IBM Systems Reference Library

Catalog of Programs for IBM System/360

August 1967

This Catalog contains a complete listing of
all programs available for the IBM System/360.
It obsoletes the previous edition of this
Catalog, Form No. C20-1619-2, and its
Supplement, Form No. N20-0030-13.

Instructions for ordering magnetic tape
programs are contained in the section of
the Introduction entitled, "How to
Order Programs".

This Catalog contains the following sections:

1. Introduction and instructions on how to
   use the catalogs and how to order the
   programs.

2. A list of corrections and revisions to
   announced programs (if applicable).

3. A Keyword-in-Context (KWIC) Index.

4. Abstracts of all available programs.

5. A list of deletions (if applicable).

All programs listed in this Catalog should
be ordered through your local IBM Branch Office.

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INTRODUCTION

The Catalogs for the systems listed below, with their form numbers, are currently available from IBM Branch Offices. Individually updated supplemental issues of all Catalogs will be published under the form numbers indicated and can be obtained from IBM Branch Offices as they are published.

Title	Catalog Form No.	Supplement Form No.
Catalog of Programs for IBM 1240, 1401, 1420, 1440, and 1460 Data Processing Systems	C20-1601	N20-0013
Catalog of Programs for IBM 705, 1410, 7010, 7070, 7072, 7074, 7080, 7740 and 7750 Data Processing Systems	C20-1602	N20-0014
Catalog of Programs for IBM 1620 and 1710 Data Processing Systems	C20-1603	N20-0015
Catalog of Programs for IBM 704, 709, 7040, 7044, 7090 and 7094 Data Processing Systems	C20-1604	N20-0016
Catalog of Programs for IBM System/360	C20-1619	N20-0030
Catalog of Programs for IBM 1130 Computer System and IBM 1800 Data Acquisition and Control System	C20-1630	N20-0031

This Catalog and its supplements contain a complete listing of all programs available for System/360.

To assist you in using this Catalog, the abstracts are listed by file number in numeric and alphabetical sequence.

TYPES OF PROGRAMS

Type I

Programming Systems are conceived and developed by IBM as integral parts of the data processing system for which they are written.

Type II

Application Programs are carefully selected solutions by IBM of data processing problems. They are supported by well-planned documentation and tested procedures.

Both types of programs are maintained by IBM. Modifications are distributed to registered users of specific programs by the Program Information Department. Abstracts for Type I and Type II programs are contained in the "IBM Programs" Section of this Catalog.

Type III

IBM-Contributed Programs are contributed voluntarily by IBM employees to aid the programming and system community.

Type IV

Customer-Contributed Programs are valuable aids to the programming and systems community supplied by members of user organizations and individual users of

IBM serves solely as the distribution agent for Type III and Type IV programs. Abstracts for Type III and Type IV programs are contained in the "Contributed Programs" Section of this Catalog.

USER ORGANIZATIONS

The major user organizations are COMMON, GUIDE, and SHARE. Members of these organizations all have IBM systems installed, on order, or are major users. Members participate in the exchange of systems and programming information. They also provide information to IBM on desired product features and matters of general interest.

COMMON is an organization of users of IBM 1620, 1710, 1130, 1800 and System/360 Data Processing Systems.

GUIDE is an organization of users of the IBM 705, 1410, 7010, 7070, 7072, 7074 and 7080 Data Processing Systems and certain models of System/360.

SHARE is an organization of users of IBM 704, 709, 7040, 7044, 7090 and 7094 Data Processing Systems and certain models of System/360.

STANDARDS FOR TYPE IV (CUSTOMER-CONTRIBUTED) PROGRAMS

Programs written by customer personnel for submission to the Program Library must conform to established standards and procedures. These criteria differ according to the machine system for which the program is written. Copies of standards and procedures for Type IV (Customer-Contributed) Programs are available from the Program Information Department.

HOW TO ORDER PROGRAMS

Domestic Customers

All programs listed in this Catalog should be ordered through your local IBM Branch Office.

Distribution media information for each program can be found in the abstract. Programs are distributed in card form unless otherwise stated. If the abstract states a program is available in card form or on a 9-track or a 7-track Distribution Tape Reel (DTR), one of three media should be indicated on the order. If no specification is noted, 9-track DTR will be supplied. It is not necessary to submit reels of tape for programs indicated as available on DTR's. The DTR's will be supplied by IBM.

When the abstract states distribution of the program is on a 2400 foot reel of magnetic tape or a disk pack, the designated magnetic volume should be submitted with the program order. A reel of magnetic tape may be ordered through the local IBM Branch Office. All orders to be filled on magnetic tape reels should specify clearly the track and recording density requirements along with the installation name and location and program order number. Orders without the track and recording density requirements specified will be filled on 9-track tape at 800 bytes per inch.

The Program Information Department's objective is to complete the in-house processing of a program request within ten (10) working days of its receipt by the department.

IBM World Trade Users

World Trade users should order programs by contacting their IBM representative.

KEYWORD-IN-CONTEXT INDEX
(Illustrated next page)

The Keyword-in-Context (KWIC) Index lists available programs by their search words, for Contributed Programs, and by keywords, for IBM Programs. Search words are significant words that describe the program but do not necessarily appear in the title. Keywords are significant words which appear in the program title.

Each search word and each keyword is listed alphabetically in a column. Their respective context words are printed on either side. There is an index entry for each search word and keyword. Certain words are not accepted as indexing words (See section titled "Words Prevented From Indexing"). These words and words which the program author chooses to exclude from indexing will be printed with search words and keywords. The example shown illustrates the operation.

Note that the # sign always precedes the first word of the search word group or title. Each print line in the KWIC index contains 59 spaces. A search word group or title that is longer than 59 spaces will show only the characters that fall on either side of the search word or keyword being highlighted, up to the limits of one line. The # placed two spaces in front of the first word indicates that the entry is the second part of a two-line search word group or title. The complete search word group or title may be found in the section containing abstracts.

PROGRAM CLASSIFICATION CODES

Included below is a complete listing of classification codes for all types of programs included in this catalog.

In addition to assisting you in locating the abstract of each program, this list should prove useful in classifying programs written by IBM or customer personnel and contributed to the Program Libraries.

The System/360 four-digit identification code includes an alphabetic character which designates:

360A:	Type II Application Programs
360B:	Basic Operating System
360C:	Miscellaneous (Conversion)
360D:	Type III and IV Programs
360F:	Model 44

OG:	Model 67-Time Sharing System (TSS)
OM:	Tape Operating System
ON:	Disk Operating System
OP:	Basic Programming Support
OS:	Operating System
OT:	Model 20 Card
OU:	Model 20 Tape Program Support
OW:	Model 20 Disk Program Support

Programming Application Type II

Industry-Oriented Programs

Distribution
/DP/	Publishing
/DR/	Retail
/DW/	Wholesale
/DX/	Other

ogramming Systems Type I

L/	ALGOL Compiler
S/	Assembler
B/	COBOL Compiler
Q/	Communications Input/Output
L/	Control Program
V/	Conversion
C/	Documentor
M/	Data Management
N/	Diagnostic
D/	Editor
U/	Emulator Program
O/	FORTPAN
O/	Input/Output
M/	Library Material
D/	Loader
I/	Miscellaneous
S/	Operating System
L/	Programming Language/I Compiler
T/	Program Test
C/	Remote Computing
G/	Report Generator and Report Program Generator
I/	Simulator
M/	Sort/Merge
V/	Supervisor
T/	Utility

Finance
/FB/	Banking
/FF/	Finance Companies
/FI/	Brokerage and Investment
/FX/	Other

Federal Government
/GF/	Government, Federal

Insurance
/IB/	Blue Cross and Blue Shield
/IF/	Fire and Casualty
/IL/	Life
/IX/	Other

Manufacturing
/MA/	Aerospace
/MD/	Drug, Food, Chemical Products
/ME/	Electrical and Machinery
/MF/	Fabrication and Primary Metals
/MP/	Petroleum and Industrial Chemicals
/MR/	Transportation Equipment
/MT/	Textiles and Paper
/MX/	Other

Service
/SC/	Communication
/ST/	Transportation
/SU/	Utilities
/SX/	Other

Universities and Government
/UC/   Colleges and Universities
/UG/   Government, State and Local
/UH/   Hospital and Medical
/US/   Secondary Schools
/UX/   Other

Industry-Independent Programs

Cross Industry Group
/CA/   Statistical Applications
/CC/   Process Control
/CM/   Mathematical Applications
/CN/   Numerical Control Applications
/CO/   Operations Research
/CP/   Critical Path Scheduling
/CR/   Information Retrieval
/CS/   Simulators
/CX/   Other

Engineering
/EC/   Civil Engineering
/EE/   Electrical Engineering
/EH/   Chemical Engineering
/EM/   Mechanical Engineering
/EN/   Nuclear Codes
/EO/   Optics
/EX/   Other

Exploratory
/XP/   Mathematics and Applications

SMTD
/SE/   System Marketing Techniques

Type III and IV Programs

Utility (External) Programs   00.
    0 Unclassified
    1 Multiple Utility
    2 Flowcharting
    3 Tape Handling
    4 Disk Handling
    5 Drum and Direct Data Devices
    6 Graphic Display Devices

Utility (Internal) Programs   01.
    0 Unclassified
    1 Loading
    2 Clear/Reset Memory
    3 Check Sum Accumulative and
      Correction
    4 Internal Housekeeping
    5 Dump to Reload/Restore Operations
    6 File Organization
    7 Self Checking Digit
    8 Packed Data Handlers

Diagnostics   02.
    0 Unclassified
    5 Status Recorders

Programming Systems   03.
    0 Unclassified
    1 Assemblers

    2 Compilers
    3 Interpretive Systems
    4 Input/Output Control
    5 Report Generators
    6 Preprocessing and Editing
    7 Macros and Macro Generators
    8 Functions and Subroutines

Testing and Debugging   04.
    0 Unclassified
    1 Dumping
    2 Tracing
    3 Test Data Preparation
    4 Testing Systems
    5 Break Point Printing
    6 Memory Verification and Searching

Executive Routines   05.
    0 Unclassified
    1 Monitor
    2 Supervisor
    3 Disassembly and Derelativizing
    4 Relativizing
    5 Relocation

Data Handling   06.
    0 Unclassified
    1 Sorting
    2 Merging
    3 Data Transmission
    4 Table Operations
    5 Conversion and/or Scaling
    6 Character and Symbol Manipulation
    7 Information Classification, Storage,
      and Retrieval
    8 List Processing

Input   07.
    0 Unclassified
    1 Binary
    2 Octal
    3 Decimal
    4 BCD
    5 Hexadecimal
    6 Composite

Output   08.
    0 Unclassified
    1 Binary
    2 Octal
    3 Decimal
    4 BCD
    5 Hexadecimal
    6 Plotting
    7 Display
    8 Composite

Systems Analysis   10.
    0 Unclassified
    1 Network Design
    2 File and Core Requirement
    3 Systems Design
    4 Configurator

USING THE CATALOG

To locate a program begin by thinking of
the significant words describing the
desired program. Then look in the KWIC,
Keyword-in-Context, Index for the key-
word entry. The page number adjacent to
the order number will then direct you to
the corresponding program abstract. The
reference code is set up as follows:

System	Order No.
360P	UT-098
360D	04.4.001

The number of the   The IBM Library
IBM system for which   code for filing
the program is   and ordering a
written and the   program.
alphabetic character
designation.

Now refer back to the illustration in
the section entitled, "Keyword-in-Con-
text Index".
    The page number listed at the end
of the KWIC entry line will direct you
to the program abstract. Each abstract
describes the relevant program in enough
detail to help you determine if the
program will meet your requirements.

RIBUTED PROGRAM ABSTRACTS

The example above illustrates the
at in which the Contributed Program
racts appear. Explanations are in-
ed where the information is not
-explanatory.

Program Order Number followed by
first line of Search Word Group.

Second line of Search Word Group
if applicable.

Program Title.

Additional Author Information and
Secondary Classification codes.
From left to right in the above
example:

  N-User Organization Affiliation
   Code
       C-Common   S-Share
       G-Guide   N-Non-affiliated
   XXXX-User Organization Instal-
   lation Code will appear here if
   applicable, otherwise will be
   blank
   0001A-Submitter's own Program
   Identification if applicable
   00.0 06.5 08.0-Secondary
   Classification Codes (up to a
   maximum of four).

First line of Program Abstract.

LIST OF NEW PROGRAMS

This section consists of a list of new
programs added since the last edition of
the Catalog or its Supplement.

PROGRAM CORRECTIONS AND REVISIONS

There are two kinds of revisions to
programs listed in this Catalog:
     1. Changes in the program abstract.
     2. Functional changes in the pro-
         gram documentation and/or changes
         in the card decks and tapes.
     Abstract changes for all Types of
programs are noted in this Catalog and
in the Supplement. The following codes
appear at the extreme right end of the
title line for each abstract that is new
or has been revised in this edition:
     *N - This symbol indicates a new
          program
     *M - This symbol indicates that the
          title of the program has been
          modified when it appears only at
          the extreme right end of the
          title line
     *M - This symbol indicates that the
          text of the abstract has been
          modified when an additional *M
          or * alone appears at the ex-
          treme right end of each line of
          the abstract that has been
          modified
     *R - This symbol indicates that the
          entire text of the abstract has
          been revised
     Functional changes in program docu-
mentation and/or decks or tapes for

Type III (IBM-Contributed) and Type IV (Customer-Contributed) programs are listed in a special table preceding the KWIC Index. This data is listed under three headings: order number; machine system area; and the date the correction was effective. If a user has received the program data prior to the date indicated and would like to receive the correction, he must reorder the program. See the section entitled "How to Order Programs".

Information concerning functional changes in program documentation and/or decks or tapes for Type I (Programming Systems) and Type II (Application Programs) can be obtained through your IBM Branch Office.

DELETED PROGRAMS

The last section of this catalog contains a list of programs that have been re-moved. These programs are listed in sequence by machine systems and order number.

Included in the listing is an alpha-betical heading, "Reason for Removal". This letter refers to a key that indicates the specific reasons for removing the program from the Catalog.

Alphabetical Key to Reason for Removal

A   This program has been deleted because of low usage.
B   This program has been withdrawn at user organization direction.
C   This program has been deleted because of limited usefulness.
D   This program is obsoleted and replaced by file number -----.
F   This program has been withdrawn by the author.

Programs deleted by the letter "D" are followed by a program order number. This is the order number of the program that replaces the deleted program.

An abstract for the replacement program may be found in the "Abstracts of Available Programs" Sections in this Catalog.

LIST OF PROGRAM CORRECTIONS + REVISIONS

ORDER NUMBER	MACHINE AREA	DATE
00.0.001	360D	12-13-66
01.6.002	360D	05-10-67
03.2.001	360D	01-24-67
03.4.007	360D	03-28-67
05.1.003	360D	01-31-67
05.1.005	360D	03-13-67
05.3.001	360D	07-03-67
11.1.005	360D	05-27-67
15.1.002	360D	05-19-67
16.2.001	360D	07-03-67
16.4.001	360D	01-12-67
16.6.001	360D	05-01-67
19.1.002	360D	06-06-67
19.0.001	360D	01-16-67

List of New Programs

WORDS PREVENTED FROM INDEXING

For the purpose of this index the following words are considered to be too general to be useful for retrieval purposes and are therefore prevented from indexing. This list may be modified as needed to make the index more useful. Note that hyphenated words are treated as one index word, with only the first word being significant.

A
ABOUT
ABOVE
ACCOMPANYING
ACCORDING
ACHIEVED
ACHIEVEMENTS
ACHIEVES
ACQUIRED
ACROSS
ADAPTATION
ADDITIONAL
ADVANTAGE
ADVANTAGES
AFFECT
AFFECTED
AFFECTING
AFFORDING
AFTER
AGAIN
AGAINST
AIMED
ALL
ALLEGED
ALLOW
ALLOWED
ALLOWING
ALLOWS
ALMOST
ALONE
ALONG
ALSO
AMONG
AN
ANALYSES
ANALYSIS
ANALYZING
AND
AND/OR
ANOTHER
ANY
APART
APPARENT
APPARENTLY
APPEAR
APPEARING
APPLICABILITY
APPLICABLE
APPLICATION
APPLICATIONS
APPLIED
APPLY
APPLYING
APPRECIABLE
APPROACH
APPROACHES
APPROACHING
ARE
ARISE
ARISING
AROUND
AS
ASCERTAIN
ASPECT
ASPECTS
AT
ATTAIN
ATTAINED
ATTEMPT
ATTEMPTED
ATTEMPTS
AVAILABILITY
AVAILABLE
AVOIDING
AWAY
B
BAD
BASED
BASIC
BE
BECAUSE
BEEN
BEFORE
BEING
BELONG

BELOW
BEST
BETTER
BETWEEN
BEYOND
BIG
BOTH
BRIEF
BRIEFLY
BRING
BUT
BY
C
CALLED
CAN
CAPABILITIES
CAPABILITY
CAPABLE
CAUSE
CAUSED
CAUSES
CAUSING
CERTAIN
CHALLENGE
CHIEF
CO
COME
COMING
COMPANIES
COMPANY
COMPLETE
COMPLETED
COMPLETELY
COMPRISING
CONCERNED
CONCERNING
CONSIDERATION
CONSIDERATIONS
CONSIDERED
CONSIDERING
CONSISTING
CONVENIENT
CORP
CORPORATION
COULD
CPS
D
DATA
DE
DEG
DEPARTMENT
DEPARTMENTS
DEPENDING
DEPT
DETERMINATION
DETERMINE
DETERMINED
DETERMINING
DI
DID
DISCUSSION
DO
DOES
DOING
DONE
DOUBLE
DOUBLY
DOWN
DR
DUE
DURING
E
EACH
EARLIER
EARLY
EASE
EASILY
EASY
EIGHT
EITHER
ENG
ET
ETC
EXPLANATION
EXTREMELY

F
FAR
FAST
FEW
FEWER
FIFTH
FINAL
FIRST
FIVE
FOR
FOUR
FOURTEEN
FOURTH
FROM
FT
FULL
FULLY
FUNDAMENTALS
FURTHER
G
GAVE
GENERAL
GENERALLY
GIVE
GIVEN
GIVES
GIVING
GOOD
GREATER
GREATLY
GUIDE
H
HAD
HAS
HAVE
HAVING
HE
HIGH
HIGHER
HIGHLY
HIS
HOW
I
IBM
IF
II
III
IMPLICATIONS
IMPORTANCE
IMPORTANT
IMPROVED
IMPROVEMENT
IMPROVEMENTS
IMPROVING
IN
INC
INCLUDE
INCLUDED
INCLUDING
INCORPORATING
INCREASE
INCREASED
INCREASES
INCREASING
INFLUENCE
INFLUENCED
INFLUENCING
INNER
INSIDE
INSTEAD
INTERESTING
INTO
INVOLVING
IS
IT
ITS
ITSELF
IV
J
K
KEPT
L
LARGE
LARGER
LIKE

LIKELY
LONG
LOOK
LOW
LOWER
LTD
M
MADE
MAKE
MAKES
MAKING
MANY
MEANS
MET
METHOD
METHODS
MORE
MOST
MPH
MULTIPLE
MY
N
NEAR
NEARLY
NECESSARY
NEED
NEEDED
NEEDS
NEW
NEWER
NEWLY
NEXT
NINE
NO
NOT
NOW
O
OBSERVED
OBTAINABLE
OBTAINED
OBTAINING
OCCURRING
OF
OFF
ON
ONE
ONLY
ONTO
OR
OTHER
OUR
OUT
OVER
P
PARTICULAR
PER
POOR
POSSIBILITY
POSSIBLE
PRACTICAL
PRELIMINARY
PRESENCE
PRESENT
PRIMARY
PRINCIPLE
PRINCIPLES
PROCEDURE
PROCEDURES
PROGRAM
PROGRAMMING
PROGRAMS
PUT
Q
R
RECENT
REGARDING
RELATED
RELATING
RELATION
RELATIONSHIP
RELATIONSHIPS
RELATIVE
REQUIRE
REQUIRED
REQUIRES

REQUIRING
RESULTING
RESULTS
ROUTINE
S
SCHEME
SCHEMES
SEC
SECONDARY
SEE
SEEMS
SEEN
SELF
SEVEN
SEVENTH
SEVERAL
SHORT
SHORTER
SIGNIFICANCE
SIGNIFICANT
SIMILAR
SIMPLE
SIMPLER
SIMPLY
SINCE
SINGLE
SIX
SIXTH
SLOW
SLOWLY
SMALL
SMALLER
SMALLEST
SO
SOME
SPECIAL
SUBROUTINE
SUCH
SUGGESTED
SUGGESTIONS
SUITABLE
SUMMARY
SURVEY
SYSTEM
SYSTEMS
T
TAKE
TAKEN
TAKING
TECHNIQUE
TECHNIQUES
TEN
THAN
THAT
THE
THEIR
THEM
THEORETICAL
THERE
THEREFROM
THEREON
THESE
THEY
THIRD
THIS
THOSE
THOUGHTS
THREE
THROUGH
THRU
TO
TOGETHER
TOTAL
TOTALLY
TOWARD
TOWARDS
TRI
TWO
U
UNDER
UNTIL
UP
UPON
USAGE
USE

USED
USEFUL
USEFULNESS
USER
USERS
USES
USING
UTILIZATION
UTILIZE
UTILIZING
V
VARIOUS
VARYING
VERSUS
VERY
VI
VIA
VII
VIII
VS
W
WAS
WHAT
WHEN
WHERE
WHEREBY
WHICH
WHILE
WHO
WHOSE
WHY
WILL
WITH
WITHIN
WITHOUT
WOULD
X
XI
XII
XIII
Y
YET
YOUR
Z
2K
4K
8K
10K
12K
14K
16K
0
1
1130
1240
1401
1410
1420
1440
1460
1620
1710
1800
2
3
4
5
6
7
704
705
709
7010
7040
7044
7070
7072
7074
7080
7090
7094
7740
7750
8
9

Keyword-in-Context (KWIC) Index

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**A-CM-03X   CORRELATION REGRESSION TESTS   *R
TISTICS ANALYSIS MATRICES POLYNOMIALS INTERGRATION FUNCTIONS ROOTS**
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CM-03X

TITLE -- SCIENTIFIC SUBROUTINE PACKAGE

SCIENTIFIC SUBROUTINE PACKAGE CONSISTS OF A COLLECTION OF
FORTRAN SUBROUTINES, INPUT-OUTPUT FREE, WHICH CAN BE COMBINED
WITH A USERS INPUT, OUTPUT OR COMPUTATIONAL ROUTINES TO
MEET HIS INDIVIDUAL REQUIREMENTS. THE PRIMARY PURPOSE OF
THIS PACKAGE IS TO MAKE AVAILABLE A BASIC MATHEMATICAL AND
STATISTICAL SUBROUTINE LIBRARY TO AID THE USER IN THE
DEVELOPMENT OF HIS OWN FORTRAN SUBROUTINE LIBRARY. THE USER
MAY SUPPLEMENT OR MODIFY THE COLLECTION TO MEET HIS NEEDS.
THE LIBRARY INCLUDES A WIDE VARIETY OF SUBROUTINES TO PERFORM
THE FUNCTIONS LISTED BELOW. THERE IS NO INTENT TO IMPLY
THAT THESE SUBROUTINES REPRESENT THE CURRENT ,,STATE OF THE ART,,
IN STATISTICS OR NUMERICAL ANALYSIS. HOWEVER, THEY SHOULD BE
USEFUL IN SOLVING THE MORE COMMONLY ENCOUNTERED PROBLEMS IN
ENGINEERING AND SCIENCE. MOST OF THE NEW SUBROUTINES ARE
AVAILABLE IN BOTH SINGLE AND DOUBLE PRECISION.

INDIVIDUAL SUBROUTINES, OR COMBINATIONS OF THEM, CAN BE USED
TO CARRY OUT-
STATISTICS -- ANALYSIS OF VARIANCE /FACTORIAL DESIGN/...
CORRELATION ANALYSIS... MULTIPLE LINEAR REGRESSION...
POLYNOMIAL REGRESSION... CANONICAL CORRELATION... FACTOR
ANALYSIS /PRINCIPAL COMPONENTS, VARIMAX/... DISCRIMINANT
ANALYSIS /MANY GROUPS/... TIME SERIES ANALYSIS... DATA SCREENING
AND ANALYSIS... NONPARAMETRIC TESTS... RANDOM NUMBER GENERATION
/UNIFORM, NORMAL/.
MATHEMATICS -- INVERSION... EIGENVALUES AND VECTORS /REAL
SYMMETRIC CASE/... SIMULTANEOUS LINEAR ALGEBRAIC EQUATIONS...
TRANSPOSITIONS... MATRIX ARITHMETIC /ADDITION, PRODUCT, ETC./...
MATRIX PARTITIONING... MATRIX TABULATION AND SORTING OF ROWS
OR COLUMNS... ELEMENTARY OPERATIONS ON ROWS OR COLUMNS OF
MATRICES... MATRIX FACTORIZATION... INTEGRATION OF GIVEN OR
TABULATED FUNCTIONS... SOLUTION OF SYSTEMS OF FIRST-ORDER
DIFFERENTIAL EQUATIONS... FOURIER ANALYSIS OF GIVEN OR
TABULATED FUNCTIONS... BESSEL AND MODIFIED BESSEL FUNCTION
EVALUATION... GAMMA FUNCTION EVALUATION... JACOBIAN ELLIPTIC
FUNCTIONS... ELLIPTIC, EXPONENTIAL, SINE COSINE, FRESNEL
INTEGRALS... FINDING REAL ROOTS OF A GIVEN FUNCTION...
FINDING REAL AND COMPLEX ROOTS OF A REAL POLYNOMIAL...
POLYNOMIAL ARITHMETIC /ADDITION, DIVISION, ETC./....
POLYNOMIAL EVALUATION, INTEGRATION, DIFFERENTIATION...
CHEBYSHEV, HERMITE, LAGUERRE, LEGENDRE POLYNOMIALS...
MINIMUM OF A FUNCTION... APPROXIMATION, INTERPOLATION
AND TABLE CONSTRUCTION.

FEATURES- ALL SUBROUTINES ARE FREE OF INPUT/OUTPUT STATEMENTS...
SUBROUTINES DO NOT CONTAIN PERMANENT MAXIMUM DIMENSIONS FOR
THE DATA ARRAYS NAMED IN THEIR CALLING SEQUENCE... ALL
SUBROUTINES ARE WRITTEN IN FORTRAN... ALL SUBROUTINES ARE
DOCUMENTED UNIFORMLY.

PROGRAMMING SYSTEMS- THE SCIENTIFIC SUBROUTINE PACKAGE HAS
BEEN DEVELOPED USING SYSTEM/360 BASIC PROGRAMMING SUPPORT
FORTRAN COMPILER /TAPE/. HOWEVER, THE SUBROUTINES OF SSP/360
SHOULD COMPILE AND EXECUTE WITH ANY SYSTEM/360 FORTRAN
COMPILER CAPABLE OF ACCEPTING BASIC PROGRAMMING SUPPORT
FORTRAN STATEMENTS.

BASIC MACHINE CONFIGURATION- A SYSTEM/360 CONFIGURATION
SUITABLE FOR THE FORTRAN COMPILER CHOSEN. THE MACHINE
CONFIGURATION REQUIRED FOR ANY GIVEN PROBLEM DEPENDS ON
THE NUMBER OF SUBROUTINES USED, THE SIZE OF THE COMPILED
SUBROUTINE, THE SIZE OF THE COMPILED MAIN PROGRAM, THE SIZE OF
THE CONTROL PROGRAM, AND THE DATA STORAGE REQUIREMENTS.

BASIC PROGRAM MATERIAL -
     DOCUMENTATION - APPLICATION DIRECTORY... PROGRAMMERS
     MANUAL, H20-0205.
     MACHINE READABLE - SOURCE DECKS AND SAMPLE PROBLEM SOURCE
     DECKS WITH DATA ON ONE 9-TRACK OR 7-TRACK /DATA
     CONVERSION FEATURE REQUIRED/ 2400 FOOT REEL OF
     MAGNETIC TAPE OR ONE 1316 DISK PACK.

NOTES- THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM
REPRESENTATIVE OR SUPPLIED.
THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.
IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
FORWARDED.

**-CN-10X   APT NUMERICAL CONTROL
ESSOR**
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CN-10X

THE APT PROCESSOR HAS THE CAPABILITY OF PERFORMING A
VARIETY OF FORTRAN-LIKE MATHEMATICAL CALCULATIONS, DEFINING
THE EQUATIONS OF COMPLEX GEOMETRICAL SURFACES FROM SEVERAL
FORMS OF INPUT, COMPUTING THE CUTTER PATHS REQUIRED TO
REMOVE THE MATERIAL ACCORDING TO THE USERS SPECIFICATION,
AND LINKING TO USER-WRITTEN POST·PROCESSORS TO PREPARE THE
INPUT FOR A PARTICULAR MACHINE TOOL AND CONTROL SYSTEM
COMBINATION. THE APT PROCESSOR ENABLES THE USER TO USE AN
ENGLISH-LIKE PROBLEM ORIENTED LANGUAGE TO CONVERT THE INFORMATION
FROM AN ENGINEERING DRAWING TO THE FORMAT REQUIRED FOR
NUMERICALLY CONTROLLED MACHINE TOOLS. THE PART PROGRAM IS A
SEQUENCE OF STATEMENTS WHICH DEFINES THE PART GEOMETRY,
MACHINE OPERATIONS, AND AUXILIARY MACHINE FUNCTIONS. THIS
PART PROGRAM, IN PUNCHED CARD FORM, BECOMES THE INPUT TO THE
APT PROCESSOR. THE APT PROCESSOR IS CAPABLE OF HANDLING
TWO-DIMENSIONAL, THREE-DIMENSIONAL, AND COMPLEX FIVE-AXIS
PARTS.

USER RESPONSIBILITIES- THE USER MUST PROVIDE THE POST-PROCESSOR
PROGRAMS THAT ARE REQUIRED. THESE PROGRAMS CONVERT THE RESULTS
OF THE APT PROCESSOR INTO THAT FORMAT REQUIRED BY A PARTICULAR
MACHINE TOOL AND CONTROL SYSTEM COMBINATION. INSTRUCTIONS
REGARDING THE INTEGRATION OF THESE POST PROCESSORS INTO THE
APT SYSTEM IS PROVIDED IN THE SYSTEM MANUAL /Y20-0080/.

PROGRAMMING SYSTEMS- THE APT PROCESSOR IS WRITTEN IN FORTRAN IV
LEVEL-H AND IN ASSEMBLER LANGUAGE. IT OPERATES UNDER THE
CONTROL OF OPERATING SYSTEM/360 AND REQUIRES, IN ADDITION
TO THE ASSEMBLER, LEVEL-H COMPILER, AND THEIR ASSOCIATED
LIBRARIES, THE LEVEL-E LINKAGE EDITOR AND THE IEBUPDAT UTILITY.

MINIMUM SYSTEM REQUIREMENTS- SYSTEM/360, 2040 MODEL H
WITH FLOATING-POINT ARITHMETIC... SELECTOR CHANNEL...
DISK STORAGE DEVICE /TOTAL INSTALLATION REQUIREMENTS SHOULD
BE CONSIDERED/... SIX LOGICAL SEQUENTIAL I/O DEVICES /MAGNETIC
TAPE DRIVES OR EQUIVALENT/... CARD READER, CARD PUNCH, AND
PRINTER OR TAPE DRIVES FOR PERIPHERAL I/O. MINIMUM REQUIREMENTS
OF OPERATING SYSTEM/360 FOR DISK STORAGE DEVICES MUST BE
CONSIDERED IN ADDITION TO THESE REQUIREMENTS. TAPE PUNCHING
FACILITIES EITHER ON-LINE OR OFF-LINE ARE USUALLY REQUIRED
FOR PREPARATION OF NUMERICAL CONTROL MACHINE TOOL INPUT MEDIA.
THE COLUMN BINARY FEATURE MAY BE REQUIRED FOR USE WITH
CUSTOMER-WRITTEN POST-PROCESSOR PROGRAMS.

BASIC PROGRAM MATERIAL
     DOCUMENTATION - APPLICATION DIRECTORY... PART PROGRAMMERS
     MANUAL, H20-0309... OPERATORS MANUAL, H20-0331.
     MACHINE READABLE - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
     FEATURE REQUIRED/ REEL OF MAGNETIC TAPE CONTAINING
     LOAD MODULES, SOURCE MODULES, OVERLAY STRUCTURE AND
     SAMPLE PROBLEMS IN DISK RESTORE MODE.

OPTIONAL PROGRAM MATERIAL - PROGRAM FLOWCHARTS ON ONE 9-TRACK
     OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF
     MAGNETIC TAPE.

NOTES- THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM
REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400
FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

**360A-CO-14X   MATHEMATICAL PROGRAMMING
SYSTEM - LINEAR PROGRAMMING CAPABILITY**
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CO-14X

MPS COMBINES THE BEST FEATURES OF CURRENT IBM LINEAR
PROGRAMMING SYSTEMS PLUS SIGNIFICANT NEW CAPABILITIES SUCH AS-
     - A DYNAMIC STORAGE ALLOCATION ALGORITHM TO UTILIZE THE
     SYSTEM/360 MEMORY AND INPUT/OUTPUT DEVICES MOST EFFICIENTLY
     DURING PROBLEM SOLUTION.
     - AN IMPROVED INVERSION TECHNIQUE WHICH IMPROVES ACCURACY
     AND REDUCES SOLUTION TIME.
     - A MAXIMUM PROBLEM SIZE OF 4,095 ROWS.

