data set was correctly defined, a hardware error was encountered and the data set must be re-created on another I/O device. Save the job output and contact your IBM service representative.

ICK30318I **INVALID DATA SET SPECIFICATION**

Explanation: In the VSE version, the I/O adapter open/close routine was unable to open a data set because of an invalid specification of the data set in the DLBL statement.

System Action: Processing for the specific data set is terminated. Command processing will continue if the opening of the specific data set is deemed noncritical to the main function performed by the command.

Operator Response: None.

Programmer Response: Probable user error. Check the DLBL statement. If there are no errors, contact your system programmer.

ICK30320I **INVALID DEVICETYPE**

Explanation: In the VSE version, the I/O adapter open/close routine was unable to open a data set, because it exists on a device that is not supported for sequential processing.

System Action: Processing for the specific data set is terminated, and the command processing will continue if the opening of the specific data set is deemed noncritical to the main function performed by the command.

Operator Response: None.

Programmer Response: Probable user error. The data set does not exist on a valid device that is supported for sequential processing (SAM access method). Correct the situation, and resubmit the job. If the error persists, contact your system programmer.

ICK30321I **OPEN/CLOSE ABEND EXIT TAKEN

Explanation: The OPEN/CLOSE system services SVC detected an error when opening or closing a data set. The ABEND message was written to the JOBJCL data set.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Check the ABEND message, correct the error, then reissue the command. Save the job output and contact your IBM service representative.

ICK30330I DATA SET xxxxxxxx IS TOO SHORT FOR THE SPECIFIED FUNCTION

Explanation: The specified data set is not large enough to accommodate the data fields as specified in the CCW chain.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Reallocate the data set and resubmit the job.

ICK30332I UNABLE TO PROCESS DATA SET RC=xx

Explanation: The CP macro FSSTATE was issued with RC=xx.

Code	Meaning
20	Invalid character in fileid
24	Invalid file mode
28	File not found
36	Disk not accessed
80	I/O error accessing OS data set
81	OS read password protected data set
82	OS data set organization is not BSAM,QSAM, or BPAM
83	OS data set has more than 16 extents

System Action: The command is terminated with condition code 12

Operator Response: None.

Programmer Response: Correct the error and rerun the job

ICK30334I RECORD LENGTH / FORMAT OF DATA SET fn ft fm IS INCORRECT

Explanation: The record length must be = 80, the record format must be fixed block.

System Action: Process terminates.

Operator Response: None.

Programmer Response: Correct the data set and rerun the job

ICK30335I DATA SET ON READ ONLY DISK

Explanation: The specified file is on a read only disk.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Correct the data set and rerun the job

ICK30336I TIC ADDRESS OUTSIDE CCW AREA OF FILE

Explanation: A TIC ccw with a address outside the ccw area of the file been found.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Correct the data set and rerun the job

ICK30337I CCW ENDING INDICATOR NOT FOUND

Explanation: A double word of X'FFFFFFFFFFFFFFFF' was not found in the file.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Correct the data set and rerun the job

ICK30500I MAIN STORAGE NOT AVAILABLE, COMMAND TERMINATED

Explanation: Dynamic acquisition of storage for control blocks and work areas failed.

System Action: The command is terminated.

Operator Response: Increase main storage size, and resubmit the job. Save the job output and contact your IBM service representative.

ICK30700I EQUIPMENT CHECK

System Action: Drive test processing terminates if path control is not being used. If path control is being used, drive test processing terminates on the current path and ICKDSF continues with the next available path specified.

ICK30701I EQUIPMENT CHECK ON ccuu

Explanation: An EQUIPMENT CHECK I/O error occurred.

System Action: If you do not receive message ICK00701I "EQUIPMENT CHECK RETRY SUCCESSFUL," execution of the command is terminated.

Operator Response: None.

Programmer Response: The failing CCW, CSW, and sense information should be examined to determine the cause of the equipment check. Assistance of the IBM hardware service representative is required to interpret the sense information and/or to aid in correcting the cause of the error. Save the job output and contact your IBM hardware service representative.

ICK30702I OPERATOR DID NOT READY DEVICE

Explanation: When the operator was prompted by message ICK004D to make a device ready, the response was to terminate the command.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative.

ICK30703I DEVICE ALREADY IN USE

Explanation: The device referred to in the ICKDSF command by the UNITADDRESS or DDNAME parameter is already being used by another job.

System Action: The command terminates. ICKDSF ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM service representative.

ICK30704I INVALID DEVICE-TYPE FOR FUNCTION

Explanation: The type of device specified is invalid for the command issued. For instance, a Mass Storage System staging pack cannot be a 2314 device.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reissue the command, and specify an appropriate device. Save the job output and contact your IBM service representative.

ICK30705I OPERATOR DID NOT SET DEVICE TO WRITE-MODE

Explanation: During I/O operations, the device was found set for read-only mode. The operator elected to terminate the command in response to message ICK014D instead of setting the device to write mode.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Ensure that the device is in write mode, and resubmit the command. Save the job output and contact your IBM service representative.

ICK30706I DEVICETYPE PARAMETER MISSING OR ERRONEOUS

Explanation: This message appears only in the stand-alone version. The DEVICETYPE parameter must specify one of the valid device types. See Figure 2 on page 6 for valid device types.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the error, and reissue the command. Save the job output and contact your IBM service representative.

ICK30707I MIMIC MINI/EMU SPECIFICATION ERRONEOUS

Explanation: The number of cylinders specified, either for an MVS minidisk for the VM environment or for an emulated count-key-data device on a fixed block architecture device, is greater than the total number of primary cylinders that exist on the volume.

System Action: The command terminates and ICKDSF continues processing with the next command.

Operator Response: None.

Programmer Response: Correct the invalid number of cylinders in the MINI or EMU specification, and resubmit the job.

ICK30708I DEVICETYPE PARAMETER REQUIRED WITH MIMIC MINI SPECIFICATION.

Explanation: When you specify the MIMIC MINI parameter, you must also specify the DEVICETYPE parameter.

System Action: The command terminates and ICKDSF continues processing with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and resubmit the job.

ICK30709I ACCESS DENIED TO SHARED DEVICE ccuu BY OPERATOR

Explanation: If the operator replies T to message ICK020D, this message appears before termination of the command.

System Action: Command processing terminates, and ICKDSF continues processing with the next command.

Operator Response: None.

Programmer Response: Resubmit the job when the volume is accessible.

ICK30710I SUBSID SUPPORT NOT AVAILABLE ON SYSTEM

Explanation: The level of the VSE system where ICKDSF is being executed does not have the support required to execute ICKDSF.

System Action: Processing terminates

Operator Response: None

Programmer Response: See explanation.

ICK30711I CHANNEL ERROR: CSW=xxxxxx xxxxxxxx

Explanation: An unrecoverable channel error occurred. xx . . . xx is a hexadecimal display of the last seven bytes of the CSW at the time of the error.

System Action: Execution of the command is terminated. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM hardware service representative

ICK30712I xxx DEVICE TYPE VERIFICATION FAILED

Explanation: During OPEN, ICKDSF was unable to determine the device type at address xxx, or the device type is not supported. If the sense ID CCW X'E4' is supported by the device at address xxx, then the following message is issued:

```
PHYSICAL DEVICE=UNKNOWN
SENSE ID=xxxxxxxxxxxxxx
```

See the appropriate device manual for the sense ID information. Basically, the format is as follows:

```
byte 0 = X'FF'
bytes 1-3  = storage control id
bytes 4-6 = device id
```

If the sense ID CCW is not supported by the device, the following message is issued:

```
PHYSICAL DEVICE=UNKNOWN
LOGICAL DEVICE=UNKNOWN
```

System Action: Execution of the command is terminated.

Operator Response: None.

Programmer Response: The direct access devices supported by ICKDSF are listed in the Introduction. Check that the device specified by the UNITADDRESS, DDNAME, or SYSNAME parameter is supported by ICKDSF. If the device is supported by ICKDSF, save the output and contact your IBM service representative.

ICK30714I DDNAME NOT FOUND

Explanation: The ddname specified on the DDNAME parameter of input command could not be found for this job step.

System Action: The command terminates. ICKDSF continues
with the next command.

Operator Response: None.

Programmer Response: Add a DD card to the JCL for the job step to include the ddname specified in the command. Save the output and contact your IBM service representative.

ICK30715I DEVICE IS IN TRANSITION MODE

Explanation: The device is in "transition" state between 3390 mode and 3380 track compatibility mode. This can occur because a previous INSTALL command did not complete.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Run the INSTALL command to complete the mode change before executing any other commands.

ICK30716I DEVICE IS IN MEDIA MAINTENANCE RESERVE STATE

Explanation: The device is in media maintenance reserve state because a previous INSPECT PRESERVE did not complete.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Run the INSPECT command to allow recovery processing to occur for the previously INSPECTed track.

ICK30717 UNRECOGNIZED I/O ERROR TYPE

Explanation: An I/O error has occurred, however the error can not be recognized for the specified device type.

System Action: ICKDSF has performed a retry but the error still persists. A system or hardware error is suspected.

Programmer Response: Examine the failing CCW,CSW and sense information. Assistance of the IBM service representative may be required to interpret the sense information and/or to aid in correcting the cause of the error.

ICK30718I FUNCTION NOT SUPPORTED FOR ESCON CHANNEL ATTACHED DEVICE

Explanation: The specified function can not be performed since the device is in 3380 track compatibility mode. Track compatibility mode is not supported on ESCON channel attached devices. In addition, the INSTALL function to set the device into 3380 track compatibility mode is not supported.

System Action: Command terminates.

Operator Response: None.

Programmer Response: The specified function can only be performed on a parallel channel interface. Re-submit the request from a host with parallel channel access to the device. Correct the situation and re-submit the job.

ICK30719 DEVICE IS IN "STATUS CAN NOT BE DETERMINED" STATE

Explanation: The device is in a "*status can not be determined state*" and a command was issued which was not the CONTROL command with the RESETICD parameter to reset this condition.

System Action: The current command terminates.

Programmer Response: Contact your IBM service representative and run CONTROL RESETICD.

ICK30721I UNABLE TO DETERMINE PATH STATUS

Explanation: The path status could not be determined.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Examine the previous messages to determine the reason the path status could not be determined.

ICK30726I STIMERM FUNCTION CANNOT BE PERFORMED RETURN CODE = xxxxxxxx

Explanation: The system STIMERM function could not be performed.

System Action: Processing terminates. The return code from the STIMERM function is printed in hexadecimal.

Operator Response: None.

Programmer Response: Contact your IBM service representative to assist in determining the reason the function could not be performed.

ICK30730I UNSUPPORTED DEVICE TYPE

Explanation: The device type as described in message ICK00700 is no longer a supported device for this release of ICKDSF.

System Action: The function is terminated.

Operator Response: None.

Programmer Response: None.

ICK31004I VTOC CREATION FAILED

Explanation: An I/O error occurred when attempting to write a volume table of contents on the volume.

System Action: The volume table of contents is not written on the volume, and the command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative.

ICK31006I VOLUME LABEL CREATION FAILED

Explanation: An I/O error occurred when attempting to write a volume label.

System Action: A volume label was not written, and the command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: The failing CCW, CSW, and sense information should be examined to aid in determining the cause of the failure.

During minimal initialization, writing of the volume label is the first write operation that occurs on the volume. This message can be an indication that the volume is in read only mode.

If the error is caused by a data check an INSPECT of cylinder 0, track 0 may be all that is required.

Other failure conditions may require the aid of the IBM service representative. If so, save the job output and contact your IBM service representative.

ICK31007I ALLTRACKS NOT SUPPORTED FOR THIS FUNCTION

Explanation: The ALLTRACKS parameter is only valid for NOCHECK NOASSIGN processing

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Limit the amount of track specified by using the range parameters.

ICK31012I VOLID NOT SPECIFIED AND NO VOLUME LABEL EXISTS

Explanation: A volume being initialized must either contain a volume label from which the old volume serial can be used, or the VOLID parameter must specify a new volume serial number.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Be sure that the correct volume is mounted, or specify the VOLID parameter, and reissue the command. Save the job output and contact your IBM service representative.

ICK31013I UNRECOVERABLE TRACK THRESHOLD MET

Explanation: Multiple failures have occurred while writing the home address/record zero on multiple tracks. This message follows many ICK21000 and/or ICK21001 messages.

System Action: The command terminates.

Operator Response: None.

Programmer Response: Prior messages should be examined (including the CCW, CSW, and sense that caused the I/O) to determine the cause of the failure. This message may be caused if the read/write mode switch is set to READ mode, or some other condition is causing the inability of ICKDSF to write on the volume. Inability to write on the volume is characterized by the previous ICK21000 messages being for the first 10 successive alternate tracks on the volume.

If running under VM (either stand-alone or an operating system version running under VM), this message can be an indication that a diagnostic or media maintenance function was attempted against a device that was a minidisk and/or LINK to the userid. Diagnostic and media maintenance functions must be done on devices that are ATTACHed to the userid. For more information on VM support, see Appendix B, "VM Support" on page 257.

Assistance may be required from the IBM service representative.

ICK31015I UNABLE TO READ VOLUME LABEL

Explanation: An I/O error occurred when attempting to read the volume label to verify the volume serial number.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reissue the command and specify the NOVERIFY parameter, or reinitialize the volume. Save the job output and contact your IBM service representative.

ICK31019I NEXT-AVAILABLE-ALTERNATE POINTER OR COUNTER IN VTOC IS INVALID

Explanation: The value of the pointer to the next available alternate track or the count of the number of alternate tracks that are available is in error.

System Action: Processing continues. If it is possible, the value in the VTOC is updated when processing completes.

Operator Response: None.

Programmer Response: Reinitialize the volume at either the minimal or the maximal level. Save the job output and contact your IBM service representative.

ICK31022I UNABLE TO CHANGE VOLUME LABEL

Explanation: An I/O error occurred while attempting to change the volume serial number, the owner identification, or the address of the volume table of contents in the volume label.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reinitialize the volume. Save the job output and contact your IBM service representative.

ICK31023I INVALID UNITADDRESS, SYSNAME OR DDNAME SPECIFIED

Explanation: The channel and unit addresses specified do not exist in the system I/O configuration, or the DDNAME is incorrect, or the SYSNAME is incorrect.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the value substituted for *ccuu*, or for *dname*, or for *sysxxx*, then reissue the command. Save the job output and contact your IBM service representative.

ICK31024I UNABLE TO OPEN VOLUME

Explanation: The volume that was specified cannot be, opened. This could be caused by:

- The DD statement is missing or invalid.
- The channel/unit address is invalid.
- When processing in a shared environment, the device is not in an offline status on the system executing ICKDSF.
- I/O errors associated with the volume.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: The status of the volume should be checked. Previous messages should be examined to aid in determining the volume status. Save the job output and contact your IBM service representative.

ICK31025I VOLUME NOT MOUNTED PRIVATE

Explanation: When online initializing, inspecting, or reformatting is requested, the specified volume must be mounted PRIVATE to prevent interference by other jobs.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Be sure the volume is mounted PRIVATE, or perform the job offline. Save the job output and contact your IBM service representative.

ICK31026I COMMAND INVALID FOR UNINITIALIZED VOLUME

Explanation: The REFORMAT command can only be specified for a previously initialized volume.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Initialize the volume. Save the job output and contact your IBM service representative.

ICK31027I UNABLE TO WRITE VOLUME LABEL DURING VTOC CREATION

Explanation: An I/O error occurred when attempting to rewrite the volume label field that locates the volume table of contents.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM service representative.

ICK31028I INVALID VSE DATA SET NAME

Explanation: The DSname is limited to seven characters.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Correct the data set and rerun the job

ICK31029I VTOCPTR SPECIFIED AND VOLUME LABEL EXISTS

Explanation: VTOCPTR is used to restore the destroyed *volser* information of a previously initialized volume. VTOCPTR cannot be used if the volume label exists.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: None.

ICK31030I VALID VTOC DOES NOT EXIST AT THE SPECIFIED LOCATION

Explanation: The format-4 DSCB can not be found at the specified VTOC location.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Reissue the REFORMAT command specifying the correct VTOC location.

ICK31034I "ASSIGN NOCHECK" PROHIBITED WITH RANGE PARAMETERS

Explanation: The combination of ASSIGN and NOCHECK indicates that the user has determined that an alternate track or block is necessary, independent of the surface analysis processes performed by ICKDSF. This combination of parameters, if used with the range parameters, can easily exhaust the alternate tracks or blocks on a volume, because unconditional alternate assignment takes place.

System Action: Processing terminates.

Programmer Response: If it is determined that an unconditional assignment of alternate tracks or blocks is necessary, use ASSIGN and NOCHECK with the TRACKS or BLOCKS parameter.

ICK31035I UNABLE TO READ FORMAT-4 DSCB

Explanation: An I/O error occurred when attempting to read the data set control block (DSCB) for the volume table of contents. This record is read, then rewritten, to indicate the location.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reinitialize the volume. Save the job output and contact your IBM service representative.