LINEAR PROGRAMMING IS A MATHEMATICAL PROGRAMMING TECHNIQUE
FOR DETERMINING THE OPTIMUM SOLUTION TO A SYSTEM OF LINEAR
INEQUALITIES. THIS SOLUTION MAY BE AN OPTIMUM ALLOCATION OF
RESOURCES /CAPITAL, RAW MATERIALS, MANPOWER, ETC./ TO SPECIFIED
ACTIVITIES /INVESTMENTS, PRODUCTS, JOBS/ TO OBTAIN A PARTICULAR
OBJECTIVE /MINIMUM EXPENSE, MAXIMUM PROFIT/ WHEN THERE ARE
ALTERNATE USES FOR THESE RESOURCES. LINEAR PROGRAMMING PLAYS
AN IMPORTANT ROLE IN SUCH AREAS AS MATERIALS ALLOCATION,
INGREDIENT BLENDING, /FEED, FLOUR, GASOLINE, ETC./, PRODUCTION
SCHEDULING, DISTRIBUTION, AND SHIPPING. THIS PROGRAMMING
SYSTEM OPERATES UNDER CONTROL OF THE IBM OPERATING SYSTEM/360.
IT CONSISTS OF A NUMBER OF ROUTINES CALLED PROCEDURES,
STORED ON THE PROGRAM LIBRARY RESIDENCE DEVICE OF OPERATING
SYSTEM/360. ONLY THOSE PROCEDURES CURRENTLY BEING EXECUTED
ARE BROUGHT INTO MAIN STORAGE. THE PARTICULAR PROCEDURES
TO BE EXECUTED ARE UNDER THE SUPERVISION OF A CONTROL PROGRAM
PREPARED BY THE USER. THIS CONTROL PROGRAM IS COMPOSED OF
STATEMENTS WHICH SPECIFY TO THE SYSTEM THE DESIRED PROCEDURES
TO BE EXECUTED. THE SEQUENCE OF THESE STATEMENTS DEFINES A
SOLUTION STRATEGY FOR SOLVING A PARTICULAR LINEAR PROGRAMMING
PROBLEM.

FEATURES-
     - THE SYSTEM UTILIZES THE REVISED SIMPLEX METHOD /PRODUCT
     FORM OF INVERSE/ WITH BOUNDED VARIABLES AND RANGE CONSTRAINTS.
     - A HIGHLY EFFICIENT INVERSION TECHNIQUE USING A
     TRIANGULARIZATION METHOD PERMITS INVERSIONS TO BE MADE
     FREQUENTLY, THUS INCREASING THE SPEED OF SUCCEEDING
     ITERATIONS AND MAINTAINING A HIGH DEGREE OF ACCURACY.
     - A MULTIPLE PRICING METHOD, ADJUSTED FOR PROBLEM SIZE AND
     AMOUNT OF AVAILABLE STORAGE, REDUCES THE AMOUNT OF FILE
     PROCESSING AND INCREASES SOLUTION SPEED.
     - DYNAMIC STORAGE ALLOCATION PROVIDES FOR MAXIMUM UTILIZATION
     OF AVAILABLE SYSTEM/360 COMPONENTS.
     - MAXIMUM PROBLEM SIZE IS 4,095 ROWS.
     - CONDITIONAL CONTROL STATEMENTS PERMIT ALTERNATE SOLUTION
     STRATEGIES TO BE IMPLEMENTED DEPENDING UPON THE CONDITIONS
     WHICH ARISE DURING SOLUTION.
     - INTERRUPT FACILITIES PROVIDE THE MEANS FOR PRE-PLANNING
     ALTERNATE STRATEGIES IN THE EVENT OF OFF-NORMAL CONDITIONS.
     - SIMULTANEOUS PARAMETRIC PROGRAMMING ON BOTH THE RIGHTHAND
     SIDE AND OBJECTIVE FUNCTION MAY BE UTILIZED.
     - PARAMETRIC PROGRAMMING ON MATRIX ROWS OR COLUMNS.
     - MODULAR DESIGN MAKES IT EASY TO ADD, MODIFY, REPLACE OR
     DELETE FUNCTIONS AS NEW REQUIREMENTS DEVELOP.
     - PROVISION FOR CONVERTING INPUT DATA FROM THE 7040/44,
     1620 - 1311, AND 1400 - 1311 LINEAR PROGRAMMING SYSTEMS IS
     PROVIDED.

PROGRAMMING SYSTEMS- OS/360, RELEASE 7. MPS/360 IS WRITTEN IN
THE OS/360 ASSEMBLER LANGUAGE. IT USES THE BSAM AND EXCP
DATA ACCESS METHODS OF OS/360.

MACHINE CONFIGURATION- MPS/360 REQUIRES A S/360 WITH AT
LEAST 65,536 BYTES, THE STANDARD AND DECIMAL INSTRUCTION SETS,
THE FLOATING POINT OPTION, AND, IF THE SYSTEM OUTPUT IS A
PRINTER, IT MUST HAVE 132 PRINT POSITIONS /A MINIMUM OF 44K
BYTES MUST BE AVAILABLE FOR MPS/360 PROGRAM AND DATA STORAGE/.
THIS VERSION OF MPS/360 SUPPORTS THE 2400 SERIES MAGNETIC TAPE
UNITS MODELS 1, 2, AND 3 AND THE 2311 DISK STORAGE DRIVE.
THE PROBLEM SIZE /NUMBER OF ROWS/ WHICH MPS/360 SOLVES IS
DIRECTLY DEPENDENT UPON THE SIZE OF MEMORY AVAILABLE FOR DATA.
THE TOTAL AMOUNT OF CORE STORAGE USED BY MPS/360 IS DIVIDED
INTO TWO PARTS, PROGRAM STORAGE AND DATA STORAGE. THE SIZE
OF THE MPS/360 PROGRAM IS APPROXIMATELY 29,800 BYTES WITH A
SLIGHT VARIATION BECAUSE OF THE NUMBER AND TYPE OF I/O
DEVICES USED TO SOLVE A GIVEN PROBLEM. THE AMOUNT OF STORAGE
AVAILABLE FOR DATA VARIES DEPENDING ON THE FOLLOWING FACTORS-
     - S/360 CPU SIZE.
     - SIZE OF RESIDENT OS/360.
     - IN A MULTI-TASK OPERATING SYSTEM. THE SIZE OF CORE
     CURRENTLY BEING USED BY OTHER TASKS.
     - THE USER-SPECIFIED AMOUNT OF DATA CORE AVAILABLE TO
     MPS/360 FOR THE CURRENT RUN.

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THE DESIGN OF MPS/360 ALLOWS THE USER TO SOLVE PROBLEMS
MUCH LARGER THAN THE DESIGNED NORM /TO BE DEFINED LATER/,
BUT WITH A REDUCTION OF EFFICIENCY. THIS CONSCIOUS DESIGN
GOAL OF THE SYSTEM ALLOWS THE USER TO SOLVE ,,IN HOUSE,,
THOSE FEW PROBLEMS WHICH EXCEED HIS NORMAL REQUIREMENTS.
HOWEVER, IT IS RECOMMENDED THAT THE SYSTEM/360 CPU SIZE BE
SELECTED USING THE DESIGNED NORM PROBLEM SIZE RATHER THAN
THE MAXIMUM PROBLEM SIZE. THE NUMBER OF DATA STORAGE BYTES
AVAILABLE TO MPS/360 MAY BE OBTAINED BY SUBTRACTING FROM THE
S/360 CPU SIZE-
 - SIZE OF RESIDENT OS/360.
 - AMOUNT OF CORE, IF ANY, BEING CURRENTLY USED BY OTHER TASKS.
 - 29,800 /APPROXIMATE PROGRAM SIZE OF MPS/360/.
FIGURE 1 REPRESENTS THE MAXIMUM AND THE DESIGNED NORM PROBLEM
SIZE WHICH MAY BE SOLVED WITH THE INDICATED NUMBER OF DATA
BYTES. THE APPLICATION DESCRIPTION MANUAL /H20-0136/
PROVIDES THE EQUATIONS NECESSARY TO EVALUATE THE MAXIMUM
PROBLEM FOR A GIVEN NUMBER OF DATA BYTES. MPS/360 REQUIRES
A MINIMUM NUMBER OF UTILITY FILES FOR THE PERMANENT AND
TEMPORARY STORAGE OF DATA. HOWEVER, IF AVAILABLE AND
SPECIFIED BY THE USER, THE SYSTEM WILL UTILIZE A SET OF
OPTIONAL FILES TO PROVIDE ADDITIONAL FLEXIBILITY OR MORE
EFFICIENT PROBLEM SOLUTION. A FILE IS A COLLECTION OF
RELATED DATA STORED AND RETRIEVED IN A SEQUENTIAL FASHION.
A FILE MAY BE STORED ON A PART OF A DIRECT ACCESS DEVICE
/2311/ OR A SINGLE REEL OF TAPE. FIGURE 2 CONTAINS THE FILES
REQUIRED BY MPS/360. NOTE THE SYSTEM INPUT, OUTPUT, PUNCH
AND SYSTEM RESIDENCE FILE HAVE BEEN EXCLUDED FROM THIS TABLE.
FIGURE 3 CONTAINS THE OPTIONAL FILES WHICH IF PRESENT WILL
BE UTILIZED BY MPS/360.

FIGURE 1

```
*****************************************************************
*ROWS/BYTES*17,300     *82,500*213,000*475,000*992,000     *
*****************************************************************
*MAXIMUM   * 305       *2,120 * 4,095 * 4,095 * 4,095      *
*****************************************************************
*DESIGNED *LESS THAN OR*200- * 700- *1600- *LESS THAN OR *
* NORM    *EQUAL TO 200*700  * 1600 *3500  *EQUAL TO 4,095*
*****************************************************************
```
,,DESIGNED NORM,, IS THE PROBLEM SIZE MPS/360 WAS DESIGNED TO
SOLVE NORMALLY ON THE SPECIFIED NUMBER OF DATA BYTES.

FIGURE 2

```
*****************************************************************
*FILE NAME  *                  DESCRIPTION                    *
*****************************************************************
*SYSMLCP /1/ *CONTAINS MACH. LANG. CONTROL PRODUCED BY COMPILER.*
*****************************************************************
*MATRIX1 /3/ *CONTAINS, IN INTERNAL FORM, THE LP MATRIX.       *
*****************************************************************
*ETA1 /2/    *CONTAINS,IN INTERNAL FORM,PRODUCT FORM OF INVERSE.*
*****************************************************************
*SCRATCH1 /3/*USED FOR TEMPORARY DATA STORAGE.                 *
*****************************************************************
*SCRATCH2 /3/*USED FOR TEMPORARY DATA STORAGE.                 *
*****************************************************************
*PROBFILE /2/*CONTAINS A MACH. INDEPENDENT REP. OF LP MODEL.   *
*****************************************************************
```

FIGURE 3

```
*****************************************************************
*FILE NAME   *                  DESCRIPTION                   *
*****************************************************************
*OLDPFILE /2/ *CONTAINS A MACHINE INDEPENDENT REPRESENTATION OF *
*             *PROBLEM WHICH IS TO BE REVISED OR COPIED.       *
*****************************************************************
*MATRIX2-4 /3/*UP TO 4 DEVICES MAY BE SPECIFIED FOR STORAGE OF *
*             *THE LP MODEL /THEY SHOULD BE ON SEP. CHANNELS/. *
*****************************************************************
*ETA 2-4 /2/  *UP TO 4 DEVICES MAY BE SPEC. FOR STORAGE OF PROD.*
*             *FORM OF THE INVERSE /SHOULD BE ON SEP. CHANNELS/.*
*****************************************************************
*MPSCRAT /1/  *USED BY THE POST-OPTIMAL PROCEDURES WHEN ONLY 4 *
*             *WORK REGIONS /MINIMUM/ HAVE BEEN SETUP.         *
*****************************************************************
*SYSABS       *A HIGH-SPEED PRINTER WHICH MAY BE USED TO MONITOR*
*             *THE LP SOLUTION.                                *
*****************************************************************
```

/1/ MUST BE A DIRECT ACCESS DEVICE.
/2/ IF 2400 SERIES TAPE UNIT, IT MUST BE 9-TRACK.
/3/ IF 2400 SERIES TAPE UNIT AND 7-TRACK, IT MUST HAVE THE DATA
    CONVERSION FEATURE.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY-USERS MANUAL,
        H20-0290... LP USERS MANUAL, H20-0291.
    MACHINE READABLE - RELOCATABLE LOAD MODULES, MESSAGE
        DESCRIPTIONS AND SAMPLE PROBLEM DECK ON ONE 9-TRACK OR
        7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE OR ON
        ONE 1316 DISK PACK. EACH OF THESE VOLUMES WILL ALSO
        CONTAIN THE OPTIONAL SOURCE CARD IMAGES.

OPTIONAL PROGRAM MATERIAL - PROGRAM FLOWCHARTS ON ONE 9-TRACK
    TAPE AND FLOWCHART PRINT PROGRAM ON ONE 9-TRACK DTR.

WHEN ORDERING THE BASIC MATERIAL 9-TRACK OR 7-TRACK MUST BE
INDICATED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE
OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH.
DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT-
NO TAPE SUBMITTAL IS REQUIRED.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-CP-04X   PROJECT MANAGEMENT SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CP-04X

PMS/360 IS A BATTERY OF COMPUTER PROGRAM MODULES THAT CAN
BE COMBINED TO FORM THE DATA PROCESSING ELEMENTS OF VARIOUS
MANAGEMENT SYSTEMS APPLICATIONS FOR COST AND SCHEDULE
PLANNING AND CONTROL. THESE MODULES SUPPORT CRITICAL PATH
ANALYSIS, PROJECT COST AND PROGRESS CONTROL, AND FLEXIBLE
REPORT PREPARATION. BRIEF DESCRIPTIONS OF THESE APPLICATION
TECHNIQUES AND THEIR SALIENT FEATURES ARE DESCRIBED BELOW.

PMS/360-NETWORK PROCESSOR- THIS PROCESSOR IS THE KEY PROGRAM
MODULE FOR EXECUTING THE PROGRAM EVALUATION AND REVIEW
TECHNIQUE /PERT/, AND OTHER CRITICAL PATH ANALYSES. PERT HAS
EVOLVED INTO A VERSATILE MANAGEMENT SYSTEM. ITS RECOMMENDED
IMPLEMENTATION INCLUDES A WORK-SEQUENCING OPERATION THAT
TREATS A PROJECT AS A SERIES OF INTERRELATED ACTIVITIES,
SOME CAN BE DONE IN PARALLEL, OTHERS MUST BE DONE SERIALLY.
A PROJECTS WORK WHEN DISPLAYED IN THIS FASHION FORMS A
NETWORK. THE LONGEST TIME PATH THROUGH THIS NETWORK DETERMINES
THE TIME REQUIRED TO COMPLETE THE PROJECT. THIS PATH IS
CALLED THE CRITICAL PATH. ALL OTHER PATHS THROUGH THE
NETWORK HAVE SOME SLACK WITH RESPECT TO THIS CRITICAL PATH.
THE JOB OF PROJECT MANAGEMENT THEN BECOMES ONE OF SO SCHEDULING
BOTH CRITICAL AND NON-CRITICAL WORK THAT IT TAKES BEST
ADVANTAGE OF AVAILABLE RESOURCES WHILE MAKING THE CRITICAL
PATH AS SHORT AS FEASIBLE. PMS/360 IS AN EXTREMELY VERSATILE
COMPUTER PROGRAM FOR IMPLEMENTING PERT-TYPE TECHNIQUE.
ITS FEATURES INCLUDE VARIABLE SIZE DATA FIELDS... VARIABLE
ORDERING OF INPUT ELEMENTS ON DATA CARDS... FLEXIBLE CALENDAR
CAPABLE OF SPECIFYING HOLIDAYS AND VACATION PERIODS...
ACTIVITES CAN BE TAGGED FOR WORK ON HOLIDAYS... OPTIONAL
USE OF MASTER FILES... NETWORKS MAY CONTAIN UP TO 254 SUBNET
SIZE RANGES FROM 2,000 TO 32,000 ACTIVITIES, DEPENDING ON
CORE MEMORY, DISK MEMORY, THE SIZE OF OTHER DATA ELEMENTS,
OPERATING SYSTEMS, ETC.... ABILITY TO PROCESS EITHER THE
NETWORK OR THE SUBNET APPROACH TO PERT... ABILITY TO ACCEPT
ACTIVITY TIME DURATIONS IN HOURS, DAYS, WEEKS, OR MONTHS...
NINE LEVELS OF MILESTONE SUMMARIZATION... TWO METHODS OF
MILESTONE SUMMARIZATION... ONE LEVEL OF ACTIVITY SUMMARIZATION
THAT ALLOWS THE SUMMARY ACTIVITIES TO BE SPECIFIED EXPLICITLY...
A DESCRIPTION OF UP TO 99 CHARACTERS FOR ACTIVITIES AND
MILESTONE EVENTS THAT MAY BE SUBDIVIDED AND OPERATED UPON
IN THE PMS/360 - REPORT PROCESSOR... OUTPUT THROUGH THE
PMS/360 REPORT PROCESSOR CAN BE FORMATTED AND TAILORED TO
INDIVIDUAL NEEDS... USER CONTROL OF PROGRAM LOGIC THROUGH
MODULAR DESIGN... PROGRAMMED FOR EASY MODIFICATION.

PMS/360 - COST PROCESSOR- THIS PROGRAM MODULE IS A COLLECTION
OF PROJECT-ORIENTED MANPOWER, MATERIAL AND COST PLANNING
AND CONTROL SUBROUTINES. IT CAN BE USED IN CONJUNCTION WITH
PERT, OR IN A COMPLETELY SEPARATE ,,COMPANION,, APPLICATION.
WHEN USED WITH THE OTHER MAJOR MODULES OF PMS/360 TO
IMPLEMENT THE DOD/NASA PERT COST TECHNIQUE, IT CAN PRODUCE
THE REPORTS REQUIRED FOR INTERNAL CONTROL AND THE TOTAL
MANAGEMENT CYCLE. ITS FEATURES INCLUDE AN ACCOUNTING CALENDAR
FOR VARIABLE COST PERIOD REPORTING... RATE TABLES FOR BUDGETS,
ACTUALS, ESTIMATES, COMMITMENTS AND OBLIGATIONS... CHARGE
NUMBER RATE TABLES FOR APPLICATION OF FACTORS SUCH AS GENERAL
AND ADMINISTRATIVE EXPENSES AND SPECIAL FEES... NINE-LEVEL
WORK BREAKDOWN STRUCTURE FOR PRODUCT-ORIENTED COST REPORTING...
NINE-LEVEL ORGANIZATION BREAKDOWN STRUCTURE FOR FUNCTION-ORIENTED
COST REPORTING... OPTIONAL USE OF MASTER FILE... APPROXIMATELY
32,000 CHARGE NUMBERS AND ORGANIZATION CODES PERMITTED AT
EACH LEVEL OF BOTH THE WORK BREAKDOWN STRUCTURE AND THE
ORGANIZATION BREAKDOWN STRUCTURE... GROUPING FACTORS FOR
SUMMARY RESOURCE REPORTING... VARIABLE CARD FORMAT...
VARIABLE FIELD SIZE FOR MANY DATA ELEMENTS... DESCRIPTION
FIELD FOR USE AS A USER OPTION... USER CONTROL OF PROGRAM
LOGIC THROUGH THE MODULAR DESIGN... PROGRAMMED FOR EASY
MODIFICATION... ADDITIONAL ,,CUSTOMIZED,, REPORTS POSSIBLE
THROUGH THE PMS/360 REPORT PROCESSOR.

PMS/360 - REPORT PROCESSOR- THE REPORT PROCESSOR IS DESIGNED
FOR USE IN OUTPUT REPORT PREPARATION FOR THE OTHER PMS/360
MODULES, OR AS AN INDEPENDENT MODULE WITHIN THE FRAMEWORK
OF PMS. ITS FEATURES INCLUDE A SET OF PERT REPORTS /SIMILAR
TO THOSE PRODUCED BY IBM PERT COST II, 7090-CP-02X/...
DOD/NASA PERT COST REPORTS... PROCEDURES THAT ALLOW A USER
TO DEFINE HIS OWN REPORTS WITHOUT THE AID OF A PROGRAMMER...
ABILITY TO READ A WIDE RANGE OF INPUT TAPES OTHER THAN
THOSE PREPARED BY OTHER PMS/360 MODULES... PROGRAMMED FOR
EASY MODIFICATION... ARITHMETIC AND LOGICAL PROCEDURES
PERMIT ANALYSIS OF DATA TO BE REPORTED... SELECTIVITY OF
DATA FOR PROCESSING.

USER RESPONSIBILITY- THE USER MUST BE FAMILIAR WITH THE
FUNDAMENTALS OF CRITICAL PATH, PERT, AND PERT-COST TECHNIQUES.
HELPFUL REFERENCES ARE GIVEN IN THE PMS/360 APPLICATION
DESCRIPTION MANUAL /H20-0210/. IN ADDITION, USERS MUST HAVE
ACCESS TO PERSONNEL FAMILIAR WITH THE OS/360 JOB CONTROL
LANGUAGE TO INSTALL THE SYSTEM IN THEIR ORGANIZATION.
THOROUGH READING OF THE PMS/360 USERS MANUAL /H20-0344/ IS
ALSO NECESSARY BEFORE ATTEMPTING IMPLEMENTATION.

PROGRAMMING LANGUAGE- WRITTEN IN OS/360 ASSEMBLER LANGUAGE.
IT OPERATES UNDER THE CONTROL OF OS/360 AND USES THE QSAM
DATA ACCESS METHOD.

SYSTEM CONFIGURATION- PMS/360 WILL REQUIRE A MINIMUM OF
44K DATA BYTES OF CORE STORAGE OVER AND ABOVE THE REQUIREMENTS
OF OS/360. IF LARGE CORE SIZE IS AVAILABLE, INCREASED DATA
CAPACITY /NETWORK SIZES, ETC./ CAN BE HANDLED. THE STANDARD
INSTRUCTION SET AND THE DECIMAL FEATURE INSTRUCTION SET ARE
USED. IF THE SYSTEMS OUTPUT DEVICE IS A PRINTER IT MUST HAVE
132 PRINT POSITIONS. PERIPHERAL DEVICES SUPPORTED BY PMS/360
INCLUDE 2400 SERIES MAGNETIC TAPE UNITS AND 2311 DISK STORAGE
DRIVES.

MINIMUM CONFIGURATION FOR THE OPERATING OF PMS/360 CONSISTS
OF A SYSTEM/360 MODEL 30, 2311 DISK STORAGE DRIVE, AND
FOUR 2400 SERIES TAPE UNITS, IN ADDITION TO OS/360 REQUIREMENTS
FOR SYSTEM INPUT, SYSTEM OUTPUT AND SYSTEM LIBRARY RESIDENCE.
IN LIEU OF THE TAPE UNITS, THREE ADDITIONAL 2311 DISK STORAGE
DRIVES MAY BE SUBSTITUTED, MAKING THE MINIMUM ALL-DISK
CONFIGURATION FOUR 2311 DISK STORAGE DRIVES OVER AND ABOVE
THE OS/360 REQUIREMENTS.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY... USERS
        MANUAL, H20-0344.
    MACHINE READABLE - LOAD MODULES, SAMPLE PROBLEM, REPORT
        PROCESSOR MACRO AND SOURCE PROGRAM ON ONE 9-TRACK OR
        7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF
        MAGNETIC TAPE.

    OPTIONAL PROGRAM MATERIAL - ONE 9-TRACK OR 7-TRACK /DATA
        CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE
        CONTAINING FLOWCHARTS.

IBM Programs

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NOTES- THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM
REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400
FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED,
9-TRACK WILL BE FORWARDED.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

S-17X   GENERAL PURPOSE SIMULATION
FOR OPERATION UNDER OS/360
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CS-17X

GPSS/360 IS A BROAD RANGE GENERAL PURPOSE TOOL FOR MODELING
AND EXAMINING THE BEHAVIOR OF SYSTEMS IN THE ENGINEERING AND
MANAGEMENT SCIENCE AREAS. MANY APPLICATIONS OF A COMPLEX
LOGICAL AND PROCEDURE ORIENTED NATURE WHICH ORDINARILY DEFY
MATHEMATICAL DESCRIPTION CAN BE EASILY DESCRIBED AND STUDIED
USING GPSS. VARYING ENVIRONMENTS MAY BE SIMPLY INTRODUCED
TO ENABLE THE USER TO EXPLORE ALTERNATIVES, AND IDENTIFY
CAPACITY LIMITATIONS. BOTH ENVIRONMENT AND ACTIVITIES MAY
HAVE RANDOM VARIATIONS. PROPOSED CHANGES TO EXISTING
POLICIES, METHODS, AND OPERATIONS CAN BE SUBJECTED TO CRITICAL
PERFORMANCE CRITERIA AND EVALUTED. THE USER MAY ALSO
INVESTIGATE AND JUDGE THE VALUE OF NEW PROPOSALS WITHOUT
COSTLY CAPITAL INVESTMENTS AND WITHOUT DISTURBING EXISTING
OPERATIONS.

THE APPLICATION AREAS IN WHICH GPSS TYPE SIMULATIONS HAVE
BEEN PROFITABLE ARE MANY AND VARIED -- INFORMATION SYSTEM
DESIGN, COMMUNICATION TRAFFIC FLOW AND CAPACITY STUDIES,
QUALITY CONTROL PROCEDURE SPECIFICATION, ADVANCED MANAGEMENT
PLANNING, ANALYSIS OF CONSUMER BEHAVIOR, INVENTORY SYSTEM
DESIGN, JOB SHOP PROCESSING, STUDIES OF EQUIPMENT AVAILABILITY,
PERFORMANCE AND RELIABILITY, TRANSPORTATION LOADING AND
SCHEDULING, COMPUTER CONFIGURATION EVALUATION, CAPITAL
INVESTMENT AND RISK STUDIES, ANALYSIS OF ALTERNATIVE
MILITARY STRATEGIES, ANALYSIS OF PLANS FOR CORPORATE GROWTH
AND MERGER, AMONG OTHERS.

FEATURES- GPSS/360 PROVIDES THE USER WITH ALL OF THE
CAPABILITIES OF 7040/7044 AND 7090/7094 GPSS III. SOME OF
THE FEATURES WHICH GIVE THE PROGRAM NEW AND EXTENDED CAPABILITIES
AND VERSATILITY ARE GPSS/360 OUTPUT EDITOR WHICH PROVIDES A
MEANS OF EDITING AND SPECIFYING THE CONTENT, FORMAT AND
TITLES OF SIMULATION OUTPUT... GRAPHICAL /PRINTER-PLOTTED/
OUTPUT OF SYSTEM NUMERICAL ATTRIBUTES, PROVIDED FOR ALL
ATRIBUTES EXCEPT FUNCTIONS, VARIABLES AND MATRIX SAVEVALUES.,
OUTPUT MAY BE PRINTED IN BAR-CHART OR CONTINUOUS FORM...
FULL-AND HALF-WORD SAVEVALUES WHICH ARE AVAILABLE AND MAY
BE SPECIFIED IN A MATRIX FORMAT... A NEW ENTITY, GROUP,
PROVIDED AS A MEANS OF COMMUNICATING WITH AND REFERENCING
TRANSACTIONS OR OTHER ENTITIES WHICH HAVE COMMON
CHARACTERISTICS., THIS FEATURE GREATLY ENHANCES THE SET
MANIPULATING ABILITY OF GPSS... BOOLEAN STATEMENTS...
EIGHT INDEPENDENT RANDOM NUMBER GENERATORS SO THAT EXACT
REPETITION OF PARTICULAR SEQUENCES ARE POSSIBLE FROM RUN
TO RUN... THE GPSS/360 ASSEMBLY PROGRAM WHICH PROVIDES
SYMBOLIC ADDRESSING OF ENTITIES., A CROSS REFERENCE DICTIONARY
LISTS THE BLOCKS IN WHICH THESE SYMBOLS ARE REFERENCED., A
MACRO FACILITY IS ALSO AVAILABLE... AN UPDATE FEATURE WHICH
PERMITS MAINTENANCE AND MODIFICATION OF SYMBOLIC MODESL
ON DISK OR TAPE, THEREBY MAKING UNNECESSARY THE MAINTENANCE
OF LARGE CARD DECKS... USER CHAIN STATISTICS LISTING THE
MAXIMUM NUMBER OF TRANSACTIONS TO APPEAR ON THE USER CHAIN,
AVERAGE NUMBER OF TRANSACTIONS TO APPEAR ON THE USER CHAIN,
TOTAL NUMBER OF TRANSACTIONS WHICH WERE PLACED ON THE USER
CHAIN AND THE AVERAGE TIME A TRANSACTION WAS ON THE USER CHAIN...
ADDITIONAL STATISTICAL SYSTEM NUMERICAL ATTRIBUTES /SNA/S/.
AVAILABLE TO THE USER... TRANSACTIONS WHICH ARE ALLOWED TO
PREEMPT FACILITIES BASED ON THE PRIORITY OF THE TRANSACTION,
AND THE PREEMPTED TRANSACTION WHICH IS AVAILABLE FOR
PROCESSING... THE NUMBER AND TYPE OF PARAMETERS ASSOCIATED
WITH A TRANSACTION WHICH ARE DYNAMICALLY VARIABLE., PARAMETERS
MAY BE SIGNED., PARAMETERS MAY BE SPECIFIED WITH A MAXIMUM
MAGNITUDE OF PLUS MINUS 2 TO THE THIRTY FIRST -1.

PROGRAMMING EXPERIENCE IS GENERALLY UNNECESSARY FOR USERS
OF GPSS/360. THE USER NEED ONLY KNOW THE RULES BY WHICH
SYSTEM MODELS ARE CONSTRUCTED. THE LOGICAL STRUCTURE AND
STATISTICAL PARAMETERS OF THE SYSTEM ARE FIRST MODELED IN
TERMS OF A GPSS/360 BLOCK DIAGRAM. INFORMATION FROM EACH
BLOCK OF THE DIAGRAM IS KEYPUNCHED INTO CARDS, CONTROL CARDS
ARE ADDED, AND THE INPUT IS THEN LOADED FOR ASSEMBLY AND
EXECUTION. NO OPERATOR INTERVENTION IS REQUIRED., ERROR
MESSAGES ARE PRINTED AUTOMATICALLY AS REQUIRED. THE OPERATING
SYSTEM USED PROVIDES GPSS/360 WITH INPUT-OUTPUT SERVICES.

USER RESPONSIBILITIES- A THROUGH UNDERSTANDING OF THE
PRINCIPLES OF SYSTEM MODELING... COMPLETE DEFINITION OF
SYSTEM TO BE MODELED, INCLUDING CONFIGURATION AND ALL
DECISION LOGIC... COLLECTION OF DATA TO BE USED AS INPUT
TO THE MODEL... MODEL VALIDATION TO ASSURE THAT OUTPUT IS
MEANINGFUL.

PROGRAMMING SYSTEMS- GPSS/360 IS WRITTEN IN ASSEMBLER
LANGUAGE AND OPERATES UNDER THE CONTROL OF EITHER OPERATING
SYSTEM/360 OR DISK OPERATING SYSTEM/360.

MINIMUM SYSTEM REQUIREMENTS- A 2030 MODEL F WITH UNIVERSAL
INSTRUCTION SET., 1442, 2501, 2520, OR 2540 CARD READER PUNCH.,
1403, 1404, 1443 OR 1445 PRINTER., AND TWO 2311 DISK STORAGE
DRIVES. ADDITIONAL CORE STORAGE WILL PERMIT THE CONSTRUCTION
OF LARGER, MORE COMPLEX MODELS.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY... INTRODUCTORY
        USERS MANUAL, H20-0304... USERS MANUAL, H20-0326...
        OPERATORS MANUAL, H20-0311.
    MACHINE READABLE - OBJECT DECKS AND SAMPLE PROBLEM DECK IN
        CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
        FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL - TWO 9-TRACK MAGNETIC TAPES-- ONE
    CONTAINING LISTINGS AND SOURCE DECKS, ONE CONTAINING
    FLOWCHARTS.

NOTES- WHEN ORDERING THE BASIC PROGRAM MATERIAL EITHER 9-TRACK
OR 7-TRACK MUST BE INDICATED. IF NOT SPECIFIED 9 TRACK WILL BE
FORWARDED.
DTR WILL BE PROVIDED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE TAPES REQUIRED FOR THE OPTIONAL MATERIAL MAY BE ORDERED FROM
YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE
2400 FEET IN LENGTH.

CONTINUED FROM PRIOR COLUMN--
            OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-CS-19X   GENERAL PURPOSE SIMULATION
SYSTEM FOR OPERATION UNDER DOS/360
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-CS-19X

GPSS/360 IS A BROAD RANGE GENERAL PURPOSE TOOL FOR MODELING
AND EXAMINING THE BEHAVIOR OF SYSTEMS IN THE ENGINEERING AND
MANAGEMENT SCIENCE AREAS. MANY APPLICATIONS OF A COMPLEX
LOGICAL AND PROCEDURE ORIENTED NATURE WHICH ORDINARILY DEFY
MATHEMATICAL DESCRIPTION CAN BE EASILY DESCRIBED AND STUDIED
USING GPSS. VARYING ENVIRONMENTS MAY BE SIMPLY INTRODUCED TO
ENABLE THE USER TO EXPLORE ALTERNATIVE, AND IDENTIFY CAPACITY
LIMITATIONS. BOTH ENVIRONMENT AND ACTIVITIES MAY HAVE
RANDOM VARIATIONS. PROPOSED CHANGES TO EXISTING POLICIES,
METHODS, AND OPERATIONS CAN BE SUBJECTED TO CRITICAL PERFORMANCE
CRITERIA AND EVALUATED. THE USER MAY ALSO INVESTIGATE
AND JUDGE THE VALUE OF NEW PROPOSALS WITHOUT COSTLY CAPITAL
INVESTMENTS AND WITHOUT DISTURBING EXISTING OPERATIONS.