ICK31036I UNABLE TO INITIALIZE 2314 MINI DISK

Explanation: For the 2314 minidisk specification, initialization of less than 2 cylinders was requested. This is not acceptable because one cylinder is always used as a cylinder of alternate tracks.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the MIMIC(MINI(n)) parameter, and reissue the command.

ICK31043I NO STORAGE AVAILABLE TO HOLD RECORD BEING PRESERVED, TRACK CCHH=X'cccc hhhh'

Explanation: To preserve the contents of a track during surface checking, the complete track is read into a dynamically allocated buffer in accordance with the track capacity of the volume. There is insufficient space in which to allocate this buffer.

System Action: The track under inspection is not surface checked to avoid loss of data, and the command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Increase the available storage space, or specify the NOPRESERVE parameter if the data may be destroyed, then reissue the command. Save the job output and contact your IBM service representative.

ICK31046I UNABLE TO WRITE FORMAT-4 DSCB AT CCHH=X'cccc hhhh'

Explanation: An I/O error occurred when attempting to update the volume table of contents. The address of the first available alternate track and the number of alternate tracks could not be written in the VTOC.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reinitialize the volume and specify a different cylinder and track location for the volume table of contents, or issue the INSPECT command to assign an alternate track. Save the job output and contact your IBM service representative.

ICK31049I UNITADDRESS SPECIFIED FOR VOLUME MOUNTED ON-LINE

Explanation: The UNITADDRESS parameter is valid for offline processing only, but this device was mounted online.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Mount the volume offline, or specify the DDNAME parameter. Save the job output and contact your IBM service representative.

ICK31050I UNABLE TO ENSURE DATA AVAILABILITY -- FUNCTION TERMINATED

Explanation: You specified the AVAILABLE parameter for the INSPECT command. However, the device does not support the *Concurrent Media Maintenance* function and ICKDSF cannot ensure the availability of the user data during the INSPECT process.

System Action: Processing of the command is terminated.

Operator Response: None.

Programmer Response: Remove the AVAILABLE parameter and re-issue the command.

ICK31052I MINIMAL INITIALIZATION NOT PERMITTED FOR MSS STAGING PACK

Explanation: To initialize a pack as a Mass Storage System staging pack, the VALIDATE or the CHECK parameter must be specified to initialize the pack at medial or maximal level, respectively.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reissue the command with the VALIDATE parameter specified. Save the job output and contact your IBM service representative.

ICK31053I DIRECTIO(SECONDARY) IS SPECIFIED TO THE VOLUME IN DUPLEX STATE

Explanation: You specified the INSPECT DIRECTIO(SECONDARY) function to a volume that is in duplex state.

System Action: INSPECT function is not supported on the secondary device if the volume is in duplex state.

Operator Response: None.

Programmer Response: The volume must be in suspended failed duplex state prior to invoking INSPECT.

ICK31054I DEVICE NOT SUPPORTED FOR THE SPECIFIED FUNCTION

Explanation: The volume that was specified for the command is not supported for the function as defined by the combination of parameters used. For example, ANALYZE is not valid for a 9332 device. See Figure 2 on page 6 for other incompatible functions.

System Action: Processing of the command is terminated.

Operator Response: None.

Programmer Response: Correct the control statement, and reissue the command.

ICK31055I **CONCURRENT MEDIA MAINTENANCE FUNCTION REQUIRED FOR DUAL COPY VOLUMES**

Explanation: The *Concurrent Media Maintenance* function is required on this control unit for the INSPECT command to process a volume that is part of a dual copy pair.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative. In the interim, the dual copy pair may be reset to simplex state and the INSPECT command executed on the volume in simplex state.

ICK31056I **VTOC LOCATION IN VOLUME LABEL INCORRECT**

Explanation: The VTOC location specified in the standard volume label is incorrect. Therefore, addressability to the volume table of contents is lost.

System Action: The command terminates. Processing continues
with the next command.

Operator Response: None.

Programmer Response: Reinitialize the volume, and reestablish addressability to the volume table of contents.

ICK31057I **INVALID DEVICE TYPE: VTOC INDEX NOT SUPPORTED ON THIS DEVICE**

Explanation: The device type is not a valid device type for initialization with a VTOC index.

System Action: The creation of the VTOC index is not attempted. INIT command ICKDSF continues.

Operator Response: None.

Programmer Response: None.

ICK31058I **ccuu I/O ERROR DETECTED DURING INDEX CREATION: ERROR CODE= ***

Explanation: An I/O error occurred during VTOC index creation processing. Error codes:

```
1 - Error occurred in reading the
    volume label
2 - Error occurred in reading the
    VTOC
3 - Error occurred in writing the
    VTOC
4 - Error occurred in writing
    index records
5 - Index extent was violated;
    increase index size
```

System Action: VTOC index creation processing is terminated. The VSE volume indicator is turned on in the VTOC. INIT command processing continues.

Operator Response: Refer the error indication to the system coordinator for problem determination.

Programmer Response: None. Save the output and contact your IBM service representative.

ICK31059I **INDEX STARTING LOCATION INVALID AS SPECIFIED**

Explanation: The INDEX parameter on the INIT command statement is invalid. The starting location, as specified, is not valid for one of the following reasons:

- It caused an overlap with the VTOC.
- It defined cylinder 0, track 0 as the starting location of the index data set.
- It was outside the physical limits of the device.
- The relative track specified is invalid for the device.

System Action: Execution of the command is terminated.

Operator Response: None.

Programmer Response: Check the values specified for the INDEX parameter, and correct the value in error. Resubmit the job.

ICK31061I **ccuu VTOC INDEX CREATION SUCCESSFUL: VOLUME NOW IN INDEX FORMAT**

Explanation: The VTOC index was successfully created on the volume.

System Action: None.

Operator Response: None.

Programmer Response: None.

ICK31062I **ccuu VTOC INDEX CREATION FAILED: RETURN CODE= 12**

Explanation: Index creation was unsuccessful.

System Action: None.

Operator Response: None.

Programmer Response: Check the job output for additional information on the reason for job failure.

ICK31063I **UNABLE TO READ HOME ADDRESS BEFORE DATA SAVED FROM CCHH=X'cccc hhhh'**

Explanation: Before the data on a track is read, the home address is read from the specified track. This read operation failed.

System Action: ICKDSF continues with the next track. The return code is set to 8.

Operator Response: None.

Programmer Response: An attempt should be made to recover the data on the track if necessary. (This may not be possible because the home address cannot be read.) Inspection of the failing track can then take place with NOPRESERVE specified, to cause all possible recovery actions to take place.

If the volume is part of a dual copy pair, put the volume in simplex state to perform an INSPECT with NOPRESERVE.

Note: No further inspection of this track takes place; no information regarding the condition of this track is retained or included in the map when processing completes.

ICK31064I **UNABLE TO READ RECORD ZERO BEFORE DATA SAVED FROM CCHH=X'cccc hhhh'**

Explanation: Before the data on a track is read, record zero is read from the specified track. This read operation failed.

If the sense information is all zeros, and the CSW indicates only channel end/device end/incorrect length, it could be an indication that ICKDSF processing was previously aborted while executing on this track.

System Action: ICKDSF continues with the next track. The return code is set to 8.

Operator Response: None.

Programmer Response: An attempt should be made to recover the data on the track if necessary. (This may not be possible because record zero cannot be read.) Inspection of the failing track can then take place with NOPRESERVE specified, to cause all possible recovery actions to take place.

If the volume is part of a dual copy pair, put the volume in simplex state to perform an INSPECT with NOPRESERVE.

Note: No further inspection of this track takes place; no information regarding the condition of this track is retained or included in the map when processing completes.

ICK31066I **PRESERVE RECOVERY FAILED-DATA MAY BE LOST FOR TRACK CCHH=X'cccc hhhh'**

Explanation: This message follows message ICK21047I if the preserved data cannot be successfully written to an alternate track.

System Action: Processing terminates for this command.

Operator Response: None.

Programmer Response: Analysis of the failing CCW, CSW, and sense byte(s) (which accompany the messages) is required to determine the cause of the failure.

When the failing situation has been determined and corrected, an INSPECT of the failing track is required to ensure that the track is in a proper format. Data recovery procedures may be required for the previous data on the track.

ICK31067I **UNABLE TO ESTABLISH PRIMARY AND ALTERNATE ASSOCIATION FOR TRACK CCHH = X'cccc hhhh'**

Explanation: During the Concurrent Media Maintenance process, the HA/R0 of the specified primary track can not be written to associate it to an alternate track due to an I/O error.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: The failing CCW, CSW and SENSE information should be examined to determine the cause of the error.

ICK31070I **DUPLEX PAIR STATE HAS BEEN CHANGED**

Explanation: The state of the duplex pair has been changed (not by ICKDSF) during the direct I/O operation.

System Action: Processing terminates

Operator Response: None.

Programmer Response: Save the ICKDSF output and remember which physical volume (primary or secondary) was processing. Investigate the cause of the state change, take action appropriate to your installation's procedure. If equipment problems are suspected, contact your IBM service representative. Resume the ICKDSF job.

Note: If the volume becomes suspended duplex state, the original primary and secondary volume may be swapped.

ICK31082I **DEVICE TYPE OF THE SPECIFIED UNIT ADDRESS IS INVALID FOR THIS COMMAND**

Explanation: The device type is not acceptable for this command.

System Action: The command terminates.

Operator Response: None.

Programmer Response: A previous message should indicate the device type of the specified unit. The description for the input command should be examined to determine the valid device types for the specified command.

ICK31096I **UNABLE TO READ VOLUME LABEL - CANNOT VERIFY VOLUME**

Explanation: An INSPECT has been requested on a volume that does not contain a volume label and verify is specified, or the volume is online to an MVS operating system.

System Action: Because verification cannot take place without a volume label (and/or the operating system cannot function with an online volume that contains an unreadable volume label), the command terminates.

Operator Response: None.

Programmer Response: Either use the INIT command to write a volume label, rerun the INSPECT command with the NOVERIFY parameter, and/or vary the device offline.

ICK31300I **VERIFICATION FAILED: VOLUME-SERIAL WRONG**

Explanation: The VERIFY parameter was specified and the specified volume serial number does not match the volume serial number found in the volume label.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Ensure that the correct volume is mounted, correct the volume serial number specified in the command, or specify the NOVERIFY parameter. Save the job output and contact your IBM service representative.

ICK31301I **VERIFICATION FAILED: OWNER-ID WRONG**

Explanation: The VERIFY parameter was specified, and the specified owner identification does not match the owner identification found in the volume label.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Ensure that the correct volume is mounted, correct the owner identification specified in the command, or specify the NOVERIFY parameter. Save the job output and contact your IBM service representative.

ICK31303I **UNABLE TO VERIFY AUTHORIZATION FOR PROTECTED DATA SET**

Explanation: An attempt was made to scratch a data set, but the user was not authorized to do so.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Obtain the proper authorization, or reissue the command in the offline mode. Save the job output and contact your IBM service representative.

ICK31304I **SYSTEM OPERATOR DID NOT CONFIRM DATA SET PURGING**

Explanation: The operator replied T to message ICK001D.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Determine if the data may be purged and, if so, reissue the command and reply U to message ICK001D. Save the job output and contact your IBM service representative.

ICK31305I **UNEXPIRED OR PASSWORD PROTECTED DATA SET FOUND ON VOLUME**

Explanation: When attempting to process an online volume using INIT with NOPURGE or INSPECT with NOPRESERVE, unexpired or password-protected data sets were found that prevent initialization or inspection of the volume.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: If the unexpired or password protected data sets can be purged, reissue the INIT command with the PURGE parameter or the INSPECT command with the PRESERVE parameter, or process the volume offline. Save the job output and contact your IBM service representative.

ICK31324I **VOLUME CONTAINS VSAM DATA SET(S)**

Explanation: The volume being processed online contains one or more VSAM data sets.

System Action: The data sets are not destroyed, and the command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Use Access Method Services to delete the VSAM data sets, or initialize the volume offline. Save the job output and contact your IBM service representative.

ICK31325I **OPERATOR REFUSED PURGE PERMISSION**

Explanation: The operator responded T to message ICK003D.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Determine why the request to process was refused, and reissue the command.

ICK31326I **IMPROPER RACF ACCESS AUTHORITY**

Explanation: A volume that is RACF protected cannot be processed unless the user has the proper level of authorization.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Obtain the proper level of authorization, or process the volume in offline mode. Save the job output and contact your IBM service representative.

ICK31327I **NO STORAGE AVAILABLE FOR MAXIMUM TRACK CAPACITY RECORD**

Explanation: No storage was available to build the bit pattern in a main storage buffer that would eventually be written on the volume during surface check.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Specify a larger region size for the job step, and resubmit the job.

ICK31328I **UNABLE TO OBTAIN STORAGE**

Explanation: Dynamic acquisition of storage for control blocks and work areas failed.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Increase storage size and resubmit the job.

ICK31329I **ERROR DURING FREEMAIN**

Explanation: An error occurred during execution of the FREEMAIN macro.

System Action: Processing terminates

Operator Response: None

Programmer Response: Contact your IBM service representative.

ICK31330I **UNIT PARAMETER INVALID**

Explanation: The UNIT parameter has been specified and is invalid in this operating system environment.

System Action: Execution is terminated.

Operator Response: None.

Programmer Response: Check the accepted parameters for the specified command to determine what parameters are valid for this operating system.

ICK31331I **REALADDR PARAMETER INVALID**

Explanation: You specified the REALADDR parameter which is invalid in this operating system environment.

System Action: Execution terminates.

Programmer Response: Check the accepted parameters for the specified command to determine the valid parameters for this operating system.

Operator Response: none.

ICK31335I **SPECIFIED RANGE IS INVALID WHEN USED WITH REALADDR PARAMETER**

Explanation: When you use the INSPECT REALADDR, the specified addresses cannot exceed one cylinder for CKD devices, or one block for FBA devices

System Action: Execution terminates.

Programmer Response: Check the accepted parameters for the specified command to determine the valid parameters.

Operator Response: none.

ICK31396I **TOO MANY DATA CHECKS ON VOLUME**

Explanation: During processing for the specified volume, more data checks were detected than are considered reasonable for this device type.

System Action: The command terminates.

Operator Response: None.

Programmer Response: This message is an indication that an abnormal amount of data checks have occurred for this volume. If the volume was expected to have a large number of data checks, the command can be re-executed. Otherwise, the system programmer might want to seek the aid of the IBM hardware service representative. It might to useful to run an ANALYZE SCAN of the volume and provide that output, in addition to the current ICKDSF output.

ICK31401I **UNABLE TO PROCESS FURTHER**

Explanation: An error occurred that prevents further processing on this device.

This message is issued when path control is used and an error occurs that prevents processing on any remaining paths. It is also issued when a volume in duplex or suspended duplex state changes its state during processing.

System Action: Command processing terminates.

Operator Response: None.

Programmer Response: Examine previous messages to determine the cause of the error.

ICK31403I **ccuu DATA SCAN VALUES INVALID, testing terminated**

Explanation: The relative block number(s), tracks, or cylinders specified by the LIMITS parameter are invalid.

System Action: Data verification is not done.

Operator Response: Specify valid relative block number(s), tracks, or cylinders in the LIMITS parameter, and resubmit the request.

ICK31404I **ccuu VOLUME HAS UNFORMATTED DATA BLOCKS**

Explanation: An attempt was made to read a data block which was not initialized (data field not written).

System Action: After 504 data checks, the ANALYZE command is terminated.

Operator Response: Perform appropriate procedures to recover all desired data from the volume and then reinitialize the volume, using the ICKDSF INIT command specifying the CHECK parameter.

ICK31405I **NO STORAGE AVAILABLE**

Explanation: Dynamic acquisition of storage for work areas and control blocks failed.

System Action: Command processing is terminated.

Operator Response: Increase main storage size.

ICK31410I **MAIN STORAGE NOT AVAILABLE, TESTING TERMINATED**

Explanation: Dynamic acquisition of storage for work areas and control blocks failed.

System Action: ANALYZE command processing is terminated.

Operator Response: Increase main storage size.

ICK31412I **DEVICE NOT READY, TESTING TERMINATED**

Explanation: A condition occurred that caused "Intervention Required" to be posted in the failing CSW sense byte.

System Action: The ANALYZE command is terminated.

Operator Response: Ready the drive, and reissue the command.

ICK31413I DATAVER DATA FORMAT UNACCEPTABLE ON CYLINDER X'cccc'

Explanation: One of the following conditions might have occurred at hexadecimal cylinder X'cccc' on the device:

- The data on the identified cylinder is written in a format unreadable by the standard IBM CCWs. This condition can be further examined and/or corrected using the INIT and/or INSPECT commands.
- A drive error (such as dropping ready) occurred during the test. The condition that caused the drive error is usually intermittent or marginal, and was not detected during the drive tests. Support from your IBM hardware service representative is required.
- The volume under test is also accessed by another program, and the other program erased a record that ANALYZE might be trying to reread. This condition is not probable, but if it occurs, rerun the ANALYZE job.

System Action: ANALYZE processing terminates with a return code of 8.

Operator Response: None.

Programmer Response: See "Explanation." Check subsequent messages for status of drive.

ICK31414I MAIN STORAGE NOT AVAILABLE FOR DRIVE TEST

Explanation: Storage is not available for CCW and work areas.

System Action: Command processing is terminated.

Operator Response: Increase storage size and resubmit the job.

Programmer Response: None.

ICK31501I INVALID DEVICE TYPE SPECIFIED FOR BUILDIX COMMAND

Explanation: A request was made to change the format of a VTOC on a volume whose device type is not supported by the BUILDIX command (for example, a 9332 DASD).

System Action: Execution of the command is terminated.

Operator Response: None.

Programmer Response: Verify that the volume is on a device type supported by the BUILDIX command, and change the JCL or command statement.

ICK31505I ccuu VTOC FORMAT IS CURRENTLY **FORMAT, REQUEST REJECTED

Explanation: The format of the VTOC is currently the same as the format requested in the BUILDIX command statement. "***" identifies the format of the VTOC, either OS or IX.

System Action: Execution of the command is terminated.

Operator Response: None.

Programmer Response: Check the command statement. The format requested must be opposite from the current VTOC format as identified in this message. Be certain that the JCL DD statement correctly identifies the volume. Change the statement(s) where required, and resubmit the job.

ICK31509I ccuu DIRF FLAG SET IN VTOC, BUILDIX CANNOT PROCEED

Explanation: An error occurred during VTOC processing on a previous job, causing the DADSM interrupt flag to be set in the VTOC. The VTOC is not accurate.

System Action: Execution of the command is terminated.

Operator Response: Prepare a job that will cause reconstruction of the VTOC, and run it against the volume. (For example, run an IEFBR14 job to allocate a temporary data set to the volume.) On conclusion of this job, resubmit the BUILDIX command.

Note: The VTOC DIRF bit and the indexed bit (DS4VTOC=5) should never be set on together. If they are, the IEFBR14 job, mentioned in the previous paragraph, cannot correct the VTOC. To correct this condition, you can use the SUPERZAP program, available with your system, to turn the DIRF bit off.

Programmer Response: None.

ICK31510I ccuu BUILDIX REQUEST CANCELLED DUE TO OPERATOR ACTION

Explanation: The operator replied "CANCEL" to a message requiring a response.

System Action: Execution of the command is terminated.

Operator Response: None.

Programmer Response: Check with the operator for the reason for cancellation of the job.

ICK31511I ccuu CVAF ERROR: RETURN CODE= ERROR CONDITION= *****

Explanation: The common VTOC access facility returned to ICKDSF
with a return code indicating either a logical error or a physical error. Return codes have the following meanings:

4, 12
Indicate logical errors

8 Indicates an invalid index structure

16 Indicates an I/O error

The error condition will be printed only for a return code of 4 or 8. For more information on these error conditions, see one of the following publications.

For MVS/ESA, see *MVS/Enterprise System Architecture System-Data Administration.*

For MVS/XA, see *MVS/Extended Architecture System-Data Administration.*

For MVS/370, see *MVS/370 System Programming Library: Data Management.*

System Action: Execution of the command terminates with the following conditions existing, depending on the return code:

4, 8, 12
The volume is left in OS VTOC format.

16 The volume is left as it was before the command was issued.

Operator Response: None.

Programmer Response: Refer to the DADSM program logic manual for a full explanation of CVAF return codes and error condition codes.

ICK31512I ccuu ERROR: SYS1.VTOCIX. IS A VIO DATASET. BUILDIX TERMINATED.

Explanation: The index data set was allocated as a VIO data set and is not supported by the BUILDIX command.

System Action: Execution of the command terminates with a return code of 12. The VTOC is left unchanged.

Operator Response: None.

Programmer Response: Ensure that allocation of the index data set specifies a permanent data set. Check the JCL statement that defines the index data set and change the parameter. Resubmit the job.

ICK31514I INDEXED VTOC FACILITY NOT ON SYSTEM. BUILDIX TERMINATED.

Explanation: A request was made to change a VTOC to IXVTOC format, but the system does not contain indexed VTOC programming support.

System Action: Execution of the command is terminated.

Operator Response: None.

Programmer Response: None.

ICK31515I ccuu BUILDIX COMMAND FAILED.

Explanation: An error occurred that caused execution of the command to be terminated.

System Action: Execution of the command is terminated.

Operator Response: None.

Programmer Response: Check the job output for messages describing the type of failure.

ICK31516I ccuu I/O ERROR DETECTED DURING VTOC CONVERSION: ERROR CODE= x

Explanation: An I/O error occurred during BUILDIX processing. Error codes:

```
1 - Error occurred in reading the
    volume label
2 - Error occurred in reading the
    VTOC
3 - Error occurred in writing the
    VTOC
4 - Error occurred in writing
    index records
5 - Index extent was violated;
    increase index size
```

System Action: Execution of the BUILDIX command is terminated.

Operator Response: Refer the error indication to the system coordinator for problem determination.

Programmer Response: None.

ICK31517I ccuu ERROR: VOLUME IS A DOS STACKED PACK

Explanation: The volume being processed has a VTOC on the first track of the volume. VTOC conversion is not possible on such a volume.

System Action: Execution of the command is terminated.

Operator Response: None

Programmer Response: Correct the problem on the volume, possibly by initializing the volume with an INIT command. Note, however, that this will purge all existing data on the volume.

ICK31518I ccuu ERROR: VOLUME CONTAINS SPLIT CYLINDER EXTENTS

Explanation: It was found that the volume contains one or more shared extent data sets. These are not supported by the BUILDIX command.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

Programmer Response: None.

ICK31519I ccuu ERROR: SYS1.VTOCIX. DATASET NOT FOUND ON VOLUME

Explanation: The index data set could not be found on the volume.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

Programmer Response: Check the job control statements to see if a DD statement exists that will cause allocation of the index data set. If the statement exists, check if the name is specified correctly. Correct the error and resubmit the job.

ICK31520I ccuu ERROR: DUPLICATE INDEX DATASET NAME FOUND ON VOLUME

Explanation: Two data sets were found on the volume that had names beginning with SYS1.VTOCIX. Only one is allowed per volume.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

Programmer Response: Submit a job to scratch one of the data sets, or scratch both data sets if new index allocation is desired.

ICK31521I ccuu ERROR: INDEX DATASET EXTENT NOT CONTIGUOUS

Explanation: This data set was found to occupy more than one extent. The index data set must occupy one, and only one, extent.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

Programmer Response: Scratch the invalid index data set, and resubmit the job with a job control statement that will ensure that only one extent is allocated to the index.

ICK31522I INVALID UNITADDRESS OR DDNAME SPECIFIED

Explanation: The UNITADDRESS or DDNAME is incorrect in the command statement.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: Correct the job control statement, and resubmit the job.

Programmer Response: None.

ICK31523I VTOC ENQUEUE FAILURE

Explanation: ENQ RET=HAVE returned higher than a return code 8 (task does not have resources).

System Action: The command terminates. Processing continues with the next command.

Operator Response: None.

Programmer Response: Resubmit the job when ENQ can be obtained.

ICK31526I CONVERSION TO OSFORMAT COULD NOT COMPLETE SUCCESSFULLY

Explanation: At the conclusion of BUILDIX processing to convert to OSFORMAT, the VTOC indicates an error condition.

System Action: BUILDIX terminates abnormally.

Operator Response: None.

Programmer Response: This message is usually an indication that the OS VTOC on the volume contains an error. The VTOC should be examined to determine the nature of the error.

ICK31528I INDEX DATA SET CANNOT START AT CYLINDER 0, TRACK 0

Explanation: You specified cylinder zero track zero for the index data set location. This is an invalid location.

System Action: BUILDIX processing terminates. None

Operator Response: None.

Programmer Response: Respecify the command using a valid location.

ICK31529I ALLOCATE ERROR: RETURN CODE = xxxx

Explanation: DADSM allocate returned to ICKDSF with a return code other than expected.

System Action: Execution of the BUILDIX command is terminated.

Operator Response: None.

Programmer Response: Refer to the DADSM Diagnosis Reference for a full explanation of DADSM allocate return codes.

ICK31602I INCORRECT DEVICETYPE, MAPALT TERMINATED

Explanation: The device type specified is not supported by the MAPALT command.

System Action: Execution of the MAPALT command is terminated.

Operator Response: Specify the correct device type in the DEVICETYPE keyword of the command statement, and resubmit the job. MAPALT can only be executed on fixed block devices in fixed block mode.

Programmer Response: None.

ICK31603I UNABLE TO OPEN VOLUME

Explanation: The volume that was specified cannot be opened. The ASSGN statement could be missing or invalid, or the channel and unit address could be invalid.

System Action: Execution of the MAPALT command is terminated.

Operator Response: Correct the error, and resubmit the job.

Programmer Response: None.

ICK31604I ccuu LIMITS PARAMETER INVALID AS SPECIFIED, MAPALT TERMINATED

Explanation: The relative block number(s) specified by the LIMITS parameter are invalid.

System Action: Execution of the MAPALT command is terminated.

Operator Response: Correct the value(s) in the LIMITS parameter, and resubmit the job.

ICK31605I ccuu UNRECOVERABLE I/O ERROR DETECTED, MAPALT TERMINATED

Explanation: An unrecoverable I/O error (other than a data check) was encountered.

System Action: Execution of the MAPALT command is terminated.

Operator Response: Check the job output, which will contain diagnostic information to aid in analyzing the error. Execute the ICKDSF ANALYZE command as a problem determination aid, and follow installation procedures for recovery from this type of error.

Programmer Response: None

ICK31607I ccuu MAPALT ABNORMALLY ENDED, REPORT MAY BE INCOMPLETE

Explanation: This message is printed after an error has been encountered that caused execution of the command to be terminated. The report may be incomplete.

System Action: None.

Operator Response: Check previous messages on job output, and follow installation procedures.

Programmer Response: None.

ICK31611I MAIN STORAGE NOT AVAILABLE, MAPALT TERMINATED

Explanation: Dynamic acquisition of storage for control blocks and work areas failed.

System Action: Execution of the MAPALT command is terminated.

Operator Response: Increase main storage size, and resubmit the job.

Programmer Response: None.

ICK31700I VTOC EXTENT INVALID

Explanation: Either the starting or ending block number as calculated from the FBAVTOC parameter is invalid.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the FBAVTOC parameter so the ending parameter is within the device limits, and rerun the job.

ICK31702I AN UNRECOVERABLE I/O ERROR OCCURRED DURING RECLAIM PROCESSING

Explanation: An unrecoverable i/o error occurred during INIT reclaim processing.

System Action: Command processing is terminated.

Operator Response: None.

Programmer Response: Prior messages should be examined (including the CCW, CSW, and sense that caused the I/O) to determine the cause of the failure. The INIT command should be re-run after the problem has been resolved.

Assistance may be required from the IBM service representative. Save the job output and contact your IBM hardware service representative.

ICK31705I ALTERNATE BLOCKS EXHAUSTED

Explanation: A prime block needed an alternate but all available alternate blocks have already been assigned.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reinitialize the volume with RECLAIM specified to free up some alternate blocks. If this is not successful, contact your IBM hardware service representative. Save the job output and contact your IBM hardware service representative.

ICK31706I AN UNRECOVERABLE I/O ERROR OCCURRED DURING SURFACE ANALYSIS

Explanation: An unrecoverable i/o error occurred during INIT surface analysis.

System Action: Command processing is terminated.

Operator Response: None.

Programmer Response: Prior messages should be examined (including the CCW, CSW, and sense that caused the I/O) to determine the cause of the failure. The INIT command should be re-run after the problem has been resolved.

Assistance may be required from the IBM service representative. Save the job output and contact your IBM hardware service representative.

ICK31709I I/O ERROR FORMATTING BLOCK IDENTIFIER

Explanation: An uncorrectable error occurred while formatting the block identifier field of a block on a 3370.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative. Save the job output and contact your IBM hardware service representative.

ICK31710I I/O ERROR FORMATTING BAD BLOCK xxxxxxxxxx

Explanation: An uncorrectable error occurred while formatting the defective block xxxxxxxx.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative. Save the job output and contact your IBM hardware service representative.

ICK31711I CANNOT READ SA INFORMATION

Explanation: Because of an I/O error, the surface analysis information (factory-flagged list) cannot be read.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative. Save the job output and contact your IBM hardware service representative.

ICK31712I INVALID SA INFORMATION FORMAT

Explanation: The data format of SA information (factory-flagged list) is in error. Typically, the end of data is not found.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative. Save the job output and contact your IBM hardware service representative.

ICK31713I CANNOT READ PRIME CYLINDER IDS

Explanation: An uncorrectable I/O error occurred while reading the ID fields of prime blocks.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative. Save the job output and contact your IBM hardware service representative.

ICK31715I SETMODE PARAMETER INVALID FOR THIS DEVICE TYPE

Explanation: The SETMODE parameter of the INSTALL command is only valid for 3390 devices.

System Action: Processing terminates.

Programmer Response: Correct the parameters and rerun the job.

Operator Response: None

ICK31716I INVALID PARAMETER(S) FOR DEVICE TYPE: list of parameters

Explanation: Parameter(s) in the parameter list are invalid for device type being processed. For example, the VTOC parameter is specified for an INIT of an FBA device, or the CHECK parameter is specified for the IBM 3375, 3380, or 3390.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct parameter(s), and rerun the job.

ICK31717I VERIFICATION FAILED: VOL1 LABEL DOES NOT EXIST

Explanation: Verification was requested, but failed because the volume being initialized does not have a VOL1 label to use for the verify. This may indicate this is the wrong volume.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Resolve the conflict, and rerun the job.

ICK31718I INIT FAILED: VOLID NOT SPECIFIED AND I/O ERROR READING VOLUME LABEL

Explanation: The VOLID parameter is not specified, and because of an I/O error, reading the volume label, a volume serial is not available.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Try specifying VOLID. If this is not successful, investigate the cause of the I/O error reading the volume label. Save the job output and contact your IBM hardware service representative.

ICK31722I VERIFICATION FAILED: I/O ERROR READING VOL1 LABEL

Explanation: An uncorrectable I/O error occurred reading the VOL1 label. Verification cannot continue

System Action: Diagnostic information is printed on the output device. The command is terminated. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reinitialize the volume, specifying NOVERIFY and a VOLID. Start recovery procedures for data on the volume. Save the job output and contact your IBM hardware service representative.

ICK31728I FBA MINIDISK NOT SUPPORTED IN THIS ENVIRONMENT

Explanation: Fixed block architecture minidisks are not supported in VSE or MVS environments.

System Action: The command terminates. Processing continues with the next command.

Operator Response: None.

Programmer Response: Execute the command in the standalone version of ICKDSF.

ICK31748I COMMAND CANNOT BE EXECUTED - DEVICE ACCESS LIMITED

Explanation: The current command cannot be executed because certain types of access are prohibited for the device you have specified. For example, a diagnostic control CCW cannot be issued for a minidisk.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Check that the command you issued is compatible with the specified device.

ICK31749I DEVICE TYPE NOT SUPPORTED IN THIS ENVIRONMENT

Explanation: Fixed block architecture devices are not supported in the MVS environment.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Execute the command in the standalone or VSE version of ICKDSF. Save the output and contact your IBM service representative..

ICK31750I TRACKS OR ALLTRACKS PARAMETER REQUIRED FOR CKD DEVICES

Explanation: BLOCKS was specified for a count-key-data device. You must specify either TRACKS or ALLTRACKS for these devices.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Resubmit the job, specifying either TRACKS or ALLTRACKS. Save the output and contact your IBM service representative.

ICK31751I BLOCKS PARAMETER REQUIRED FOR FBA DEVICE

Explanation: TRACKS OR ALLTRACKS was specified for a fixed block architecture device. You must specify BLOCKS for these devices.

System Action: The command terminates. ICKDSF processing continues with the next command.

Operator Response: None.

Programmer Response: Resubmit the job, specifying BLOCKS. Save the output and contact your IBM service representative.

ICK31753I **NO VALID BLOCK NUMBERS SPECIFIED**

Explanation: All the block numbers specified by the BLOCKS parameters were invalid. This message is preceded by one or more ICK11752I messages.

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Resubmit the job, specifying the correct block number(s) in the BLOCKS parameter. Save the output and contact your IBM service representative.

ICK31756I **READ FOR PRESERVE OF BLOCK xxxxxxxx FAILED: UNRECOVERABLE I/O ERROR**

Explanation: The user data on block xxxxxxxx could not be read because of unrecoverable I/O errors.

System Action: Diagnostic information is printed on the output device and processing of the block is terminated to prevent loss of the user data on the block. Command processing continues with the next valid block specified in the BLOCKS parameter.

Operator Response: None.

Programmer Response: None. Save the job output and contact your IBM hardware service representative.