THE APPLICATION AREAS IN WHICH GPSS TYPE SIMULATIONS HAVE
BEEN PROFITABLE ARE MANY AND VARIED -- INFORMATION SYSTEM
DESIGN, COMMUNICATION TRAFFIC FLOW AND CAPACITY STUDIES,
QUALITY CONTROL PROCEDURE SPECIFICATION, ADVANCED MANAGEMENT
PLANNING, ANALYSIS OF CONSUMER BEHAVIOR, INVENTORY SYSTEM
DESIGN, JOB SHOP PROCESSING, STUDIES OF EQUIPMENT AVAILABILITY,
PERFORMANCE AND RELIABILITY, TRANSPORTATION LOADING AND
SCHEDULING, COMPUTER CONFIGURATION EVALUATION, CAPITAL
INVESTMENT AND RISK STUDIES, ANALYSIS OF ALTERNATIVE MILITARY
STRATEGIES, ANALYSIS OF PLANS FOR CORPORATE GROWTH AND
MERGER, AMONG OTHERS.

FEATURES- GPSS/360 PROVIDES THE USER WITH ALL OF THE
CAPABILITIES OF 7040/7044 AND 7090/7094 GPSS III. SOME OF
THE FEATURES WHICH GIVE THE PROGRAM NEW AND EXTENDED CAPABILITIES
AND VERSATILITY ARE GPSS/360 OUTPUT EDITOR WHICH PROVIDES A
MEANS OF EDITING AND SPECIFYING THE CONTENT, FORMAT AND TITLES
OF SIMULATION OUTPUT... GRAPHICAL /PRINTER-PLOTTED/ OUTPUT
OF SYSTEM NUMERICAL ATTRIBUTES, PROVIDED FOR ALL ATTRIBUTES
EXCEPT FUNCTIONS, VARIABLES AND MATRIX SAVEVALUES., OUTPUT
MAY BE PRINTED IN BAR-CHART OR CONTINUOUS FORM... FULL- AND
HALF-WORD SAVEVALUES WHICH ARE AVAILABLE AND MAY BE SPECIFIED
IN A MATRIX FORMAT... A NEW ENTITY, GROUP, PROVIDED AS A
MEANS OF COMMUNICATING WITH AND REFERENCING TRANSACTIONS OR
OTHER ENTITIES WHICH HAVE COMMON CHARACTERISTICS., THIS
FEATURE GREATLY ENHANCES THE SET MANIPULATING ABILITY OF
GPSS... BOOLEAN STATEMENTS... EIGHT INDEPENDENT RANDOM NUMBER
GENERATORS SO THAT EXACT REPETITION OF PARTICULAR SEQUENCES
ARE POSSIBLE FROM RUN TO RUN... THE GPSS/360 ASSEMBLY PROGRAM
WHICH PROVIDES SYMBOLIC ADDRESSING OF ENTITIES., A CROSS
REFERENCE DICTIONARY LISTS THE BLOCKS IN WHICH THESE SYMBOLS
ARE REFERENCED., A MACRO FACILITY IS ALSO AVAILABLE...
AN UPDATE FEATURE WHICH PERMITS MAINTENANCE AND MODIFICATION
OF SYMBOLIC MODELS ON DISK OR TAPE, THEREBY MAKING UNNECESSARY
THE MAINTENANCE OF LARGE CARD DECKS... USER CHAIN STATISTICS
LISTING THE MAXIMUM NUMBER OF TRANSACTIONS TO APPEAR ON THE
USER CHAIN, AVERAGE NUMBER OF TRANSACTIONS TO APPEAR ON THE
USER CHAIN, TOTAL NUMBER OF TRANSACTIONS WHICH WERE PLACED
ON THE USER CHAIN AND THE AVERAGE TIME A TRANSACTION WAS
ON THE USER CHAIN... ADDITIONAL STATISTICAL SYSTEM NUMERICAL
ATTRIBUTES /SNAS/, AVAILABLE TO THE USER... TRANSACTIONS
WHICH ARE ALLOWED TO PREEMPT FACILITIES BASED ON THE PRIORITY
OF THE TRANSACTION, AND THE PREEMPTED TRANSACTION WHICH IS
AVAILABLE FOR PROCESSING... THE NUMBER AND TYPE OF PARAMETERS
ASSOCIATED WITH A TRANSACTION WHICH ARE DYNAMICALLY VARIABLE.,
PARAMETERS MAY BE SIGNED., PARAMETERS MAY BE SPECIFIED WITH
A MAXIMUM MAGNITUDE OF PLUS OR MINUS 2 TO THE THIRTY FIRST -1.

PROGRAMMING EXPERIENCE IS GENERALLY UNNECESSARY FOR USERS
OF GPSS/360. THE USER NEED ONLY KNOW THE RULES BY WHICH SYSTEM
MODELS ARE CONSTRUCTED. THE LOGICAL STRUCTURE AND STATISTICAL
PARAMETERS OF THE SYSTEM ARE FIRST MODELED IN TERMS OF A
GPSS/360 BLOCK DIAGRAM. INFORMATION FROM EACH BLOCK OF
THE DIAGRAM IS KEYPUNCHED INTO CARDS, CONTROL CARDS ARE
ADDED, AND THE INPUT IS THEN LOADED FOR ASSEMBLY AND EXECUTION.
NO OPERATOR INTERVENTION IS REQUIRED., ERROR MESSAGES ARE
PRINTED AUTOMATICALLY AS REQUIRED. THE OPERATING SYSTEM
USED PROVIDES GPSS/360 WITH INPUT-OUTPUT SERVICES.

USER RESPONSIBILITIES- A THOROUGH UNDERSTANDING OF THE
PRINCIPLES OF SYSTEM MODELING... COMPLETE DEFINITION OF
SYSTEM TO BE MODELED, INCLUDING CONFIGURATION AND ALL DECISION
LOGIC... COLLECTION OF DATA TO BE USED AS INPUT TO THE MODEL...
MODEL VALIDATION TO ASSURE THAT OUTPUT IS MEANINGFUL.

PROGRAMMING SYSTEMS- GPSS/360 IS WRITTEN IN ASSEMBLER
LANGUAGE AND OPERATES UNDER THE CONTROL OF EITHER OPERATING
SYSTEM/360 OR DISK OPERATING SYSTEM/360.

MINIMUM SYSTEM REQUIREMENTS- A 2030 MODEL F WITH UNIVERSAL
INSTRUCTION SET., 1442, 2501, 2520, OR 2540 CARD READER PUNCH.,
1403, 1404, 1443 OR 1445 PRINTER., AND EITHER TWO 2311 DISK
STORAGE DRIVES OR ONE 2311 AND FOUR 2400 SERIES MAGNETIC
TAPE UNITS. ADDITIONAL CORE STORAGE WILL PERMIT THE
CONSTRUCTION OF LARGER, MORE COMPLEX MODELS.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY... INTRODUCTORY USERS
        MANUAL, H20-0304... USERS MANUAL, H20-0326...
        OPERATORS MANUAL, H20-0327.
    MACHINE READABLE - OBJECT DECKS AND SAMPLE PROBLEM DECK IN
        CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
        FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL - TWO 9-TRACK MAGNETIC TAPES-- ONE
    CONTAINING LISTINGS AND SOURCE DECKS, ONE CONTAINING
    FLOWCHARTS.

NOTES- WHEN ORDERING BASIC PROGRAM MATERIAL EITHER 9-TRACK OR
7-TRACK MUST BE INDICATED. IF NOT SPECIFIED 9-TRACK WILL BE
FORWARDED.
DTR WILL BE PROVIDED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE TAPES REQUIRED FOR THE OPTIONAL MATERIAL MAY BE ORDERED FROM
YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE
2400 FEET IN LENGTH.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-CX-15X   ATTACHED SUPPORT PROCESSOR
SYSTEM /ASP/
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-CX-15X

IBM Programs

ATTACHED SUPPORT PROCESSOR- PROVIDES A MULTIPROCESSOR
OPERATING SYSTEM AS AN EXTENSION OF IBM SYSTEM/360 OPERATING
SYSTEM /OS/360/. THROUGH A REDUCTION IN REQUIRED OPERATOR
INTERVENTION, ASP PROVIDES AN IMPROVED OPERATIONAL ENVIRONMENT,
ENHANCING SYSTEM WORK-LOAD CAPACITY AND REDUCING TURNAROUND
TIME. THE CONFIGURATION CONSISTS OF TWO IBM SYSTEM/360
COMPUTERS CONNECTED VIA THE CHANNEL-TO-CHANNEL ADAPTER.
THE SUPPORT PROCESSOR /MODEL 40 OR LARGER/ PROVIDES THE
SUPPORT FUNCTIONS /INCLUDING CARD READING, PUNCHING, AND
PRINTING/ UNDER COMPUTER CONTROL, WHILE A HIGH-SPEED MAIN
PROCESSOR /MODEL 50, 65, OR 75/ PERFORMS THE APPLICATION
WORKLOAD. ASP ALSO PERMITS INTERMIXING OF OS/360 AND
7090/94 EMULATOR JOBS IN THE INPUT STREAM, SUPPORTS REMOTE
JOB PROCESSING FROM STR TERMINALS /DEFERRED FEATURE/, AND
PERMITS OTHER BACKGROUND JOBS TO SHARE SUPPORT PROCESSOR
CPU TIME WITH THE PRIMARY SUPPORT FUNCTIONS.

THE ASP SUPERVISOR OPERATES AS A TASK IN THE SUPPORT PROCESSOR
UNDER CONTROL OF THE OS/360 PRIMARY CONTROL PROGRAM /PCP/
WITH THE SEQUENTIAL SCHEDULER. THE ASP SUPERVISOR SCHEDULES
AND INITIATES THE VARIOUS SUPPORT AND BACKGROUND FUNCTIONS,
INCLUDING INPUT OF JOBS TO THE MAIN PROCESSOR, ON A PRIORITY
BASIS. SINCE IT IS PREPLANNED TO PROVIDE MULTIPROGRAMMING
IN THE SUPPORT PROCESSOR IN A WELL-DEFINED, LIMITED FRAMEWORK,
THE ASP SUPERVISOR OPERATES AS A MULTIPROGRAM MONITOR TO
ALLOCATE CPU AND CHANNEL TIME, CORE STORAGE, AND DEVICES
AMONG THE VARIOUS FUNCTIONS, WITH MINIMAL OVERHEAD. THE MAIN
PROCESSOR OPERATES UNDER OS/360. THE SYSTEM INPUT AND
OUTPUT DEVICES FOR THE MAIN PROCESSOR ARE REPLACED BY THE
CHANNEL-TO-CHANNEL CONNECTION WITH THE SUPPORT PROCESSOR.
DIRECT ACCESS STORAGE DEVICES FOR SYSTEMS RESIDENCE AND
PROGRAM LIBRARY ARE ATTACHED TO THE MAIN PROCESSOR, AS ARE
ANY INPUT/OUTPUT DEVICES ACCESSED DURING EXECUTION BY THE
PROBLEM PROGRAMS. THE OPERATING SYSTEM IN THE MAIN PROCESSOR
PROVIDES AN ENVIRONMENT FOR THE PROBLEM PROGRAM IDENTICAL TO
A STAND-ALONE SYSTEM, WITH THE EXCEPTION OF THE USE OF THE
OS/360 CATALOG. THE USE OF THE OS/360 CATALOG FOR GENERATION
DATA GROUPS WILL CAUSE OPERATIONAL PROBLEMS AND SHOULD BE
AVOIDED. THE PERFORMANCE OF THE SYSTEM IS DIRECTLY RELATED
TO THE THROUGHPUT CAPABILITY OF OS/360 ON THE MAIN PROCESSOR.

MODIFICATIONS INCORPORATED INTO OS/360 PERMIT 7090/94 EMULATOR
AND OS/360 JOBS TO BE INTERMIXED IN THE INPUT STREAM.
OPERATING SYSTEM/360 USED IN THE MAIN PROCESSOR IS MODIFIED
TO OVERLAY ITSELF WITH THE EMULATOR PROGRAM UPON A SIGNAL
FROM THE SUPPORT PROCESSOR. THE 7090/94 EMULATOR PROGRAM
IS SIMILARLY MODIFIED TO OVERLAY ITSELF WITH OS/360 AT THE
END OF AN EMULATION JOB OR A GROUP OF CONSECUTIVE EMULATION
JOBS. THE EMULATOR PROGRAM IS ALSO MODIFIED TO RECOGNIZE
THE CHANNEL-TO-CHANNEL ADAPTER AS ITS SYSTEM INPUT AND OUTPUT
DEVICES. THUS, THE SYSTEM INPUT AND OUTPUT STREAMS FOR
EMULATOR JOBS ARE HANDLED BY THE SUPPORT PROCESSOR IN THE
SAME MANNER AS ARE THOSE FOR OS/360 JOBS. THE SUPPORT PROCESSOR
WILL ACCEPT JOB STREAMS FROM REMOTE COMPUTER TERMINALS OVER
STR TRANSMISSION LINES /DEFERRED FEATURE/. THE ASP SYSTEM
WILL SUPPORT TWO INPUT/OUTPUT DATA FORMATS FOR THIS REMOTE
JOB PROCESSING. ONE IS COMPATIBLE WITH THE IBM 1974 OR THE
IBM 1978 TERMINALS /RPQ DEVICES/. THE OTHER IS ORIENTED
TOWARD IBM SYSTEM/360 COMPUTERS /MODEL 20, AND OTHER SYSTEM/360
PROCESSORS EQUIPPED WITH PROPER STR FEATURES ON A 2701 DATA
ADAPTER UNIT/. THE DATA FORMAT IS SUITABLE FOR ANY COMPUTER
WHICH HAS AN EIGHT-BIT BYTE DATA FORMAT AND WHICH CAN ACCEPT
STR TRANSMISSION. NOTE THAT THE ASP SYSTEM DOES NOT INCLUDE
THE USER PROGRAMMING THAT IS NECESSARY IN THE REMOTE TERMINALS.

FEATURES- INCREASED SYSTEM WORKLOAD CAPACITY... REDUCTION
OF TURNAROUND TIME... IMPROVED OPERATING EFFICIENCY...
INTERMIXED OS/360 AND 7090/94 EMULATOR JOBS IN THE INPUT
STREAM /FOR A MODEL 65 MAIN PROCESSOR EQUIPPED WITH THE
709X EMULATOR FEATURE/. THESE FEATURES ARE MADE POSSIBLE BY-
COMPUTER-CONTROLLED EXECUTION OF SUPPORT FUNCTIONS IN A
MULTIPROGRAMMED MODE ON A LOWER COST SUPPORT PROCESSOR, WHICH
PERMITS-
 - PRIORITY JOB SCHEDULING.
 - AUTOMATIC PROCESSING OF SYSTEM INPUT AND OUTPUT DATA SETS.
 - AUTOMATIC SWITCHING BETWEEN OS/360 AND 7090/94 EMULATOR JOBS.
 - CONCURRENT PROCESSING OF PERIPHERAL AND OTHER USER PROGRAMS,
   SUCH AS CARD-TO-TAPE... TAPE-TO-TAPE... TAPE-TO-PRINTER...
   TAPE-TO-CARD... CARD-TO-PRINTER... CARD-TO-PUNCH...
   7090/94 DIRECT COUPLE OPERATING SYSTEM /DCS/ TAPE FORMAT
   DEBLOCKING... USER-WRITTEN BACKGROUND PROGRAMS.
REDUCTION OF RESOURCE INTERFERENCE ON MAIN PROCESSOR IN TERMS OF-
 - CORE STORAGE. CORE BUFFERING OF MAIN PROCESSOR INPUT
   AND OUTPUT DATA SETS IN THE SUPPORT PROCESSOR.
 - CPU TIME. MULTIPLEXER CHANNEL INTERFERENCE AND INTERRUPT
   SERVICE FOR PERIPHERAL INPUT/OUTPUT DEVICES ELIMINATED
   IN MAIN PROCESSOR.
 - DATA CHANNELS. SELECTOR CHANNEL DATA FLOW TIME FOR SYSTEM
   INPUT AND OUTPUT ON MAIN PROCESSOR REDUCED.
 - INPUT/OUTPUT DEVICES. ALGORITHM PROVIDED FOR EFFICIENT
   MANAGEMENT OF DIRECT ACCESS STORAGE DEVICES FOR SYSTEM
   INPUT AND OUTPUT DATA SETS.
 - PRE-EXECUTION SETUP OF REMOVABLE INPUT/OUTPUT DEVICES
   ON MAIN PROCESSOR.
 - SUPPORT OF MULTIPLE OPERATOR CONSOLES FOR DIVERSIFICATION
   OF SYSTEM OPERATION.
 - CONCURRENT SPOOLING OF INPUT/OUTPUT BACKGROUND PROCESSING
   ON SUPPORT PROCESSOR DURING EMULATION ON MAIN PROCESSOR.
 - REMOTE JOB PROCESSING VIA STR /DEFERRED FEATURE/.

OPERATIONAL CONTROL OF THE ASP SYSTEM IS EXERCISED BY THE
OPERATOR FROM THE CONSOLE TYPEWRITER OR AN ALTERNATE OPERATOR
CONSOLE ON THE SUPPORT PROCESSOR. A COMMAND LANGUAGE IS PROVIDED
TO START ASP, TO DELETE AND RESTART JOBS, TO INITIATE
BACKGROUND PROCESSING, TO CHANGE PRIORITY OF JOBS, AND TO
DETERMINE THE BACKLOG OF JOBS IN THE QUEUE. ASP PROVIDES A
STANDARD SEQUENCE OF FUNCTIONS FOR EACH JOB IN THE SUPPORT
PROCESSOR- INPUT SERVICE, MAIN PROCESSOR SERVICE, PRINT SERVICE,
PUNCH SERVICE, AND JOB PURGE. THIS STANDARD SEQUENCE MAY BE
REPLACED TO ADAPT TO THE PARTICULAR NEEDS OF AN INSTALLATION.
SPECIAL CONTROL CARDS ARE NOT REQUIRED FOR JOBS USING THE
STANDARD SEQUENCE. THE ASP CONTROL CARDS PROVIDE A SIMPLE
MEANS OF ALTERING THIS SEQUENCE FOR A PARTICULAR JOB.
THE ASP PROGRAM IN THE SUPPORT PROCESSOR REQUIRES AN OS/360
JOB CARD WITH SEVERAL ADDITIONAL FIELDS FOR EACH JOB RUN
UNDER THE SYSTEM. THESE FIELDS ARE USED TO CONVEY ACCOUNTING
AND PRIORITY INFORMATION TO THE ASP SUPERVISOR. THEY ARE
IGNORED BY OS/360 WHEN IT READS THE JOB CARD IN THE MAIN
PROCESSOR. FOR JOBS TO BE EXECUTED UNDER THE CONTROL OF THE
7090/94 EMULATOR, THE PROGRAMMER MUST USE AN ASP JOB CARD
AND 7090/94 EMULATOR CONTROL CARDS IN ADDITION TO THE CONTROL
CARDS REQUIRED BY THE 7090/94 PROGRAMMING SYSTEM BEING USED.
THE ASP SYSTEM SEPARATES THE ASP CONTROL CARDS AND 7090/94

EMULATOR CONTROL CARDS FROM THE JOB STREAM, PRESENTING THE
7090/94 PROGRAMMING SYSTEM WITH ITS SYSTEM INPUT JOB STREAM
ONLY. THE SUPPORT PROCESSOR MAY ASSUME THE FUNCTIONS OF THE
ONLINE UNIT RECORD DEVICES FOR THE 7090/94 EMULATOR PROVIDED
THE OPERATOR IS NOT REQUIRED /THROUGH PROGRAM LOGIC/ TO
ATTEND TO OR EXAMINE THESE DEVICES DURING PROGRAM EXECUTION.

PROGRAMMING SYSTEMS- THE ASP SYSTEMS PROGRAMS ARE WRITTEN
IN OS/360 MACRO ASSEMBLER LANGUAGE. PROGRAMS TO PROVIDE
ADDITIONAL FUNCTIONS, KNOWN AS DYNAMIC SUPPORT PROGRAMS
/DSP/S/, CAN BE INCORPORATED INTO THE SUPPORT PROCESSOR
BY THE CUSTOMER AT HIS INSTALLATION. THESE PROGRAMS ALSO
MUST BE WRITTEN IN OS/360 MACRO ASSEMBLER LANGUAGE. ASP USERS
MUST ORDER SEPARATELY OS/360 AND THE 709X EMULATOR PROGRAM
/360C-EU-729/, IF USED.

MINIMUM SYSTEM REQUIREMENTS- THE CONFIGURATION REQUIREMENTS
FOR THE MAIN PROCESSOR ARE IDENTICAL WITH THOSE OF A STAND-ALONE
PROCESSOR OPERATING UNDER OS/360, EXECPT THAT THE
CHANNEL-TO-CHANNEL ADAPTER REPLACES THE NORMAL SYSTEM INPUT
AND OUTPUT DEVICES. THE MINIMUM SUPPORT PROCESSOR IS A
MODEL 40G WITH TWO SELECTOR CHANNELS /ONE DEDICATED TO THE
CHANNEL-TO-CHANNEL ADAPTER/, 1052 PRINTER-KEYBOARD MODEL 7
/CONSOLE TYPEWRITER/, ONE 2540 CARD READ PUNCH, ONE 1403 PRINTER
MODEL N1, AND THREE 2311 DISK STORAGE DRIVES. THIS CONFIGURATION
PERMITS QUEUING OF UP TO 30 JOBS. /A JOB IS CONSIDERED EQUAL TO
A COMBINED INPUT AND OUTPUT STREAM OF 5000 100-BYTE RECORDS./
LARGER CORE, A FASTER PROCESSOR, AND ADDITIONAL 2311 DISK
STORAGE DRIVES WILL PERMIT ADDITIONAL 1403 PRINTERS MODEL N1
AND 2540 CARD READ PUNCHES, AND WILL QUEUE APPROXIMATELY
15 ADDITIONAL JOBS PER ADDED 2311. THE NUMBER OF DIRECT
ACCESS STORAGE DEVICES AND THE SIZE OF CORE MUST BE
DETERMINED ON THE BASIS OF THE INDIVIDUAL INSTALLATIONS
WORKLOAD. THE DEVICES LISTED BELOW ARE SUPPORTED AS AUXILIARY
OPERATOR CONSOLES IN THE ASP SYSTEM-
 - IBM 2740 COMMUNICATION TERMINAL ATTACHED THROUGH AN
   IBM 2701 DATA ADAPTER UNIT.
 - IBM 1443 MODEL N1 PRINTER /OUTPUT ONLY/.
 - IBM 1053 MODEL 4 PRINTER ATTACHED THROUGH AN IBM 2848
   DISPLAY CONTROL /OUTPUT ONLY/.
 - IBM 1403 PRINTER /OUTPUT ONLY/.
FOR EASE OF SYSTEM MAINTENANCE, THE SUPPORT PROCESSOR
SHOULD HAVE ACCESS TO AT LEAST ONE 2400-SERIES /NINE-TRACK
OR SEVEN-TRACK WITH THE DATA CONVERSION FEATURE/ TAPE UNIT.
THE ASP SYSTEM SUPPORTS THE IBM 2401 MODEL 1, 2, OR 3 FOR
USE ON THE SUPPORT PROCESSOR BY BACKGROUND PROGRAMS SUPPLIED
WITH THE ASP PROGRAMS. NOTE- THESE ARE COMPLEX CONFIGURATIONS
AND MUST BE SYSTEM ASSURED.

ENGINEERING CHANGE LEVELS- IN ADDITION TO THE REQUIRED
ENGINEERING CHANGES TO RUN THE SUPPORTED LEVELS OF OS/360
AND THE 7090 EMULATOR, THE EC LEVELS REQUIRED FOR PROPER
FUNCTIONING OF THE ASP SYSTEM ARE EC 705754 AND EC 254902
ON THE CHANNEL-TO-CHANNEL ADAPTER /NO. 1850/.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY... PROGRAMMERS
       MANUAL, H20-0322... CONSOLE OPERATORS MANUAL, H20-0321...
       SYSTEM PROGRAMMERS MANUAL, H20-0323.
    MACHINE READABLE - OBJECT PROGRAMS, SOURCE PROGRAMS, OS/360
       MODIFICATIONS, 709X EMULATOR MODIFICATIONS AND MACRO
       DEFINITIONS ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
       FEATURE REQUIRED/ 2400 FOOT REEL OF MAGNETIC TAPE.

OPTIONAL PROGRAM MATERIAL - TWO 9-TRACK OR 7-TRACK /DATA
    CONVERSION FEATURE REQUIRED/ REELS OF MAGNETIC TAPE--
    ONE CONTAINING ASSEMBLY LISTINGS, ONE CONTAINING FLOWCHART
    LISTINGS.

NOTES- THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM
REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET
IN LENGTH. IF TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
BE FORWARDED.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-CX-16X   CONTINUOUS SYSTEM MODELING   *N
PROGRAM /CSMP/
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-CX-16X

SIMULATION IS A WELL ESTABLISHED TOOL FOR INVESTIGATING
PHENOMENA RANGING FROM INFORMATION FLOW IN BUSINESS ORGANIZATIONS
TO THE DYNAMIC BEHAVIOR OF COMPLEX CONTINUOUS SYSTEM.
FOR MANY PROBLEMS, S/360 CSMP OBVIATES THE NEED TO USE AN
ANALOG COMPUTER FACILITY. IT ALLOWS SIMULATION PROBLEMS TO
BE PREPARED DIRECTLY AND SIMPLY FROM EITHER A BLOCK DIAGRAM
REPRESENTATION OR A SET OF ORDINARY DIFFERENTIAL EQUATIONS.
IT PROVIDES A BASIC SET OF FUNCTIONAL BLOCKS WITH WHICH THE
COMPONENTS OF A CONTINUOUS SYSTEM MAY BE REPRESENTED AND
ACCEPTS APPLICATION-ORIENTED STATEMENTS FOR DEFINING THE
CONNECTIONS BETWEEN THESE FUNCTIONAL BLOCKS. THIS BLOCK
MODELING TECHNIQUE IS COMMON TO ENGINEERING AND SCIENTIFIC
PRACTICE. S/360 CSMP ALSO ACCEPTS FORTRAN STATEMENTS,
THEREBY ALLOWING THE USER TO READILY HANDLE NONLINEAR AND
TIME-VARIANT PROBLEMS OF CONSIDERABLE COMPLEXITY. INCLUDED
IN THE BASIC FUNCTION SET ARE CONVENTIONAL ANALOG COMPUTER
COMPONENTS /I.E., INTEGRATORS AND RELAYS, PLUS MANY SPECIAL
PURPOSE FUNCTIONS LIKE DELAY TIME AND LIMITER FUNCTIONS/.
THIS BASIC LIBRARY IS AUGMENTED BY THE FORTRAN LIBRARY.
IN ADDITION, SPECIAL FUNCTIONS CAN BE DEFINED BY THE USER,
THEREBY ALLOWING S/360 CSMP TO TAKE ON THE CHARACTERISTICS
OF A LANGUAGE ORIENTED TO ANY PARTICULAR SPECIAL PURPOSE
FIELD IN CONTINUOUS SYSTEM SIMULATION. INPUT AND OUTPUT
ARE FACILITATED BY MEANS OF USER-ORIENTED CONTROL STATEMENTS.
A FIXED FORMAT IS PROVIDED FOR PRINTING /TABULAR FORMAT/,
PRINT-PLOTTING /GRAPHIC FORMAT/, AND PREPARATION OF A DATA
SET AT SELECTED INCREMENTS OF THE INDEPENDENT VARIABLE.
CONVENIENT MEANS ARE AVAILABLE FOR TERMINATING A SIMULATION
RUN WITH A SEQUENCE OF COMPUTATIONS AND LOGICAL TESTS.
THESE CAN BE DESIGNED TO TEST RUN RESPONSES AND DEFINE RUN
CONTROL CONDITIONS FOR ACCOMPLISHING ITERATIVE SIMULATIONS
OF THE TYPE REQUIRED IN PARAMETER OPTIMIZATION STUDIES.
WITH FEW EXCEPTIONS, PARAMETER DATA, RUN CONTROL DATA, AND
CONNECTION STATEMENTS CAN BE PREPARED IN ANY ORDER FOR
AUTOMATIC SEQUENCING BY THE PROGRAM. THROUGH THESE FEATURES,
S/360 CSMP PERMITS THE USER TO CONCENTRATE UPON THE PHENOMENON
BEING SIMULATED RATHER THAN THE MECHANISM FOR IMPLEMENTING
THE SIMULATION.

IBM Programs

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FEATURES- A PROBLEM CAN BE PREPARED DIRECTLY FROM EITHER
A FUNCTIONAL BLOCK DIAGRAM OR A SYSTEM OF ORDINARY DIFFERENTIAL
EQUATIONS... THE INPUT LANGUAGE IS APPLICATION ORIENTED AND
FREE FORM... THE STATEMENTS MAY BE GENERALLY WRITTEN IN
ANY ORDER, AND, BY USER OPTION, MAY BE SEQUENCED BY THE
PROGRAM TO ESTABLISH THE CORRECT INFORMATION FLOW... FORTRAN
STATEMENTS CAN BE INTERMIXED WITH THE S/360 CSMP SIMULATION
STATEMENTS... THE METHOD OF INTEGRATION CAN BE CHOSEN FROM
SEVERAL STANDARD OPTIONS PROVIDED IN THE PROGRAM... OUTPUT IS
PROVIDED AUTOMATICALLY IN A FIXED FORMAT FOR ALL OUTPUT
OPTIONS... THIRTY-FOUR STANDARD FUNCTIONAL BLOCKS ARE PROVIDED,
AND, IN ADDITION, THE USER CAN ADD HIS OWN FUNCTIONS TO THE
LIBRARY... SIMULATION RUNS ARE COMPLETELY REPEATABLE.,
PROBLEM DECKS MAY BE CONVENIENTLY STORED FOR FUTURE RERUNS...
THE ENTIRE SIMULATION MAY BE CONTROLLED BY A SEQUENCE OF
CONVENTIONAL FORTRAN STATEMENTS.

USER RESPONSIBILITIES- THE USER MUST REPRESENT THE PHENOMENON
TO BE SIMULATED BY EITHER AN ANALOG BLOCK DIAGRAM OR A SYSTEM
OF ORDINARY DIFFERENTIAL EQUATIONS. THEN THE INPUT LANGUAGE
STATEMENTS MUST BE PREPARED AND PUNCHED ON CARDS FOR INPUT
TO THE APPLICATION PROGRAM. FAMILIARITY WITH BASIC FORTRAN IS
HELPFUL, BUT NOT NECESSARY. SPECIAL FUNCTIONS MAY BE DEFINED
EITHER THROUGH FORTRAN PROGRAMMING OR SIMPLY THROUGH A MACRO
CAPABILITY WHICH PERMITS THE COMBINATION OF INDIVIDUAL
LIBRARY FUNCTIONS INTO LARGER FUNCTIONAL BLOCKS. A
CUSTOMER-PREPARED PLOTTING PROGRAM CAN BE USED WITH THE
OUTPUT DATA FILE TO OBTAIN GRAPHIC OUTPUT ON ANY PARTICULAR
PLOTTING EQUIPMENT.

PROGRAMMING SYSTEMS- FORTRAN IV /E/ IS USED AS THE SOURCE
LANGUAGE FOR APPROXIMATELY 95 PER CENT OF THE PROGRAM.,
OPERATIONS NOT READILY PERFORMED IN FORTRAN IV /E/ ARE CODED
AS SUBROUTINES IN SYSTEM/360 ASSEMBLER LANGUAGE. ALL ROUTINES
OPERATE UNDER OS/360.

MINIMUM SYSTEM REQUIREMENTS- THE PROGRAM WILL REQUIRE A
MINIMUM OF 102K BYTES OF STORAGE /EXCLUDING THAT REQUIRED BY
OS/360/, THE STANDARD INSTRUCTION SET, AND THE FLOATING-POINT
OPTION. IN ADDITION TO THE I/O UNITS NEEDED BY THE OPERATING
SYSTEM/360 FOR FORTRAN IV COMPILING, THE PROGRAM WILL REQUIRE
THREE LOGICAL UTILITY UNITS, ONE OF WHICH MUST BE A DIRECT
ACCESS STORAGE DEVICE /DASD/.

BASIC PROGRAM MATERIAL
    DOCUMENTATION - APPLICATION DIRECTORY-USERS MANUAL,H20-0367..
        OPERATORS MANUAL,H20-0368.
    MACHINE READABLE - OBJECT MODULES AND SAMPLE PROBLEM ARE
        AVAILABLE ON ONE 9-TRACK DTR AT EITHER 800BPI OR 1600BPI.

OPTIONAL PROGRAM MATERIAL - SOURCE MODULES ON ONE 9-TRACK DTR.

NOTES- THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS
REQUIRED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER
CARD.

X-17X   REMOTE ACCESS COMPUTING   *N
/RAX/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CX-17X

RAX IS A TIME SHARED, REMOTE COMPUTING SYSTEM. USERS OF RAX
CAN SUBMIT BASIC FORTRAN IV AND BASIC ASSEMBLER LANGUAGE JOBS
FOR COMPILATION AND TIME-SLICED EXECUTION FROM LOCAL AND
REMOTE TERMINALS, SIMULTANEOUS WITH SIMILAR OPERATIONS
FROM OTHER ON-LINE EQUIPMENT AT THE COMPUTER SITE. PROGRAMMERS
CAN COMPILE, MODIFY, AND EXECUTE PROGRAMS FROM THEIR TERMINALS
WHILE NON-COMPUTER ORIENTED USERS CAN BE CONVERSATIONALLY
INTERACTING WITH PROGRAMS PREVIOUSLY STORED IN THE RAX LIBRARY.
RAX USER FLEXIBILITY IS PROVIDED BY A MODULAR AND COMPATIBLE
DESIGN. THREE SYSTEM/360 MODELS /30, 40, AND 50/ ARE SUPPORTED.
THREE MEMORY SIZES /64K, 128K, AND 256K BYTES/ CAN BE USED
WITH THE THREE CPU MODELS. TWO TERMINALS /THE IBM 1050
DATA COMMUNICATIONS TERMINAL AND THE IBM 2260 DISPLAY STATION/
CAN BE USED WITH UP TO A MAXIMUM OF 63 TERMINALS SIMULTANEOUSLY
OPERATIONAL. TWO IBM 2311 DIRECT ACCESS STORAGE DEVICES ARE
NECESSARY, BUT UP TO EIGHT CAN BE UTILIZED BY RAX.