ICK31757I **READ FOR PRESERVE OF BLOCK xxxxxxxx FAILED: INSPECT ECC CORRECTION LOGIC FAILED**

Explanation: The read for the user data on block xxxxxxxx failed with an error correction code (ECC) correctable error, and the ECC correction information in the sense did not correspond to the expected information for the executed CCW chain.

System Action: Diagnostic information is printed on the output device, and processing of the command is terminated. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: None. Save the output and contact your IBM service representative.

ICK31758I **USER DATA ON BLOCK xxxxxxxx LOST**

Explanation: Command processing failed with a permanent error. ICKDSF was unable to restore the user data on block xxxxxxxx.

System Action: The command is terminated. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Start recovery procedures for the data set containing block xxxxxxxx. Save the output and contact your IBM service representative.

ICK31762I **CHECK FUNCTION FOR BLOCK xxxxxxxx FAILED: UNRECOVERABLE I/O ERROR**

Explanation: An unrecoverable I/O error occurred during surface analysis of block xxxxxxxx.

System Action: Diagnostic information is printed on the output device. The command is terminated, and ICKDSF continues with the next command. If you specified PRESERVE, you receive either message ICK31758I or message ICK01759I on the output device to indicate the status of the user data on the block.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM hardware service representative.

ICK31763I **ASSIGN FUNCTION FOR BLOCK xxxxxxxx FAILED: NO ALTERNATE BLOCKS AVAILABLE**

Explanation: An attempt was made to assign an alternate to block xxxxxxxx, and there are no more alternates available.

System Action: The command is terminated. ICKDSF continues with the next command. If you specified PRESERVE, you receive either message ICK31758I or message ICK01759I on the output device to indicate the status of the user data on the block.

Operator Response: None.

Programmer Response: Reinitialize the device. Save the output and contact your IBM service representative.

ICK31764I **ASSIGN FUNCTION FOR BLOCK xxxxxxxx FAILED: FORMAT DEFECTIVE BLOCK ERROR**

Explanation: An unrecoverable error occurred while using the format defective block CCW chain to assign a new alternate to block xxxxxxxx.

System Action: Diagnostic information is printed on the output device. The command is terminated, and ICKDSF continues with the next command. If you specified PRESERVE, you receive either message ICK31758I or message ICK01759I on the output device to indicate the status of the user data on the block.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM hardware service representative.

ICK31766I **ASSIGN FUNCTION FOR BLOCK xxxxxxxx FAILED: NO NON-DEFECTIVE ALTERNATES FOUND**

Explanation: The format defective block CCW chain was retried 10 times for block xxxxxxxx and all ten assigned alternates failed surface analysis.

System Action: The command is terminated, and ICKDSF continues with the next command. If you specified PRESERVE, you receive either message ICK31758I or message ICK01759I on the output device to indicate the status of the user data on the block.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM hardware service representative.

ICK31767I ASSIGN FUNCTION FOR BLOCK xxxxxxxx FAILED: UNRECOVERABLE I/O ERROR OCCURRED DURING SURFACE ANALYSIS

Explanation: An unrecoverable I/O error occurred during surface analysis of the alternate assigned to block xxxxxxxx.

System Action: Diagnostic information is printed on the output device. The command is terminated and ICKDSF continues with the next command. If you specified PRESERVE, you receive either message ICK31758I or message ICK01759I on the output device to indicate the status of the user data on the block.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM hardware service representative.

ICK31768I INVALID LOGICAL AND PHYSICAL DEVICE COMBINATION FOR REQUESTED FUNCTION

Explanation: The logical and physical device types were not equal. This was determined from the information returned from the sense ID (Sense I/O Type) CCW. Emulation of fixed block architecture devices is not supported by ICKDSF.

System Action: The command is terminated, and ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Verify the device configuration is supported by ICKDSF. Save the output and contact your IBM service representative.

ICK31769I DEVICE BLOCK SIZE OF nnnn NOT SUPPORTED

Explanation: The block size (nnnn) information returned by the device from a read device characteristics CCW does not equal 512.

System Action: The command is terminated, and ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Save the job output and contact your IBM hardware service representative

ICK31772I INSUFFICIENT STORAGE AVAILABLE TO READ VTOC

Explanation: Dynamic acquisition of storage for an input buffer failed.

System Action: The command is terminated and ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Increase the amount of storage available for GETMAIN/GETVIS. Save the output and contact your IBM service representative.

ICK31773I VOL1 LABEL NOT FOUND

Explanation: An online volume does not have a VOL1 label.

System Action: The command is terminated, and ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Initialize the volume, or rerun the command in the stand-alone version of ICKDSF.

ICK31774I I/O ERROR READING VOL1 LABEL

Explanation: A permanent I/O error occurred reading the VOL1 label.

System Action: Diagnostic information is printed on the output device. The command is terminated, and ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Reinitialize the volume, and start recovery procedures for the data on the volume. The INIT command for reinitialization must specify the NOVERIFY and VOLID parameters. Save the job output and contact your IBM hardware service representative.

ICK31775 DATAVER: DATA CHECK EXCEEDED THRESHOLD

Explanation: The number of data checks exceeded the limit set for the specified device. For FBA devices, this limit is 504. For CKD devices, this limit is equivalent to the number of alternate tracks for this device, or 50, whichever is larger.

System Action: Processing terminates with a return code of 12.

Operator Response: None.

Programmer Response: Save the console output and the printer output. Take the action appropriate to your installation procedures for determining if an equipment problem is suspected. If the problem is determined to be equipment-related, contact your IBM hardware service representative.

ICK31776I dataset IS A RACF-PROTECTED DATA SET, BUT RACF IS INACTIVE

Explanation: The named data set is marked as RACF protected, but RACF is not active on the system. This precludes ICKDSF from checking on the user's authority to alter the data set.

System Action: Command processing is terminated after the security function is complete.

Operator Response: None.

Programmer Response: Activate RACF on the system or run in offline mode.

ICK31777I UNRECOVERABLE I/O ERROR READING THE VTOC

Explanation: The ICKDSF security function tried to read the VTOC and an unrecoverable I/O error occurred.

System Action: Command processing is halted and the next command, if any, is processed.

Operator Response: None.

Programmer Response: Investigate the cause of the I/O error. If required, run the command in an offline mode or stand-alone version. Save the job output and contact your IBM hardware service representative.

ICK31779I **dataset IS A RACF-PROTECTED DATA SET, BUT NO RACF PROFILE EXISTS**

Explanation: The named data set is marked as RACF protected but the RACF data set does not contain a profile for the named data set.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: Contact the system RACF administrator. If required, run the command in an offline mode or the stand-alone version of ICKDSF.

ICK31780I **dataset IS A RACF-PROTECTED DATA SET, USER IS NOT AUTHORIZED**

Explanation: The named data set is RACF protected and the user does not have authority to alter the data set.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: Contact the system RACF administrator.

ICK31782I **dataset IS A PASSWORD PROTECTED DATA SET, NO PASSWORD GIVEN**

Explanation: The named data set is password protected but the user gave no password for it.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: Supply a password for the named data set, using the PASSWORDS parameter, and rerun the job.

ICK31783I **dataset IS A PASSWORD PROTECTED DATA SET, USER HAS NO ALTER AUTHORITY**

Explanation: The named data set is password protected and the password supplied by the user does not give authority to alter the data set.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: Supply the correct password and rerun the job.

ICK31784I **dataset IS A PASSWORD PROTECTED DATA SET, WRONG PASSWORD GIVEN**

Explanation: The named data set is password protected and the password supplied by the user for this data set is wrong.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: Supply the correct password and rerun.

ICK31785I **USER SECURITY EXIT ROUTINE RETURNED AN INVALID CODE = X'code'**

Explanation: The user security exit returned a code other than the codes documented in Appendix G, "User Security Exit Module" on page 357, of this manual.

System Action: Command processing is terminated.

Operator Response: None.

Programmer Response: Contact the owner of your installation's user security exit routine for ICKDSF.

ICK31786I **dataset IS A PASSWORD PROTECTED DATA SET, USER EXIT REJECTS DATA SET**

Explanation: The named data set is password protected and the user security exit module indicated that the user should not be allowed to alter this data set.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: Consult the owner of your installation's user security exit module.

ICK31787I **TRACK X'00000000' CANNOT BE INSPECTED WITH "NOPRESERVE"**

Explanation: ICKDSF does not allow INSPECTing cylinder 0, track 0 in an online mode with the NOPRESERVE option.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: If required, run in an offline mode or in a stand-alone version of ICKDSF.

ICK31788I **TRACK X'cccc hhhh' IS CONTAINED IN THE VTOC**

Explanation: The track identified in the message is contained in the volume table of contents and cannot be INSPECTed with NOPRESERVE.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: If required, run the job in an offline mode or in the stand-alone version of ICKDSF.

ICK31789I **VOLUME volser IS RACF-PROTECTED AND THE USER HAS INSUFFICIENT ACCESS AUTHORITY**

Explanation: The named volume is RACF-protected and the user does not have authority to alter its contents.

System Action: Command processing is halted and the next command, if any, is processed.

Operator Response: None.

Programmer Response: Consult the RACF administrator for your installation.

ICK31790I **dataset IS A PASSWORD PROTECTED DATA SET, UNRECOVERABLE I/O ERROR IN PASSWORD DATA SET**

Explanation: An unrecoverable I/O error occurred in the system password data set while verifying the user's authority to modify the named data set.

System Action: Command processing is halted and the next command, if any, is processed.

Operator Response: None.

Programmer Response: Consult the system programmer at your installation.

ICK31791I **dataset IS AN UNEXPIRED DATA SET, USER NOT AUTHORIZED**

Explanation: The expiration date for the named data set has not yet passed, and either the PURGE parameter was not specified on the INIT command, or the command is INSPECT with NOPRESERVE.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: If INIT is used, specify the PURGE parameter and rerun. If INSPECT is used, run with PRESERVE.

ICK31792I **dataset IS A VSAM DATA SET, USER NOT AUTHORIZED**

Explanation: The named data set is a VSAM data set and either the PURGE parameter was not specified on the INIT command, or NOPRESERVE was specified on the INSPECT command.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: If INIT is used, specify PURGE and rerun the job. If INSPECT is used, run with PRESERVE.

ICK31793I **dataset IS A PASSWORD/VSAM/UNEXPIRED DATA SET, USER EXIT TERMINATES COMMAND**

Explanation: The named data set is a password protected, VSAM or unexpired data set and the user security exit module has indicated that ICKDSF should terminate command processing.

System Action: Command processing is terminated and the next command, if any, is processed.

Operator Response: None.

Programmer Response: Consult the owner of the user security exit module at your installation.

ICK31794I **dataset: UNRECOVERABLE I/O ERROR READING FORMAT 2/ FORMAT 3 DSCB**

Explanation: An unrecoverable I/O error occurred while reading a Format 2/Format 3 data set label for the named data set.

System Action: Command processing is halted and the next command, if any, is processed.

Operator Response: None.

Programmer Response: Consult the system programmer at your installation and, if required, run in an offline mode or in the stand-alone version.

ICK31796I **TRACK INSIDE VTOC INDEX DATASET CANNOT BE INSPECTED WITH "NOPRESERVE"**

Explanation: One or more tracks to be inspected are contained in the INDEX VTOC data set and cannot be inspected with NOPRESERVE. If the TRACKS parameter is specified, the preceding ICK01795I messages identify the tracks you specified that are inside the INDEX VTOC data set.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: If required, run in an offline mode or the stand-alone version.

ICK31797I **TRACKS INSIDE VTOC CANNOT BE INSPECTED WITH "NOPRESERVE"**

Explanation: One or more tracks to be inspected are contained in the VTOC and cannot be inspected with NOPRESERVE.

System Action: Command processing is halted after the security function is complete.

Operator Response: None.

Programmer Response: If required, run in an offline mode or the stand-alone version.

ICK31799I **OPERATOR REFUSED PERMISSION TO RECLAIM SYSTEM RESERVED AREA ON *ccuu***

Explanation: The operator replied T to message ICK177D

System Action: The command terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Determine why the requested processing was refused and resubmit the command.

ICK31827I **UNABLE TO DO CONCURRENT PRESERVE ON TRACK CCHH = X'xxxx xxxx'**

Explanation: The *Concurrent Media Maintenance* process was unable to guarantee that it has read the unmodified data from the track. The number of records or the format of data records are consistently changing. This problem may be caused by the user program consistently reformatting the track while the INSPECT process is preserving the data. It might also be caused by a hardware error.

System Action: The process terminated.

Operator Response: None.

Programmer Response: This message is preceded with ICK11827. Re-run the job and ensure that there is no other application accessing the same volume during the INSPECT process. If this message or ICK11827 persists, contact your IBM service representative.

ICK31837I **IPL TEXT EXISTS ON VOLUME. OPERATOR REFUSED PERMISSION TO OVERLAY**

Explanation: An attempt was made to replace IPL text on a volume that already contains IPL text. The operator refused permission to replace the IPL text.

System Action: The command terminates.

Operator Response: None.

Programmer Response: Either specify a volume that does not contain IPL text, or instruct the system operator to allow permission.

ICK31841I **FORMAT FC STATUS CANNOT BE DETERMINED FOR DEVICE ccuu**

Explanation: The RESETICD function did not complete due to an I/O error. This problem may be caused by a hardware error. It might also be that the device is not in the "FC" status and therefore does not need to be reset.

System Action: ICKDSF is terminated.

Operator Response: None.

Programmer Response: Refer to the *Storage Subsystem Library 3990 Manuals*. Examine the CCW, CSW, and sense information to determine the cause of the error and take action appropriate to your installation's procedures.

ICK31851I **EXTENDED CKD FUNCTIONS CANNOT BE ACTIVATED - COMMAND TERMINATED**

Explanation: The device has never been online to the operating system, and the extended CKD functions (for example, cache logic) have not been activated. ICKDSF surface checking functions cannot be performed.

System Action: Execution of the command is terminated.

Operator Response: The device must be varied online and varied offline (or varied online and the job can be run online) in order to activate the extended CKD functions.

Programmer Response: When the device cannot be varied online (that is, no volume label or duplicate volume label) this procedure will have gone far enough to activate the extended CKD logic, and the job can be rerun offline successfully.

ICK32106I **RANGE SPECIFICATIONS INVALID**

Explanation: The combination and/or values of the parameters specifying the current range are invalid.

Programmer Response: Correct the parameters, and reexecute the job.

ICK32110I **TOO MANY TRACKS IN SPECIFIED RANGE FOR SKIP DISPLACEMENT FUNCTION**

Explanation: The total number of tracks to be processed is greater than the maximum allowed for SKIP processing.

Programmer Response: Reexecute the job with a smaller range, or execute the job with the NOSKIP parameter.

ICK32111I **TOO MANY TRACKS IN SPECIFIED RANGE**

Explanation: The total number of tracks in the specified range is greater than the maximum allowed for INSPECT processing.

Programmer Response: Reexecute the job with a smaller range, or save the data if necessary and use the INITialize command.

ICK32112I **UNABLE TO SET/RESET/READ CHECKPOINTED DATA, PROCESSING TERMINATES**

Explanation: The current INSPECT process is unable to set/reset/read the checkpoint data because of an I/O error. The recovery process for the error is exhausted.

System Action: The current INSPECT process terminates.

Operator Response: None.

Programmer Response: If it is determined that there is no other ICKDSF job processing the same device from a different processor, the INSPECT job can be re-submitted using the FORCE parameter.

ICK32120I **PRESERVE BACKUP FUNCTION CANNOT BE ACTIVATED**

Explanation: The PRESERVE backup function of the INSPECT command cannot be activated. This message follows ICK12118I.

System Action: Processing terminates.

Programmer Response: The job can be rerun, using HOLDIT.

If the error is temporary, the job can be rerun.

ICK32121I **CANNOT WRITE DATA ON THE PRESERVE TRACK**

Explanation: An I/O error was encountered while backing up user data on the preserve track.

System Action: Processing terminates.

Programmer Response: The job can be rerun, using HOLDIT.

If the error is temporary, the job can be rerun.

ICK32122I **PRESERVE BACKUP FUNCTION CANCELLED**

Explanation: An I/O error was encountered while performing the PRESERVE backup function. This message is preceded by a message indicating the reason for cancellation.

System Action: Processing terminates.

Programmer Response: The job can be rerun, using HOLDIT.

If the error is temporary, the job can be rerun.

ICK32127I DATA CANNOT BE RECOVERED, INSPECT TERMINATED

Explanation: This message is issued if you reply "t" to ICK22158I, ICK22130I, ICK12126I or ICK12159I.

ICK32160I CANNOT WRITE DATA ON THE PRESERVE BLOCK

Explanation: An I/O error was encountered while backing up user data on the preserve block.

System Action: Processing terminates.

Programmer Response: The job can be rerun using HOLDIT.

If the error is temporary, the job can be rerun.

ICK32165I TOO MANY BLOCKS IN SPECIFIED RANGE

Explanation: The total number of blocks in the specified range is greater than the maximum allowed for INSPECT processing.

Programmer Response: Reexecute the job with a smaller range, or save the data if necessary and use the INITialize command.

ICK32166I ERROR NOT A DATA CHECK-PROCESSING TERMINATED

Explanation: An I/O error occurred that was not a data check. See the previous messages, CCW, CSW, and sense information to determine the cause of the error.

System Action: The command terminates. Processing continues with the next command.

Programmer Response: Examine the previous messages, CCW, CSW, and sense information to determine the cause of the I/O error.

Operator Response: None.

ICK32167I ALTERNATE TRACK CANNOT BE ASSIGNED FOR TRACK CCHH=X'cccc hhhh'

Explanation: During execution of the INSPECT command to unconditionally assign alternate tracks, there was no alternate available for X'cccc hhhh' No assignment for this track has taken place.

System Action: Processing terminates.

Programmer Response: The alternate tracks are exhausted. If this or subsequent tracks require unconditional alternate track assignment, then INSPECT with RECLAIM should be run for tracks that already have alternates assigned to them. If any of these previous tracks can be reclaimed, then the job to assign this track an alternate unconditionally can be run. Note that the tracks that currently have alternate tracks assigned can be found in the map that is produced at the end of INSPECT processing when MAP is specified. If MAP is not specified, run INSPECT NOCHECK NOASSIGN MAP TRACKS(xxxx,xxxx) for any track, and a map is produced.

Operator Response: None.

ICK32170I - CONTINUE DATA EXISTS FOR THIS VOLUME - RUN INITIALIZE

Explanation: For this INSPECT job, it has been determined that a previous INIT job did not complete. For CKD devices, it is very likely that there exists a track on the volume that is unusable by the operating system. The volume label and the VTOC have not been written on the volume.

System Action: Processing terminates.

Programmer Response: Run an INIT (at least at the minimal level) before rerunning this INSPECT job.

Operator Response: None.

ICK32171I PREVIOUS COMMAND DID NOT COMPLETE

Explanation: An INSTALL/REVALidate command did not complete and the volume has been left in an unusable state. This command will be inhibited until the condition is corrected.

System Action: Processing terminates.

Programmer Response: Execute a command that ensures that the device is returned to a usable condition (for example, INSTALL, medial initialization, or REVALidate).

Operator Response: None.

ICK32175I UNABLE TO SET/RESET MODE

Explanation: During INSTALL command processing, an I/O error occurred while switching the device to 3390 mode or 3380 track compatibility mode.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Examine the csw, ccw, and sense information in the previous message to determine the cause of the error.

ICK32176I DATA CHECK THRESHOLD EXCEEDED ON FOLLOWING HEADS:

Explanation: The data error rate on one or more heads exceeded the data check error rate threshold criterion for the device. Heads in error were printed with the message.

System Action: The command terminates. ICKDSF continues with the next command.

Programmer Response: Take action appropriate to your installation's procedures for handling the suspected equipment problems. If the problem cannot be determined, contact your IBM service representative.

Operator Response: None.

ICK32177I DATA SETS EXIST ON DFSMS-MANAGED VOLUME

Explanation: You are performing an online INIT and there are data sets on the volume you are attempting to initialize as a Data Facility Storage Management Subsystem (DFSMS) managed volume.

System Action: Processing terminates

Operator Response: None

Programmer Response: Delete the data sets from the volume or perform the INIT offline.

ICK32178I **UNRECOVERABLE TRACK ON CE/SA CYLINDER, CCHH = X'xxxx xxxx'**

Explanation: All attempts to write the Home address and/or record zero on the indicated track failed.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: The failing, CCW, CSW, and sense should be examined to determine the cause of the error. Contact the IBM hardware service representative to aid in resolving the problem.

ICK32203I **INSUFFICIENT STORAGE AVAILABLE FOR DATA SET ENQUEUE -- FUNCTION TERMINATED**

Explanation: GETMAIN failed while obtaining the storage necessary to process the data set enqueue procedures.

Because TOLERATE(ENQFAIL) was not specified, processing terminates.

System Action: INSPECT processing terminates.

Programmer Response: Either execute the job, providing more storage, rerun the job specifying TOLERATE(ENQFAIL), or execute the job specifying fewer total tracks.

ICK32310I **FUNCTION NOT SUPPORTED FOR READ ONLY MINIDISK**

Explanation: The ICKDSF command function you requested cannot be performed on a read only minidisk.

System Action: The command terminates. ICKDSF continues with the next command.

Programmer Response: none.

Operator Response: none.

ICK32315I **DEVICE ADDRESS COULD NOT BE FOUND TO ESTABLISH A LINK**

Explanation: For the minidisk media maintenance function, ICKDSF is to obtain an unused virtual address to establish a full-pack overlay link. Address range 05FF to 0000 in descending order was checked and and none was found available.

System Action: The command terminates. ICKDSF continues with the next command.

Programmer Response: use CP DETACH to detach an unused virtual address, then re-execute the command.

Operator Response: None.

ICK32316I **SYSTEM SUPPORT IS UNAVAILABLE FOR SPECIFIED FUNCTION**

Explanation: The required system support code from VM/SP, VM/HPO VM/XA, or VM/ESA for the CMS version of ICKDSF does not exist.

System Action: The command terminates.

Programmer Response: Check with your installation to determine if the support is provided for your environment. If the support is available, ensure it is installed before running the job.

Operator Response: None.

ICK32317I **ccuu DEVICE DOES NOT EXIST**

Explanation: The device address you specified does not exist.

System Action: The command terminates.

Programmer Response: Provide the correct address and re-run the job.

Operator Response: None

ICK32318I **CCUU UNABLE TO DETERMINE SUB-CHANNEL ID FOR THE SPECIFIED DEVICE**

Explanation: An attempt has been made to get the sub-channel ID for the device specified by *ccuu* by issuing the CMS macro, GETSID. However, no matching sub-channel ID was found.

System Action: Processing terminates. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: None.

ICK32345I **CYLINDER OR BLOCK INFORMATION IS REQUIRED FOR THE SPECIFIED FUNCTION**

Explanation: When you specify REALADDR, you must also specify the cylinder or block address.

System Action: The command terminates.

Programmer Response: Provide a range, or specific cylinder/track/block for the command you specified.

Operator Response: None

ICK32347I **REPLY "T" HAS BEEN ISSUED FOR ICKnnnnn.**

Explanation: ICKDSF was invoked using the invocation parameter list and CONSOLE is not the INPUT device. Reply "T" is assumed to the previous ICKnnnnn message

System Action: Processing terminates.

Operator Response: Rerun job without invocation parameter list or use CONSOLE as INPUT device.

Programmer Response: None.

ICK32364I **CAN NOT OBTAIN ACCESS TO DEVICE ccuu**
RC= nnnn
"failing reason"

Explanation: The DIAGNOSE E4 FCN 00, 01, 02 or 03 enables ICKDSF to obtain minidisk information or to establish a full-pack overlay link to the specified user's minidisk or real device defined in the system. The operation failed with the CP return code RC=nnnn. The "failing reason" line of the message gives some common reasons for the failure.

- RC=0005 USER DOES NOT HAVE DIRECTORY OR RACF AUTHORIZATION
- RC=0101 - VIRTUAL DEVICE ADDRESS INVALID -

  The device number does not identify a device in the current I/O configuration of the virtual machine specified by the input userid.
- RC=0102 VIRTUAL DEVICE ADDRESS IS NOT ACCEPTED. IT DOES NOT REPRESENT A MINIDISK

- RC=0103 REAL VOLUME WHICH CONTAINS THE MINI DISK IS NOT MOUNTED
- RC=0200 USERID NOT DEFINED TO THE SYSTEM
- RC=0201 DEVICE DOES NOT IDENTIFY A VIRTUAL DEVICE IN THE DIRECTORY FOR THE INPUT USERID
- RC=0202 VIRTUAL DEVICE ADDRESS IS NOT ACCEPTED IT DOES NOT REPRESENT A MINIDISK
- RC=0203 REAL VOLUME WHICH CONTAINS THE MINI DISK IS NOT MOUNTED
- RC=0300 USERID NOT DEFINED TO THE SYSTEM
- RC=0301 DEVICE DOES NOT IDENTIFY A VIRTUAL DEVICE IN THE DIRECTOR FOR THE INPUT USERID
- RC=0302 VIRTUAL DEVICE ADDRESS IS NOT ACCEPTED IT DOES NOT REPRSENT A MINIDISK
- RC=0305 A FULL PACK OVERLAY ALREADY EXISTS

  Only one full pack overlay is allowed on a volume at any time.
- RC=0306 THE FULL PACK OVERLAY REQUEST INCLUDES CP PAGING, SPOOLING, DIRECTORY, T-DISK OR DUMP AREAS
- RC=0307 THE FULL PACK OVERLAY REQUEST FAILED BECAUSE THE MINIDISK HAS EXISTING LINKS TO IT USERID = NNNNNN

  The target minidisk has a write link to it. Have the user with the LINK remove it and rerun the job. USERID = NNNNNN specifies the user who has the existing link to the volume.
- RC=0402 - INPUT REAL DEVICE IS NOT ACCEPTED BECAUSE IT IDENTIFIES A NON DASD DEVICE
- RC=0403 DEVICE OFFLINE OR NOT MOUNTED

  In a VM/ESA environment, this return code can also be received if the device is a FREE device (not assigned to the system). In this case, ATTACH the device to the system.
- RC=0405 A FULL PACK OVERLAY ALREADY EXISTS

  Only one full pack overlay is allowed on a volume at any time.
- RC=0406 THE FULL PACK OVERLAY REQUEST INCLUDES CP PAGING, SPOOLING, DIRECTORY, T-DISK OR DUMP AREAS
- RC=0407 THE FULL PACK OVERLAY REQUEST FAILED BECAUSE THE MINIDISK HAS EXISTING LINKS TO IT USERID = NNNNNN

  The target minidisk has a write link to it. Have the user who is LINKed, remove it and rerun the job. USERID = NNNNNN specifies the user who has the existing link to the volume.
- RC=0410 CYLINDER OR BLOCK NUMBER INVALID

  CP has determined the cylinder or block number is invalid. If the cylinder or block is valid for the device type, check the CP directory to make sure this device type is correctly properly defined.

System Action: The command terminates. ICKDSF continues with the next command.

Programmer Response: Correct the problem and rerun the job.

Operator Response: Correct the problem and rerun the job.

ICK33000I *volser* CYL|PAGE ZERO NOT IN CP(VMXA|VM370) FORMAT

Explanation: A function was requested that requires the unit to be formatted. The unit is not formatted, or the unit is in VM/370 format and CPVOLUME is operating in VM/XA mode, or the unit is in VM/XA format and CPVOLUME is operating in VM/370 mode (VM/XA includes VM/ESA).

System Action: processing is terminated.

Operator Response: Format the unit, or specify MODE(370) or specify MODE(XA).

Programmer Response: None.

ICK33010I type(xxxx,yyyy) START CYL|PAGE HIGHER THAN END CYL|PAGE

Explanation: A range or allocation statement contained a start value higher than the end value.

System Action: If the statement in error is RANGE, processing is terminated. If the statement in error is an allocation statement, the allocation map will not be updated.

Operator Response: Correct the statement in error.

Programmer Response: None.

ICK33020I type(xxxx,yyyy) START CYL|PAGE HIGHER THAN nnnn

Explanation: A range or allocation statement contained an ending value(yyyy) higher than the highest cylinder/page(nnnn) on the unit.

System Action: If the statement in error is RANGE, processing is terminated. If the statement in error is an allocation statement, the allocation map will not be updated.

Operator Response: Correct the statement in error.

Programmer Response: None.

ICK33030I ALLOCATION MAP IS INVALID

Explanation: The allocation map contains data that is logically inconsistent.

System Action: The allocation map will not be updated and processing is terminated.

Operator Response: The allocation map must be recreated by executing the CPVOLUME FORMAT function with a starting range of 0.

Programmer Response: None.

ICK33040I ALLOCATION MAP IS FULL

Explanation: The allocation map has reached the upper limit of 85 allocation ranges.

System Action: The allocation map will not be updated and processing is terminated.

Operator Response: Review the allocation map for the unit and reduce fragmentation by combining or eliminating allocation ranges.

Programmer Response: None.

ICK33050I **ALLOCATION TYPE "type" IS NOT SUPPORTED IN VMXA|VM370 MODE**

Explanation: The allocation type specified is not supported in VM/XA (includes VM/ESA) or VM/370 mode. For example, SPOL space is supported in VM/XA but not in VM/370. OVRD space is supported in VM/370 but not in VM/XA.

System Action: The allocation map will not be updated.

Operator Response: Change the allocation type or specify the appropriate mode (XA or 370).

Programmer Response: None.

ICK33060I **ALLOCATION TYPE "type" IS NOT SUPPORTED ON 3880-xx**

Explanation: The allocation type specified is not supported for 3880-11 or 3880-21 paging subsystems. The only supported allocation types are PAGE and PERM.

System Action: The allocation map will not be updated.

Operator Response: Change the allocation type or use a different device type.

Programmer Response: None.

ICK33080I **PREVIOUS cmdtype COMMAND DID NOT COMPLETE**

Explanation: An INITIALIZE, INSTALL, INSPECT or REVALidate command was interrupted and did not complete.

System Action: CPVOLUME processing is prohibited.

Operator Response: Complete the interrupted command.

Programmer Response: None.

ICK33090I **FBA DEVICES MUST BE PROCESSED IN VM/370 MODE**

Explanation: CPVOLUME command formats FBA volumes for use on VM/370 only. If you execute the CPVOLUME command from an XA mode virtual machine you must specify the MODE(370) parameter.

System Action: The command terminates. Processing continues with the next command.

Operator Response: None.

Programmer Response: Resubmit the job specifying MODE(370).

ICK33100I **nnnn CYLINDER MINIDISK IS INVALID**

Explanation: *nnnn* exceeds the maximum number of cylinders that the allocation map allows. The capacity of the allocation map is 4096.

System Action: The command terminates. Processing continues with the next command.

Operator Response: None.

Programmer Response: Correct the value of the cylinders for the device in the MIMIC(MINI) parameter, and resubmit the job.

ICK33101I **CONCURRENT MEDIA MAINTENANCE FUNCTION CANCELLED**

Explanation: Concurrent media maintenance processing is cancelled because of an error. Examine the previous message to determine the error.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: See previous message issued.

ICK33102I **CONCURRENT MEDIA MAINTENANCE FUNCTION CAN NOT BE ACTIVATED**

Explanation: The Concurrent Media Maintenance function can not be activated because the required control unit microcode support does not exist or because a failure occurred.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative.

ICK33103I **UNABLE TO RESET MEDIA MAINTENANCE RESERVE STATE**

Explanation: The device cannot be reset to a normal state when:

- ICKDSF is re-invoked
- the Concurrent Media Maintenance function cannot be continued because of an I/O error which occurred while the device is being reset from a media maintenance reserve state
- the media maintenance reserve state cannot be reset after an INSTALL command.

System Action: Processing terminates. The device is left in the media reserve state. All future I/O to the device will result an I/O error until the problem is solved.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative and then re-submit the job after the problem is resolved.

ICK33104I **DEVICE ccuu INACCESSIBLE**

Explanation: The Concurrent Media Maintenance function can not be continued due to an I/O error while resetting the device from a media reserve state to a normal state. The device can not be accessed by user programs.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Contact your IBM hardware service representative.

ICK33105I **UNABLE TO RECOVER CHECKPOINT FAILURE FOR ANOTHER CPU**

Explanation: The current INSPECT process detected that checkpoint data exists from another processor. Since the FORCE parameter is not specified, the current INSPECT process is not allowed to recover the failure.

System Action: The current INSPECT process is terminated.

Operator Response: None.

Programmer Response: If it is determined that there is not another processor working on the device, specify the FORCE parameter and re-submit the job.

ICK33110I FORMATTING TERMINATED DUE TO MINIDISK ERROR ON CCHH|BLOCK.

Explanation: While formatting, a device error was encountered that requires that the CKD track or FBA block be inspected. CPVOLUME cannot invoke INSPECT for minidisk errors.

System Action: Formatting is terminated.

Operator Response: Refer to "Minidisk Support under CMS" on page 156 (CKD) or "CMS Version Minidisk Support" on page 232 (FBA) for a description of how to INSPECT a minidisk track or block using the USERID or REALADDR parameters. After the CKD track or FBA block has been successfully inspected, restart the format operation.

Programmer Response: None.

ICK33113I NOFILLER IS NOT ALLOWED IN 370 MODE

Explanation: NOFILLER can only be specified if CPVOL is operating in XA mode.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Reissue the CPVOLUME FORMAT command without the NOFILLER parameter.

ICK33114I FORMATTING ON PARTIAL VOLUME IS NOT ALLOWED

Explanation: Formatting a partial volume is not allowed if the current specification is NOFILLER and the volume was previously CPVOL formatted with filler records or the current specification is FILLER and the volume was previously CPVOL formatted without filler records.