FEATURES-
- UP TO 63 TERMINALS CAN BE USED WITH RAX, DEPENDING UPON
  THE AMOUNT OF CORE MEMORY AVAILABLE. THE NUMBER OF RAX
  TERMINALS SUPPORTED FOR THE ALLOWABLE MEMORY CONFIGURATIONS
  ARE-
  256K BYTE MEMORY   - MAXIMUM OF SIXTY-THREE 1050 DATA
                       COMMUNICATIONS TERMINALS.
                     - MAXIMUM OF EIGHT 2260 DISPLAY STATIONS.
                     - TOTAL NUMBER OF 1050 TERMINALS AND
                       2260 DISPLAY STATIONS MAY NOT EXCEED
                       SIXTY-THREE.
  128K BYTE MEMORY   - MAXIMUM OF THIRTY-SIX 1050 TERMINALS.
                     - 2260/S CAN BE USED WITH THIS MEMORY
                       CONFIGURATION WITH ONE 2260 EQUATED
                       TO THREE 1050/S IN DETERMINING THE
                       THIRTY-SIX LIMIT.
  64K BYTE MEMORY   - MAXIMUM OF TEN 1050 TERMINALS.
- USERS MAY SHARE PROGRAMS AND DATA STORED IN THE RAX USER
  LIBRARY. FILE SECURITY IS PROVIDED BY MEANS OF A LOCK
  CODE USED TO PREVENT UNAUTHORIZED DELETION OR MODIFICATION
  OF ANY FILE IN THE LIBRARY.
- A RESTART CAPABILITY IS PROVIDED FOR RESUMPTION OF JOBS
  AFTER RECOVERY FROM SYSTEMS ERROR. UPON RECOVERY, RAX WILL
  INDICATE TO EACH USER THE LAST LINE OF INPUT ACCEPTED OR
  REPEAT THE LAST FEW LINES OF OUTPUT.
- THE 2260 DISPLAY STATIONS ALLOW ENTRY OF UP TO TWELVE
  LINES OF INPUT AT A TIME. THE NON-DESTRUCTIVE CURSOR
  FEATURE IS USED TO PROVIDE FOR SINGLE CHARACTER MODIFICATION
  WITHIN A LINE WHEN UPDATING PROGRAM OR DATA FILES.
- OBJECT PROGRAM EXECUTION STORAGE OF 32K BYTES IS PROVIDED
  ON THE MINIMUM MEMORY CONFIGURATION. 64K BYTES ARE AVAILABLE
  ON THE 128K AND 256K BYTE CONFIGURATIONS.
- USERS OF RAX MAY ENTER PROGRAMS AND DATA ONE LINE AT A
  TIME FROM THEIR TERMINALS OR USE A SINGLE TERMINAL COMMAND
  TO INSERT A PREVIOUSLY STORED DATA OR SOURCE PROGRAM
  MODULE INTO HIS JOB STREAM AT COMPILE TIME.
- UP TO SEVEN 2311 DISK STORAGE DRIVES ARE SUPPORTED FOR
  ON-LINE LIBRARY STORAGE.
- THE USER MAY ENTER EITHER BASIC FORTRAN IV OR BASIC ASSEMBLER
  JOBS FROM HIS TERMINALS. RAX SUPPORTS USA BASIC FORTRAN WITH
  THE FOLLOWING EXCEPTIONS- EMBEDDED BLANKS ARE NOT PERMITTED,
  AND RESERVED WORDS CANNOT BE USED IN THE PROGRAM.
  ALL INPUT/OUTPUT MUST BE PROGRAMMED IN FORTRAN. EXECUTION
  OF PRIVILEGED INSTRUCTIONS IN A USER PROGRAM IS NOT

CONTINUED FROM PRIOR COLUMN--
    ALLOWED BY RAX.
    - A DISPLAY COMMAND IS AVAILABLE FOR TOTAL OR SELECTIVE
      LISTING OF A USERS INPUT OR LIBRARY FILES.
RAX PROVIDES A FACILITY FOR CONVERSATIONAL INTERACTION
BETWEEN A USER AND AN EXECUTING PROGRAM. THIS IS ACCOMPLISHED
BY THE USE OF INPUT/OUTPUT STATEMENTS IN A PROBLEM PROGRAM
WHICH ADDRESSES THE USERS TERMINAL AS AN I/O DEVICE. THUS,
PROGRAMS CAN BE WRITTEN TO TAKE ADVANTAGE OF THE ,,ON-LINE,,
PRESENCE OF THE USER BY PERMITTING HIM TO SELECTIVELY MODIFY
HIS INPUT, OBSERVE INTERMEDIATE RESULTS, AND ALTER PARAMETERS -
OR PERHAPS THE EXECUTION SEQUENCE - OF THE PROGRAM BASED ON
HIS INTERPRETATION OF THESE RESULTS.

PROGRAMMING SYSTEM- RAX IS WRITTEN IN BPS BASIC ASSEMBLER
LANGUAGE.

MACHINE REQUIREMENTS- SYSTEM/360 MODEL 30F WITH ONE SELECTOR
CHANNEL, INTERVAL TIMER, STORAGE PROTECTION, DECIMAL
ARITHMETIC, FLOATING POINT ARITHMETIC FEATURES...
1052 PRINTER-KEYBOARD MODEL 8 AS A SYSTEM CONSOLE...
2540 CARD READ PUNCH... 1403 PRINTER MODEL 2, 3, 7 OR N1...
TWO 2311 DISK STORAGE DRIVES., FOR ATTACHING 1050 DATA
COMMUNICATION TERMINALS EITHER A 2702 TRANSMISSION CONTROL
WITH TERMINAL CONTROL - TYPE 1 /NO. 4615/, SELECTIVE SPEED
/NO. 9684/, AND APPROPRIATE LINE ADAPTERS OR A 2701 DATA ADAPTER

UNIT WITH TERMINAL ADAPTER - TYPE 1 /NO. 4645 OR 4646/ AND
APPROPRIATE LINE ADAPTER FOR EACH LINE /UP TO 4/. UP TO TEN
1050 DATA COMMUNICATION TERMINALS MAY BE ATTACHED TO THE
MINIMUM CONFIGURATION. 2260 DISPLAY STATIONS ARE NOT SUPPORTED
ON THE 64K BYTE CONFIGURATION.

TERMINAL CONFIGURATION- THE MINIMUM IBM 1050 DATA COMMUNICATION
TERMINAL CONSISTS OF- ONE IBM 1051 CONTROL UNIT MODEL 2 WITH
THE FIRST PRINTER ATTACHMENT FEATURE /NO. 4408/ AND ONE
IBM 1052 PRINTER-KEYBOARD MODEL 2. THE 1052 PRINTING
ELEMENT USED BY RAX IS DATA 1 FONT /NO. 9575 OR NO. 9576/.
THE 1050 CAN UTILIZE THE 1054 PAPER TAPE READER OR 1056 CARD
READER ATTACHED AS READER NO. 1 ON THE 1051. FOR USE WITH THE
1056 CARDS CAN BE PREPARED ON EITHER THE 26 OR 29 KEYPUNCH.
THE 1056 MUST HAVE THE EXTENDED CHARACTER READ SPECIAL FEATURE.

MAXIMUM SUPPORT CONFIGURATION- SYSTEM/360 MODEL 50 H
/256K BYTE MEMORY/ WITH TWO SELECTOR CHANNELS, INTERVAL TIMER,
STORAGE PROTECTION, DECIMAL ARITHMETIC, FLOATING POINT
ARITHMETIC, 1052 PRINTER-KEYBOARD MODEL 7, 2540 CARD READ PUNCH,
1403 PRINTER MODEL 2, 3, 7 OR N1, EIGHT 2311 DISK STORAGE
DRIVES, TWO 2702 TRANSMISSION CONTROLS UP TO SIXTY-THREE
1050 DATA COMMUNICATIONS TERMINALS, ONE 2848 DISPLAY CONTROL
MODEL 3 WITH NON-DESTRUCTIVE CURSOR FEATURE AND UP TO EIGHT
2260 DISPLAY STATIONS WITH THE ALPHAMERIC KEYBOARD FEATURE
/WITH A MAXIMUM OF SIXTY-THREE 1050/S AND 2260/S COMBINED/,
FOUR 2400 9-TRACK TAPE DRIVES.

BASIC PROGRAM MATERIAL
    DOCUMENTATION - APPLICATION DIRECTORY... USERS MANUAL
        /H20-0354/... OPERATORS MANUAL /H20-0355/.
    MACHINE READABLE - OBJECT PROGRAM LOAD MODULES AND SAMPLE
        PROBLEM DECKS ON EITHER ONE 9-TRACK /800 OR 1600BPI/ DTR
        OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL - SOURCE DECKS ON EITHER ONE 9-TRACK
    OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF
    MAGNETIC TAPE.

NOTES- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK
DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT,
NO TAPE SUBMITTAL IS REQUIRED. THE TAPE REQUIRED FOR OPTIONAL
MATERIAL MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR
SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.
IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
FORWARDED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON
THE ORDER CARD.

360A-DW-05X   IBM SYSTEM/360 WHOLESALE
IMPACT PROGRAM LIBRARY
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-DW-05X

    THE IBM SYSTEM/360 WHOLESALE IMPACT PROGRAM LIBRARY OFFERS
    SYSTEM/360 USERS THE OPPORTUNITY TO USE THE IMPACT SYSTEM
    OF INVENTORY MANAGEMENT NOW IN WIDE USE AMONG 1400-1311
    SYSTEMS USERS /1401/1440/1460/.

    THE IBM IMPACT /INVENTORY MANAGEMENT PROGRAM AND CONTROL
    TECHNIQUES/ SYSTEM OF SCIENTIFIC INVENTORY MANAGEMENT PROVIDES
    THE WAREHOUSE DISTRIBUTOR /OR ANY ORGANIZATION WITH THE SAME
    INVENTORY CONTROL CHARACTERISTICS/ WITH THE INFORMATION OF
    ,,WHEN,, AND ,,HOW MUCH,, TO BUY FOR EACH INVENTORY ITEM
    CONTROLLED BY THE SYSTEM. IT DOES THIS THROUGH THE MEANS
    OF PROBABILITY SCIENCE IN CONJUNCTION WITH THE MANY FACTORS
    INFLUENCING THE DISTRIBUTORS INVENTORY CONTROL DECISIONS.
    FACTORS CONSIDERED INCLUDE- LEAD TIME, LEAD TIME VARIABILITY,
    FORECAST DEMAND, FORECAST ERROR, SERVICE DESIRED,
    INVENTORY CARRYING COSTS, PURCHASING/RECEIVING COSTS,
    DISCOUNT STRUCTURES, MINIMUMS, MAXIMUMS, SHELF LIVES, AND
    PACK SIZES. THE ,,WHEN,, AND ,,HOW MUCH,, ANSWERS FIND THE
    MOST EFFICIENT BALANCE BETWEEN THE COST OF CARRYING INVENTORY,
    COST OF PURCHASING AND RECEIVING, DISCOUNTS REALIZED, AND
    CUSTOMER SERVICE REQUIREMENTS. THE SYSTEM/360 IMPACT
    INCLUDES THE IBM SYSTEM/360 WHOLESALE IMPACT PROGRAM LIBRARY
    AND A NUMBER OF IBM AND CUSTOMER EDUCATION CLASSES AND
    MANUALS.
    THE SYSTEM/360 WHOLESALE IMPACT PROGRAM LIBRARY ENABLES THE
    DISTRIBUTOR WHO HAS AN IBM SYSTEM/360 DATA PROCESSING SYSTEM
    /MODEL 30 OR GREATER/ TO SUCCESSFULLY IMPLEMENT AN IMPACT
    INVENTORY MANAGEMENT SYSTEM WITH MINIMUM EFFORT AND EXPENSE.
    PROGRAMS ARE INCLUDED THAT PERFORM IN THE FOLLOWING
    FUNCTIONAL AREAS- EDITING, FILE INITIALIZATION, ESTIMATING,
    AND THE CONTROL OF INDEPENDENT AND JOINT REPLENISHMENT ORDERING.

    FEATURES- THE SYSTEM/360 PROGRAM LIBRARY PERFORMS THE SAME
    FUNCTIONS AS THE EXISTING 1440-1311 PROGRAM LIBRARIES-
    - EDIT ALL INPUT FOR FORMAT.
    - SCREEN HISTORICAL DEMANDS FOR PROMOTIONS.
    - DETERMINE THE FORECAST MODEL /HORIZONTAL, TREND,
      HORIZONTAL-SEASONAL OR TREND-SEASONAL/.
    - DETERMINE THE ORDERING STRATEGY TO BE USED AND CALCULATE
      ORDER QUANTITY OR ORDER FREQUENCY AS APPROPRIATE FOR
      STRATEGY SELECTED.
    - CALCULATE FOR EACH ITEM THE SAFETY FACTOR REQUIRED FOR A
      PRESCRIBED LEVEL OF CUSTOMER SERVICE.

IBM Programs

CONTINUED FROM PRIOR PAGE--
- CALCULATE INITIALIZING VALUES REQUIRED FOR FORECAST AND
  ORDER MODELS SELECTED.
- ESTIMATE, IN ADVANCE, RESULTS TO BE EXPECTED FROM APPLYING
  THE RULES AND VALUES DEVELOPED.
- DETERMINE WHEN TO ORDER ITEMS AND ITEM GROUPS TO MEET
  SERVICE OBJECTIVES AFTER THE SYSTEM IS OPERATIONAL.
- CALCULATE THE PRODUCT MIX TO BE ORDERED WITHIN AN ITEM
  GROUP THAT WILL MEET BOTH SERVICE OBJECTIVES AND LIMITATIONS
  ON TOTAL SIZE OF ORDER.
IN ADDITION, THE 360 PROGRAMS PROVIDE INCREASED FLEXIBILITY
IN THE TYPE OF INPUT/OUTPUT DEVICES USED.
  BOTH INPUT AND OUTPUT OF MAIN DATA FLOW IN ALL PROGRAMS
  MAY BE BY DISK OR TAPE. AN ADDITIONAL CARD TO INPUT FILE
  AND/OR OUTPUT FILE TO CARD OPTION IS AVAILABLE AND CAN
  BE SPECIFIED AT RUN TIME. EITHER 1442 OR 2540 CARD READ PUNCH
  AND 1443 OR 1403 PRINTER MAY BE SPECIFIED BY THE USER.
FOR MAXIMUM COMPATIBILITY WITH IMPACT SYSTEMS DEVELOPED BY
PRESENT USERS, ALL INPUT AND OUTPUT FORMATS ARE IDENTICAL
TO THOSE OF THE 1400-1311 PROGRAM LIBRARIES.

THE PROGRAM LIBRARY INCLUDES BOTH INITIALIZING PROGRAMS AND
OPERATING PROGRAMS. INITIALIZING PROGRAMS ARE DESIGNED TO
BE USED ONCE TO SET UP AN IMPACT SYSTEM, THEN PERIODICALLY
/AT LEAST ONCE A YEAR/, OR, AS REQUIRED, TO MEET CHANGING
CONDITIONS. A COMPLETE SET OF PROGRAMS IS PROVIDED TO PERFORM
NECESSARY INITIALIZING FUNCTIONS. OPERATING PROGRAMS ARE
USED IN THE DAY-TO-DAY CONTROL OF THE IMPACT SYSTEM /FORECASTING
AND ORDERING/. LIBRARY PROGRAMS ARE PROVIDED TO CONTROL THE
ORDERING OF BOTH INDEPENDENT AND JOINT VENDORS.

BECAUSE REQUIREMENTS VARY WIDELY, THE USER WRITES HIS OWN
PROGRAMS TO PERFORM RECORD-KEEPING, FORECASTING, REVIEWING
/IF HE ELECTS TO USE AN ORDER-POINT OR PEEK-POINT APPROACH/,
ORDERING FOLLOW-UP /PREPARING PURCHASE ORDERS, STATUS LISTINGS,
ETC./, AND LINKAGE BETWEEN HIS PROGRAMS AND IMPACT LIBRARY
PROGRAMS. TO GUIDE THE USER IN DEVELOPING HIS OWN PROGRAMS
WITH MINIMUM EFFORT, THE IMPACT PACKAGE PROVIDES FLOWCHARTS OF
TYPICAL FORECASTING AND REVIEW SYSTEMS.

PROGRAMMING SYSTEMS- PROGRAMS IN THE SYSTEM/360 WHOLESALE
IMPACT PROGRAM LIBRARY ARE WRITTEN IN ASSEMBLER LANGUAGE AND
OPERATE UNDER CONTROL OF THE BASIC OPERATING SYSTEM/360,
DISK OPERATING SYSTEM/360, OR THE OPERATING SYSTEM/360.

MINIMUM SYSTEM REQUIREMENTS-
FOR USE WITH BOS/360 OR DOS/360- A 16K SYSTEM/360 MODEL D30
WITH DECIMAL ARITHMETIC, 1442 OR 2540 CARD READ PUNCH,
1443 OR 1403 PRINTER, AND EITHER TWO 2311 DISK DRIVES OR ONE
2311 AND TWO MAGNETIC TAPE DRIVES.
FOR USE WITH OS/360- A 32K SYSTEM/360 MODEL E30 WITH
DECIMAL ARITHMETIC, 1442 OR 2540 CARD READ PUNCH,
1443 OR 1403 PRINTER, AND EITHER TWO 2311 DISK DRIVES OR ONE
2311 AND TWO MAGNETIC TAPE DRIVES. THE 32K MINIMUM
CONFIGURATION IS APPLICABLE ONLY IF THE USERS
OPERATING SYSTEM/360 IS 14K BYTES OR LESS. /FIXED MAIN
STORAGE MUST NOT EXCEED 14K BYTES SINCE THE SEQUENTIAL
SCHEDULER REQUIRES 18K BYTES./

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION
        DESCRIPTION, H20-0173... USERS MANUAL, H20-0255...
        OPERATORS MANUAL, H20-0256... SYSTEM MANUAL.
    MACHINE READABLE - THE SOURCE PROGRAMS AND SAMPLE PROBLEM
        DECKS MAY BE OBTAINED ON ONE 9-TRACK OR ONE 7-TRACK /DATA
        CONVERSION FEATURE REQUIRED/ TAPE OR ONE 1316 DISK PACK.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED. THE TAPE REQUIRED MAY BE ORDERED FROM
YOUR IBM REPRESENTATIVE OR SUPPLIED. IT MUST BE 2400 FEET IN
LENGTH. ONLY THOSE USERS WITHOUT TAPE CAPACITY SHOULD ORDER THIS
PROGRAM ON DISK.

360A-FB-15X   DEMAND DEPOSIT ACCOUNTING
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-FB-15X

    THE DEMAND DEPOSIT ACCOUNTING APPLICATION PROGRAM GIVES
    SUPPORT TO COMMERCIAL BANKS USING SYSTEM/360. THE OBJECTIVE
    OF THE APPLICATION PROGRAM IS TO MEET THE CUSTOMERS PROGRAMMING
    REQUIREMENTS FOR INSTALLING DEMAND DEPOSIT ACCOUNTING.

    THE PROGRAM PACKAGE COVERS THREE AREAS- DEMAND DEPOSIT
    ACCOUNTING, ANALYSIS, AND CONVERSION.
    DEMAND DEPOSIT ACCOUNTING - THE APPLICATION ACCEPTS TRANSACTIONS
    IN THE FORM OF MICR DOCUMENTS OR PUNCHED CARDS, CONVERTS
    THESE TRANSACTIONS TO DISK STORAGE, AND SORTS THE TRANSACTIONS
    INTO SEQUENCE FOR PROCESSING. THE TRANSACTION FILE IS RUN
    AGAINST A STOP-HOLD FILE AND STOP-HOLD SUSPECTS ARE RECORDED
    IN DISK STORAGE. CONTROL TOTALS ARE ADDED TO THE TRANSACTION
    FILE AND HIGH VOLUME ACTIVITY SUMMARIZED. THIS EDITED
    AND SUMMARIZED TRANSACTION FILE IS USED TO POST TO CUSTOMER
    ACCOUNTS. DURING POSTING, A TRIAL BALANCE OR JOURNAL TRIAL
    BALANCE IS PREPARED. EXCEPTION CONDITIONS ARE RECORDED ON
    DISK STORAGE IN THE REPORTS FILE. AT THE COMPLETION OF
    POSTING, TODAYS TRANSACTIONS FILE IS MERGED WITH AN ACCUMULATED
    TRANSACTION FILE. STATEMENTS ARE CYCLED AND PRINTED IN ANY OF
    THREE OPTIONAL PRINT FORMATS. EIGHT EXCEPTION REPORTS ARE
    PRINTED FROM THE REPORTS FILE. A LEDGER CONTROL RECAP REPORT
    IS INCLUDED AS A SEPARATE REPORT.
    ANALYSIS -- THE OPTIONAL ANALYSIS PROCESSING ACCUMULATES
    A HISTORY FILE OF BALANCE AND TRANSACTION ACTIVITY FOR SELECTED
    ACCOUNTS. INCLUDED ARE PROGRAMS TO CREATE, PERIODICALLY
    REORGANIZE, AND UPDATE THIS FILE. THE ANALYSIS REPORT
    PROGRAM PREPARES, ON USER REQUEST, A COMPARATIVE ANALYSIS OF
    ACCOUNTS OR GROUPS OF ACCOUNTS., ITS USE IS OPTIONAL.
    CONVERSION -- THE CONVERSION PROCESSING PORTION OF THE
    APPLICATION PROGRAM PACKAGE PROVIDES PROGRAMS TO ASSIST USERS
    IN THE CREATION OF INITIAL DATA FILES /BALANCES AND NAMES
    AND ADDRESSES/. THESE PROGRAMS ACCEPT AS INPUT-
    /1/ THE NAME AND ADDRESS FILE TAPES AND BALANCE FILE TAPE
    FORMATTED AS USED BY THE 1401 DEMAND DEPOSIT ACCOUNTING
    APPLICATION PROGRAM, 1401-FB-01X., AND /2/ 1311 MASTER FILE
    AS FORMATTED BY THE 1440 DEMAND DEPOSIT ACCOUNTING APPLICATIONS
    PROGRAMS, 1440-FB-03X.

    FEATURES-
    - ALL PROCESSING CAN BE ACCOMPLISHED ON A MULTI-BANK BASIS.
      IN MULTI-BANK PROCESSING, THE DATA FOR ALL BANKS IS
      PROCESSED THROUGH ONE APPLICATION PROGRAM BEFORE PROCEEDING
      TO THE NEXT.
    - ALL ACCOUNTING CONTROLS ARE ORGANIZED TOGETHER ON A
      SINGLE REPORT PRINTED DAILY.

CONTINUED FROM PRIOR COLUMN--
- DATA FOR SINGLE AND RELATED GROUPS OF ACCOUNTS MAY BE
  COLLECTED, ORGANIZED INTO AN HISTORICAL FILE AND PROCESSED
  TO DETERMINE ACCOUNT PROFITABILITY. A COMPARATIVE REPORT
  BASED ON FLEXIBLE CRITERIA IS PRINTED ON DEMAND.
- THE ACCOUNT BALANCE FILE IS ORGANIZED SO THAT FUTURE
  INQUIRY CAN BE ACCOMPLISHED WITHOUT REQUIRING EXTRAORDINARY
  DISK DRIVE CAPACITY. APPROXIMATELY 48,000 ACCOUNTS ARE
  RECORDED ON ONE 1316 DISK PACK.
- THE ACCOUNT NAME AND ADDRESS FILE IS ORGANIZED TO KEEP
  SIGNIFICANT DATA ONLY. THIS REDUCES DISK PACK REQUIREMENTS
  AND SPEEDS THROUGHPUT.
- THE IBM 1419 AND 1412 MAGNETIC CHARACTER READERS ARE
  PROGRAMMED TO OPERATE IN CONJUNCTION WITH 8K BASIC OPERATING
  SYSTEM.
- A GENERALIZED SERVICE CHARGE CALCULATION ROUTINE IS PROVIDED.
  THIS ROUTINE WILL MEET ALL THE REQUIREMENTS FOR MANY USERS
  AND PROVIDE A GUIDE FOR THOSE WHICH REQUIRE ADDITIONAL
  PROGRAMMING.
- THE PROGRAMS CONTAIN A SERIES OF OPTIONS AT BOTH THE
  OVERALL SYSTEM AND THE INDIVIDUAL BANK LEVEL. AMONG THEM
  ARE -- 3 READER SORTER DISTRIBUTION ROUTINES... 2 SELF CHECK
  ACCOUNT NUMBER ROUTINES... THE ABILITY TO MAINTAIN THE
  STOP-HOLD FILE IN BOTH DISK AND CARDS... PROVISION FOR A
  2-UP TRIAL BALANCE OR A COMBINED TRIAL BALANCE -
  TRANSACTION JOURNAL... FLEXIBLE OVERDRAFT POLICY CRITERIA...
  3 FORMATS OF CUSTOMER STATEMENTS... 4 CRITERIA FOR STATEMENT
  SELECTION.

USER RESPONSIBILITIES
- A THOROUGH KNOWLEDGE AND UNDERSTANDING OF THE SYSTEM
  BEFORE INSTALLATION.
- CREATION OF BALANCE AND NAME AND ADDRESS FILES IF CONVERSION
  PROGRAMS ARE NOT UTILIZED.
- PARALLEL OPERATION OF NEW AND PRESENT SYSTEMS OR A
  SATISFACTORY ALTERNATIVE TO VERIFY VALIDITY OF ANY
  MODIFICATIONS MADE TO PACKAGE PROGRAMS.
- CUSTOMIZED PRE-PRINTED FORMS IF USER CHOOSES VARIOUS
  PRE-PRINTED OPTIONS.
- IN-HOUSE TRAINING OF OPERATOR PERSONNEL AND DATA CAPTURE
  PERSONNEL.
- WRITE ROUTINES REQUIRED FOR INSERTION TO PACKAGE PROGRAMS
  TO TAILOR THE SYSTEM TO USERS REQUIREMENTS.
- WRITE PROGRAMS THAT USER DETERMINES NECESSARY TO INCREASE THE
  SCOPE OF THE DEMAND DEPOSIT ACCOUNTING PROGRAMS.
- WRITE PROGRAM MODIFICATIONS REQUIRED TO TAILOR OR INCREASE
  THE SCOPE OF IBM PACKAGE PROGRAM.

PROGRAMMING SYSTEMS- THE FOLLOWING FEATURES OF THE
IBM SYSTEM/360 BASIC OPERATING SYSTEM /SYSTEM RELEASE 8/
ARE USED-
- BASIC CONTROL PROGRAM 360B-CL-302.
- INPUT OUTPUT CONTROL SYSTEM /IOCS/.
    - CONSECUTIVE PROCESSING /DTFSR/ 360B-IO-303.
    - INDEX AND SEQUENTIAL FILE MANAGEMENT SYSTEM /ISFMS/
      360B-IO-304.
- IBM BASIC OPERATING SYSTEM/360 SORT MERGE PROGRAM
  360B-SM-308.
- IBM BASIC OPERATING SYSTEM/360 ASSEMBLER WITH I/O MACROS
  360B-AS-309.
- IBM SYSTEM/360 BASIC OPERATING SYSTEM UTILITIES,
  GROUP I 360B-UT-300.
- IBM SYSTEM/360 BASIC PROGRAMMING SUPPORT UTILITY PROGRAM
  INITIALIZE DISK 360P-UT-069.
- IBM 1401/1440/1460 AUTOCODER /ON DISK/ 1401-AU-008.

SYSTEM REQUIREMENTS- MANY SYSTEM CONFIGURATIONS ARE POSSIBLE.
ALL, HOWEVER, MUST INCLUDE- A 2030 MODEL D OR 2040 MODEL D
PROCESSING UNIT WITH DECIMAL ARITHMETIC /NO. 3237/,
SELECTOR CHANNEL /NO. 6960/, 1051 ATTACHMENT /NO. 7915/...
1051 CONTROL UNIT MODEL N1... 1052 PRINTER-KEYBOARD...
PROCESSOR ATTACHMENT /NO. 3130/... ADAPTER FOR FIRST PUNCH
/NO. 3410/... ADAPTER FOR FIRST READER /NO. 4411/...
2841 STORAGE CONTROL READER... THREE 2311 DISK STORAGE DRIVES...
ONE READER PUNCH SELECTED FROM 1442 CARD READ PUNCH MODEL N1,
2540 CARD READ PUNCH, 2520 CARD READ PUNCH MODEL A1, OR ONE
READER AND ONE PUNCH SELECTED FROM 2501 CARD READER MODEL B1
OR B2, 2520 CARD PUNCH MODEL B2 !OR B3, 1442 CARD PUNCH
MODEL N2... ONE PRINTER AND THE ASSOCIATED CONTROL UNIT IF THE
LATTER IS REQUIRED- 1403 PRINTER MODELS 2, 3, OR N1 WITH
2821 CONTROL UNIT, MODELS 1, 2, 3, 5 AND 1416 INTERCHANGEABLE
TRAIN CARTRIDGE, OR 1443 PRINTER MODEL N1 WITH 24 PRINT
POSITIONS ADDITIONAL /NO. 5558/, SELECTIVE CHARACTER SET
FOR 13 CHARACTER BAR /NO. 6402/, AND PREFERRED CHARACTER SET
FEATURE /NO. 9562 OR 9564/... ONE MAGNETIC CHARACTER READER
WITH ATTACHMENT 1412 MAGNETIC CHARACTER READER WITH 7720
ADAPTER OR 1419 MAGNETIC CHARACTER READER WITH 7720 ADAPTER/.
THE CONVERSION OF 1440 COMBINED MASTER FILE PROGRAM REQUIRES
THE FOLLOWING MACHINE CONFIGURATION OR ITS EQUIVALENT IN
S/360 WITH COMPATIBILITY. ONE 1441 PROCESSING UNIT MODEL A4...
ONE CARD READER AND ASSOCIATED CONTROL UNIT... ONE PRINTER
AND ASSOCIATED CONTROL UNIT... ONE 1311 DISK STORAGE DRIVE
AND DISK STORAGE CONTROL UNIT /NO. 3321/... TWO 7335 MAGNETIC
TAPE UNITS AND 7802 TAPE ADAPTER.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION
        DESCRIPTION MANUAL, E20-0246... PROGRAMMERS
        MANUAL, H20-0263... OPERATORS MANUAL, H20-0262...
        SAMPLE PROBLEM MANUAL.
    MACHINE READABLE - ONE 9-TRACK OR ONE 7-TRACK /DATA
        CONVERSION FEATURE REQUIRED/ 800 BPI MAGNETIC TAPE
        OR ONE 1316 DISK PACK /VENTED HUB MODEL/
        CONTAINING ASSEMBLER LANGUAGE SOURCE DECKS, OBJECT
        DECKS /SOME UTILITY FUNCTIONS/, SAMPLE PROBLEM JOB
        CONTROL DECKS, SAMPLE PROBLEM DATA DECKS, 1440 AUTOCODER
        SOURCE DECK.

OPTIONAL PROGRAM MATERIAL - SYSTEMS MANUAL.

NOTE- THE REEL OF TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM
REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET
IN LENGTH. WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-FB-16X   ON LINE TELLER PROGRAM 32K
CAPABILITY
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-FB-16X

IBM Programs

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THE ON LINE TELLER PROGRAM PERFORMS BASIC ACCOUNTING
NORMALLY ASSOCIATED WITH TELLER ACTIVITY AT THE SAVINGS
WINDOW. IT ACCEPTS ENTRIES FROM THE 1060 SYSTEM, MAINTAINS
DEPOSITORS RECORDS ON 2311 DISKS, RESPONDS TO THE TELLER
TERMINAL TAPE OR THE PASSBOOK, ACCUMULATES TELLER TOTALS
AND DEVELOPS A JOURNAL OF SAVINGS TRANSACTIONS. IT KEEPS
CONTROL TOTALS WHICH, WITH TELLER TOTALS AND THE JOURNAL,
MAKE POSSIBLE A DAILY AUDIT OF THE DEPOSITORS RECORDS.
THE PROGRAMS FURNISHED ARE - MASTER FILE CONVERSION, ON LINE
PROCESSING AND FILE REORGANIZATION.

ON LINE TELLER 32K CAPABILITY REQUIRES A 2030 MODEL E /32K/.
IN ADDITION TO REAL TIME SAVINGS ACCOUNTING, THE USER WILL
BE ABLE TO PERFORM LIMITED SPOOL OPERATIONS SUCH AS CARD TO DISK,
DISK TO PRINTER AND DISK TO CARD. UP TO 44 SUBCHANNELS CAN
BE HANDLED BY THE 32K PROGRAM. THE ON LINE TELLER PROGRAM
IS DESIGNED TO CONTROL THE OPERATION OF MULTIPLE 1060 AND 1050
TERMINALS FOR ON LINE SAVINGS ACCOUNTING WITH S/360.

PROGRAMMING SYSTEMS - SOURCE LANGUAGE IS S/360 ASSEMBLER.
THE FOLLOWING PROGRAMS ARE REQUIRED FOR PROGRAM ASSEMBLY
AND USE WITH THE CONVERSION AND REORGANIZATION PROGRAMS -
360B-CL-302, 360B-IO-303, 360B-IO-305, 360B-UT-300, 360B-AS-309
AND 360P-UT-069.

MINIMUM SYSTEM REQUIREMENTS - 32K CAPABILITY WITH A MAXIMUM
OF 44 SUBCHANNELS... 2030 MODEL E WITH DECIMAL ARITHMETIC,
INTERVAL TIMER, STORAGE PROTECTION, SELECTOR CHANNEL,
CONSOLE TYPEWRITER, 1060 AND/OR 1050 TERMINALS AS REQUIRED
TO A MAXIMUM OF 88... 2701 /FROM 1 TO 4 SUBCHANNELS/ TERMINAL
ADAPTER TYPE I /ONE PER LINE/, EXPANSION FEATURES /ONE FOR
EACH LINE BEYOND ONE/, EXPANDED CAPABILITY /ONE FOR LINES
3 AND 4/, LINE ADAPTER /ONE PER LINE/... OR TWO 2702/S
/FROM 1 TO 31 SUBCHANNELS/, TERMINAL CONTROL TYPE I /TWO/,
LINE ADAPTERS /ONE PER LINE/, 31 LINE EXPANSION FEATURE
/ONE PER 2702 WITH MORE THAN 15 LINES/... 2311 DISK STORAGE
DRIVE /MINIMUM OF 2*/... 2841 STORAGE CONTROL.
 * WHEN USING SPOOL YOU MUST HAVE AN ADDITIONAL 2311 DISK DRIVE.
DEVICES SUPPORTED BY SPOOL INCLUDE - 2821 CONTROL UNIT /REQUIRED/
2540 MODEL 1, 1403 MODELS 2, 3, 7, N1, 1443 PRINTER MODEL N1.

BASIC PROGRAM MATERIAL
    DOCUMENTATION- APPLICATION DIRECTORY - PROGRAMMERS
        MANUAL, H20-0305... OPERATORS MANUAL, H20-0325...
        SYSTEMS MANUAL, Y20-0071.
    MACHINE READABLE - AVAILABLE IN SOURCE CARD IMAGE FORMAT
        ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ TAPE OR ON ONE 1316 DISK PACK.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE 9-TRACK OR 7-TRACK
MUST BE INDICATED ON THE ORDER CARD. IF NOT SPECIFIED 9-TRACK
WILL BE FORWARDED.
THE TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR
SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.

I-06X   OPTIMUM BOND BIDDING PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-FI-06X

THE OPTIMUM BOND BIDDING PROGRAM, HAS BEEN DESIGNED FOR BOND
UNDERWRITERS TO ASSIST THEM IN DETERMINING THE COUPON
SCHEDULE AND ASSOCIATED VALUES FOR A BID ON A NEW BOND ISSUE.
A MATHEMATICAL PROCEDURE IS USED WHICH DEVELOPS AN OPTIMAL
SET OF COUPON RATES. THE OPTIMIZATION PROCEDURE MINIMIZES
THE NET INTEREST COST OR EFFECTIVE RATE, WHICHEVER IS APPLICABLE,
WHILE REMAINING WITHIN THE CONSTRAINTS ESTABLISHED BY THE
ISSUER AND THE CONSTRAINTS ESTABLISHED BY THE UNDERWRITER.
THE PROGRAM IS FLEXIBLE IN THAT A NUMBER OF OPTIONS ARE
PROVIDED WHICH AID THE USER IN OBTAINING BIDDING INFORMATION
FOR ISSUES WITH VARIOUS CHARACTERISTICS.

NEW MUNICIPAL BOND ISSUES, USUALLY SERIAL IN NATURE, ARE
NORMALLY OFFERED FOR COMPETITIVE BIDDING. THE ISSUE IS,
THEREFORE, AWARDED TO THE UNDERWRITER WHOSE BID RESULTS IN
THE LOWEST COST TO THE MUNICIPALITY. OTHER TYPES OF BOND
ISSUES, SUCH AS CORPORATE OR FOREIGN ISSUES, MAY BE EITHER
OFFERED FOR COMPETITIVE BIDDING OR NEGOTIATED FOR PRIVATE
PLACEMENT. REGARDLESS OF THE NATURE OF THE ISSUE OR THE
METHOD OF PLACEMENT, THE OPTIMUM BOND BIDDING PROGRAM WILL
PROVE TO BE A VALUABLE AID.
TO BID FOR A SERIAL BOND ISSUE, IT IS NECESSARY FOR THE USER
TO DECIDE UPON A YIELD FOR BONDS OF EACH MATURITY, A SPREAD
WHICH COVERS THE EXPENSE AND PROFIT OF THE UNDERWRITER, AND
A RANGE OF COUPON RATES ACCEPTABLE FOR EACH MATURITY.
THE PROGRAM THEN CONSTRUCTS A SET OF FIGURES WHICH SATISFIES
ALL CONSTRAINTS OF THE ISSUE AND WHICH SETS A COUPON RATE
FOR EACH MATURITY SO THAT A RELATIVELY LOW NET INTEREST COST
OR EFFECTIVE RATE, WHICHEVER IS APPLICABLE, IS OBTAINED.
THE OPTIMUM BOND BIDDING PROGRAM REPLACES THE MANUAL METHODS
COMMONLY USED TO OBTAIN BID FIGURES FOR A SERIAL BOND ISSUE.
THE PROGRAM UTILIZES A MATHEMATICAL PROCEDURE TO DEVELOP
AN OPTIMAL SET OF COUPON RATES WHICH MINIMIZE EITHER THE NET
INTEREST COST OR THE EFFECTIVE RATE DEPENDING UPON THE BASIS
FOR THE AWARD OF THE ISSUE. MANY POSSIBLE COMBINATIONS OF
CONSTRAINTS CAN BE QUICKLY AND ACCURATELY ANALYZED BY THE
USE OF THE OPTIMUM BOND BIDDING PROGRAM PRIOR TO SUBMITTING
A BID.

FEATURES ARE-
 - OPTIMIZE A BID FOR A SERIAL BOND ISSUE ON THE BASIS OF
   NET INTEREST COST.
 - OPTIMIZE A BID FOR A SERIAL BOND ISSUE ON THE BASIS OF
   EFFECTIVE RATE.
 - OPTIMIZE TWO POSSIBLE BIDS WITHOUT PREMIUM TO PRODUCE
   SPREADS IN JUXTAPOSITION ABOVE AND BELOW THE DESIRED SPREAD.
 - OPTIMIZE ALL POSSIBLE NET INTEREST COST BIDS WITHOUT
   PREMIUM WHICH PRODUCE SPREADS WITHIN A RANGE OF ACCEPTABLE
   SPREADS.
 - OPTIMIZE A BID PREDICATED UPON A DESIRED BID PRICE OTHER
   THAN PAR. THIS PERMITS A CONTROLLED PREMIUM OR DISCOUNT
   ON THE ISSUE.
 - OPTIMIZE A BID WHILE USING ONLY AUTHORIZED COUPON MULTIPLES.
 - OPTIMIZE OR EVALUATE A BID, TAKING INTO CONSIDERATION
   STATED CALL PROVISIONS IN THE COMPUTATION OF THE SELLING
   PRICE OF THE BOND.
 - OPTIMIZE OR EVALUATE AN ISSUE WITH BONDS MATURING AT
   EITHER SIX MONTH OR TWELVE MONTH INTERVALS.
 - EVALUATE EITHER A SERIAL OR TERM BOND ISSUE TO DETERMINE
   SPREAD.
 - EVALUATE EITHER A SERIAL OR TERM BOND ISSUE TO DETERMINE
   BID PRICE.

CONTINUED FROM PRIOR COLUMN--

OTHER SALIENT FEATURES-
 - BOTH THE OPTIMIZATION AND EVALUATION PROCEDURES ADJUST
   FOR AN IRREGULAR FIRST INTEREST PAYMENT PERIOD.
 - BOTH THE OPTIMIZATION AND EVALUATION PROCEDURES BASE THE
   SELLING PRICE ON DELIVERY DATE RATHER THAN ON ISSUE DATE.
 - CONTROL OF THE DESIRED SPREAD MAY BE ACHIEVED IN THE
   OPTIMIZATION MODE. A SINGLE BID MAY BE GENERATED TO
   PRODUCE AN EXACT SPREAD, OR, MULTIPLE BIDS MAY BE GENERATED
   TO PRODUCE SPREADS FOR STATED INTERVALS WITHIN A RANGE
   OF ACCEPTABLE SPREADS.
 - COUPON STRUCTURE LIMITATIONS ARE CHECKED AUTOMATICALLY
   AND ANY VIOLATION IS REPORTED IN A WARNING MESSAGE.
   THE LIMITATIONS ARE MAXIMUM COUPON RATE, MAXIMUM NUMBER
   OF DIFFERENT RATES, MAXIMUM NUMBER OF TIMES RATE MAY
   CHANGE, AND MAXIMUM RANGE BETWEEN HIGH AND LOW RATE.
 - THE EFFECTIVE OR ,,CANADIAN,, RATE OF INTEREST TO THE
   ISSUER IS COMPUTED FOR EACH BID.
 - ACCRUED INTEREST PER DAY ON THE ENTIRE ISSUE IS COMPUTED
   FOR EACH BID.
 - .05 EQUALS IS COMPUTED ON THE BASIS OF THE ACTUAL AMOUNT
   PRODUCTION DECREASES WHEN EACH YIELD IS INCREASED .05 PERCENT.
 - THE WEIGHTED AVERAGE YIELD AND THE WEIGHTED AVERAGE
   MATURITY OF THE ENTIRE BOND ISSUE ARE COMPUTED.
 - CONTROL AND DESCRIPTIVE INFORMATION IS PRINTED AT THE
   TOP OF EACH OUTPUT PAGE.
 - A COMPLETE LISTING OF INPUT IS PRINTED, IF DESIRED.
   THIS LISTING INCLUDES A SCHEDULE OF BOND YEAR VALUES.
 - COMPLETE DATA IS PROVIDED FOR EACH MATURITY ON AN OUTPUT
   REPORT.
 - ABBREVIATED OUTPUT REPORTS MAY BE OBTAINED IF DESIRED.
 - ALL ESSENTIAL INFORMATION CONCERNING THE BID IS SUMMARIZED
   AT THE BOTTOM OF EACH REPORT.
 - AN INTEREST AND PRINCIPAL PAYMENT SCHEDULE IS PRINTED,
   IF DESIRED. THIS CASH-FLOW REPORT WILL BE OF PARTICULAR
   VALUE IN THE CALCULATION OF BIDS REQUIRING LEVEL-DEBT
   SERVICE. ANNUAL TOTALS MAY BE GENERATED ON EITHER A
   CALENDAR YEAR OR FISCAL YEAR BASIS.

BASIC DATA CONCERNING THE BOND OFFERING IS TRANSCRIBED FROM
AN INFORMATION SHEET DESCRIBING THE ISSUE ONTO A WORKSHEET.
THEN, THE ANALYST DECIDES UPON A YIELD FOR BONDS OF EACH
MATURITY, A SPREAD OR MARGIN WHICH COVERS THE EXPENSE AND
PROFIT OF THE UNDERWRITER, AND A RANGE OF COUPON RATES
ACCEPTABLE FOR EACH MATURITY. AFTER THESE DECISIONS HAVE
BEEN MADE, THIS DATA IS INDICATED ON THE WORKSHEET. INPUT
CARDS ARE THEN PUNCHED FROM THE DATA ON THE WORKSHEET AND
ENTERED INTO THE COMPUTER. THE PROGRAM THEN PRODUCES THE
DESIRED REPORTS.

PROGRAMMING SYSTEMS- IBM BASIC OPERATING SYSTEM/360 /8K DISK/
IS REQUIRED. ASSEMBLY - ASSEMBLER WITH INPUT/OUTPUT MACROS
/8K DISK/ /360B-AS-309/, MONITOR SYSTEM - CONTROL PROGRAM
/8K DISK/ /360B-CL-302/., CONSECUTIVE PROCESSING MACROS
/360B-IO-303/., ISF MS MACROS /360B-IO-304/., UTILITY PROGRAMS
/8K DISK/, CARD TO DISK, CLEAR DISK, /360B-UT-300/.

MINIMUM SYSTEM REQUIREMENTS- 32K SYSTEM/360 CENTRAL PROCESSING
UNIT WITH DECIMAL INSTRUCTION SET, PRINTER /ANY OF THOSE
AVAILABLE WITH 120 OR MORE PRINT POSITIONS/, CARD READER/PUNCH
/ANY OF THOSE AVAILABLE/, DIRECT ACCESS STORAGE /ONE 2311
DISK STORAGE DRIVE/, AND CONSOLE TYPEWRITER FOR OPERATOR/PROGRAM
COMMUNICATION /OPTIONAL/.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY... USERS MANUAL
        E20-0228.
    MACHINE READABLE - OBJECT DECKS AND A SAMPLE PROBLEM WHICH
        CAN BE ORDERED ON A 7- OR 9-TRACK DTR OR IN CARD FORM*.
    OPTIONAL PROGRAM MATERIAL - SYSTEMS MANUAL... SOURCE
        DECKS ON EITHER 9- OR 7-TRACK DTR*.
    * 9- AND 7-TRACK DTR ARE WRITTEN AT 800 BPI. THE DATA
CONVERSION FEATURE IS REQUIRED IF 7-TRACK DTR IS USED.
IF TRACK REQUIREMENT IS NOT SPECIFIED A 9-TRACK DTR WILL BE
SUPPLIED. THE DTR WILL BE SUPPLIED BY PROGRAM INFORMATION.

360A-ME-06X   IBM SYSTEM/360 BILL OF
MATERIAL PROCESSOR
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-ME-06X

THE BILL OF MATERIAL PROCESSOR SUPPORTS THE FUNCTIONS OF
CREATION AND MAINTENANCE OF THE PART NUMBER MASTER AND
PRODUCT STRUCTURE FILES AS DESCRIBED BELOW. ALSO INCLUDED
ARE THE AUTOMATIC CUSTOMIZING FEATURE, THE SEQUENTIAL
PROCESSING MACROS AND THE SINGLE LEVEL PRODUCT STRUCTURE
RETRIEVAL MACRO.

THE PACKAGE PROVIDES MANUFACTURING ORGANIZATIONS WITH-
1. EASY-TO-MODIFY PROGRAMS THAT ESTABLISH AND MAINTAIN
   BASIC INFORMATION FILES DESCRIBING THE STRUCTURE OF
   PRODUCTS AND THEIR MANUFACTURING PROCEDURES.
2. LOGIC DIAGRAMS EXPLAINING THE RETRIEVAL OF THIS INFORMATION
   IN FUNDAMENTAL APPLICATIONS.

THE SYSTEM/360 BILL OF MATERIAL IS A DIRECT ACCESS
FILE-ORIENTED CONCEPT THAT REQUIRES THE PART NUMBER MASTER
/INVENTORY-TYPE/ FILE TO BE ON-LINE SIMULTANEOUSLY WITH THE
PRODUCT STRUCTURE FILE AND/OR THE STANDARD ROUTING FILE.
ALL THREE COULD BE USED ON LINE TO PRODUCE ALTERNATE
MANUFACTURING WORK ORDERS AND COMPONENTS LISTS. THE WORK
CENTER MASTER FILE CAN BE INTEGRATED BY THE USER WITH THE
ROUTING FILE FOR A MACHINE LOADING APPLICATION. ALL FILES
ARE CREATED, ADDED, DELETED AND REORGANIZED BY THE
BILL OF MATERIAL PROCESSOR EMPLOYING ASSEMBLER LANGUAGE
WITH INPUT/OUTPUT MACROS.
THE PACKAGE INCLUDES LOGIC DIAGRAMS FOR EIGHT FUNDAMENTAL
CLASSIFICATIONS OF RETRIEVAL PROGRAMS THAT THE USER MAY
DESIRE TO PREPARE. THEY ARE-
1. ONE-LEVEL BILL OF MATERIAL OR PARTS LIST.
2. NEXT ASSEMBLY WHERE-USED LISTING.
3. INDENTED PARTS LIST.
4. INDENTED WHERE-USED LIST.
5. SUMMARIZED EXPLOSION.
6. SUMMARIZED IMPLOSION.
7. MANUFACTURING ROUTINGS.
8. WORK CENTER WHERE USED.
THE PACKAGE IS DESIGNED SO THAT THE LOGIC DIAGRAMS CAN BE
USED BY ANY CUSTOMER AS A GUIDE IN THE PREPARATION OF HIS
OWN SET OF PROGRAMS.
THE LOGIC DIAGRAMS FOR CLASSIFICATIONS 5 AND 6 ARE PARTICULARLY
SIGNIFICANT SINCE THEY ARE THE FRAMEWORK FOR TWO MAJOR

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APPLICATION AREAS THAT ARE VITAL TO THE PLANNING AND EXECUTION
OF THE MANUFACTURING OPERATION. THE SUMMARIZED EXPLOSION
LOGIC PROVIDES THE FRAMEWORK FOR PERFORMING A GROSS TO NET
REQUIREMENTS GENERATION APPLICATION. THE SUMMARIZED IMPLOSION
LOGIC CAN BE EXPANDED TO SHOW THE EFFECT OF INCREMENTAL COST
INCREASES OR DECREASES OF PARTS AND SUB-ASSEMBLIES ON TOP
LEVEL PRODUCTS.

FEATURES- THIS PACKAGE HAS ALL THE FEATURES OF THE
IBM 1440/1311 BILL OF MATERIAL PROCESSOR /1440-ME-02X/-
- PRODUCT STRUCTURE RECORDS ARE LINKED WITH PART NUMBER
  MASTER INVENTORY TYPE RECORDS ON DISK FILES.
- DISK FILE CHAINING IS USED TO ORGANIZE PRODUCT STRUCTURE
  DATA IN TWO INHERENT SEQUENCES.
  1. ASSEMBLY OR BILL OF MATERIAL SEQUENCE /I.E., LINKING THE
     COMPONENTS OF AN ASSEMBLY/. THE USER DETERMINES THE
     MAINTAINED SEQUENCE OF COMPONENTS WITHIN THE ASSEMBLY.
     TYPICAL SEQUENCES MIGHT BE COMPONENT PART NUMBER OR
     ENGINEERING DRAWING ITEM NUMBER.
  2. WHERE-USED SEQUENCE /I.E., LINKING THE USAGES OF A
     PART NUMBER ON HIGHER LEVEL ASSEMBLIES/. THIS
     CROSS-REFERENCED SEQUENCE ELIMINATES THE NEED TO
     /A/ MAINTAIN A DUPLICATE FILE IN WHERE-USED SEQUENCE, OR
     /B/ PERIODICALLY SORT AN ASSEMBLY DECK FILE TO
     WHERE-USED SEQUENCE FOR LISTING PURPOSES.
- RAW MATERIAL CAN BE INCLUDED IN THE PRODUCT STRUCTURE FILE,
  PROVIDING COMPLETE WHERE-USED CROSS REFERENCE OF EACH
  RAW MATERIAL NUMBER.
- USER DESIGNS HIS OWN RECORD LAYOUTS BY INCORPORATING HIS
  OWN INFORMATION PLUS CERTAIN REQUIRED DATA INTO PART NUMBER
  MASTER INVENTORY AND PRODUCT STRUCTURE RECORDS.
- LOW LEVEL CODING IS AUTOMATICALLY MAINTAINED.
- ASSEMBLY TO SUB-ASSEMBLY CONTINUITY IS VERIFIED. THIS
  FEATURE GUARANTEES THAT THE PRODUCT STRUCTURE RECORDS CAN BE
  ,,EXPLODED.,,
- USER BUILDS HIS OWN ENGINEERING CHANGE PROCEDURE INTO THE
  FILE ORGANIZATION AND MAINTENANCE PROGRAMS.
- MODULAR IN DESIGN, THE SYSTEM PERMITS THE USER TO
  USE ONLY THOSE FEATURES THAT SUIT HIS NEEDS.
- THE ABILITY OF THE USER TO COMBINE PROGRAM MODULES SO THAT
  COMBINATIONS OF MAINTENANCE FUNCTIONS CAN BE PERFORMED
  AGAINST MULTIPLE FILES DURING THE SAME PROGRAM RUN.
- BI-DIRECTIONAL FILE CHAINS TO SPEED THE MAINTENANCE OF
  PART NUMBER WHERE-USED DATA. /WHERE RECORD A POINTS TO
  RECORD B, RECORD B ALSO POINTS TO RECORD A./
- WORK CENTER MASTER FILE ORGANIZATION AND MAINTENANCE
  CONTAINING ONE RECORD PER UNIQUE WORK CENTER AND INCLUDING
  BI-DIRECTIONAL WORK CENTER WHERE-USED CHAINS.
- STANDARD ROUTING FILE ORGANIZATION AND MAINTENANCE INCLUDING-
  A. BI-DIRECTIONAL FILE CHAINS TO --
     1. SPECIFY THE LOGICAL SEQUENCE BETWEEN FABRICATION OR
        ASSEMBLY OPERATIONS.
     2. SPECIFY THE REVERSE SEQUENCE TO AID IN THE CALCULATION
        OF SCHEDULED START AND FINISH TIMES.
     3. SPEED THE MAINTENANCE OF THE FILE.
  B. LINKS TO THE WORK CENTER MASTER FILE TO FACILITATE THE
     ACCUMULATION OF WORK LOADS.
  C. LINKS TO AND FROM THE CORRESPONDING PART NUMBER MASTER
     RECORDS.
- A RUN ACTIVITY CONTROL TECHNIQUE TO AID IN RESTART AND
  RECONSTRUCTION AND TO FACILITATE ADDITIONAL RETRIEVAL
  FEATURES.
- RECORD COUNT FOR AUDIT AND CONTROL OF DIRECT ACCESS
  CHAINS. THE COUNT IS MAINTAINED IN THE PART NUMBER MASTER
  AND WORK CENTER MASTER FILES WHERE THE CHAINS ARE ANCHORED.
- TAILORING OF THE GENERALIZED SOURCE PROGRAMS TO THE SPECIFIC
  NEEDS OF EACH USERS INSTALLATION THROUGH A SPECIAL
  CUSTOMIZING PROGRAM SUPPLIED WITH THE PACKAGE. THE USER
  HAS ONLY TO PREPARE A SET OF PARAMETER CARDS TO SPECIFY
  HIS NEEDS., THE CHOICE OF BOS/360 OR DOS/360 IS MADE IN ONE
  OF THESE PARAMETER CARDS.
- MACROS FOR SEQUENTIAL PROCESSING OF BOTH MASTER FILES., THIS
  CAPABILITY IS AVAILABLE FOR RETRIEVAL PROGRAMS WRITTEN IN
  EITHER ASSEMBLER LANGUAGE OR COBOL UNDER DOS/360.
- MACRO FURNISHING THE CAPABILITY TO RETRIEVE THE SET OF
  DISK FILE RECORDS WHICH COMPRISE A SINGLE LEVEL BILL OF
  MATERIAL OR A SINGLE-LEVEL PARTS WHERE-USED LIST., A MACRO
  ALSO PROVIDES THE CAPABILITY TO RETRIEVE A MANUFACTURING
  ROUTING OR A WORK CENTER WHERE-USED LIST., THIS CAPABILITY
  IS ALSO FURNISHED FOR EITHER COBOL UNDER DOS/360 OR
  ASSEMBLER LANGUAGE.

A THOROUGH KNOWLEDGE OF BILLS OF MATERIAL BY THE SYSTEM
DESIGNER IS NECESSARY. TO IMPLEMENT THIS SYSTEM, THE FOLLOWING
STEPS MUST BE TAKEN-
- DETERMINE THE FORMAT AND CONTENT REQUIREMENTS OF THE
  DISK FILE.
- WRITE RETRIEVAL PROGRAMS TO ACQUIRE INFORMATION FROM THE
  FILES.
- DESIGN INPUT CARD FORMAT.
- DESIGN AUDIT LIST PRINT FORMATS AND WRITE PRINT ROUTINES
  TO IMPLEMENT THEM.

REQUIRED PROGRAMMING SYSTEMS- THE BILL OF MATERIAL PROCESSOR
OPERATES UNDER EITHER BOS/360 OR DOS/360.
THE BOS MODULES REQUIRED IN SUPPORT ARE-
CONTROL PROGRAM - 360B-CL-302, DIRECT ACCESS METHOD /DAM/,
360B-IO-305, ASSEMBLER 360B-AS-309, AND UTILITIES,
GROUP 1 - 360B-UT-300.
THE DOS MODULES REQUIRED IN SUPPORT ARE-
ASSEMBLER BASIC MODULES 360N-AS-465, SYSTEM CONTROL AND BASIC
INPUT/OUTPUT CONTROL SYSTEMS 360N-CL-453, DIRECT ACCESS METHOD
MACROS 360N-IO-454 AND DISK UTILITIES, GROUP 1 360N-UT-461. THE
USER MAY, AT HIS OWN OPTION, EMPLOY THE FOLLOWING ADDITIONAL
DOS/360 MODULES - COBOL 360N-CB-452, CONSECUTIVE TAPE I/O
CONTROL SYSTEM MACROS 360N-IO-456. USER DATA FILES CREATED
UNDER BOS/360 MAY LATER BE MAINTAINED AND PROCESSED UNDER
DOS/360.

MINIMUM SYSTEM REQUIREMENTS -
FOR OPERATING UNDER BOS/360 -
   16K PROCESSING UNIT /MODEL D/ WITH DECIMAL ARITHMETIC
   /NO. 3237/, 1052 PRINTER-KEYBOARD WITH APPROPRIATE
   ATTACHMENT... CARD-READ-PUNCH /ANY SYSTEM/360 MODEL/...
   PRINTER /ANY SYSTEM/360 MODEL/... 2841 STORAGE CONTROL
   MODEL 1... 2311 DISK STORAGE DRIVES AS REQUIRED TO CONTAIN
   BOS/360 AND USERS DATA FILES. /MINIMUM OF TWO. AUTOMATIC
   REORGANIZATION OF THE PRODUCT STRUCTURE FILE WILL REQUIRE
   ONE DRIVE IN ADDITION TO THOSE REQUIRED TO CONTAIN THE
   PART NUMBER MASTER FILE AND THE PRODUCT STRUCTURE FILE/.
FOR OPERATING UNDER DOS/360 -
   32K PROCESSING UNIT /MODEL E/ WITH DECIMAL ARITHMETIC
   /NO. 3237/, 1052 PRINTER-KEYBOARD WITH APPROPRIATE
   ATTACHMENT... CARD-READ-PUNCH /ANY SYSTEM/360 MODEL/...

CONTINUED FROM PRIOR COLUMN--
   PRINTER /ANY SYSTEM/360 MODEL/... 2841 STORAGE CONTROL
   MODEL 1... 2311 DISK STORAGE DRIVES AS REQUIRED TO CONTAIN
   DOS/360 AND USERS DATA FILES. /MINIMUM OF TWO. AUTOMATIC
   REORGANIZATION OF THE PRODUCT STRUCTURE FILE WILL REQUIRE
   ONE DRIVE IN ADDITION TO THOSE REQUIRED TO CONTAIN THE
   PART NUMBER MASTER FILE AND THE PRODUCT STRUCTURE FILE/.

BASIC PROGRAM MATERIAL -
   DOCUMENTATION - APPLICATION DIRECTORY... PROGRAMMERS
   MANUAL, H20-0246... OPERATORS MANUAL, H20-0254.
   MACHINE READABLE - THE MACROS, GENERALIZED SOURCE PROGRAMS
   SPECIALIZED UTILITY OBJECT PROGRAMS AND SAMPLE PROBLEM
   INPUT MAY BE OBTAINED ON ONE 9-TRACK OR ONE 7-TRACK /DATA
   CONVERSION FEATURE REQUIRED/ TAPE OR ONE 1316 DISK PACK.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT INDICATED
9-TRACK WILL BE FORWARDED. THE TAPE MAY BE ORDERED FROM YOUR IBM
REPRESENTATIVE OR SUPPLIED. IT MUST BE 2400 FEET IN LENGTH.
ONLY THOSE USERS WITHOUT TAPE CAPACITY SHOULD ORDER THIS PROGRAM
ON 1316 DISK PACK.

360A-ME-07X   PRODUCT STRUCTURE RETRIEVAL   *N
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-ME-07X

THE GENERAL STRUCTURE OF THE RETRIEVAL PROGRAM CONSISTS OF
A MAINLINE PHASE AND THREE RETRIEVAL PHASES... A SINGLE LEVEL
RETRIEVAL PHASE... AN INDENTED RETRIEVAL PHASE... A SUMMARIZED
RETRIEVAL PHASE. EACH PHASE INCORPORATING BOTH EXPLOSION AND
IMPLOSION LOGIC... A COMMON AREA FOR CONSTANTS AND WORK
AREA... SEPARATE FORMATTING ROUTINES ARE INCLUDED. EACH OF
THE THREE RETRIEVAL PHASES PERFORMS PROCESSING APPROPRIATE
TO IT., LINKAGE IS THEN MADE TO THE REQUIRED FORMATTING ROUTINE
TO PRODUCE REPORTS ON A PARTICULAR PART NUMBER REQUEST.
THE SYSTEM/360 PRODUCT STRUCTURE RETRIEVAL PROGRAM IS A
DIRECT ACCESS FILE ORIENTED CONCEPT THAT REQUIRES A MASTER
INVENTORY FILE TO BE ON LINE SIMULTANEOUSLY WITH THE PRODUCT
STRUCTURE FILE. ALL FILES ARE CREATED, ADDED, DELETED, AND
REORGANIZED BY THE BILL OF MATERIAL PROCESSOR PROGRAM
/360A-ME-06X/. THE PACKAGE INCLUDES LOGIC DIAGRAMS AND
PROGRAMMING SUPPORT FOR THE THREE RETRIEVAL PHASES OF THE
MODULE. THE DIAGRAMS SUPPLYING THE MASTER LOGIC DESCRIBE THE
DECISIONS REQUIRED TO DETERMINE WHICH RECORDS TO ACCESS...
ACCESSING OF THE RECORDS... CONTROLS... THE LOCATIONS IN
THE LOGIC FLOW WHERE THE USER MAY INSERT HIS OWN PROCESSING
SUBROUTINES.

FEATURES- THE MAINLINE PHASE IS THE CONTROL SECTION OF THIS
RETRIEVAL SYSTEM. IT PERFORMS SYSTEM INITIALIZATION.,
OPENING FILES, UPDATING THE RUN NUMBER... READS THE FIRST
REQUEST CARD /TYPE OF RETRIEVAL DESIRED/... FETCHES THE
APPROPRIATE RETRIEVAL PROGRAM PHASE INTO CORE... PASSES
CONTROL TO IT. THE RETRIEVAL PHASES OPERATE GENERALLY BY-
READING THE PART NUMBER REQUEST CARD... RETRIEVING THE
APPROPRIATE FILE RECORDS... PASSING CONTROL TO THE APPROPRIATE
REPORT FORMATTING ROUTINE... READING THE NEXT PART NUMBER
REQUEST CARD /IF ANY/... CONTINUING TO LINK TO AND FROM THE
REPORT FORMATTING ROUTINE UNTIL A NEW RETRIEVAL REQUEST
CARD IS ENCOUNTERED... RETURNING CONTROL TO THE MAINLINE.
WHEN ONE OF THE RETRIEVAL PHASES ENCOUNTERS AN END OF JOB CARD,
CONTROL IS ALSO RETURNED TO THE MAINLINE WHICH PERFORMS
END-OF-JOB FUNCTIONS AND ENDS THE RUN. USE OF THE PRODUCT
DATA CAN BE CLASSIFIED AS EXPLOSION /ASSEMBLY DATA/ OR
IMPLOSION /WHERE USED DATA/ BY USING THE ASSEMBLY-COMPONENT
ADDRESSES /CHAINS/ OR WHERE-USED ADDRESSES /CHAINS/ CONTAINED
IN THE MASTER AND PRODUCT STRUCTURE FILES.