System Action: The command terminates. Processing continues with the next command.

Operator Response: None.

Programmer Response: Reissue the CPVOLUME FORMAT command without the RANGE parameter.

ICK33120I "type" IS AN INVALID ALLOCATION TYPE

Explanation: The allocation type specified is unknown for the CPVOL command.

System Action: The command terminates. Processing continues with the next command.

Operator Response: None.

Programmer Response: Correct the allocation type, and resubmit the job.

ICK34015I ERROR COUNT EXCEEDED THRESHOLD

Explanation: The maximum allowable error count has been reached for the specified ICKDSF function. See previous error messages for the nature of the error.

System Action: Processing terminates.

Operator Response: None.

Programmer Response: Contact your IBM service representative.

ICK40227I AN "ELSE" COMMAND APPEARS IMPROPERLY

Explanation: An ELSE clause appeared in the command without a corresponding IF statement.

System Action: The remainder of the command is ignored. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the command syntax, and reissue the command. Save the output and contact your IBM service representative.

ICK40228I AN "END" COMMAND IS INVALID

Explanation: An END statement was encountered without a matching DO statement.

System Action: The remainder of the command is ignored. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the DO-END sequence, and reissue the command. Save the output and contact your IBM service representative.

ICK40229I 'IF' COMMAND HAS INVALID RELATIONAL EXPRESSION

Explanation: The IF-THEN-ELSE statement sequence is incorrect. Only the system variables LASTCC and MAXCC can be specified, and the values must be decimal numbers from 0 through 99999.

System Action: The remainder of the command stream is ignored. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Check the requirements of the IF-THEN-ELSE statement sequence, correct the error, then reissue the command. Save the output and contact your IBM service representative.

ICK40230I "SET" COMMAND HAS INVALID ASSIGNMENT EXPRESSION

Explanation: A SET statement has invalid syntax. Only the system variables LASTCC and MAXCC can be assigned values, and the values must be decimal numbers from 0 through 99999.

System Action: The remainder of the command stream is ignored. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Check the syntax requirements of the SET statement, correct the error, then reissue the command. Save the output and contact your IBM service representative.

ICK40232I IMPROPER OR MISSING "THEN" KEYWORD

Explanation: The THEN clause of the IF-THEN-ELSE command sequence is missing or is misspelled.

System Action: The remainder of the command stream is ignored. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Correct the error, and reissue the command. Save the output and contact your IBM service representative.

ICK40236I INPUT STREAM END-OF-FILE FOUND BEFORE END OF COMMAND

Explanation: An end-of-file condition was encountered while scanning the command. This could be caused by incorrect command-continuation syntax or missing records in the input stream.

System Action: The command terminates.

Operator Response: None.

Programmer Response: Correct the command syntax, or add the missing records, then reissue the command. Save the output and contact your IBM service representative.

ICK40237I TOO MANY LEVELS OF "IF" COMMAND NESTING

Explanation: More than ten IF statements have been nested.

System Action: The remainder of the command stream is ignored. ICKDSF continues with the next command.

Operator Response: None.

Programmer Response: Restructure the command stream to avoid the excessive nesting, and reissue the command. Save the output and contact your IBM service representative.

ICK40300I ERROR READING INPUT DATA FROM "fn ft fm" RC= nnnn

Explanation: An error condition was detected with RC=nnnn when using CMS macro FSREAD to read a record from the specified CMS file.

System Action: The command terminates.

Programmer Response: For an explanation of the return code, see the FSREAD macro in *CMS Macros and Function Reference*

Operator Response: None.

ICK40305I ERROR READING INPUT DATA FROM VIRTUAL READER RC= nnnn

Explanation: An error condition has been detected (RC=nnnn) when the CMS macro RDCARD to read a record from a virtual reader file.

System Action: The command terminates.

Programmer Response: For an explanation of the return code, see the RDCARD macro in *CMS Macros and Function Reference*

Operator Response: None.

ICK40310I ERROR WRITING OUTPUT DATA TO "fn ft fm" RC= nnnn

Explanation: An error condition has been detected (RC=nnnn) when the CMS macro FSWRITE is issued to write a record to the specified CMS file.

System Action: The command terminates.

Programmer Response: For an explanation of the return code, see the FSWRITE macro in *CMS Macros and Function Reference*

Operator Response: none.

ICK40315I ERROR WRITING OUTPUT DATA TO VIRTUAL PRINTER RC= nnnn

Explanation: An error condition has been detected (RC=nnnn) when the CMS macro PRINTL is issued to print a line to a virtual printer.

System Action: The command terminates.

Programmer Response: For an explanation of the return code, see the PRINTL macro in *CMS Macros and Function Reference*

Operator Response: None.

ICK40317I ICKDSF IS UNABLE TO PERFORM SPECIFIED FUNCTION

Explanation: ICKDSF was invoked using the CMSinvocation parameter list. An operator response was required to messages ICK12316I and ICK033E, but the specified input device does not allow operator input.

System Action: Processing terminates.

Operator Response: Rerun the job with an input device which allows a response.

Programmer Response: None.

ICK40320I I/O OPERATION INCOMPLETE OR FAILED RC= nnnn

Explanation: An error condition has been detected (RC=nnnn) when the CMS macro HNDINT is issued to handle the I/O interrupt for the DASD I/O operation.

System Action: The command terminates.

Programmer Response: For an explanation of the return code, see HNDINT macro in *CMS Macros and Function Reference*

Operator Response: none.

ICK40999I UABORT CODE nn

Explanation: This message indicates a termination error causing the ICKDSF processor to abort. This situation is usually caused by hardware, program, or system errors. The message appears in the output listing via the write-to-programmer SVC. Code *nn* indicates the nature of the error.

Code	**Meaning**
15	When you attempted to invoke ICKDSF from CMS using the CMS parameter list, the file containing the input data set cannot be found.
19	Invalid input device
24	Text processor's print control table not addressed by the GDT

28 No virtual storage available for:

- Page header line
- Argument lists
- Main title line
- Footing lines
- Print control table (PCT)
- Initialization of the I/O adapter historical data and message area
- Automatic (dynamic) storage for a module which uses preallocated automatic storage
- A GETMAIN/GETVIS request
- Space for STAE control block
- Open control-block allocation
- Device Information Table (DIT)

Note: The message that sufficient storage was not available could not be issued because the SYSPRINT data set is not open.

29 Invalid output device.

32 Request made to process unopened data set

33 Unable to cancel STAE control

36 Processor unable to open SYSPRINT (or whichever DD name is used to denote the processor's standard listing output data set). The SYSIN DD card may be misspelled.

40 Invalid U-macro argument list:

UOPEN, UCLOSE, UPUT,
UGSPACE, UGPOOL, UFPOOL
UTIME
UVOLCHK, UWTO
USTAE

44 Processor is unable to produce a dump (the SNAP system service was not successful: either the DSFDUMP data set could not be opened, or not enough storage was available)

50 Invalid CCW order

52 Module not found for ULOAD

56 Delete error.

59 Terminating error message for message ICK40320I. See the explanation and response for ICK40320I.

68 GETVIS failure.

69 Terminating error message for message ICK40320I. See the explanation and response for ICK40320I.

72 Unsupported device type

80 Invalid ACTIONKEY value

84 A unrecognized I/O error has occurred for the device type

88 Operator replied "T" to message ICK014D

89 DIRECTed I/O incorrect. Contact your IBM service representative.

92 Dynamic device information table (DIT) does not exist.

93 ICKDSF termination for message ICK011E.

96 Equipment check occurred on device that is being processed.

98 Unable to release storage.

99 Unable to get storage.

System Action: ICKDSF terminates.

Operator Response: Notify the system programmer.

Programmer Response: Correct the cause of the error, and restart ICKDSF. Save the job output and contact your IBM hardware service representative

Appendix D. The VTOC Index

The VTOC index is a separate, sequential data set containing four record types that give information on volume and VTOC status. Systems that contain and use indexed VTOC programming support can realize performance improvements in the areas of volume space management and I/O operations to the VTOC.

The INIT and BUILDIX commands will build the VTOC index on eligible count-key-data devices. The INIT command creates space for the index during volume initialization in both operating system and stand-alone versions. The BUILDIX command, which requires that the host operating system contain indexed VTOC programming support, builds VTOC indexes on volumes currently in use on the system. Both commands prepare the VTOC on the target volume to indexed VTOC (IXVTOC) format.

Calculating the Size of the VTOC

To calculate VTOC size, you generally determine the maximum number of data sets that will reside on the volume. The number of VTOC tracks to reserve can be easily calculated by dividing this number by the number of DSCBs per track, rounding to the next higher track.

The number of DSCBs in the VTOC determines the number of data sets or VSAM data spaces that can reside on a volume and is therefore essential information for the DADSM routines that allocate and release space.

The number of DSCBs that will fit on a single track of each type can be found in Figure 25 on page 348.

Calculating the Size of the VTOC Index

The size of the index data set depends upon:

1. The size of the volume (total number of cylinders and tracks)
2. The track length (in bytes)
3. The number of tracks occupied by the VTOC

For the INIT command, the user may calculate the number of tracks to reserve for the index and place that value as the third, optional subparameter of the INDEX parameter; or the third subparameter may be omitted and the program allowed to calculate the size of the index. For the BUILDIX command, the user must calculate the size of the index.

If your data set name lengths are greater than 12, you should compute the size of your VTOC index using the calculations shown following Figure 25 on page 348.

For efficient use of DASD space, it is recommended that you calculate the number of tracks to reserve for both the VTOC and the index data set. Figure 25 shows the maximum values for VTOC and VTOC index size for the devices that can support the VTOC index. The assumptions used to generate the chart may or may not be valid in an actual situation. However, the chart places the upper limits for calculating maximum usable space. Space reserved above these limits is wasted.

Figure 25. Table of Maximum VTOC and VTOC Index Sizes

DEVICE	CYLS		TRKS PER CYL	DSCBs/ TRK	INDEX RECS/ TRK[1]	MAX. VTOC.[2] (TRKS)	MAX. INDEX[3] (TRKS)	# OF RECORD TYPES[4]		
	PRI	ALT						VPSM[5]	VMDS[6]	VIER[7]
2305-1	48	1	8	18	5	21	3	1	1	1
2305-2	96	1	8	34	6	23	4	1	1	17
3330	404	7	19	39	6	192	27	1	1	156
3330-11	808	7	19	39	6	384	53	2	1	312
3340 (35MB)	348	1	12	22	3	181	29	1	1	82
3344 3340 (70MB)	696	2	12	22	3	363	56	1	1	163
3350 (native)	555	5	30	47	8	347	42	2	2	328
3375	959	1	12	51	14	222	20	1	1	272
3380 A04, B04 AA4, AD4, BD4 AJ4, BJ4, CJ2	885	1	15	53	18	246	16	1	1	285
3380 AE4, BE4	1770	1	15	53	18	492	31	2	2	553
3380 AK4, BK4	2655	1	15	53	18	738	46	3	3	821
3390-1	1113	1	15	50	21	328	17	2	2	352
3390-2	2226	1	15	50	21	655	33	3	3	686
3390-1 (3380 mode)	1113	1	15	53	18	310	20	2	2	355
3390-2 (3380 mode)	2226	1	15	53	18	619	39	3	3	695

Notes:

[1] Index record length of 2048 bytes.

[2] This maximum value assumes that all data sets on the volume are single track data sets

[3] This maximum value assumes that the VTOC is the maximum size.

[4] The first VIXM map will manage up to 7840 index records. (One VIXM is more than sufficient for current devices.) The second VIXM will manage an additional 16032 records.

[5] The number of VPSMs required for a device is dependent upon its size. 16032 bits are available for cylinder and track mapping in each VPSM (a maximum of 5 VPSMs is currently reserved).

[6] The first VMDS will manage up to 16032 DSCBs. The second and third VMDS will manage up to an additional 16032 DSCBs.

[7] Each VIER is assumed to contain 48 entries

To calculate the number of tracks to reserve for the index, first determine the average data set name length of the identifier data set control blocks. If the length chosen is too small, the data set names may not fit in the index. If the length chosen is too large, some space is unused in the index. Next determine the maximum number of data sets that will reside on the volume. Then calculate the number of VIERs needed to contain that many data set names of the chosen average data set name length, using the calculations shown below. For the number of VIXM, VPSM, and VMDS records, refer to the chart for actual numbers. (Note that the 3330-11 and 3350 will always require two VPSMs, and a 3350 with a maximum-size VTOC will require two VMDSs.) Add together the totals of all four record types and divide by the number of index records per track, rounding to the next higher track, to get the number of tracks to reserve for the index.

The value calculated for the index size is to be placed as the third subparameter of the INDEX parameter on the INIT command statement; or it is to be placed as the number of tracks to be allocated in the SPACE or ABSTR parameter in the DD statement required to execute the BUILDIX command.

The following shows the calculations to determine the number of VIERs needed to contain N data set names, each of which has an average data set name length of D. The calculations assume that all VIERs except one at each level are half filled, that a new level of the index is created when four lower level VIERs are created, and that n+1 unused VIERs are required for an n-level index.

Calculate the number of VIERs as follows where:

$\lfloor \; \rfloor$ = round quotient down to integer value

$\lceil \; \rceil$ = round quotient up to integer value
N = number of data set names in the index
D = average data set name length
E^1 = number of data set names that fit in the half-filled level 1 VIER
E^2 = number of data set names that fit in a half-filled level 2 or greater VIER
L(n) = number of VIERs at level n

$\lfloor 244/(D+8) \rfloor * 4 = E^1$ number of data set names that fit in a half-filled level 1 VIER

$\lfloor 244/(D+7) \rfloor * 4 = E^2$ number of data set names that fit in a half-filled level 2 or greater VIER

Calculate L(n) (where n is 1,2,3,...). and L(n) is the number of VIERs at level n

$\lceil N/E^1 \rceil -1 = L(1)$ number of level 1 VIERs. Use L(n)=1 if calculation yields zero.

For n=2,3,... L(n) is calculated from L(n-1)

If $L(n-1) \geq 4$ then

$\lceil L(n-1)/E^2 \rceil -1 = L(n)$ Use L(n)=1 if calculation yields zero.

If $L(n-1) < 4$, then there are no VIERs at level n or higher.

The total number of VIERs is

$L(1) + L(2) + \ldots + L(n)$

The assumptions used for the above calculations represent the state of the index immediately after building it using the BUILDIX command. The state of the index is such that the largest number of VIERs possible are used to contain the data set names. However, since the data set names on a volume will not all have the same length, the calculations should be used only as an approximation. You should choose N (maximum number of data set names) and D conservatively to account for the varying number of data set names that will fit in a VIER.

Note: Fragmentation (because of scratch and reallocation activity) will cause the index to expand significantly (by up to 50%).

Appendix E. The Fixed Block Architecture VTOC (FBAVTOC)

FBAVTOC Format Characteristics

VTOCs on FBA devices are formatted in a similar manner to VSAM relative record data sets in that the 140-byte label records are stored in control intervals. For example, three label records fit into a 512-byte control interval. The control interval size is always an integral multiple of the device's physical block size. The upper limit is 8192 bytes.

The FBAVTOC extent is expressed in number of "slots," which is equivalent to the number of file label records. It can range from a minimum of 3 slots to a maximum of 999 slots, fitting into as many control intervals as required. The program rounds up the extent values to that of the next full control interval.

The FBAVTOC's starting location can be any physical block on the volume, except for blocks 0 and 1, which are reserved for the IPL and volume label blocks (VLB).

A default (non-SYSRES) FBAVTOC has the following default characteristics:

- Starting location—block 2, immediately after the VLB
- Extent—56 file label records
- Control interval size—1024 bytes (or FBA block size, if larger)

If you specify FBAVTOC(END), ICKDSF creates a VTOC that is 99 entries long with a control interval size of 1024, and places it on the last blocks of the volume.

Label Record Format

Each record of the FBAVTOC contains 140 bytes, written as binary zeros. The first two records of the FBAVTOC are reserved for specific records:

- The data set control block of the FBAVTOC
- The space management label

Each control interval of the FBAVTOC contains a fixed number of slots and has the following format (Figure 26).

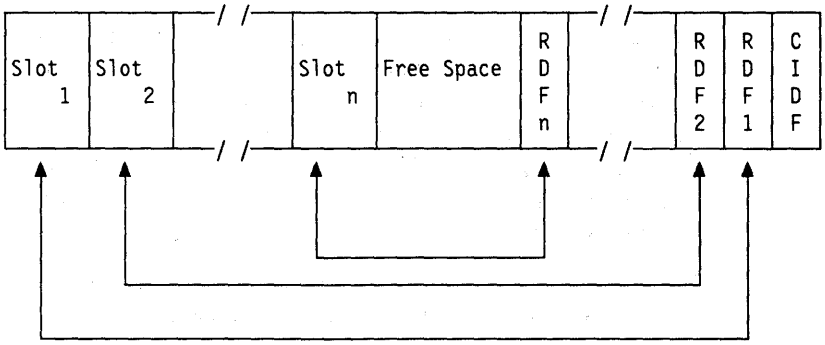

Figure 26. Format of a FBAVTOC Control Interval

There is one RDF (record definition field) associated with each slot in a control interval. The length field in the RDF (bytes 1 and 2) contains the slot length, which is equal to the label record length. Bit 5 of byte 0 of the RDF indicates whether the associated slot contains a record/label (bit 5=0) or not (bit 5=1). The RDF has one of the following contents:

- X'00008C' if the slot contains a label.
- X'04008C' if the slot does not contain a label, that is, it is empty.