THE FOLLOWING IS A DISCUSSION OF THE FEATURES OF EACH OF THE
THREE RETRIEVAL PHASES WHICH PRODUCE THE FOLLOWING SIX REPORT
TYPES-
- SINGLE LEVEL EXPLOSION- THE MOST FUNDAMENTAL TYPE OF
  RETRIEVAL PROGRAM USING PRODUCT STRUCTURE DATA IN ASSEMBLY
  COMPONENT SEQUENCE. THE PROCESSING OUTPUT IS A BILL OF
  MATERIAL. THE ASSEMBLY IS EXPLODED INTO ITS DIRECT
  COMPONENTS AND ASSOCIATED QUANTITIES PER ASSEMBLY.
  AN EXAMPLE OF A SINGLE LEVEL EXPLOSION APPLICATION THAT
  USES PRODUCT STRUCTURE DATA AS A FRAMEWORK FOR PROCESSING
  IS THE EXTENDED BILL OF MATERIAL.
- INDENTED EXPLOSION- A PROCESSING TECHNIQUE FOR COMPLETELY
  BREAKING A TOP-LEVEL OR OTHER MAJOR ASSEMBLY INTO ITS
  MULTIPLE SUB-ASSEMBLY LEVELS OR TIERS. THE TERM ,,INDENTED,,
  REFERS TO THE FORMAT OF THE PRINTED OUTPUT FREQUENTLY CALLED
  AN INDENTED PARTS LIST. IN ADDITION, THE ORDER QUANTITY
  OF THE STARTING ASSEMBLY IS MULTIPLIED BY EACH OF THE
  QUANTITY-PER-ASSEMBLY FIELDS GIVING THE TOTAL QUANTITY
  FOR EACH COMPONENT NEEDED. THIS REPORT SHOWS A LEVEL BY
  LEVEL RELATIONSHIP OF ALL PARTS WITHIN AN ASSEMBLY.
- SUMMARIZED EXPLOSION- PROVIDES GROSS REQUIREMENTS FOR END
  PRODUCTS AND SUBASSEMBLIES. THIS IS A PROCESSING TECHNIQUE
  FOR COMPLETELY BREAKING A TOP-LEVEL OR OTHER MAJOR ASSEMBLY
  INTO ALL ITS MULTIPLE SUB-ASSEMBLY LEVELS AND SUMMARIZING
  THE QUANTITIES OF EACH PART /SUB-ASSEMBLIES AND SIMPLE
  PARTS/ FOUND IN THE ENTIRE PRODUCT STRUCTURE. LOW LEVEL
  CODES ARE USED TO ELIMINATE RE-EXPLOSION OF MULTIPLE-USE
  ASSEMBLIES. THIS TYPE OF RETRIEVAL PROVIDES THE FRAMEWORK
  FOR PERFORMING A GROSS TO NET REQUIREMENTS APPLICATION.
- SINGLE LEVEL IMPLOSION- THE MOST BASIC TYPE OF RETRIEVAL
  PROGRAM USING THE PRODUCT STRUCTURE DATA IN WHERE-USED
  SEQUENCE. THE OUTPUT OF THE PROCESSING IS A NEXT ASSEMBLY
  WHERE-USED LISTING.
- INDENTED IMPLOSION- A PROCESSING TECHNIQUE FOR TRACING THE
  USAGES OF A GIVEN PART NUMBER IN ASSEMBLIES AT VARIOUS
  USAGE LEVELS, AND IN TURN, THE USE OF THE PART NUMBER IN
  HIGHER LEVEL ASSEMBLIES UP TO THE TOP ASSEMBLY LEVEL.
  THE TERM ,,INDENTED,, REFERS TO THE FORMAT OF THE PRINTED
  OUTPUT WHICH SHOWS A LEVEL BY LEVEL RELATIONSHIP THROUGH
  ALL PRODUCTS.
- SUMMARIZED IMPLOSION- A MULTI-LEVEL PROCESSING TECHNIQUE
  THAT TOTALS THE DIRECT AND INDIRECT USAGES OF A PART NUMBER
  ON ALL HIGHER LEVEL ASSEMBLIES. THE PRINTED OUTPUT INDICATES
  ALL THE ASSEMBLIES THAT DIRECTLY OR INDIRECTLY CONTAIN
  THE PART NUMBER, INCLUDING THE TOTAL QUANTITY OF THE PART
  NUMBER IN EACH ASSEMBLY. THIS TYPE OF RETRIEVAL ALSO
  REFLECTS THE EFFECT OF INCREMENTAL COST INCREASES OR
  DECREASES OF SIMPLE PARTS OR SUB-ASSEMBLIES ON TOP LEVEL
  PRODUCTS.

USER RESPONSIBILITIES- A THOROUGH KNOWLEDGE OF THE SYSTEM/360
INVENTORY FILES...
BILL OF MATERIAL PROCESSOR PROGRAM... CREATION OF MASTER
CREATION OF PRODUCT STRUCTURE FILES... TAILOR SAMPLE FILE
LAYOUTS TO INSTALLATION REQUIREMENTS.

IBM Programs

PROGRAMMING SYSTEMS- ASSEMBLER LANGUAGE WITH INPUT/OUTPUT
MACROS UNDER SUPERVISION OF THE BASIC OPERATING SYSTEM/360
OR DISK OPERATING SYSTEM/360.

MINIMUM SYSTEM REQUIREMENTS- A 2030 D OR E CENTRAL PROCESSING
UNIT /16K UNDER BOS CONTROL OR 32K UNDER DOS CONTROL/ WITH
DECIMAL ARITHMETIC /NO. 3237/, 1051 ATTACHMENT /NO. 7915/...
1051 CONTROL UNIT MODEL N1 FOR CONSOLE PRINTER-KEYBOARD,
FIRST PRINTER ATTACHMENT /NO. 4409/, CPU ATTACHMENT /NO. 3130/,
FIRST PUNCH ATTACHMENT /NO. 4410/, FIRST READER ATTACHMENT
/NO. 4411/... 1052 CONSOLE PRINTER-KEYBOARD /MODEL 8/...
/ANY S/360 MODEL/ CARD READ PUNCH... /ANY S/360 MODEL/ PRINTER...
2841 STORAGE CONTROL MODEL 1... 2311 DISK STORAGE DRIVES
MODEL 1 AS REQUIRED TO CONTAIN BASIC OR DISK OPERATING
SYSTEM/360 AND USERS DATA FILES /MINIMUM OF 2/.

BASIC PROGRAM MATERIAL
    DOCUMENTATION - APPLICATION DIRECTORY, PROGRAMMERS
        MANUAL,H20-0369...OPERATORS MANUAL,H20-0370.
    MACHINE READABLE - SOURCE PROGRAM DECKS IN CARD FORM OR ON
        ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
        DTR.

NOTES- IF THE TRACK REQUIREMENT IS NOT INDICATED, 9-TRACK WILL
BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL
IS REQUIRED.

C-01X   COMMUNICATIONS CONTROL
ATION PROGRAM /CCAP/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SC-01X

THE COMMUNICATIONS CONTROL APPLICATION PROGRAM /CCAP/ IS A
BASIC PROGRAMMING PACKAGE FOR IMPLEMENTING A COMPUTER CONTROLLED,
STORE AND FORWARD COMMUNICATIONS NETWORK. NOT ONLY CAN YOUR
CUSTOMERS USE THIS PACKAGE TO INSTALL A MODERN COMMUNICATIONS
SYSTEM, BUT WITH THE IOCS OPTION USER PROGRAMS CAN NOW PROCESS
VARIOUS APPLICATIONS CONCURRENT WITH MESSAGE SWITCHING.
SOME EXAMPLES ARE- SALES ORDER ENTRY... DATA COLLECTION...
ORDER PROCESSING... SPOOL.

THIS PROGRAM IS A COMPLETE PACKAGE WHICH PERFORMS THE BASIC
FUNCTIONS OF A COMMUNICATIONS STORE AND FORWARD MESSAGE
SWITCHING CENTER INCLUDING-
- TERMINAL POLLING, RECEIVE AND TRANSMISSION OF ALL TRAFFIC.
- AUTOMATIC LOGGING AND ROUTING OF TRAFFIC.
- MESSAGE SECURITY AND SEQUENCE NUMBER CHECKING UNDER COMPUTER
  CONTROL. DATE TIME STAMP AND SEQUENCE NUMBERING OF OUTPUT
  MESSAGES.
- LINE AND NETWORK STATUS REPORTING.
- MESSAGE RETRIEVAL PROCEDURES.
- QUEUEING OF TRAFFIC FOR INOPERATIVE OR CLOSED TERMINALS AND
  AUTOMATIC TRANSMISSION UPON RECOGNITION OF TERMINAL-UP
  CONDITION.
- LINE AND TERMINAL ERROR DETECTION AND REPORTING.
PROVISION IS MADE FOR ACCOMMODATION OF SPECIFIC USER TERMINAL
MNEMONICS /1-4 CHARACTERS/ AND TERMINAL POLLING CHARACTERS.
HEADER ANALYSIS IS PROVIDED AS A SERIES OF MODULAR SUBROUTINES
WHICH CAN BE UTILIZED AS REQUIRED BY THE SPECIFIC USERS
HEADER FORMAT. THE MAXIMUM NUMBER OF TERMINALS THAT CAN BE
CONTROLLED IS 2559
IN ADDITION TO THESE FEATURES, THE PROGRAM INCLUDES PHYSICAL
IOCS ROUTINES FOR 2400 SERIES MAGNETIC TAPE DRIVES,
2540 CARD READ PUNCH, 1403 PRINTER, AND 2311 DISK STORAGE.
WHEN ADEQUATE CORE MEMORY IS AVAILABLE, A USER MAY UTILIZE
THESE ROUTINES TO ADD HIS OWN PROCESSING PROGRAMS, WRITTEN
IN S/360 BASIC ASSEMBLER, TO BE RUN IN CONJUNCTION WITH THE
MESSAGE SWITCHING APPLICATION. I/O IS SCHEDULED BY THE CCAP
MONITOR SUPERVISOR, WHICH GIVES FIRST PRIORITY TO THE
MESSAGE SWITCHING FUNCTIONS, AND THEN ON A FIFO BASIS WITHIN
AN INDIVIDUAL QUEUE PER DEVICE. DEVICES ARE HANDLED
INDEPENDENTLY, ALLOWING OVERLAP OF OPERATIONS.
THE PROGRAM IS DESIGNED TO OPERATE IN A SYSTEM/360 MODEL 30
PROCESSOR WITH 16K OR 32K POSITIONS OF CORE STORAGE. BEFORE
ATTEMPTING TO INSTALL THE SYSTEM ON A LARGER MODEL SYSTEM/360,
CONSULT THE SYSTEMS MANUAL FOR INFORMATION RELATING TO REQUIRED
MODIFICATIONS IN ADDRESSING. ADDITIONAL MODIFICATIONS ARE
NECESSARY IN THE DIAGNOSTIC ROUTINES FOR USE ON THE
SYSTEM/360 MODEL 40.

FEATURES-
- EXTENSIVE SUPERVISOR CONTROLS TO DISPLAY TERMINAL STATUS,
  LINE QUEUES, ALTER TERMINAL AND LINE STATUS, SET POLLING
  LIMITS, START AND STOP SYSTEM.
- AUTOMATIC CHECKPOINT AND RESTART FACILITY.
- FACILITY FOR AUTOMATIC BROADCAST AND DISTRIBUTION MESSAGES.

CCAP INCLUDES ALL OF THE ERROR ROUTINES REQUIRED TO CONTROL
A COMMUNICATIONS NETWORK AND IS, THEREFORE, A COMPLETE PACKAGE.
THE PROGRAM IS ALSO MODULAR SO THAT ADDITIONS OF NON-SUPPORTED
TERMINALS OR A NON-SUPPORTED HEADER FORMAT MAY BE INCLUDED
WITH MINIMUM EFFORT.
THE USER MUST ADAPT THE PROGRAM TABLES TO MEET THE SPECIFIC
REQUIREMENTS OF HIS NETWORK. THE BASIC FUNCTIONS OF RECEIVE
AND SEND, LOG AND QUEUE, IDENTIFY AND ROUTE, CODE CONVERT,
ANALYZE AND CONTROL ARE PROVIDED BY THE PROGRAM PACKAGE.
INFORMATION CONCERNING TERMINAL MNEMONICS, POLLING CHARACTERS
AND HEADER FORMAT MUST BE INCLUDED IN THE PROGRAM BY THE USER.
MESSAGES ARE PREPARED ON PAPER TAPE AT THE VARIOUS TERMINAL
LOCATIONS AND ENTERED INTO THE TERMINAL. AFTER BEING POLLED
BY THE COMPUTER, THE MESSAGE WILL ENTER THE SYSTEM, BE RECEIVED
AND LOGGED ON DISK FILE STORAGE. THE MESSAGE HEADER WILL BE
ANALYZED, ROUTING PERFORMED, TABLES UPDATED, OUTPUT HEADERS
CONSTRUCTED AND QUEUED FOR TRANSMISSION. WHEN THE OUTPUT LINE IS
AVAILABLE, THE MESSAGE WILL BE TRANSMITTED. INFORMATION
CONCERNING LINE QUEUES AND TERMINAL STATUS IS PRINTED OUT
UPON DEMAND, UTILIZING SUPERVISOR CONTROLS.
THE SOURCE LANGUAGE IS THE SYSTEM/360 BASIC ASSEMBLER.

MINIMUM SYSTEM REQUIREMENTS- A 2030 MODEL D PROCESSOR WITH
DECIMAL ARITHMETIC, INTERVAL TIMER, 1050 ATTACHMENT AND ONE
SELECTOR CHANNEL... A 1051 CONTROL UNIT MODEL N1 WITH
CPU ATTACHMENT FEATURE, FIRST PRINTER ATTACHMENT FEATURE AND
A 1052 PRINTER-KEYBOARD MODEL 6... A 2841 STORAGE CONTROL UNIT
AND AT LEAST ONE 2311 DISK STORAGE DRIVE /MAXIMUM 8/... A
2702 TRANSMISSION CONTROL UNIT WITH TELEGRAPH TERMINAL
CONTROL - TYPE I FEATURE, TELEGRAPH LINE ADAPTERS, LINE
EXPANSION FEATURE IF MORE THAN 15 LINES ARE REQUIRED AS WELL AS
APPROPRIATE FEATURES FOR ATTACHMENT OF 45, 57, OR 75 BPS
COMMUNICATION LINES. IT MUST BE REALIZED THAT IN ORDER TO
ASSEMBLE CCAP, A SYSTEM CONFIGURATION IS REQUIRED THAT
CONTAINS CARD AND TAPE EQUIPMENT.

WHEN THE MINIMUM CONFIGURATION IS USED, 6,100 BYTES HAVE BEEN
ALLOCATED FOR LINE TABLES AND BUFFERS AND TERMINAL TABLES.
THE PROGRAM REQUIRES 194 BYTES PER LINE APPEARANCE AND 19 BYTES
PER TERMINAL, THUS A TYPICAL CONFIGURATION OF 20 LINES AND
100 TERMINALS MAY BE ACCOMMODATED WITHIN THE 16K SYSTEM.
VARIATIONS OF THE LINE AND TERMINAL CONFIGURATIONS MAY BE
ACCOMMODATED WITHIN THE 6,100 BYTE CORE LIMITATION. EXPANSION
OF CORE STORAGE AND APPROPRIATE FILE AND LINE TERMINATION
CAPABILITIES WILL PERMIT SERVICING OF NETWORKS INCLUDING
MORE THAN 20 LINES AND UP TO THE MAXIMUM OF 255 TERMINAL
LOCATIONS. THE MAXIMUM NUMBER OF LINES THAT CAN BE ACCOMMODATED
IN A 32K OR 64K SYSTEM WILL REQUIRE ANALYSIS OF PROCESS TIMINGS
AND CHANNEL UTILIZATION. THE ADDITION OF THE IOCS ROUTINES MAKES
LARGER SYSTEM CONFIGURATIONS VERY ATTRACTIVE. IT WILL BE
NECESSARY TO MAKE INDIVIDUAL STUDIES OF CONFIGURATIONS WITH
GREATER NUMBERS OF LINES, OR THROUGHPUT AND CHANNEL UTILIZATION
CONSIDERATIONS WHICH MAY REQUIRE LARGER BUFFER AREAS.

TYPICAL CORE STORAGE ALLOCATIONS-
16K MODEL 30

10,300	MESSAGE SWITCHING /INCLUDES 2311 IOCS/
3,880	20 LINES
1,900	100 TERMINALS
16,080	TOTAL BYTES

32K MODEL 30

10,300	MESSAGE SWITCHING
1,400	IOCS FOR 2400, 2540, AND 1403
7,760	40 LINES
3,800	200 TERMINALS
9,440	USER-WRITTEN PROGRAMS
32,700	TOTAL BYTES

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION
        DESCRIPTION, H20-0165... PROGRAMMERS MANUAL, H20-0244...
        OPERATORS MANUAL, H20-0245... SYSTEMS MANUAL.
    MACHINE READABLE - ONE 9-TRACK OR ONE 7-TRACK /DATA
        CONVERSION FEATURE REQUIRED/ 800 CPI MAGNETIC TAPE
        CONTAINING BLOCKED SOURCE STATEMENT RECORDS.

NOTE- THE ONE REEL OF TAPE REQUIRED TO OBTAIN THIS PROGRAM MAY
BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE
PROVIDED MUST BE 2400 FEET IN LENGTH. WHEN ORDERING THE REQUESTOR
MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT
SPECIFIED 9-TRACK WILL BE FORWARDED.

360A-SE-15X   IBM S/360 DATA CONVERSION
UTILITY I PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-15X

THE IBM SYSTEM/360 DATA CONVERSION UTILITY I PROVIDES AN
EFFECTIVE AND FLEXIBLE CAPABILITY FOR CUSTOMERS TO CONVERT
THEIR CURRENT IBM SYSTEM DATA FILES TO SYSTEM/360 DATA SETS.
DESIGNED AS A GENERAL PURPOSE UTILITY PROGRAM UTILIZING CONTROL
CARDS, THIS PROGRAM ACCEPTS AS INPUT DATA SETS IN THE FORMAT
OF THE IBM 1620, 1401, 1440, 1460, 1410, AND 7010 SYSTEMS AND
PRODUCES AS OUTPUT THE DATA FORMAT DESIRED FOR SYSTEM/360. THE
PROGRAM ACCEPTS CARD, TAPE OR DASD DATA SETS FROM THE ABOVE
CURRENT IBM SYSTEM /WHERE IBM WRITTEN DUMP OR UNLOAD ROUTINES
HAVE BEEN USED WHEN COMING FROM A CURRENT IBM SYSTEM DASD/ AND
WRITES THESE DATA SETS ON SYSTEM/360 TAPE OR DASD UNITS. THE
PROGRAM HAS DATA TRANSFORMATION CAPABILITY THAT ALLOWS THE USER
MAXIMUM FLEXIBILITY IN ,,RESYSTEMATIZING,, HIS DATA SETS FOR
SYSTEM/360.
THIS PROGRAM ACCOMMODATES THE THREE GENERAL CONSIDERATIONS IN
DATA CONVERSIONS-
- THE PHYSICAL CHARACTERISTICS OF THE I/O DEVICE /I.E., 7-TRACK
  TAPE FORMAT/.
- CURRENT IBM PROGRAMMING SYSTEMS STANDARDS /I.E., LABELS,
  PADDING, CHARACTERS, CHECKPOINT RECORDS, ETC./.
- OPTIMIZATION OF DATA REPRESENTATION /I.E., FLOATING POINT,
  BINARY, PACKED DECIMAL, ETC./.
THE DATA CONVERSION UTILITY I PROGRAM IS DESIGNED TO RUN UNDER
CONTROL OF THE IBM BASIC OPERATING SYSTEM/360 /8K DISK/ AND WILL
UTILIZE THE BASIC OPERATING SYSTEM INPUT AND OUTPUT CAPABILITY.
DESCRIPTION- THE PROGRAM IS DIVIDED INTO TWO STEPS-
- ANALYZING THE CONTROL CARDS
- PERFORMING THE REQUESTED DATA CONVERSION
TO DESCRIBE ANY OF THE ALLOWABLE DATA CONVERSION OPTIONS, CONTROL
CARDS ARE USED TO SPECIFY INFORMATION IN FOUR AREAS --
- THE INPUT DATA...
- THE DESIRED MOVE/TRANSFORMATIONS...
- THE OUTPUT DATA...
- THE USER EXITS AND USER TASKS TO BE PERFORMED.
THE ANALYSIS OF THE CONTROL CARDS EXTRACTS THE DATA FROM CONTROL
CARDS SO IT IS AVAILABLE TO THE MODULES AT EXECUTION TIME AND
PROVIDES FOR USER EXITS AND TASKS THAT ARE SPECIFIED. THIS STEP
ALSO ANALYZES THE MOVE/TRANSFORM INFORMATION FROM THE CONTROL
CARDS TO PROVIDE THE NECESSARY INFORMATION TO RELATE THE INPUT
AND OUTPUT FIELDS.

THE SECOND STEP IS DIVIDED INTO A MAXIMUM OF FOUR FUNCTIONS
WITH OVERLAYS, AS REQUIRED, TO PERFORM THE DATA CONVERSION
SPECIFIED IN THE CONTROL CARDS. THE FUNCTIONS AND THEIR
OVERLAYS ARE --
- CURRENT IBM SYSTEM INPUT -- 14XX LABEL CHECKING... 14XX/7010
  CHECKPOINT ELIMINATION... BCD FIXED LENGTH TAPE RECORDS /WITH
  OR WITHOUT PADDING/... BCD VARIABLE LENGTH TAPE RECORDS
  /14XX/... 1620/14XX DASD CARDS... CODE CONVERSION OF DUAL
  SPECIAL CHARACTERS... CARD DATA FILES.
- MOVE/TRANSFORM STRINGS -- THE MOVE/TRANSFORM STRINGS CAN BE
  USED FOR MULTIPLE RECORD TYPES OR COMBINING MULTIPLE RECORDS
  FROM THE INPUT DATA SET INTO ONE OUTPUT DATA RECORD.
- SYSTEM/360 OUTPUT -- SYSTEM/360 LABELS /VOLUME AND FILE/...
  FIXED LENGTH TAPE RECORDS /7- OR 9-TRACK/... VARIABLE LENGTH
  TAPE RECORDS /7- OR 9-TRACK/... DASD - INDEXED SEQUENTIAL,
  SEQUENTIAL, AND DIRECT ACCESS.
- USER MODULES -- USER ROUTINES AS REQUIRED /E.G., NON-STANDARD
  TAPE LABELS... /.

FEATURES-
- THE IBM SYSTEM/360 USERS ARE PROVIDED A FACILITY TO REDUCE
  SUBSTANTIALLY THE DIFFICULTIES, TIME, AND COSTS OF PERFORMING
  THE REQUIRED DATA CONVERSIONS.
- ALLOWS GREATER FLEXIBILITY FOR SCHEDULING USER MANPOWER
  IN NEW APPLICATION AREAS WHERE POTENTIAL SAVINGS MAY BE MADE.
  MORE OF THE MANPOWER CAN BE CONCENTRATED ON THE SOLUTION TO
  THE APPLICATION PROBLEM, RATHER THAN THE NATURE OF THE DATA.

CONTINUED FROM PRIOR PAGE--
- ENCOURAGES THE USER TO WRITE HIS IBM SYSTEM/360 APPLICATION
  PROGRAMS USING RECORD ORGANIZATION AND DATA FORMATS WHICH
  WILL ALLOW HIM TO GIVE THE FULL ADVANTAGES OF THE
  IBM SYSTEM/360.
- ENCOMPASSES THE REQUIREMENTS OF CURRENT IBM SYSTEM USERS,
  REGARDLESS OF THE MACHINE SIZE AND CONFIGURATION.
- PROVIDES COMPARABLE DATA CONVERSION FACILITIES TO USERS,
  REGARDLESS OF THE IBM SYSTEM/360 LANGUAGE USED.
- DESIGNED FOR EASE OF USER IMPLEMENTATION, MODIFICATION, AND
  MAINTENANCE.
- ALLOWS THE USER TO READILY CHANGE HIS DATA STORAGE MEDIA.
- ALLOWS THE USER OF THE IBM SYSTEM/360 TO TAKE ADVANTAGE OF
  THE FLEXIBILITY PROVIDED BY DASD CAPACITIES AND CAPABILITIES.
- DESIGNED TO ALLOW THE USER TO TAILOR THE PROGRAM TO HIS
  INDIVIDUAL REQUIREMENTS THROUGH USER EXITS AND MODULAR
  PROGRAM ORGANIZATION.

USE- THE DATA CONVERSION UTILITY I PROGRAM IS DESIGNED FOR EASE
AND FLEXIBILITY OF USE. THE PROGRAM RESIDES ON THE RELOCATABLE
LIBRARY AND RUNS UNDER CONTROL OF THE IBM BASIC OPERATING
SYSTEM/360 /8K DISK/. THE PROGRAM CAN BE USED FOR THE PERMANENT
CONVERSION OF CURRENT IBM SYSTEM DATA SETS INTO SYSTEM/360 SETS
AND CAN ALSO BE USED TO OBTAIN ,,LIVE,, TEST DATA FROM CURRENT
IBM SYSTEMS FOR USE IN TESTING SYSTEM/360 APPLICATION PROGRAMS.
SINCE INPUT DATA MAY BE ON EITHER 7- OR 9-TRACK TAPE, CUSTOMERS
WHOSE INITIAL CONVERSION TO SYSTEM/360 IS PLANNED AROUND
EMULATION WILL BE ABLE TO USE THE DATA CONVERSION UTILITY I
PROGRAM TO CONVERT THEIR EVEN PARITY, AND BCD 9-TRACK EMULATOR
DATA SETS WHEN THEY CONVERT THEIR PROGRAMS TO SYSTEM/360.
THE SPECIFIC DATA CONVERSION REQUIRED ON A DATA SET IS
INDICATED BY CONTROL CARDS AS FOLLOWS --
　　INPUT-　　　SPECIFIC DESCRIPTION OF THE CURRENT IBM SYSTEM INPUT
　　　　　　　　DATA SET. /DENSITY, PARITY, RECORD FORM, TYPE OF
　　　　　　　　TAPE LABELS, RECORD LENGTH, BLOCK LENGTH... /.
　　MOVE/
　　TRANSFORM- RELATIVE LOCATION, SIZE, AND TYPE OF INPUT FIELD AND
　　　　　　　　ITS CORRESPONDING OUTPUT FIELDS RELATIVE LOCATION,
　　　　　　　　SIZE, AND TYPE.
　　OUTPUT-　　 SPECIFIC DESCRIPTION OF THE SYSTEM/360 OUTPUT DATA
　　　　　　　　SET. /DASD, 7- OR 9-TRACK TAPE, RECORD FORM... /.
　　USER-　　　 SPECIFIED EXITS IN THE PROGRAM TO BE ACTIVATED AND
　　　　　　　　THE NAME OF THE USERS TASK TO WHICH THE PROGRAM IS
　　　　　　　　TO PASS CONTROL WHEN THE EXIT IS TAKEN.
THE INSTALLATION STANDARDS FOR ANY OR ALL CONTROL CARDS, EXCEPT
THE MOVE/TRANSFORM CARDS CAN BE SET BY THE INSTALLATION WHEN THE
LIBRARY IS CREATED. ONLY THOSE CONTROL CARDS AND PARAMETERS
USED AS INPUT DURING EXECUTION WILL CHANGE THIS STATUS TO
REFLECT THE INFORMATION NOT STANDARD TO THE INSTALLATION /I.E.,
RECORD SIZE, BLOCK SIZE, ETC./.
THE PROGRAM IS DESIGNED TO ALLOW EASE OF CUSTOMER MODIFICATIONS.
USER EXITS ARE PROVIDED FOR NON-STANDARD CURRENT SYSTEM LABELS
ON INPUT, NON-STANDARD SYSTEM/360 LABELS ON OUTPUT, AND BEFORE
EACH FUNCTION WITHIN THE PROGRAM TO ALLOW THE USER TO PERFORM THE
FUNCTION OR CHANGE THE METHOD OF PERFORMING THE FUNCTION /I.E.,
THE USER COULD BYPASS THE NORMAL INPUT GET /LOCATE/ ON THE
CURRENT IBM SYSTEM DATA SET/. WHEN USER TASKS ARE INDICATED,
THE USER TASK/S/ AND THE DATA CONVERSION PROGRAM WILL RESIDE
IN STORAGE TOGETHER.

PROGRAMMING SYSTEMS- THE DATA CONVERSION UTILITY I IS PROGRAMMED
USING THE IBM BASIC OPERATING SYSTEM/360 ASSEMBLER WITH
INPUT/OUTPUT MACROS /8K DISK/ AS DESCRIBED IN C24-3361.

MACHINE CONFIGURATION- AN IBM SYSTEM/360 MODEL C30 /8K/ OR
ABOVE WITH DECIMAL ARITHMETIC /NO. 3237/.
THE BASIC OPERATING SYSTEM/360 /8K DISK/ REQUIREMENTS OF
DEVICES FOR SYSTEM RESIDENCE AND SYSTEM INPUT ARE NECESSARY. IN
ADDITION, INPUT/OUTPUT DEVICES, AS REQUIRED, ARE NEEDED FOR
THE FOLLOWING --
- ONE OR TWO 2400 SERIES TAPE DRIVES FOR THE INPUT DATA SET.
- 2540/2501 FOR 1620/14XX DASD OR OTHER DATA CARD INPUT.
- ONE OR TWO 2400 SERIES TAPE DRIVES FOR THE OUTPUT DATA SET.
- ONE OR MORE IBM 2311/S FOR THE DASD OUTPUT DATA SET.

NOTE- 2400 SERIES TAPE DRIVES CAN BE 9-TRACK UNLESS THEY
INTERFACE WITH 729 TAPE DRIVES IN WHICH CASE THE 7-TRACK HEAD
AND 7-TRACK FEATURE ARE REQUIRED.
WHEN ORDERING THIS PROGRAM, 7- OR 9-TRACK TAPE MUST BE INDICATED
ON THE PROGRAM REQUEST CARD. IF NOT SPECIFIED, 9-TRACK TAPE
WILL BE SUPPLIED. THE DATA CONVERSION FEATURE IS REQUIRED
FOR 7-TRACK. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE
ORDER CARD.

BASIC PROGRAM MATERIAL -
　　DOCUMENTATION - APPLICATION DIRECTORY...APPLICATION
　　　　DESCRIPTION H20-0194...PROGRAMMERS MANUAL H20-0232...
　　　　OPERATORS MANUAL H20-0233.
　　MACHINE READABLE - OBJECT PROGRAM IS AVAILABLE ON 7-OR 9-
　　　　TRACK DTR, OR IN PUNCHED CARDS.

OPTIONAL PROGRAM MATERIAL - SOURCE PROGRAMS AND SAMPLE PROBLEMS
　　IN CARD-IMAGE FORM ARE AVAILABLE ON A 7- OR 9-TRACK DTR..
　　...SYSTEMS MANUAL.
　　IF THE TRACK REQUIREMENT IS NOT SPECIFIED, A 9-TRACK TAPE
WILL BE SUPPLIED.
　　THE DTR /DISTRIBUTION TAPE REEL/ WILL BE SUPPLIED BY
THE PROGRAM INFORMATION DEPARTMENT- NO TAPE SUBMITTAL IS
REQUIRED.

360A-SE-19X　　　1400 AUTOCODER TO COBOL　　　　　　　　　　　　*N
CONVERSION AID PROGRAM /ACCAP/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-19X

ACCAP IS A SYSTEM/360 APPLICATION PROGRAM WHICH ACCEPTS AS
INPUT SOURCE STATEMENTS WRITTEN IN AUTOCODER OR SPS FOR THE
1401, 1410, 1440, 1460 AND 7010 SYSTEMS. IT PRODUCES
SYSTEM/360 COBOL STATEMENTS WHEN POSSIBLE AND DIAGNOSTIC
MESSAGES IN THE CASE WHERE THE PROGRAM IS UNABLE TO COMPLETE
THE TRANSLATION. ACCAP PERFORMS THE CONVERSION ON A
STATEMENT-FOR-STATEMENT BASIS. THEREFORE, THE GENERATED
CODE MAY NOT BE AS OPTIMUM AS COBOL CODING WRITTEN EXPRESSLY
FOR SYSTEM/360. WHERE THE PROGRAM IS UNABLE TO TRANSLATE
THE AUTOCODER /SPS/ SOURCE STATEMENT, IT WILL PROVIDE A
DIAGNOSTIC MESSAGE. THUS A MANUAL CODING EFFORT IS REQUIRED
TO COMPLETE THE NEW COBOL SOURCE PROGRAM PRIOR TO ITS
COMPILATION AND TESTING.

FEATURES- MACHINE ASSISTED CONVERSION OF AUTOCODER /SPS/
PROGRAM TO A PROBLEM ORIENTED LANGUAGE... GENERATES COBOL
STATEMENTS USING THE SAME SYMBOLIC LABELS OF THE AUTOCODER
PROGRAM, SUPPLEMENTED WITH INFORMATION INDICATING THEIR
ORIGINAL USE... ALL AUTOCODER COMMENTS ARE INCLUDED ON THE

CONTINUED FROM PRIOR COLUMN--
COBOL LISTING AND COMMENT CARDS BECOME COBOL NOTES IN THE
NEW SOURCE DECK... THE OUTPUT LISTING ALLOWS A PROGRAMMER TO
RELATE THE ORIGINAL AUTOCODER STATEMENTS TO THE GENERATED
COBOL STATEMENTS... DIAGNOSTICS, PROVIDED ON THE OUTPUT
LISTING, HIGHLIGHT THE SPECIFIC STATEMENTS WHICH REQUIRE
USER ATTENTION... RETENTION OF THE ORIGINAL PROGRAM LOGIC
ALLOWS THE USER TO RELATE THIS LOGIC TO THE NEW COBOL PROGRAM...
NO USER MODIFICATIONS TO THE AUTOCODER SOURCE PROGRAMS ARE
REQUIRED... TESTING OF THE NEW COBOL PROGRAM IS FACILITATED
BY THE USE OF THE GENERATED CROSS-REFERENCE LISTING...
PRODUCES PROPERLY STRUCTURED COBOL DIVISIONS IN SEQUENCE AND
CREATES A SYNTACTICALLY CORRECT COBOL SOURCE DECK.
ACCAP CONTAINS ITS OWN CONTROL PROGRAM WHICH WAS ADAPTED
FROM OS/360. THIS CONTROL PROGRAM IS INDEPENDENT OF THE
USERS SYSTEM/360 OPERATING SYSTEM AND ALLOWS AUTOCODER OR
SPS PROGRAMS OR BOTH TO BE STACKED FOR INPUT.

MACHINE REQUIREMENTS- A SYSTEM/360 MODEL G40 /131K/ WITH
DECIMAL ARITHMETIC... 1052 PRINTER-KEYBOARD MODEL 7...
2540 CARD READ PUNCH MODEL 1... 1403 PRINTER... TWO 2311 DISK
STORAGE DRIVES.
THE MINIMUM CONFIGURATION ACCEPTS AUTOCODER OR SPS SOURCE
DECKS OF UP TO APPROXIMATELY 6,000 CARDS. SOURCE DECKS
UP TO 10,000 CARDS CAN BE HANDLED BY ADDING TO THE MINIMUM
CONFIGURATION ONE 2311 DISK STORAGE DRIVE OR TWO 2400 TAPE
DRIVES. THE SAME EC LEVELS REQUIRED FOR OS/360 ARE REQUIRED
FOR EXECUTION OF ACCAP.

BASIC PROGRAM MATERIAL
　　DOCUMENTATION - APPLICATION DIRECTORY...PROGRAMMERS
　　　　MANUAL /Y20-0105/...OPERATORS MANUAL /Y20-0106/.
　　MACHINE READABLE - THE DUMP/RESTORE IMAGE OF ACCAP SYSTEM
　　　　PACK ON ONE 9-TRACK /800 BPI OR 1600 BPI/ TAPE, ONE
　　　　7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE, OR ONE
　　　　1316 DISK PACK.

NOTES- THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM
REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE
2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK 800 BPI WILL BE FORWARDED.

360A-SE-20X　　　　　SYSTEM/360 DATA CONVERSION
UTILITY II /SEQUENTIAL/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-20X

DATA CONVERSION UTILITY II PROVIDES AN EFFECTIVE AND FLEXIBLE
CAPABILITY FOR USERS TO CONVERT THEIR CURRENT IBM SYSTEM
DATA FILES TO SYSTEM/360 DATA SETS. THE PROGRAM IS DESIGNED
TO RUN UNDER THE CONTROL OF THE IBM OPERATING SYSTEM/360.
DESIGNED AS A GENERAL-PURPOSE PROGRAM, IT WILL ACCEPT, AS
INPUT, DATA SETS IN THE FORMAT FOR USE WITH THE IBM 705/1410/7010
AND 7000 SERIES SYSTEMS. SYSTEM/360 DATA SETS ARE ALSO
ACCEPTED AS INPUT AS INDICATED BELOW. THE PROGRAM PRODUCES
AS OUTPUT THE DATA FORMAT DESIRED FOR SYSTEM/360 TAPE OR DASD.
THE PROGRAM HAS DATA TRANSFORMATION CAPABILITY THAT ALLOWS THE
USER FLEXIBILITY IN ,,RESYSTEMATIZING,, HIS DATA SETS FOR
SYSTEM/360.

THE DATA CONVERSION UTILITY II PROGRAM ACCOMMODATES THE
THREE GENERAL CONSIDERATIONS IN DATA CONVERSIONS-
1. THE PHYSICAL CHARACTERISTICS OF THE I/O DEVICE /I.E.,
   7-TRACK TAPE FORMAT/.
2. CURRENT IBM PROGRAMMING SYSTEMS STANDARDS /I.E., LABELS,
   PADDING CHARACTERS, CHECKPOINT RECORDS, ETC./.
3. OPTIMIZATION OF DATA REPRESENTATION /I.E., FLOATING POINT,
   BINARY, PACKED DECIMAL, ETC./.

DATA CONVERSION UTILITY II IS A SET OF SPECIAL-PURPOSE
MACROS, SUBROUTINES, AND MODULES. THESE MAY BE COMBINED IN
A LARGE VARIETY OF WAYS TO CREATE A SPECIFIC DATA CONVERSION
PROGRAM THAT MEETS THE EXACT REQUIREMENTS OF THE USERS
DATA SET TO BE CONVERTED FROM CURRENT IBM SYSTEM FORMATS
TO SYSTEM/360 FORMATS. THERE ARE TWO STEPS INVOLVED IN
USING THE DATA CONVERSION UTILIT II -
1. CREATING A SPECIFIC DATA CONVERSION
   UTILITY II PROGRAM.
2. EXECUTING THIS SPECIFIC DATA CONVERSION
   UTILITY II PROGRAM.
TO PERFORM THE FIRST STEP, THE USER CREATES A DATA CONVERSION
UTILITY II CONTROLLER BY COMBINING IN ASSEMBLY LANGUAGE --
THREE CONTROLLER MACROS... DATA MOVE/TRANSFORM MACROS AS
REQUIRED TO PERFORM FIELD TRANSFORMATIONS... TEST MACROS
AS REQUIRED FOR RECORD SELECTION, ETC... A COMMON TABLE
MACRO THAT PROVIDES SPECIFIC INFORMATION ABOUT THE INPUT AND
OUTPUT FILES THAT CANNOT BE FURNISHED VIA THE DD CARD,
SUCH AS 7070/7074 FORM 3 RECORDS 35 WORDS OR LESS IN SIZE,
ETC.... USER CODE AS REQUIRED. THE CONTROLLER IS COMBINED
WITH AN INPUT MODULE AND AN OUTPUT MODULE BY USE OF THE
LINKAGE EDITOR TO CREATE THE UNIQUE DATA CONVERSION UTILITY II
PROGRAM. THE SECOND STEP IS PERFORMED BY EXECUTING THE
UTILITY PROGRAM CREATED IN STEP ONE. THIS IS DONE BY PROVIDING
THE IBM OPERATING SYSTEM/360 WITH THE NECESSARY JOB CONTROL
CARDS AND THE DATA SET TO BE CONVERTED. DURING PROGRAM
EXECUTION, OPERATING SYSTEM/360 CAN MAKE USE OF A SET OF
MODULES PROVIDED WITH THIS PROGRAM TO SIMPLIFY PROCESSING OF
CURRENT IBM SYSTEM STANDARD LABELS ON INPUT TAPES, WHICH ARE
CONSIDERED NON-STANDARD BY SYSTEM/360. IN ADDITION, LINKAGE
IS PROVIDED TO USER-WRITTEN HEADER AND TRAILER LABEL MODULES
IF PROCESSING OF CURRENT IBM SYSTEM NON-STANDARD LABELS IS
REQUIRED. THESE LABEL CHECKING MODULES ALSO PROVIDE LINKAGE FOR
USER-WRITTEN LABEL CHECKING MODULES.

INPUT MODULE- FOR A PARTICULAR DATA CONVERSION RUN, THE
INPUT MODULE THAT IS BEST SUITED TO PROCESS THE INPUT DATA
FILE IS SELECTED FROM-
- CARD DATA FILE INPUT- THESE MODULES READ DATA CARDS ON AN
  80/80 BASIS. THEY ARE INTENDED TO ASSIST IN CONVERTING
  CARD DATA FILES, SUCH AS TUB FILES, TO SYSTEM/360 TAPE
  OR DASD DATA SETS. THERE ARE TWO CARD INPUT MODULES-
  ONE IS PROVIDED TO PROCESS HOLLERITH/EBCDIC CARDS, AND
  THE OTHER HANDLES COLUMN BINARY CARD INPUT.
- 705/1410/7010/7080 BCD VARIABLE-LENGTH TAPE RECORD INPUT-
  THREE TYPES OF MODULES ARE PROVIDED TO GET EVEN-PARITY
  BCD VARIABLE-LENGTH RECORDS WRITTEN ON 7- OR 9-TRACK TAPE.
  THE FIRST TYPE LOCATES BLOCKED OR UNBLOCKED LOGICAL RECORDS
  WHOSE LENGTH IS ESTABLISHED BY TERMINAL RECORDS MARKS.
  THE SECOND LOCATES BLOCKED OR UNBLOCKED LOGICAL RECORDS
  OF THE SIZE SPECIFIED BY A BCD LENGTH COUNTER WITHIN
  THE LOGICAL RECORD. THE THIRD WILL LOCATE AN UNBLOCKED
  LOGICAL RECORD WHERE THE RECORD REQUIRES NEITHER A TERMINAL
  RECORD MARK NOR A BCD LENGTH COUNTER. ALL MODULE TYPES
  WILL BYPASS APPLICABLE CHECKPOINT RECORDS.

IBM Programs

  - BCD FIXED-LENGTH TAPE RECORD INPUT- THIS MODULE WILL GET
    EVEN-PARITY BCD FIXED-LENGTH RECORDS WRITTEN ON 7- OR
    9-TRACK TAPE. INTERSPERSED CHECKPOINT RECORDS OR SEGMENT
    MARK RECORDS WILL BE DELETED. THE INPUT TAPE MAY BE
    ZERO-SUPPRESSED OR NON-ZERO-SUPPRESSED.
  - MIXED MODE TAPE RECORD INPUT- THIS MODULE WILL GET ALL
    BINARY OR INTERMIXED EVEN-PARITY BCD RECORDS AND ODD-PARITY
    BINARY RECORDS. RECORDS MAY BE EITHER VARIABLE-LENGTH
    UNBLOCKED OR FIXED-LENGTH BLOCKED OR UNBLOCKED.
  - SEQUENTIAL SYSTEM/360 TAPE/DASD RECORD INPUT- THIS MODULE
    WILL GET RECORDS FROM ANY SYSTEM/360 SEQUENTIAL DATA SET.
    RECORDS MAY BE EITHER FIXED OR VARIABLE, BLOCKED OR
    UNBLOCKED.

OUTPUT MODULES-
  - SYSTEM/360 SEQUENTIAL TAPE/DASD OUTPUT- FIXED OR
    VARIABLE-LENGTH, BLOCKED OR UNBLOCKED LOGICAL RECORDS
    CAN BE CREATED ON SYSTEM/360 TAPE OR DASD WITH THIS MODULE.
    THE DATA RECORDS MAY THEN BE PROCESSED SEQUENTIALLY BY
    THE APPLICATION PROGRAM.
  - SYSTEM/360 DIRECT ACCESS DASD OUTPUT- FIXED OR VARIABLE-LENGTH
    UNBLOCKED RECORDS CAN BE CREATED ON SYSTEM/360 DASD WITH
    THIS MODULE. THE BDAM METHOD IS USED TO WRITE THE RECORDS,
    THEREFORE, IF BLOCKING OF RECORDS IS TO BE DONE, THE USER
    HAS TO SET UP THE BLOCKED PHYSICAL RECORD BEFORE CALLING
    THE DIRECT ACCESS OUTPUT MODULE.
  - SYSTEM/360 INDEXED SEQUENTIAL DASD OUTPUT- FIXED-LENGTH,
    BLOCKED OR UNBLOCKED LOGICAL RECORDS CAN BE CREATED ON
    SYSTEM/360 DASD WITH THIS MODULE. THE RECORDS CAN THEN BE
    RETRIEVED SEQUENTIALLY OR DIRECTLY.

FEATURES-
  - PROVIDES THE IBM SYSTEM/360 USERS WITH A FACILITY TO
    REDUCE SUBSTANTIALLY THE DIFFICULTIES, TIME, AND COSTS
    OF PERFORMING THE REQUIRED DATA CONVERSIONS.
  - ALLOWS GREATER FLEXIBILITY FOR SCHEDULING USER MANPOWER
    IN NEW APPLICATION AREAS WHERE POTENTIAL SAVINGS MAY BE
    MADE. MORE OF THE MANPOWER CAN BE CONCENTRATED ON THE
    SOLUTION TO THE APPLICATION PROBLEM, RATHER THAN THE
    NATURE OF THE DATA.
  - ENCOURAGES THE USER TO WRITE HIS IBM SYSTEM/360 APPLICATION
    PROGRAMS USING RECORD ORGANIZATION AND DATA FORMATS
    WHICH ARE OPTIMUM FOR THE IBM SYSTEM/360.
  - ENCOMPASSES THE REQUIREMENTS OF CURRENT IBM SYSTEM USERS,
    REGARDLESS OF THE MACHINE SIZE AND CONFIGURATION.
  - PROVIDES COMPARABLE DATA CONVERSION FACILITIES TO USERS,
    REGARDLESS OF THE IBM SYSTEM/360 LANGUAGE USED.
  - IS DESIGNED TO ALLOW THE USER TO TAILOR THE PROGRAM TO
    HIS INDIVIDUAL REQUIREMENTS THROUGH MODULAR PROGRAM
    ORGANIZATION AND THE DATA MOVE/TRANSFORM AND TEST MACROS.
DATA CONVERSION UTILITY II, /SEQUENTIAL, DIRECT
ACCESS/ RUNS UNDER CONTROL OF OPERATING SYSTEM/360. THE
PROGRAM CAN BE USED FOR THE PERMANENT CONVERSION OF CURRENT
IBM SYSTEM DATA SETS INTO SYSTEM/360 SETS AND CAN ALSO BE
USED TO OBTAIN ,,LIVE,, TEST DATA FROM CURRENT IBM SYSTEMS
FOR USE IN TESTING SYSTEM/360 APPLICATION PROGRAMS. SINCE
INPUT DATA MAY BE ON 7- OR 9- TRACK TAPE, USERS WHOSE
INITIAL CONVERSION TO SYSTEM/360 IS PLANNED AROUND EMULATION
WILL BE ABLE TO USE THE DATA CONVERSION UTILITY II PROGRAM
TO CONVERT THEIR EVEN-PARITY BCD 9-TRACK EMULATOR DATA
SETS WHEN THEY CONVERT THEIR PROGRAMS TO SYSTEM/360.

THE OBJECT DECKS AND THE MACRO DEFINITIONS WHICH MAKE UP
PART OF THE DATA CONVERSION UTILITY II PACKAGE MUST BE
CATALOGED IN A LINK LIBRARY AND THE MACRO LIBRARY RESPECTIVELY.
USERS OF THE SEQUENTIAL VERSION MUST DELETE THE OLD DATA
CONVERSION UTILITY II MACROS BEFORE CATALOGING THE NEW MACROS.
THE NSL MODULES MUST BE CATALOGED IN THE SYS1.-SVCLIB LIBRARY.
THE USER THEN WRITES THE NECESSARY DATA CONVERSION UTILITY II
MACRO STATEMENTS /AND USER ROUTINES IF REQUIRED/ TO SPECIFY
THE DESIRED DATA CONVERSION PROGRAM. THE USER ALSO HAS TO
SPECIFY IN THE LINKAGE EDITOR RUN WHICH INPUT AND OUTPUT
MODULES TO INCLUDE.

THE PROGRAM IS WRITTEN IN THE IBM OPERATING SYSTEM/360
ASSEMBLER LANGUAGE AS DESCRIBED IN C28-6514. IT IS DESIGNED
TO RUN UNDER CONTROL OF THE IBM OPERATING SYSTEM/360, AND
USES THE OPERATING SYSTEM/360 INPUT/OUTPUT CAPABILITY.

MACHINE CONFIGURATION- A SYSTEM/360 MODEL 30 OR ABOVE WITH
DECIMAL ARITHMETIC. STORAGE REQUIREMENTS ARE DEPENDENT ON THE
SIZE OF THE IBM OPERATING SYSTEM/360 SUPERVISOR USED, THE
DATA CONVERSION UTILITY MODULES SELECTED, THE MAXIMUM INPUT
PHYSICAL RECORD SIZE, THE MAXIMUM OUTPUT PHYSICAL RECORD
SIZE, THE MAXIMUM WORK AREA SIZE /REQUIRED FOR 7070 INPUT
MODULE/, THE AREA USED FOR THE REQUESTED MOVE/TRANSFORMATIONS
/INSTRUCTIONS, CONVERSION SUBROUTINES, SUBROUTINE LINKAGES,
CONSTANTS AND LITERALS/, AND USER ROUTINES. THE OS/360
REQUIREMENTS FOR SYSTEM OPERATION AND PROGRAM ASSEMBLY MUST
BE UTILIZED TO CREATE A SPECIFIC DATA CONVERSION UTILITY
PROGRAM. \FOR EXECUTING THE CREATED UTILITY, THE DEVICES FOR
OPERATING SYSTEM/360 SYSTEM OPERATION ARE REQUIRED., IN
ADDITION, THE FOLLOWING INPUT/OUTPUT DEVICES MAY BE USED-
  - ONE 2400 SERIES TAPE DRIVE FOR THE INPUT DATA SET.
  - 2540/2501 FOR DATA CARD INPUT.
  - DASD FOR INPUT OF S/360 SEQUENTIAL DATA SET.
  - ONE 2400 SERIES TAPE DRIVE FOR THE OUTPUT DATA SET.
  - ONE DASD FOR THE OUTPUT DATA SET.
NOTE- THE 2400 SERIES TAPE DRIVES CAN BE 9-TRACK, UNLESS THEY
INTERFACE WITH 729 TAPE DRIVES, IN WHICH CASE THE 7-TRACK
READ/WRITE HEAD FEATURE AND A 7-TRACK COMPATIBILITY FEATURE ARE
REQUIRED.

BASIC PROGRAM MATERIAL
    DOCUMENTATION - PROGRAMMERS MANUAL, H20-0313... OPERATORS
       MANUAL, H20-0314... APPLICATION DIRECTORY.
    MACHINE READABLE - OBJECT CARDS, MACRO DEFINITION CARDS,
       SOURCE CARDS AND SAMPLE PROBLEMS ON ONE 9-TRACK OR
       7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL - ONE 9-TRACK OR 7-TRACK /DATA
    CONVERSION FEATURE REQUIRED/ REEL OF TAPE CONTAINING THE
    ASSEMBLY LISTINGS.

NOTE- WHEN ORDERING THE REQUESTOR MUST INDICATE WHETHER 9-TRACK
OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE
FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE TAPE REQUIRED TO OBTAIN THE OPTIONAL MATERIAL MAY BE
ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE
PROVIDED MUST BE 2400 FEET IN LENGTH.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-SE-22X   SYSTEM/360 FLOWCHART
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-22X

    SYSTEM/360 FLOWCHART IS A PROGRAM FOR GENERATING PRINTED
    PROGRAM FLOWCHARTS FROM STATEMENTS WRITTEN IN A SPECIALLY
    DESIGNED INPUT LANGUAGE. ONLY A GENERAL UNDERSTANDING OF
    FLOWCHARTING IS NEEDED BY THE USER OF THIS PROGRAM. IT CAN
    BE USED READILY BY NON-PROGRAMMERS AS WELL AS PROGRAMMERS.
    THE INPUT LANGUAGE IS EASY TO LEARN, SIMPLE TO USE, AND WILL
    DESCRIBE FLOWCHARTS FOR ANY SYSTEM. BENEFITS FROM USING THIS
    PROGRAM INCLUDE -
      - PROVIDING AN EASY-TO-USE METHOD OF PRODUCING FLOWCHARTS.
      - REDUCING TOTAL PROGRAM EFFORT BY MINIMIZING THE TIME
        REQUIRED FOR PRODUCING AND MAINTAINING NECESSARY PROGRAM
        DOCUMENTATION.
      - FACILITATING PROGRAM MAINTENANCE IN A DYNAMIC ENVIRONMENT
        BY PROVIDING A CROSS-REFERENCE LISTING WHICH GIVES ALL
        REFERENCES TO A BLOCK SHAPE.
      - PROVIDING WIDE FLEXIBILITY FOR DRAWING FLOWCHARTS TO
        SPECIFIC USER REQUIREMENTS.
      - PROVIDING FLOWCHART UNIFORMITY.
    ALTHOUGH THE INPUT LANGUAGE HAS BEEN SIMPLIFIED CONSIDERABLY AND
    IS ENTIRELY DIFFERENT, THE OUTPUT FORMAT IS SIMILAR TO THE
    7070/74 AUTOCHART PROGRAM.

    THE PROGRAM USES DATA PROCESSING METHODS TO FACILITATE
    THE PRODUCTION OF PROGRAM FLOWCHARTS AND CERTAIN OTHER
    GRAPHIC INFORMATION. THE USER PREPARES THE ORIGINAL INPUT
    IN SYSTEM/360 FLOWCHART LANGUAGE. THIS LANGUAGE IS VERY
    SIMPLE AND IS MACHINE INDEPENDENT. IT CAN BE USED TO
    PREPARE FLOWCHARTS FOR ANY SYSTEM. THE COMPUTER PROCESSES
    THIS INPUT TO PRODUCE A FILE OF CHARTS ON THE 1403 PRINTER.
    IF A FLOWCHART IS TO BE PRODUCED, IT WILL- DESCRIBE THE TYPE
    OF BLOCKS, SYMBOLICALLY DIRECT NON-SEQUENTIAL FLOW, AND
    SUPPLY ANY OTHER INFORMATION DESIRED, SUCH AS LABELS,
    EXIT CONDITIONS, TEXT WITHIN BLOCKS, ETC. THE LANGUAGE CAN
    ALSO BE USED TO DESCRIBE LINES OTHER THAN FLOWLINES AND ANY
    OTHER TEXTUAL INFORMATION. THE FLOWCHART PAGES, EACH OF
    WHICH CAN HAVE UP TO 50 BLOCKS, ARE PLANNED AUTOMATICALLY
    BY SYSTEM/360 FLOWCHART. FLOWLINES ARE DRAWN WHERE POSSIBLE,
    AND WHERE THEY CANNOT BE DRAWN, CONNECTORS ARE GENERATED.
    ALL BLOCK SHAPES USED IN SYSTEM/360 FLOWCHART ARE COMBINATIONS
    OF PRINTER CHARACTERS TO APPROXIMATE CONVENTIONAL FLOWCHART
    SYMBOLS. AN OPTION IS PROVIDED SO THAT EITHER THE AUTOCHART
    SYMBOLS OR THE FLOWCHART SYMBOLS FOR INFORMATION PROCESSING
    MAY BE SPECIFIED. THERE ARE SIX BASIC OPERATOR TYPES FOR INPUT.,
    ONE IS REQUIRED FOR EVERY STATEMENT. THEY ARE-
    1. HEADINGS, USED TO GENERATE NEW HEADINGS AND PAGE NUMBERS.
    2. BLOCK-SHAPE OPERATORS TO DESIGNATE THE TYPE OF BLOCK DESIRED.
    3. BRANCHING OR FLOWLINE CONTROL, TO DESIGNATE CONDITIONS
       AND SYMBOLIC LINE DESTINATIONS WHEN THE FLOW IS
       NON-SEQUENTIAL.
    4. SPACING, USED TO SKIP BLOCKS OR COLUMNS OR EJECT A PAGE.
    5. COMMENT AND DRAW OPERATORS TO ADD COMMENTS AND LINES.
    6. END OF JOB OPERATOR, WHICH IS REQUIRED.

    SYSTEM/360 FLOWCHART IS A MULTI-PHASE PROGRAM , THE OUTPUT
    OF EACH PHASE BECOMES INPUT TO A LATER PHASE. THE INPUT CAN
    BE CARDS OR TAPE IN CARD-IMAGE FORMAT. THE FINAL OUTPUT
    WILL BE PRINTED CHARTS OR CHARTS ON TAPE. IN ADDITION TO
    THE MACHINE-GENERATED FLOWCHARTS, THE OUTPUT WILL INCLUDE-
    1. A DIAGNOSTIC LISTING OF THE ANALYZED SOURCE DECKS.
    2. A LABEL TABLE LISTING.
    3. A CROSS-REFERENCE LISTING.
    4. VARIOUS ERROR REPORTS.
       A. BLANK LABELS.
       B. UNDEFINED LABELS.
       C. DRAW ERRORS.
       D. COMMENT ERRORS.

    FEATURES-
      - EASE IN PREPARATION OF INPUT DATA WHICH MAY BE IN FREE
        OR FIXED FORMAT.
      - AUTOMATIC PAGE PLANNING FACILITIES.
      - DIRECTION OF BRANCH FLOWLINES BY SYMBOLIC REFERENCE.
      - STRIPING ANY BLOCK TO INDICATE SUBROUTINES.
      - AUTOMATIC FOOTNOTING OF OVERFLOW BLOCK TEXT.
      - UP TO THREE LINES /OF 120 CHARACTERS EACH/ OF HEADER
        INFORMATION.
      - AUTOMATIC OR USER DESIGNATED PAGINATION OF PRINTED CHARTS.
      - AUTOMATIC DATING OF CHARTS.
      - SEQUENCED LABEL TABLE LISTING.
      - CROSS-REFERENCE LISTING.
      - DIAGNOSTIC LISTING OF INPUT WITH ERROR FLAGS.
      - HIGH QUALITY OUTPUT WITH POWERFUL LINE SEARCHING ABILITIES.
      - ON AND OFF-PAGE CONNECTORS GENERATED AUTOMATICALLY.
      - AUTOMATIC BRANCH TABLE GENERATION.
      - REDUCED KEY PUNCHING REQUIREMENTS.
      - EASY FLOWCHART MODIFICATION.
      - AUTOCHART SYMBOLS OR THE FLOWCHART SYMBOLS FOR INFORMATION
        PROCESSING CAN BE SPECIFIED.
      - UNRESTRICTED PLACEMENT OF LINES OR COMMENTS AT ANY LOCATION.

    PROGRAMMING SYSTEMS- THE PROGRAM WILL OPERATE IN CONJUNCTION
    WITH THE IBM DISK OPERATING SYSTEM/360 /DOS/360/ AND IS USED
    TO PRODUCE FLOWCHARTS. THE SOURCE LANGUAGE IS DOS/360
    ASSEMBLY LANGUAGE AND USES THE EBCDIC CHARACTER SET.

    MINIMUM SYSTEM REQUIREMENTS- SYSTEM/360 MODEL E30 /32K/
    WITH STANDARD INSTRUCTION SET... TWO 2311 DISK STORAGE DRIVES
    /ONE FOR SYSTEMS RESIDENCE AND ONE FOR WORK FILE/...
    ONE 2540 CARD READ PUNCH... ONE 1052 PRINTER-KEYBOARD...
    ONE 1403 PRINTER WITH 132 PRINT POSITIONS USING THE PN OR QN
    CHAIN ARRANGEMENT /PL/1/.
    NOTE- IF A PN OR QN CHAIN IS NOT AVAILABLE, THE FOLLOWING
    DELIMITER CHARACTERS MAY EITHER NOT PRINT OR ELSE PRINT AS
    DIFFERENT CHARACTERS- PERCENT, COLON, SEMI-COLON AND
    NUMBER SIGN.
    OPTIONAL DEVICES- ONE 2400 SERIES TAPE DRIVE FOR SYSTEM/360
    FLOWCHART LANGUAGE INPUT , ONE 2400 SERIES TAPE DRIVE FOR OUTPUT.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - APPLICATION DIRECTORY-USERS MANUAL,
          H20-0293... OPERATORS MANUAL, H20-0294.
        MACHINE READABLE - OBJECT MODULES, SAMPLE CATALOG CONTROL
          CARDS, JOB CONTROL CARDS AND SAMPLE PROBLEM CARDS IN
          CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
          FEATURE REQUIRED/ DTR.

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CONTINUED FROM PRIOR PAGE--

      OPTIONAL PROGRAM MATERIAL - SYSTEMS MANUAL, Y20-0062...
         SOURCE CARDS, ASSEMBLY LISTINGS AND FLOWCHARTS ON ONE
         9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE.

      NOTE- WHEN ORDERING BASIC OR OPTIONAL MATERIAL THE REQUESTOR
      MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT
      SPECIFIED 9-TRACK WILL BE FORWARDED.
      DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -
      NO TAPE SUBMITTAL IS REQUIRED.
      THE TAPE REQUIRED TO OBTAIN THE OPTIONAL MATERIAL MAY BE ORDERED
      FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED
      MUST BE 2400 FEET IN LENGTH.
      OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-SE-23X   SYSTEM/360 DATA CONVERSION
AND LABEL PROCESSING SUBROUTINES
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-SE-23X

      THE DATA CONVERSION AND LABEL PROCESSING SUBROUTINES
      PROVIDE CHARACTER TRANSLATION FROM ONE CHARACTER SET TO
      ANOTHER CHARACTER SET. THEY ALSO PROVIDE CONVERSION FOR
      FLOATING POINT, BINARY, ZONED DECIMAL, PACKED DECIMAL AND
      DOUBLE DIGIT NUMBERS. CONVERSION SUBROUTINES OPERATE ON
      CURRENT SYSTEM NUMBER REPRESENTATIONS TO PRODUCE SYSTEM/360
      NUMBER REPRESENTATIONS AND ALSO PERFORM THE REVERSE CONVERSIONS,
      I.E., SYSTEM/360 REPRESENTATIONS TO CURRENT SYSTEM
      REPRESENTATIONS. THE LABEL PROCESSING SUBROUTINES PERFORM
      READING AND CHECKING OF CURRENT SYSTEM STANDARD IBM LABELS.
      THEY WILL ALSO GENERATE AND WRITE CURRENT SYSTEM STANDARD
      IBM LABELS.
      DATA FILES FROM THE FOLLOWING CURRENT SYSTEMS MAY BE PROCESSED-
       - 1401, 1440, 1460, 1410, 7010.
       - 1620.
       - 705, 7080.
       - 7070, 7072, 7074.
       - 7040, 7044, 7090, 7094.

      FEATURES-
       - ALLOWS USER TO CONTINUE TO PROCESS CURRENT SYSTEMS FILES
        ALONE OR MIXED WITH SYSTEM/360 FILES ON A SYSTEM/360.
       - PROVIDES FACILITY FOR FILE INTERCHANGE BETWEEN CURRENT
        SYSTEM AND SYSTEM/360.
      TYPICAL USE OF THESE SUBROUTINES MIGHT INVOLVE THE GRADUAL
      CONVERSION OF A LARGE CURRENT SYSTEM APPLICATION TO THE
      SYSTEM/360, WHEREIN ONE OR MORE DATA FILES MUST BE SHARED
      BETWEEN THE TWO COMPUTERS.
      THE DATA CONVERSION SUBROUTINES MAY BE CALLED BY ASSEMBLY
      LANGUAGE, COBOL, OR FORTRAN CALL STATEMENTS. THE LABEL
      PROCESSING SUBROUTINES ARE IMPLEMENTED FOR USAGE AT THE
      NON-STANDARD LABEL EXITS OF TOS/360 AND DOS/360 LOGICAL IOCS,
      AND THE NON-STANDARD LABEL EXIT OF OS/360. READING AND WRITING
      ARE RESPONSIBILITIES OF THE USER /WITH THE EXCEPTION OF
      LABEL PROCESSING/ SINCE THE DATA AND CHARACTER TRANSFORMATION
      PERFORMED BY THESE SUBROUTINES IS DONE WITH DATA AS IT APPEARS
      IN STORAGE. THE SUBROUTINES ARE WRITTEN IN EITHER SYSTEM/360
      ASSEMBLY LANGUAGE OR E LEVEL COBOL. THE SUBROUTINES MAY BE
      ASSEMBLED OR COMPILED AND ENTERED INTO THE TOS/360 OR DOS/360 OR
      OS/360 SUBROUTINE LIBRARY.

      MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
      ARE THE SAME AS THE MINIMUM SYSTEM CONFIGURATION FOR THE
      OPERATING SYSTEM THAT IS USED. THE LABEL PROCESSING SUBROUTINES
      REQUIRE AT LEAST ONE 2400 MAGNETIC TAPE UNIT, EITHER 9-TRACK OR
      7-TRACK WITH THE COMPATIBILITY FEATURE, AND THE FLOATING POINT
      SUBROUTINES REQUIRE THE FLOATING POINT INSTRUCTION SET. THE LABEL
      ROUTINES REQUIRE THE DECIMAL ARITHMETIC FEATURE.

      BASIC PROGRAM MATERIAL -
        DOCUMENTATION - APPLICATION DIRECTORY... PROGRAM REFERENCE
          MANUAL, H20-0319 /CONTAINS APPLICATION DESCRIPTION,
          USERS AND OPERATORS INFORMATION/.
        MACHINE READABLE - SOURCE AND OBJECT DECKS ON ONE 9-TRACK
          OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

      OPTIONAL PROGRAM MATERIAL ONE 9-TRACK OR 7-TRACK /DATA
      CONVERSION FEATURE REQUIRED/ REEL OF TAPE CONTAINING
      LISTINGS AND FLOWCHARTS.

      NOTE- WHEN ORDERING EITHER THE BASIC OR OPTIONAL MATERIAL THE
      REQUESTOR MUST INDICATE EITHER 9-TRACK OR 7-TRACK. IF NOT
      SPECIFIED 9-TRACK WILL BE FORWARDED.
      DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO
      TAPE SUBMITTAL IS REQUIRED.
      THE TAPE REQUIRED TO OBTAIN THE OPTIONAL MATERIAL MAY BE ORDERED
      FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED
      MUST BE 2400 FEET IN LENGTH.
      OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-SE-26X   SYSTEM/360 DATA CONVERSION
UTILITY III
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-SE-26X

      THE IBM SYSTEM/360 DATA CONVERSION UTILITY III PROVIDES AN
      EFFECTIVE AND FLEXIBLE CAPABILITY FOR CUSTOMERS TO CONVERT
      THEIR CURRENT IBM SYSTEM DATA FILES TO SYSTEM/360 DATA SETS.
      THIS GENERAL PURPOSE UTILITY PROGRAM ACCEPTS, AS INPUT,
      DATA SETS IN THE FORMAT OF THE IBM 1620, 1400, AND 7000
      SERIES SYSTEMS AND PRODUCES AS OUTPUT THE DATA FORMAT DESIRED
      FOR SYSTEM/360. THE PROGRAM ACCEPTS CARD, TAPE, OR DASD
      DATA SETS FROM THE ABOVE IBM SYSTEMS /WHERE IBM WRITTEN DUMP
      OR UNLOAD ROUTINES HAVE BEEN USED WHEN COMING FROM A CURRENT
      IBM SYSTEM DASD/ AND WRITES THESE DATA SETS ON SYSTEM/360
      TAPE OR DASD UNITS. THE PROGRAM HAS DATA TRANSFORMATION
      CAPABILITY THAT ALLOWS THE USER FLEXIBILITY IN
      ,,RESYSTEMATIZING,, HIS DATA SETS FOR SYSTEM/360. THE DATA
      CONVERSION UTILITY III PROGRAM ACCOMMODATES THE THREE GENERAL
      CONSIDERATIONS IN DATA CONVERSIONS-
       - THE PHYSICAL CHARACTERISTICS OF THE I/O DEVICE /I.E.,
        7-TRACK TAPE FORMAT, DELTA MODE CHANGE CHARACTER/.
       - CURRENT IBM SYSTEMS SOFTWARE STANDARDS /I.E., LABELS,
        PADDING CHARACTERS, CHECKPOINT RECORDS, ETC./.
       - OPTIMIZATION OF DATA REPRESENTATION /I.E., FLOATING POINT,
        BINARY PACKED DECIMAL, ETC./.