The number of labels per control interval (LBPCI) is determined by the formula

```
LBPCI = FLOOR of (CISIZE-4)/(RECSIZE+3)
```

where:

FLOOR takes the integral part of the argument
CISIZE = control interval size
RECSIZE = label record size, which is equal to 140

LBPCI is recorded in the standard volume label (VOL1) in bytes 29 through 32

The control interval definition field (CIDF) has the following format:

```
Bytes 0,1   free-space offset = RECSIZE * LBPCI
Bytes 2,3   free-space length = CISIZE-4-LBPCI * (RECSIZE+3)
```

FBAVTOC Space Requirements

To calculate the space required for a fixed block architecture VTOC:

The number of labels per control interval (LBPCI) is determined by the formula

```
LBPCI = FLOOR of (CISIZE-4)/(RECSIZE+3)
```

where:

FLOOR takes the integral part of the argument
CISIZE = control interval size
RECSIZE = label record size, which is equal to 140

The number of control intervals required for the FBAVTOC is

```
CEILING of (number of labels specified/LBPCI)
```

where:

CEILING takes the next highest integer if there is a remainder

The number of physical blocks reserved for the FBAVTOC is

```
CI * (CISIZE/physical block size)
```

where:

```
CI = number of control intervals required for the VTOC
```

Appendix F. Surface Checking

Surface checking for a track is performed when:

- You specify the INIT command with the CHECK(n) parameter for 2305, 2311, 2314, 3310, 3330, 3344, 3350, 3370, and 9335 devices.
- You specify the INSPECT command with the CHECK(n) parameter for 2305, 2311, 2314, 3310, 3330, 3344, 3350, 3370, 3375, 3380, 3390, and 9335 devices.

The purpose of surface checking is to detect possible defects that might exist on the surface of a track. These defects might be correctable or uncorrectable. Surface defects exist with different degrees of visibility (that is, some defects can be detected by any I/O to the defective area of the track, while other defects might only be detected once out of every 100 I/Os, and only with a certain bit pattern). The I/O that ICKDSF does to any one track is limited by performance considerations, the practicality of finding a defect, and what can be done if a defect is detected for the device type being processed.

The surface checking functions performed by ICKDSF are not equivalent to the surface checking performed on a volume at the factory. Marginal defects that exist on the surface of a track cannot be detected consistently by ICKDSF because of their intermittent nature. Therefore, different results can be obtained for the same track and/or volume from multiple runs of ICKDSF. Also, ICKDSF output can differ from other surface checking products because of different checking algorithms.

The IBM 3340, 3344, 3350, 3375, 3380, and 3390 device types contain extra space that can be used if a defective area is detected on a track. By assigning a skip displacement to a given track, the hardware knows to skip over the defective area and to use the extra area for this track. No alternative track assignment is needed. There is no performance degradation, and the track functions as if no defect exists.

ICKDSF performs two types of surface checking: Primary checking is supported for all device types; skip displacement checking can be done for 3340, 3444, 3350, 3375, 3380, and 3390 devices only.

Primary Checking

Primary checking is performed when CHECK(n) is specified as follows:

- For all devices (IBM 2305, 2311, 2314, 3310, 3330, 3340, 3344, 3350, 3370, 3375, 3380, 3390, and 9335) when you use the INSPECT command
- For the IBM 2305, 2311, 2314, 3310, 3330, 3344, 3350, and 3370 when you use the INIT command
- It is the only level supported for the IBM 2305, 2311, 2314, 3310, 3330, 3370, and 9335 devices.

It consists of writing and reading back n bit patterns for the specific device (see "CHECK(n) Values" on page 355 for the values for n by device).

Primary checking for count-key-data devices consists of the following:

1. A bit pattern for the specified device is written and read back once.
2. If a data check is detected (correctable or uncorrectable), the following is performed:
   - For devices with skip displacement support, the I/O is repeated to determine if the data check persists. If it does, skip displacement checking is performed on the track. See "Skip Displacement Checking" for more information.
   - For devices without skip displacement support, the bit pattern is reread up to 10 times to determine if the error is repeatable. If the error is not repeatable, processing continues.

     If the error is repeatable:

     - For correctable errors, an entry is made in the map output if MAP was specified. Processing continues to the next track. If you want to assign an alternate to that track, use INSPECT NOCHECK ASSIGN TRACKS.
     - For uncorrectable data checks, the track is declared defective.
3. This is repeated n times (from CHECK(n)) unless a data check is encountered. Each pass through uses a different device-dependent bit pattern. If all the patterns for the device are used, the sequence of patterns is repeated starting with the first pattern used. See "CHECK(n) Values" on page 355 for the values of n that write each bit pattern at least once.

Primary checking for fixed block architecture devices consists of the following:

1. A bit pattern for the specified device is written and read back once.
2. If a correctable data check is detected, the block is reread 10 times to determine if the error is repeatable.
3. If an uncorrectable data check or repeatable correctable data check is encountered and ASSIGN is specified, an alternate is assigned and the process is restarted to analyze the surface of the alternate.
4. This is repeated n times (from CHECK(n)) until it is performed without encountering any uncorrectable data checks or any repeatable correctable data checks. Each pass through uses a different device-dependent bit pattern. If all the patterns for the device are used, the sequence of patterns is repeated starting with the first pattern used. See "CHECK(n) Values" on page 355 for the values of n that write each bit pattern at least once.

Skip Displacement Checking

Skip displacement checking of a track can be performed on 3340, 3344, 3350, 3375, 3380, and 3390 devices. Rigorous surface checking is done to locate and skip over defective areas on a track.

The maximum number of defects that can be skipped on any one track is dependent upon the device type. A track is declared defective only if the number of defects exceeds this maximum.

Skip displacement checking is performed using the INIT or INSPECT command as follows:

INIT command

- For the 3340, 3344, 3350 when:
  - SKIP is specified with CHECK(n).
  - Primary surface checking detects a data check.
  - RECLAIM is specified and the track is currently flagged defective.

INSPECT command

- For all supported devices including the IBM 3375, 3380, and 3390 when:
  - SKIP is specified with CHECK(n).
  - Primary surface checking detects a data check.
  - RECLAIM is specified and the track is currently flagged defective.

Detection and assignment of a skip displacement for a track are complicated and can be time-consuming. When skip displacement processing is invoked, the emphasis is on defect detection.

For the NOSKIP process, the total running time can vary considerably, depending upon the number of tracks that might invoke skip displacement analysis.

Additionally, for low visibility defects, an error might not be detected during one NOSKIP run (and therefore no skip displacement checking takes place), but might be detected during a subsequent NOSKIP run.

Note, however, that, after a defect is skipped, that defect becomes invisible to all subsequent processing and will not be encountered again.

CHECK(n) Values

The n values shown below give one pass through each bit pattern. Specifying a value of n greater than these values causes the same bit pattern to be rewritten. As this is a time-consuming option, you should think about performance considerations.

- 2305, 2311, 2314, 3310, 3330, 3340, 3344, 3350, 3370, 9335. n=3 gives one pass through each bit pattern.
- 3375, 3380, 3390. n=2 gives one pass through each bit pattern if you specify INSPECT CHECK(n).

If you specify SKIP for supported devices, skip displacement checking is automatically performed and n is ignored.

Appendix G. User Security Exit Module

This appendix contains Product-Sensitive Programming Interface and Associated Guidance Information.

The data security function in ICKDSF provides for a user exit module which can tailor security processing to installation needs. A default module is shipped with ICKDSF.

The user exit module is invoked by the ICKDSF security/authorization module for online processing under MVS/370, MVS/XA, and MVS/ESA. The intended purpose of the user exit module is only to control the security checking function by setting return codes. Attempts to alter anything other than return codes with the module may have unpredictable results. SETCODE AC(1) as ICKDSF is an authorized program.

See Figure 29 on page 360 for an example of link-editing an exit module. The ICKDSF program directory, which is supplied with the ICKDSF program contains information about link-editing.

ICKDSF loads the following registers as input to ICKUSER1:

Register	Content
1	Pointer to a 3-word parameter list
13	Pointer to a standard 18-word save area
14	Return address
15	Address of ICKUSER1 entry point

The 3-word parameter list contains:

- Word 1 - Pointer to a data set name
- Word 2 - Pointer to a 6-character volume serial number
- Word 3 - Pointer to a 2-character field containing:
  - A 1-byte data set type code
  - A 1-byte ICKDSF command code

The data set type codes are:

- **1** - VSAM data set
- **2** - Password-protected data set
- **3** - Unexpired data set

The command codes are:

- **1** - reserved
- **2** - INIT command
- **3** - INSPECT command
- **4** - reserved

Note: The user exit module must set a return code in register 15 indicating the action required.

For password-protected data sets, the return codes are:

Hex	Dec	Meaning
00	0	Bypass checking for this volume, do not return to ICKUSER1 for this volume
04	4	Bypass checking for this data set, but return to ICKUSER1 for the next data set
08	8	Check this data set normally and return to ICKUSER1 for the next data set
0C	12	Check this volume normally and do not return to ICKUSER1 for this volume
10	16	Reject access to this data set without checking and return to ICKUSER1 for the next data set
14	20	Terminate this command immediately

Normal checking for a password-protected data set consists of taking the user-supplied password for this data set from the PASSWORDS parameter and verifying that this password provides authority to alter the data set.

For VSAM and unexpired data sets the return codes are:

Hex	Dec	Meaning
00	0	Bypass checking for this volume and do not return to ICKUSER1
0C	12	Check this volume normally and do not return to ICKUSER1
14	20	Terminate this command immediately

Normal checking for VSAM and unexpired data sets consists of checking whether the PURGE option has been specified. (For INSPECT with NOPRESERVE, the PURGE option is always absent.) If a code other than the ones shown is returned, ICKDSF terminates the function.

The IBM-supplied module always returns a code of 12. Codes returned by the IBM module are arranged as shown in Figure 27.

Figure 27. Offsets of Return Codes for the IBM-Supplied User Exit Module

Hex Offset	Code	Command	Data Set Type
+4*	12		
+8*	12		
+C*	12		
+10	12	INIT	VSAM
+14	12	INIT	Password-Protected
+18	12	INIT	Unexpired
+1C	12	INSPECT	VSAM
+20	12	INSPECT	Password-Protected
+24	12	INSPECT	Unexpired
+28*	12		
+2C*	12		
+30*	12		

* Reserved

However, the IBM-supplied return codes can easily be changed with superzap. Figure 28 is an example of overriding ICKUSER1, in which the IBM-supplied return code is changed in this manner. This example shows how ICKUSER1 can be overridden to permit use of the INSPECT command with the NOPRESERVE option on volumes containing VSAM data sets. This JCL changes the IBM-supplied return code of 12 at offset X'1C' as shown in Figure 27.

```
//DSFP62D      JOB     ,CLASS=A,MSGLEVEL=(1,1)
//ZAPOFF       EXEC    PGM=AMASPZAP
//SYSPRINT     DD      SYSOUT=A
//SYSLIB       DD      DSN=SYS1.LINKLIB,DISP=SHR,UNIT=3330-1,
//             VOL=SER=VS2D57
//SYSIN        DD      *
 NAME          ICKDSF  ICKUSER1
 VER           001C    0000000C
 REP           001C    00000000
/*
```

Figure 28. Example of Overriding ICKUSER1 to Change Return Codes

When an installation wants to replace the IBM-supplied user exit routine:

1. The replacement routine must be named ICKUSER1 with an entry point of ICKUSER1; and
2. ICKDSF must be relink-edited.

Figure 29 shows an example of how to relink-edit ICKDSF to include a new ICKUSER1. In the figure, ICKUSER1 is a member of MYLIB.

```
//LINKLIB      EXEC    PGM=IEWL,PARM='XREF,LIST,LET,RENT,REFR'
//SYSPRINT     DD      SYSOUT=A
//SYSUT1       DD      UNIT=SYSDA,SPACE=((CYL,2,2))
//MYLIB1       DD      DISP=SHR,DSN=MYLIB,VOL=SER=xxxxx,UNIT=3330-1
//SYSLMOD      DD      DISP=SHR,DSN=SYS1.LINKLIB
//SYSLIN       DD      *
     INCLUDE   MYLIB1(ICKUSER1)
     INCLUDE   SYSLMOD(ICKDSF)
     ENTRY     ICKSA01
     SETCODE   AC(1)
     NAME      ICKDSF(R)
/*
```

Figure 29. Example of Link-Edit for ICKUSER1

Glossary of Terms and Abbreviations

The following terms are defined as they are used in this book. If you do not find the term you are looking for, refer to the index or to the IBM *Dictionary of Computing* , SC20-1699.

A

A-unit. The direct access storage unit that contains the controller functions to attach to the storage control. An A-unit controls the B-units that are attached to it and is often referred to as a head of string.

access mechanism. See actuator.

actuator. A set of access arms and their attached read/write heads, which move as an independent component within a head and disk assembly (HDA). For example, the 3380 Model AK4 has two HDAs, each containing two actuators. See also device and volume.

ALLOC. A space allocation parameter which indicates type, such as cylinders, tracks, etc.

alternate track. On a direct access storage device, a track designated to contain data in place of a defective primary track.

ANALYZE drivetest. ICKDSF command used to determine if a problem exists in the drive itself rather than in the media located on a volume.

ANALYZE scan. ICKDSF command used to determine if problems exists in the media which is located on a volume.

APF. Authorized program facility

B

B-unit. A direct access storage unit that attaches to the subsystem through an A-unit. A B-unit has no controller functions.

BDAM. Basic direct access method.

Block length. A subparameter of the SPACE parameter in a DD statement, specifying the average block length of the data in a data set. The system computes how many tracks to allocate.

bootstrap. IPL program records

BPI. Bits per inch

C

CA. Control area, VSAM

C-unit. A direct channel attach 3380 direct access storage unit that contains both the storage control functions and the DASD controller functions. A 3380 C-unit functions as a head of string and controls the B units that are attached to it.

cache fast write. A form of fast write where the data is written directly to cache storage without using non-volatile storage and is available for later destaging. This 3990 Model 3 Storage Control function should be used for data of a temporary nature, or data which is readily recreated, such as the sort work files created by the appropriate release of DFSORT.

cache storage. A random access electronic storage in selected storage controls used to retain frequently used data for faster access by the channel. For example, 3880 Model 23 and 3990 Model 3 contain cache storage.

CCHH. Cylinder/head (track address)

CCW. Channel command word

channel path. A connection between a processor and control unit along which signals and data can be sent to perform I/O requests.

channel set. A collection of channels that can be addressed by one of the processors of a processor complex.

CHPID. specifies the channel path identifier in XA mode.

CI. Control interval, VSAM

CKD. Count, key, and data record format

CLIST. Command list

cluster. See storage cluster.

CMS. Conversational Monitor System (interactive terminal oriented system under VM)

command retry. A combined channel and storage director procedure that allows a command in a channel program to be re-executed without causing an I/O interrupt.

concurrent media maintenance. The capability that enables a customer to perform maintenance on a track while allowing user access to that data.

controller. The hardware component of a DASD head of string unit that provides the path control and data transfer functions. For example, there are two controllers in a 3380 Model AE4 or AK4.

correctable errors. See errors, correctable. See also errors, uncorrectable.

count-key-data (CKD). A DASD data recording format employing self-defining record formats in which each record is represented by a count area, that identifies the record and specifies its format, an optional key area that may be used to identify the data area contents, and a data area that contains the user data for the record. CKD is also used to refer to the set of channel commands that are accepted by a device that employs the CKD recording format.

CP. VM control program

CSECT. Control section

CVAF. Common VTOC Access Facility

CYL. A subparameter of the SPACE parameter in a DD statement, specifying that space is to be allocated by cylinder.

D

DADSM. Direct access device space management program that maintains the VTOC, VTOCIX, and the space on a volume.

DASD. Direct access storage device; for example, a 3380.

DASD fast write. A form of fast write to cache storage where the data is written concurrently to cache storage and nonvolatile storage and automatically scheduled for destaging to the DASD. Both copies are retained in the storage control until the data is completely written to the DASD, providing data integrity equivalent to writing directly to the DASD. This feature is available with a 3990 Model 3 Storage Control which has nonvolatile storage.

DASD subsystem. One or more DASD strings and the storage control(s) to which the the DASD are attached.

DCB. Data control block

DD. Data definition

DDA. Direct Disk Adapter

defective track condition. When a track of an IBM 3340/3344 is flagged defective, a read or write to such a track causes a seek to the alternate track to be performed by the system ERPs. For devices other than IBM 3340/3344, the seek is performed by the device and is transparent to the user.

delta directory. On the IBM 3340/3344/3350 the delta directory is on track X'A' of the SA cylinder. The delta directory is used to store HAs that have had additional skips added to them by ICKDSF since the SA directory was last built.

device. In this book, the term device is used when referring to a single, uniquely addressable part of a Direct Access Storage, particularly in a context that includes the geometry (track length, number of tracks per cylinder, and number of cylinders) of the device, or the accessing of the device through channel paths. See volume, unit.

device address. Three or four hexadecimal digits that uniquely define a physical I/O device on a channel path in System/370 mode. The one or two left-most digits are the address of the channel to which the device is attached. The two right-most digits represent the unit address. See device number.

device ID. An 8-bit identifier that uniquely identifies a physical I/O device in an extended architecture system.

device level selection (DLS). A DASD function available with 3380 Models AD4, BD4, AE4, BE4, AJ4, BJ4, AK4, BK4, and CJ2. With DLS, each of the two controllers in the DASD string has a path to all devices in the string, and any two devices in the 2-path DASD string can read or write data simultaneously.

device level selection enhanced (DLSE). A DASD function providing four data transfer paths to each device in a 4-path DASD string. With DLSE, any four devices in a 4-path DASD string can read or write data simultaneously.

device number. Three or four hexadecimal digits that logically identify an I/O device in an extended architecture system. See device address.

device path. a connection between a control unit and a device.

DFDSS. Data Facility Data Set Services

DFHSM. Data Facility Hierarchical Storage Manager

DFP. Data Facility Product

DFP/370. Data Facility Product for MVS/370

DFP/XA. Data Facility Product for MVS/Extended Architecture

DFSMS. Data Facility Storage Management Subsystem. An operating environment that helps automate and centralize the management of storage. To manage storage, DFSMS provides the storage administrator with control over data class, storage class, management class, storage group and automatic class selection routine definitions.

DIRF. DADSM interrupt recording facility. If a system fails, or a permanent I/O error occurs during allocation of space or during execution of a routine that updates the VTOC, the VTOC may be in error. To ensure that an error is recorded, the DADSM routines turn on a bit in the VTOC upon entry to a DADSM function, and, if no errors occur during processing, turn off that bit upon exiting from that function. This "DIRF bit" is bit 5 of the DS4VTOCI field of the format-4 DSCB.

DLS. See device level selection.

DLSE. See device level selection enhanced.

DOS. See VSE.

DOS bit. On a volume without an indexed VTOC, this bit indicates that the free space map (format-5 DSCB) is invalid.

DPR. Dynamic path reconnection

DPS. Dynamic path selection

DSCB. Data set control block

dual copy. A high availability function made possible by nonvolatile storage in a 3990 Model 3. Dual copy maintains two functionally identical copies of designated DASD volumes in the logical 3990 Model 3 subsystem, and automatically updates both copies every time a write operation is issued to the dual-copy logical volume.

dual-copy logical volume. A logical volume comprised of two physical devices with all data recorded twice, once on each device. A 3990 Model 3 Storage Control automatically ensures that both devices are updated with each write operation to the dual-copy volume. Also called a duplex pair.

duplex pair. See dual-copy logical volume.

duplex state. Two devices in a 3990 Model 3 subsystem are in duplex state when they have been made into a dual-copy logical volume.

dyadic processor. A dyadic processor consists of two integrated processors sharing channels and a central storage

dynamic path selection. A set of functions for 3380 units providing:

- Alternate controller: The capability of one string controller to back up the other and provide a path to the data in the case of a string controller failure.
- System-related device reserve: A device reserved to a particular system can be accessed by that system over any of the paths to that system.
- String switch: The capability to connect a string of devices to two different storage directors.
- Dynamic path reconnection: Disconnected DASD operations reconnect over any available channel path rather than being limited to the one on which the I/O was started.

E

ECC. Error correction code

emulated device. A device that is logically formatted on to a different device type such that the data and programming can be used without modification.

ENQ. A system macro used to serialize the access to a data set.

EREP. IBM Environmental Record Editing, and Printing program

errors, correctable. When a data check is referred to as "correctable," the following are present:

- The format 5 sense record has the correctable bit set (byte 2, bit 1)
- The error is correctable by use of ECC correction bytes.

The storage director or the system ERPs can correct this error with the aid of the ECC correction code without rereading the record. All the information needed is contained in the format 5 sense record. Restart displacement, error displacement, and error correction pattern.

When ECC correctable, the data is reconstructed to be the same as the data original written on disk storage. The data correction may be done by the subsystem as data is transferred to processor storage, or it may be done by the system ERP after the data is in processor storage. Although the data in processor storage is correct for use in processing, the data on the disk is not changed. The next attempt to read the data may again result in a data error. See also errors, uncorrectable

errors, permanent. A permanent error cannot be corrected by ECC processing or by retrying the operation. A permanent error gives an I/O interruption at the system and causes the subsystem to send unit check status to the system. A permanent error usually terminates a job step and may terminate the job. The action depends on the error recovery procedures at the application level.

errors, temporary. A temporary error is an error that is corrected by ECC correction or by retrying the operation. In each case the operation in process is completed. If the subsystem performs the recovery procedures, the action does not cause an I/O interruption. If the system (ERP) performs the recovery procedure, an I/O interruption is given. A temporary error is also called a *soft* error.

If the error is correctable using the ECC bytes or readable with command retry, it is a temporary error. If the program issuing the I/O operation considers the error as having been corrected, then it is a temporary error.

The term applies to any type of DASD error (data checks, equipment checks, etc.).

errors, uncorrectable. A data check that the storage director cannot correct using the ECC correction code bytes. Rereading or rereading with head offset is the only method available. Also referred to as "ECC uncorrectable error."

EXCP. Execute channel program. A macro used to access a data set without specifying the organization.

F

fast dual copy. A dual copy capability where DASD fast write and dual copy are active concurrently to provide a significant dual copy performance enhancement.

fast write. In a 3990 Model 3 Storage Control, a write operation at cache speed that does not require immediate transfer of data to a DASD. The data is written directly to cache and/or nonvolatile storage and is available for later destaging. Fast write reduces the time an application must wait for the I/O operation to complete.

FBA. Fixed block architecture

FBAVTOC. The volume table of contents (VTOC) for a fixed block architecture FBA device. See also *VTOC*

fence. To separate one or more paths or elements from the remainder of the logical DASD subsystem. The separation is by logical boundaries rather than power boundaries. This separation allows isolation of failing components so that they do not affect normal operations.

FTA. File Tape Adapter

G

Gb. gigabyte (1024 Mb) (approximately 1 billion or 10^9 bytes)

H

HA. Home address (of track)

HDA. Head and disk assembly

Head and disk assembly (HDA). A field replaceable unit in a direct access storage device containing the disks and actuators. A 3380 Model AK4 has two HDAs.

head of string. The unit in a DASD string that contains controller functions. For example, a 3380 model AE4, AK4, or CJ2.

home address (HA). The first field on a CKD track that identifies the track and defines its operational status. The home address is written after the index point on each track.

HSM. Hierarchical Storage Manager

I

ICKDSF. Device Support Facilities

identifier (ID). A sequence of bits or characters that identifies a program, device, controller or system.

IFA. Integrated File Adapter

indexed VTOC. The data set on which the location of the format-1 DSCBs of the VTOC are kept in an index for quick access by DADSM.

index point. The reference point on a disk surface that determines the start of a track.

initial microprogram load (IML). The act of loading microprogram(s).

Integrated catalog facility. A facility by which VSAM data set volume-related fields are separated from the catalog and maintained in the VVDS on the volume on which the data set resides.

I/O. Input/output

I/O device. An addressable input/output unit, such as a direct access storage device, magnetic tape device, or printer.

IOCDS. Input/output control data set

IOCP. Input/Output Configuration Program

IPL. Initial program load

IPL text. IPL program records

IXVTOC. Indexed VTOC.

J

JCL. Job control language.

JES. Job Entry Subsystem

K

K. The number 1024

KSDS. Key-sequenced data set, VSAM

L

like DASD devices. Devices that have the same track capacity, and the same number of tracks per cylinder; that is, like devices can differ only in the number of cylinders per volume.

Like device. A (DASD) device with identical geometry; that is, number of bytes per track, number of tracks per cylinder, and number of cylinders per actuator.

M

maximal initialization. Maximal initialization includes:

- All the functions of medial initialization
- Checking every track surface for defects
- Conditional alternate track assignment
- Conditional reclamation of tracks

Mb. Megabytes (1024K)

Mb/sec. Megabyte per second (a unit of measure for data transfer rate)

medial initialization. Medial Initialization includes the following:

- All the functions of minimal initialization
- Validation of every track

migrate. To begin using a different type of storage device. Migration often includes the movement of existing data to the new devices.

minidisk. A logical subdivision (or all) of a physical disk pack that has its own virtual device address, consecutive virtual cylinders (starting with virtual cylinder 0), and a VTOC or disk label identifier. Each user virtual disk is preallocated and defined by a VM directory entry as belonging to a user.

minimal initialization. Minimal initialization includes:

- Constructs the first track of the volume (IPL text and volume label)
- Creates the VTOC
- Checks primary/alternate track associations

ms. Milliseconds

multipath storage director. A storage director in a 3990 Storage Control operating in DLSE support mode. Each multipath storage director in a storage cluster is associated with two storage paths. All storage paths in a multipath storage director respond to the same range of control unit addresses on a channel.

MVS. Multiple Virtual Storage

MVS/370. Multiple Virtual Storage/370

MVS/SP. IBM Multiple Virtual Storage/System Product

MVS/XA. MVS/Extended Architecture

MVS/ESA. MVS/Enterprise System Architecture

O

OS/VS. Operating System/Virtual Storage

OS/VS2 MVS. Operating System/Virtual Storage 2, with multiple virtual address space support

P

PCUA. Primary channel unit address

permanent errors. See errors, permanent.

Primary surface checking. Performed by ICKDSF when NOSKIP is specified. Consists of writing and reading back bit patterns for the specified device. Skip displacement checking is performed (for those devices that support skip displacement) only if a data check occurs

PSF. Perform Subsystem Function

PSP. Preventive service planning

PSW. Program status word

PTF. Program temporary fix

R

R0. Record zero

RACF. Resource Access Control Facility program product

RAS. Reliability, availability, and serviceability

RBA. Relative byte address, VSAM

RBN. Relative block number

RELCREDT. Relative creation date

RELEXPDT. Relative expiration date

RESERVE. A method of serializing DADSM update accesses to the VTOC. It is also a method of serializing CPU accesses to a shared DASD volume.

RMF. Resource Management Facility

RPS. Rotational position sensing

rotational position sensing (RPS). A function that permits a DASD to reconnect to a block multiplexer channel when a specified sector has been reached. This allows the channel to service other devices on the channel during positional delay.

S

SA. Surface analysis also see surface analysis cylinder

SCUA. Secondary channel unit address

service information message (SIM). A message that appears on the operator console and in EREP reports, that contains notification of a need for repair or customer action. The SIM identifies the affected area of the storage control

SIM. See service information message

Similar device. A (DASD) device with the same number of bytes per track and tracks per cylinder.

simplex state. A volume is in the simplex state if it is not part of a dual-copy logical volume. Terminating a dual-copy logical volume returns the two devices to the simplex state. In this case, there is no longer any capability for either automatic updates of the secondary device or for logging changes, as would be the case in suspended duplex state.

single-path storage director. A storage director in a 3990 or 3380 Model CJ2 operating in DLS support mode. Each single-path storage director in the storage cluster is associated with one storage path. A storage path on a single-path storage director responds to a unique control unit address on the channel. A single-path storage director in a 3990 is like a storage director in a 3880.

SIO (F). Start I/O Fast Release

Skip displacement. A method of shifting data so that any surface defect causing an error can be positioned in a gap rather than in a data area, eliminating the error.

SLSS. System Library Subscription Service

SMB. Speed Matching Buffer, see also *speed matching buffer*

SMF. System Management Facility

speed matching buffer. An option available on some models of the IBM 3880 or IBM 3990 Storage Control, which facilitates the connection of DASD devices with high data transfer rates to channels which have lower data transfer rates. The data is read from the device at a high rate, then transferred to the channel at a lower rate, and vice versa for write operations.

storage cluster. In the 3990 Storage Control and 3380 Model CJ2, a power and service region containing two independent transfer paths.

storage control. The component in a DASD subsystem that connects the DASD to the host channels. It performs channel commands and controls the DASD devices. For example, the 3990 Model 2 and Model 3 are storage controls.

storage director. In a 3990 storage control, a logical entity consisting of one or more physical storage paths in the same storage cluster. In a 3880, a storage director is equivalent to a storage path.

storage director ID. For 3880 Storage Control configurations, an 8-bit designation that uniquely identifies the storage director regardless of its selection address. It identifies to the service representative, by means of EREP, a failing subsystem component (storage director) without having to translate a selection address (which may have little relation to a physical address) to a physical component. The storage director ID is the number shown on the operator panels of 3880s and the attached DASD units.

storage path. The hardware within the 3990 Storage Control that transfers data between the DASD and a channel.

storage subsystem. One or more storage controls and their attached storage devices.

string. A series of connected DASD units sharing the same A-unit (or head of string).

subsystem identifier (SSID). In a 3990 Storage Control configuration, a number that identifies the physical components of a logical DASD subsystem. This number is set by the service representative at time of installation, and is included in the vital product data in the support facility. This number is identified on the DASD A-units and 3990 operator panels.

surface analysis cylinder. The surface analysis (SA) cylinder is reserved by the system to contain a record of all the home addresses (HA) that have a skip displacement assigned at the time of manufacture or assigned subsequently by ICKDSF (depends on the device).

suspended duplex state. When only one of the devices in a dual copy logical volume is being updated because of either a permanent error condition or an authorized user command. All writes to the remaining functional device are logged. This allows for automatic resynchronization of both volumes when the dual copy logical volume is reset to the active duplex state.

T

temporary errors. See errors, temporary.

TRK. A subparameter of the SPACE parameter in a DD statement, specifying that space is to be allocated by tracks.

TSO. Time Sharing Option

U

UCB. Unit control block

uncorrectable errors. See errors, uncorrectable.

unit. In this book, the term unit is used to refer to an orderable unit of IBM 3380 Direct Access Storage. Each unit contains four access mechanisms. Model AA4, AD4, and AE4 units also contain two controllers.

unlike DASD devices. Devices that have different track capacities, or that have a different number of tracks per cylinder.

Unlike device. A (DASD) device with a different number of bytes per track, tracks per cylinder, or both.

user-assigned group name. A 1 to 8 character name that identifies a particular group of devices. The user-assigned group name and the devices that make up a group are specified during system generation (also called "esoteric name").

V

VIER. VTOC index entry record contains pointers to each format-1 DSCB in the VTOC.

VIO. Virtual Input/Output

VIXM. VTOC index map is the record that maps the VTOC index

VM. Virtual machine

VM/370. Virtual Machine Facility/370 Operating System

VM/ESA. Virtual Machine Facility/Enterprise System Architecture

VMDS. VTOC map of DSCBs contains a bit map indicating free and allocated DSCBs in the VTOC.

VMMAP. Virtual Machine Monitor Analysis Program

VM/SP. IBM Virtual Machine/System Product

VM/SP HPO. IBM Virtual Machine/System Product High Performance Option

VM/XA SP. IBM Virtual Machine/Extended Architecture System Product

VM/XA M. A.. Virtual Machine/Extended Architecture Migration Aid

volume. In this book, the term volume is used to refer to the DASD space which is accessible by one actuator, in a context where the data stored is of concern, not the geometry of the device.

volume label. The volume label uniquely identifies the volume to the operating system. Additional optional user labels are available. containing information such as user name, serial number, etc.

VPSM. VTOC pack space map contains separate bit maps which show the free and allocated space for cylinders and tracks respectively.

VSAM. Virtual storage access method

VSE/AF. Virtual Storage Extended/Advanced Functions

VSE/ESA. Virtual Storage Extended/Extended System Architecture

VSE/SP. Virtual Storage Extended/System Package

VSE/VSAM. Virtual Storage Extended/Virtual Storage Access Method program product

VTOC. Volume Table Of Contents

VTOCIX. The data set on which the location of the format-1 DSCBs of the VTOC are kept in an index for quick access by DADSM.

VVDS. The VSAM volume data set. It describes the VSAM data sets, on a volume, that are cataloged in the integrated catalog facility catalog. The name of the data set is SYS1.VVDS.Vvolser.

W

WTO. Write to operator

Numeric

2-path string. A series of physically connected DASD units in which the head of string unit provides two data transfer paths that can operate simultaneously.

4-path string. A series of physically connected DASD units in which the heads of string provide four data transfer paths that can operate simultaneously. A four path string requires two 3380 Enhanced Subsystem model A-units.

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Reader's Comments

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