      DATA CONVERSION UTILITY III IS A SET OF INTERDEPENDENT
      MACRO DEFINITIONS WHICH MAY BE GENERATED IN A VARIETY OF
      WAYS TO CREATE SPECIFIC DATA CONVERSION PROGRAMS THAT MEET THE
      EXACT REQUIREMENTS OF THE USERS DATA SET. THE PROGRAM IS
      DIVIDED INTO TWO STEPS-

CONTINUED FROM PRIOR COLUMN--
    STEP 1- ASSEMBLING AND GENERATING A PROGRAM-
    THE PARAMETERS OF THE MACRO STATEMENTS ARE USED TO SPECIFY
    THE CHARACTERISTICS OF THE USERS DATA FILE TO BE CONVERTED
    AND THE FORM OF THE CONVERTED OUTPUT. THE MACRO STATEMENTS
    ARE THEN ASSEMBLED AND THE RESULTING OBJECT MODULES ARE THEN
    COMBINED TO FORM A DATA CONVERSION PROCESSING TASK IN
    LOADABLE FORM. THE SPECIFIC DATA CONVERSION REQUIRED ON A
    DATA SET IS INDICATED BY MACRO PARAMETERS AS FOLLOWS-
    INPUT   SPECIFIC DESCRIPTION OF THE CURRENT IBM
                  SYSTEM INPUT DATA SET. /RECORD FORM,
                  TYPE OF TAPE LABELS, RECORD LENGTH, BLOCK
                  LENGTH.../.
    MOVE/TRANSFORM   RELATIVE LOCATION, SIZE, AND TYPE OF INPUT
                  FIELD AND ITS CORRESPONDING OUTPUT FIELDS
                  RELATIVE LOCATION, SIZE, AND TYPE.
    OUTPUT   SPECIFIC DESCRIPTION OF THE SYSTEM/360
                  OUTPUT DATA SET /RECORD FORM.../.
    USER   SPECIFIES EXITS IN THE PROGRAM THAT ARE
                  TO BE ACTIVATED AND THE NAME OF THE USERS
                  TASK TO WHICH THE PROGRAM IS TO PASS
                  CONTROL WHEN THE EXIT IS TAKEN.
    STEP 2- PERFORMING THE DATA CONVERSION-
    THE SECOND STEP CAN EXECUTE THE FOLLOWING FOUR FUNCTIONS
    AS ORIGINALLY SPECIFIED IN THE MACRO STATEMENTS.
    1. INPUT OF CURRENT IBM SYSTEM DATA-
     - IBM STANDARD LABEL CHECKING /80, 84, AND 120 CHARACTER
       LABELS/.
     - CHECKPOINT ELIMINATION.
     - BCD FIXED LENGTH TAPE RECORDS /WITH OR WITHOUT PADDING/.
     - BCD VARIABLE LENGTH TAPE RECORDS /14XX/7080/.
     - 7070/7074 TAPE FORM 1, 2, 3.
     - 7040/7090 BINARY OR MIXED MODE TAPE.
     - 1620/14XX DASD CARDS.
     - CARD DATA FILES.
     - CODE CONVERSION OF DUAL SPECIAL CHARACTERS.
    2. PERFORMING MOVE/TRANSFORM STRING OPERATIONS-
     THE MOVE/TRANSFORM STRINGS CAN BE USED FOR MULTIPLE RECORD
     TYPES OR TO COMBINE MULTIPLE RECORDS FROM THE INPUT
     DATA SET INTO ONE OUTPUT DATA RECORD.
    3. OUTPUT TO SYSTEM/360 DATA SETS-
     FIXED LENGTH TAPE RECORDS /7- OR 9-TRACK/.
     FIXED LENGTH DASD RECORDS.
     VARIABLE LENGTH TAPE RECORDS /7- OR 9-TRACK/.
     VARIABLE LENGTH DASD RECORDS.
    4. EXECUTING USER MODULES-
     USER ROUTINES AS REQUIRED /E.G., NON-STANDARD TAPE LABELS.../.
     USER EXITS ARE PROVIDED FOR SUCH SITUATIONS AS NON-STANDARD
     CURRENT SYSTEM LABELS ON INPUT. WHEN USER TASKS ARE
     INDICATED, THE USER TASK/S/ AND THE DATA CONVERSION
     PROGRAM WILL RESIDE IN STORAGE TOGETHER.

    FEATURES-
     - THE IBM SYSTEM/360 USERS ARE PROVIDED A FACILITY TO REDUCE
      SUBSTANTIALLY THE DIFFICULTIES, TIME, AND COSTS OF PERFORMING
      THE REQUIRED DATA CONVERSIONS.
     - ALLOWS GREATER FLEXIBILITY FOR SCHEDULING USER MANPOWER IN
      NEW APPLICATION AREAS WHERE POTENTIAL SAVINGS CAN BE MADE.
      MORE OF THE MANPOWER CAN BE CONCENTRATED ON THE SOLUTION
      TO THE APPLICATION PROBLEM, RATHER THAN THE NATURE OF THE
      DATA.
     - ENCOURAGES THE USER TO WRITE HIS IBM SYSTEM/360 APPLICATION
      PROGRAMS USING RECORD ORGANIZATION AND DATA FORMATS WHICH
      ARE OPTIMUM FOR THE IBM SYSTEM/360.
     - ENCOMPASSES THE REQUIREMENTS OF CURRENT IBM SYSTEM USERS,
      REGARDLESS OF THE MACHINE SIZE AND CONFIGURATION.
     - PROVIDES COMPARABLE DATA CONVERSION FACILITIES TO USERS,
      REGARDLESS OF THE IBM SYSTEM/360 LANGUAGE USED.
     - DESIGNED FOR EASE OF USER IMPLEMENTATION.
     - ALLOWS THE USER TO READILY CHANGE HIS DATA STORAGE MEDIA.
     - DESIGNED TO ALLOW THE USER TO TAILOR THE PROGRAM TO HIS
      INDIVIDUAL REQUIREMENTS THROUGH USER EXITS AND MODULAR
      PROGRAM ORGANIZATION.

    DATA CONVERSION UTILITY III RUNS UNDER CONTROL OF TOS/360 OR
    DOS/360. THE PROGRAM CAN BE USED FOR THE PERMANENT CONVERSION
    OF CURRENT IBM SYSTEM DATA SETS INTO SYSTEM/360 DATA SETS AND
    CAN ALSO BE USED TO OBTAIN ,,LIVE,, TEST DATA FROM CURRENT
    IBM SYSTEMS FOR USE IN TESTING SYSTEM/360 APPLICATION PROGRAMS.
    SINCE INPUT DATA MAY BE ON 7- OR 9-TRACK TAPE, CUSTOMERS
    WHOSE INITIAL CONVERSION TO SYSTEM/360 IS PLANNED AROUND
    EMULATION WILL BE ABLE TO USE THE DATA CONVERSION UTILITY III
    PROGRAM TO CONVERT THEIR EVEN PARITY, BCD 9-TRACK EMULATOR
    DATA SETS WHEN THEY CONVERT THEIR PROGRAMS TO SYSTEM/360.
    THE MACRO DEFINITIONS WHICH MAKE UP THE DATA CONVERSION
    UTILITY III PROGRAM PACKAGE MUST BE CATALOGED IN THE USERS
    SOURCE STATEMENT LIBRARY. THE USER THEN WRITES THE NECESSARY
    DCU III MACRO STATEMENTS /AND USER ROUTINES IF REQUIRED/
    TO SPECIFY THE DESIRED DATA CONVERSION PROGRAM. THE IBM
    SYSTEM/360 DATA CONVERSION UTILITY III PROGRAM IS WRITTEN IN
    TOS/360 AND DOS/360 MACRO LANGUAGE AS DESCRIBED IN C24-3414.
    IT IS DESIGNED TO RUN UNDER CONTROL OF TOS/360 OR DOS/360.
    THE FOLLOWING UTILITY PROGRAMS WILL BE REQUIRED TO PREPARE THE
    SUPPLIED PROGRAM MATERIAL- FOR TOS/360 USERS, 360M-UT-403...
    FOR DOS/360 USERS, 360N-UT-462.

    MACHINE CONFIGURATION- AN IBM SYSTEM/360, MODEL D30 /16K/,
    WITH THE DECIMAL ARITHMETIC FEATURE. THE TOS/360, DOS/360
    REQUIREMENTS OF DEVICES FOR SYSTEM OPERATION AND PROGRAM
    ASSEMBLY ARE NECESSARY FOR GENERATING A DATA CONVERSION
    UTILITY PROGRAM. THE CREATED DATA CONVERSION PROGRAM REQUIRES
    THE NECESSARY DEVICES FOR SYSTEM OPERATION, AND IN ADDITION,
    INPUT/OUTPUT DEVICES AS REQUIRED FOR THE DATA SETS ARE
    NEEDED AS FOLLOWS-
     - ONE 2400 SERIES TAPE DRIVE FOR THE INPUT DATA SET.
     - 2540/2501 FOR 1620/14XX DASD OR OTHER DATA CARD INPUT.
     - ONE 2400 SERIES TAPE DRIVE FOR THE OUTPUT DATA SET.
     - ONE DASD DEVICE FOR THE OUTPUT DATA SET.
    NOTE- 2400 SERIES TAPE DRIVES CAN BE 9-TRACK UNLESS THEY
    INTERFACE WITH 729 TAPE DRIVES, IN WHICH CASE THE 7-TRACK
    HEAD AND 7-TRACK FEATURE ARE REQUIRED.

    BASIC PROGRAM MATERIAL -
      DOCUMENTATION- APPLICATION DIRECTORY... PROGRAMMERS
        MANUAL, H20-0285... OPERATORS MANUAL, H20-0286.
      MACHINE READABLE - CONTROL CARDS AND MACRO DEFINITION CARDS
        ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR.

    NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
    WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK
    WILL BE FORWARDED. DTR WILL BE SUPPLIED BY THE PROGRAM
    INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

IBM Programs

-32X   SYNCHRONOUS TRANSMIT-RECEIVE   *N
METHOD FOR DOS/360
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-32X

THE PROGRAM PROVIDES MACRO-INSTRUCTIONS AND ROUTINES TO
ALLOW TRANSMISSION AND RECEPTION OF DATA VIA THE 2701
SYNCHRONOUS DATA ADAPTER - TYPE I CONNECTED TO STR TERMINALS,
REMOTE OR LOCAL. USER TYPE MACROS AND ROUTINES ARE PROVIDED
TO INTERFACE THE DISK OPERATING SYSTEM, MAINTAIN LINE CONTROL,
DIAGNOSE AND RECOVER FROM TRANSMISSION EXECUTE DATA
TRANSMISSION, AND CONVERT CODE. THE ACCESS METHOD PROVIDES
A MACRO LANGUAGE AT THE ASSEMBLER LEVEL TO PROVIDE ENVIRONMENT
DEFINITION... LINE CONTROL... READ/WRITE LEVEL TRANSMISSION...
DATA TRANSLATION... ERROR RECOVERY AND RESTART... MULTIPLE
LINE WAIT WITH ERROR CHECKING. THE PROGRAM UTILIZING THE
STR ACCESS METHOD MACROS AND ROUTINES OCCUPIES ONE PARTITION.
THE OTHER PARTITIONS CAN BE USED BY OTHER PROGRAMS WITHIN
THE SCOPE OF DOS/360.

FEATURES- THE ACCESS METHOD EXTENDS THE TELE-PROCESSING
SUPPORT OF DOS/360 TO INCLUDE STR TERMINALS... THE PROGRAMMING
LANGUAGE IS INDEPENDENT OF LINE SPEED, ALLOWING DATA
TRANSMISSION AT SPEEDS RANGING FROM 1200 BPS TO 40,800 BPS...
CPU TO CPU TRANSMISSION IS SUPPORTED... AUTOMATIC ANSWER,
MANUAL DIAL, MANUAL ANSWER, AND LEASED LINE OPERATIONS ARE
SUPPORTED... AUTOCALL /NO. 1302 OR NO. 1303/ IS SUPPORTED...
THE DUAL COMMUNICATIONS INTERFACE FEATURE /NO. 3461 OR NO. 3462/
IS SUPPORTED... THE SUPPORT IS AT THE ASSEMBLY LANGUAGE LEVEL.

USER RESPONSIBILITIES- A THOROUGH KNOWLEDGE OF THE OPERATION
OF THE STR TERMINALS TO BE INCLUDED WITHIN HIS SYSTEM... A
THOROUGH KNOWLEDGE OF THE MACRO LANGUAGE PROVIDED BY THE
STR ACCESS METHOD... WRITE A TAILORED PROGRAM, USING THE
MACROS PROVIDED, TO HANDLE HIS APPLICATION... PROVIDE SPACE
IN SOURCE STATEMENT LIBRARY FOR THE STR MACRO-INSTRUCTIONS...
PROVIDE SPACE IN CORE IMAGE LIBRARY FOR THE STR TRANSIENT
ROUTINES... PROVIDE SPACE IN RELOCATABLE LIBRARY FOR THE STR
RELOCATABLE MODULES.

PROGRAMMING SYSTEMS- DISK OPERATING SYSTEM FEATURES REQUIRED
ARE CHANNEL END APPENDAGE CAPABILITY /TP EQUALS BTAM/...
ENTRIES IN THE PUB TABLE FOR THE 2701 SYNCHRONOUS DATA
ADAPTERS... ASSIGNMENT OF LOGICAL UNITS TO THE ADAPTERS
EITHER AT SYSTEM GENERATION OR AT JOB TIME BY ASSGN STATEMENTS.
THE EXECUTABLE ROUTINES PROVIDED BY THE ACCESS METHOD ARE
DISTRIBUTED AS PRE-ASSEMBLED MODULES TO BE PLACED IN THE
USERS RELOCATABLE LIBRARY AND CORE IMAGE LIBRARY. THE
ASSEMBLY LANGUAGE MACRO DEFINITIONS ARE TO BE PLACED IN THE
USERS SOURCE LIBRARY. THE ACCESS METHOD CAN THEN BE USED AS
THOUGH IT WERE PART OF HIS DOS/360 SYSTEM SUPPORT.

MINIMUM SYSTEM REQUIREMENTS- SYSTEM/360 MODEL 30E OR LARGER...
ONE OR MORE 2701/S WITH SYNCHRONOUS DATA ADAPTER - TYPE I
/NO. 7695 OR NO. 7696/... AS TERMINALS, ONE OR MORE SYSTEM/360
MODEL 30 OR LARGER WITH 2701 SYNCHRONOUS DATA ADAPTER-
TYPE I /NO. 7695 OR NO. 7696/., MODEL 20 WITH COMMUNICATIONS
ADAPTER., 1978 TERMINAL /RPQ/ MODELS 1, 2, AND 3., 1009 DATA
TRANSMISSION UNIT., 7701/7702 MAGNETIC TAPE UNIT., 7711 DATA
COMMUNICATIONS - MAGNETIC TAPE., 1013 CARD TRANSMISSION
TERMINAL., 1974 TERMINAL /RPQ/ MODEL 2.

BASIC PROGRAM MATERIAL
     DOCUMENTATION - APPLICATION DIRECTORY, USERS MANUAL, H20-0349
         OPERATORS MANUAL, H20-0350...SYSTEMS MANUAL, Y20-0097.
     MACHINE READABLE - JOB STREAM ON ONE 9-TRACK DTR AT EITHER
         800BPI OR 1600BPI.

OPTIONAL PROGRAM MATERIAL - SOURCE MODULES ON ONE 9-TRACK DTR.

NOTES- THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS
REQUIRED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER
CARD.

-33X   SYNCHRONOUS TRANSMIT-RECEIVE   *N
METHOD FOR OS/360
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-33X

THE ACCESS METHOD PROVIDES A MACRO LANGUAGE AT THE ASSEMBLER
LEVEL TO PROVIDE ENVIRONMENT DEFINITION... LINE CONTROL...
READ/WRITE LEVEL TRANSMISSION... GET/PUT LEVEL TRANSMISSION...
BUFFER MANAGEMENT... DATA TRANSLATION... ERROR RECOVERY
AND RESTART... MULTIPLE EVENT WAIT WITH ERROR CHECKING.
THE PROGRAM UTILIZING THE STR ACCESS METHOD OCCUPIES ONE
PARTITION. THE REMAINING PARTITIONS CAN BE USED BY OTHER
PROGRAMS WITHIN THE SCOPE OF OS/360. USER TYPE MACROS AND
ROUTINES ARE PROVIDED TO INTERFACE THE OPERATING SYSTEM,
MAINTAIN LINE CONTROL, DIAGNOSE AND RECOVER FROM TRANSMISSION
ERROR, EXECUTE DATA TRANSMISSION, CONVERT CODE, AND HANDLE
BUFFERS.

FEATURES- THE ACCESS METHOD EXTENDS THE TELE-PROCESSING
SUPPORT OF OS/360 TO INCLUDE STR TYPE TERMINALS... LINE SPEED
IS UNDER PROGRAM CONTROL, ALLOWING DATA TRANSMISSION AT
SPEEDS RANGING FROM 1200 BPS TO 40,800 BPS... CPU TO CPU
TRANSMISSION IS SUPPORTED... AUTOMATIC ANSWER, MANUAL DIAL,
MANUAL ANSWER, AND LEASED LINE OPERATIONS ARE SUPPORTED...
AUTOCALL /NO. 1302 OR NO. 1303/ IS SUPPORTED... THE DUAL
COMMUNICATIONS INTERFACE FEATURE /NO. 3461 OR NO. 3462/ IS
SUPPORTED... THE SUPPORT IS AT THE ASSEMBLY LANGUAGE LEVEL,
WHICH ALLOWS MAXIMUM FLEXIBILTY OF USE.

USER RESPONSIBILITIES- A THOROUGH KNOWLEDGE OF THE OPERATION
OF THE STR TERMINALS TO BE INCLUDED WITHIN HIS SYSTEM...
A THOROUGH KNOWLEDGE OF THE MACRO LANGUAGE PROVIDED BY THE
STR ACCESS METHOD... WRITE A TAILORED PROGRAM, USING THE
MACROS PROVIDED, TO HANDLE HIS APPLICATION... PROVIDE SPACE
IN SVCLIB FOR THE STR ACCESS METHOD LOAD ROUTINES AND ERROR
ROUTINES... PROVIDE SPACE IN LINKLIB FOR THE STR ACCESS
METHOD LINK ROUTINES.

PROGRAMMING SYSTEMS- OPERATING SYSTEM FEATURES REQUIRED ARE
OS/360 OPTION 2 /MFT/ RELEASE 11 OR LATER... BTAM...
UCB/S DEFINED AT SYSGEN FOR THE 2701 SYNCHRONOUS DATA ADAPTER
UNITS., THE EXECUTABLE ROUTINES PROVIDED BY THE ACCESS
METHOD ARE DISTRIBUTED AS PRE-ASSEMBLED MODULES TO BE PLACED
IN THE USERS LINKLIB AND SVCLIB., THE ASSEMBLY LANGUAGE
MACRO-DEFINITIONS ARE TO BE PLACED IN THE USERS MACLIB.,
THE ACCESS METHOD CAN THEN BE USED AS THOUGH IT WERE PART
OF HIS OS/360 SYSTEM SUPPORT.

MINIMUM SYSTEM REQUIREMENTS- SYSTEM/360 MODEL 30E OR LARGER...
ONE OR MORE 2701/S WITH SYNCHRONOUS DATA ADAPTER - TYPE I
/NO. 7695 OR NO. 7696/... AS TERMINALS ONE OR MORE SYSTEM/360
MODEL 30 OR LARGER WITH 2701 SYNCHRONOUS DATA ADAPTER-
TYPE I /NO. 7695 OR NO. 7696/., MODEL 20 WITH COMMUNICATIONS
ADAPTER., 1978 TERMINAL /RPQ/ MODELS 1, 2, AND 3., 1009 DATA
TRANSMISSION UNIT., 7701/7702 MAGNETIC TAPE UNIT.,
7711 DATA COMMUNICATIONS UNIT - MAGNETIC TAPE., 1974 TERMINAL
/RPQ/ MODEL 2., 1013 CARD TRANSMISSION TERMINAL.

BASIC PROGRAM MATERIAL
     DOCUMENTATION - APPLICATION DIRECTORY, USERS MANUAL, H20-0346
         OPERATORS MANUAL, H20-0347...SYSTEMS MANUAL, Y20-0096.
     MACHINE READABLE - JOB STREAM ON ONE 9-TRACK DTR AT EITHER
         800BPI OR 1600BPI.

OPTIONAL PROGRAM MATERIAL - SOURCE MODULES ON ONE 9-TRACK DTR.

NOTES- THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS
REQUIRED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER
CARD.

360A-SU-11X   MODEL 20 TELEPHONE REVENUE
ACCOUNTING SYSTEM
     ORDER THROUGH LOCAL IBM BRANCH OFFICE
     SPECIFY FILE NUMBER 360A-SU-11X

THE TELEPHONE REVENUE ACCOUNTING SYSTEM IS AN APPLICATION
PROGRAMMING PACKAGE DESIGNED TO EFFICIENTLY PERFORM THE
HIGH VOLUME REVENUE ACCOUNTING OPERATIONS OF THE SMALL AND
MEDIUM SIZED TELEPHONE COMPANY. THE TELEPHONE REVENUE
ACCOUNTING SYSTEM WILL SIGNIFICANTLY REDUCE THE COST IN
MAN HOURS AND LENGTH OF CONVERSION REQUIRED FOR INSTALLATION.

THE TELEPHONE REVENUE ACCOUNTING SYSTEM INCLUDES TEN
INDEPENDENT BUT INTERRELATED PROGRAMS. EACH PROGRAM FUNCTIONS
AS A UNIT AND IS PROCESSED ONLY AS OFTEN AS REQUIRED.
THE PRIMARY FUNCTIONS OF THE TELEPHONE REVENUE ACCOUNTING
SYSTEM INCLUDE- CREATION AND MAINTENANCE OF TOLL MESSAGE
PRICING DATA... PRICING OF BOTH MANUALLY AND AUTOMATICALLY
ORIGINATED TOLL MESSAGES /EITHER INTRASTATE OR INTERSTATE/...
PREPARATION OF CUSTOMER TOLL STATEMENTS... PREPARATION OF
CUSTOMER BILLS TOGETHER WITH A CUSTOMER REMITTANCE CARD
WHICH WILL LATER SERVE AS CUSTOMER PAYMENT INPUT DATA...
PROCESSING AND CONTROL OF CUSTOMER PAYMENTS AND ADJUSTMENTS
WITH MAINTENANCE OF ACCOUNTS RECEIVABLE... REVIEW OF CUSTOMERS
WHO ARE DELINQUENT IN PAYMENT WITH PREPARATION OF CUSTOMER
REMINDER AND DENIAL-OF-SERVICE NOTICES.

FEATURES-
 - THE USER IS PERMITTED EXTENSIVE FLEXIBILITY IN THE
   DESIGN OF INPUT/OUTPUT FORMATS THROUGH THE USE OF
   REPORT PROGRAM GENERATOR /RPG/ AS A SOURCE LANGUAGE.
 - MODULAR CONSTRUCTION ALLOWS SELECTION OF ONLY THOSE ROUTINES
   AND FUNCTIONS REQUIRED /I.E., V+H OR BLOCK AND SECTION
   METHODS OF DISTANCE CALCULATION FOR TOLL MESSAGES/.
 - EXTENSIVE CONTROLS ARE BUILT INTO THE SYSTEM 'TO ASSURE
   ACCURACY OF ALL OPERATIONS AND TO PROVIDE REQUIRED AUDIT
   TRAILS.
 - EXITS ARE PROVIDED IN RPG TO ALLOW USERS TO INSERT THEIR
   REQUIRED SUBROUTINES.
 - AUTOMATIC PRODUCTION OF MULTIPLE COPIES OF BOTH CUSTOMER
   AND TOLL STATEMENTS.
 - AUTOMATIC PUNCHING AND INTERPRETING OF A CASH REMITTANCE
   CARD.
 - CONSISTENT APPLICATION OF COMPANY POLICY IN THE TREATMENT
   OF DELINQUENT ACCOUNTS.
 - AUTOMATIC DETERMINATION OF THE DAY-OF-WEEK DURING RATING
   /MONDAY-FRIDAY, SATURDAY, SUNDAY OR HOLIDAY/ USING ONLY
   THE TOLL TICKET DATE AND A STANDARD FORMULA.

CUSTOMER RESPONSIBILITIES- THE USER SHOULD BE ADVISED TO PERFORM
THE FOLLOWING BEFORE ACTUAL INSTALLATION OF THE PACKAGE-
 - MAKE A DETAILED ANALYSIS OF THE DESIGN AND CAPABILITIES
   OF THE PACKAGE.
 - COMPARE THE PACKAGE AGAINST THEIR OWN DESIRED SYSTEM DESIGN.
 - DEFINE THE AREAS WHERE DIFFERENCES EXIST AND MAKE A
   DECISION WHETHER ANY OF THE PROGRAMS IN THE PACKAGE SHOULD
   BE MODIFIED, THE SYSTEM DESIGN MODIFIED, OR A COMBINATION OF
   THE TWO.
 - OBTAIN THE SOURCE DECK OF TERMINATING POINT DATA USED TO
   PREPARE THE TERMINATING POINT MASTER RATE DECK.
 - PREPARE RATE TABLES IN PUNCHED CARD FORM THAT REFLECT HIS
   EXISTING TARIFF STRUCTURES AS DIRECTED BY THE PROGRAM
   DOCUMENTATION.
 - DESIGN FORMATS OF BOTH CARDS AND PAPER DOCUMENTS RELATIVE
   TO THE REQUIREMENTS OF THIS PACKAGE.
 - ESTABLISH THE CRITERIA TO BE USED AS LIMITS IN THE
   TREATMENT PROGRAM TO REFLECT THE USERS POLICY.
 - UNDERSTAND THE OPERATION OF REPORT PROGRAM GENERATOR TO
   ENABLE THE USER TO ORIGINATE HIS UNIQUE PROGRAMS AND TO
   FACILITATE NECESSARY MODIFICATIONS TO THIS PACKAGE.
FAILURE TO DO THE ABOVE CAN EASILY RESULT IN A DIFFICULT AND
PROTRACTED INSTALLATION PERIOD.

PROGRAMMING SYSTEMS- THE TELEPHONE REVENUE ACCOUNTING SYSTEM
IS WRITTEN PREDOMINANTLY USING THE SYSTEM/360 MODEL 20
REPORT PROGRAM GENERATOR. THE SYSTEM/360 MODEL 20 BASIC
ASSEMBLER IS USED IN SUBROUTINE FORM TO AUGMENT REPORT
PROGRAM GENERATOR.

MINIMUM SYSTEM REQUIREMENTS- 8K 2020 PROCESSOR /MODEL C1/
WITH CARD-PRINT CONTROL /NO. 1580/, 2203 ATTACHMENT /NO. 8082/,
2560 ATTACHMENT /NO. 8099/... 2560 MULTI-FUNCTION CARD MACHINE
WITH CARD PRINT -- FIRST 2 LINES /NO. 1575/, 2203 PRINTER
MODEL A1 WITH PRINT POSITIONS, 24 ADDITIONAL /NO. 5558/.

BASIC PROGRAM MATERIAL -
     DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION
         DESCRIPTION, H20-0193... USERS MANUAL, H20-0264...
         OPERATORS MANUAL, H20-0265.
     MACHINE READABLE - SOURCE DECKS... SAMPLE PROBLEM DATA...
         TABLE CARDS ALL IN CARD FORM.

OPTIONAL PROGRAM MATERIAL - SYSTEMS MANUAL.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-US-06X   IBM STUDENT SCHEDULING -
TALLY AND CONFLICT MATRIX PROGRAMS
     ORDER THROUGH LOCAL IBM BRANCH OFFICE
     SPECIFY FILE NUMBER 360A-US-06X

CONTINUED FROM PRIOR PAGE--

THE TALLY PROGRAM ACCUMULATES THE NUMBER OF STUDENT REQUESTS
FOR EACH COURSE OFFERED IN THE SCHOOL CURRICULUM. TWO
OPTIONS ARE PROVIDED -- COURSE TOTALS BY MALE-FEMALE BREAKDOWN
ONLY... COURSE TOTALS BY MALE-FEMALE BREAKDOWN AND BY GRADE.
A MAXIMUM OF 500 COURSES MAY BE TALLIED IN ANY ONE RUN.

THE CONFLICT MATRIX PROGRAM POINTS OUT POTENTIAL SCHEDULING
CONFLICTS. IT COUNTS ALL PAIRED COMBINATIONS OF STUDENT
REQUESTS FOR COURSES AND DISPLAYS THESE COUNTS IN MATRIX
REPORTS. TWO OPTIONS ARE PROVIDED -- A CONFLICT MATRIX...
A CONFLICT MATRIX WITH IDENTIFICATION OF THE STUDENTS WHO
HAVE THE POTENTIAL CONFLICTS ENTERED INTO THE MATRIX. A
STUDENTS IDENTIFICATION IS PRINTED ONLY WITH THOSE REQUESTED
COURSES THAT ARE MATRIX ENTRIES. A MAXIMUM OF 250 COURSES
MAY BE ENTERED INTO THE MATRIX.

SOME FEATURES ARE-
- ONE-PASS RUNS FOR BOTH TALLY AND CONFLICT MATRIX.
- VARIABLE LENGTH GRADE TITLES /ONE TO FOUR CHARACTERS,
  ALPHAMERIC/.
- VARIABLE LENGTH COURSE CODES /THREE TO SIX CHARACTERS,
  ALPHAMERIC/.
- PACKING OF COURSE CODES ON STUDENT REQUEST CARDS.
- BLANK COURSE CODE FIELDS ACCEPTABLE.
- COMMON COURSE CARD ADDITION OF UP TO 10 COURSE REQUESTS
  TO REQUESTS MADE IN NORMAL FASHION.
- SPECIFICATION AND CHECKING OF MAXIMUM NUMBER OF REQUESTS
  ALLOWED PER STUDENT.
- CONTINUED LATER USAGE OF MASTER SCHEDULE CARDS USED FOR
  CONFLICT MATRIX INPUT.
- INPUT SEQUENCE NOT DISTURBED BY ERRORS -- NO STACKER
  SELECTION.
- A MAXIMUM OF 40 COURSE REQUESTS ALLOWED PER STUDENT.
BOTH THE TALLY AND THE CONFLICT MATRIX PROGRAMS ARE USED TO
FURNISH DATA A SCHOOL ORGANIZATION NEEDS TO CREATE THE BEST
POSSIBLE MASTER SCHEDULE OF COURSE AND SECTION OFFERINGS.
THE PROGRAMS ARE EMPLOYED PRIOR TO THE USE OF THE SCHEDULER
PROGRAM OF STUDENT SCHEDULING SYSTEM/360.
USER RESPONSIBILITIES ARE-
- SELECT THE COURSES TO BE OFFERED IN THE CURRICULUM.
- DEVELOP STUDENT REQUEST AND MASTER SCHEDULE FILES.
- FROM TALLY OUTPUT, DETERMINE THOSE COURSES TO BE RUN
  WITH THE CONFLICT MATRIX.

PROGRAMMING SYSTEMS- THE ASSEMBLER LANGUAGE WITH INPUT/OUTPUT
MACROS /8K DISK/ IS USED /360B-AS-309/. BOTH PROGRAMS CAN
RUN UNDER CONTROL OF THE BASIC OPERATING SYSTEM/360, 8K DISK,
OR UNDER THE SYSTEM/360 BASIC PROGRAMMING SUPPORT.

MINIMUM SYSTEM REQUIREMENTS- A 2030 PROCESSING UNIT,
MODEL F WITH DECIMAL ARITHMETIC /NO. 3237/... 1051 ATTACHMENT
/NO. 7915/... 1051 CONTROL UNIT MODEL N1, CPU ATTACHMENT
/NO. 3130/, FIRST PUNCH ATTACHMENT /NO. 4410/, FIRST READER
ATTACHMENT /NO. 4411/... 1052 PRINTER-KEYBOARD MODEL 6...
2821 CONTROL UNIT MODEL 1... 1403 PRINTER MODEL 2... 2540 CARD
READ PUNCH MODEL 1.
THE TALLY PROGRAM WILL RUN IN 32K, PROVIDED THAT THE SUPERVISOR
BEING USED DOES NOT EXCEED 5,200 BYTES, AND THE CONFLICT
MATRIX PROGRAMS MAY BE EASILY MODIFIED BY THE USER TO RUN IN
32K WITH A REDUCE COURSE CAPACITY IN THE MATRIX.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SYSTEMS MANUAL...
        APPLICATION DESCRIPTION, H20-0202... USERS MANUAL,
        H20-0220.
    MACHINE READABLE - OBJECT CARD DECKS AND SAMPLE PROBLEM
        DECKS. THESE DECKS MAY BE ORDERED ON 7 OR 9-TRACK DTR.

OPTIONAL PROGRAM MATERIAL - SOURCE CARD DECKS. MAY BE ORDERED
        ON 7 OR 9-TRACK DTR.
NOTE- A 9-TRACK DTR WILL BE SENT UNLESS 7-TRACK IS SPECIFIED.
        THE DTRS WILL BE WRITTEN AT 800 BPI.
THE USER WHO ORDERS 7- OR 9-TRACK DTR TAPE FROM PID WILL
REQUIRE ONE 2400 SERIES TAPE UNIT, WITH ITS ASSOCIATED
CONTROL UNIT. THE DATA CONVERSION FEATURE IS REQUIRED, IF
7-TRACK TAPE IS TO BE USED.
THE DTRS ARE SOLELY FOR THE PURPOSE OF PUNCHING OUT THE
REQUIRED PROGRAM DECKS. A TAPE UNIT IS NOT REQUIRED FOR
SYSTEM OPERATION.
DTRS WILL BE SUPPLIED BY PID -- NO TAPE SUBMITTAL IS REQUIRED.

360A-US-07X   STUDENT SCHEDULING
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360A-US-07X

    USING A MASTER SCHEDULE PREPARED BY THE SCHOOL, STUDENT
    SCHEDULING SYSTEM/360 PROCESSES STUDENT COURSE REQUESTS TO
    CREATE STUDENT SCHEDULES, CLASS LISTS, AND AN UPDATED
    MASTER SCHEDULE. TWO AUXILIARY PROGRAMS, THE TALLY AND
    CONFLICT MATRIX PROGRAMS, 360A-US-06X, ARE USED TO FURNISH
    THE SCHOOL ADMINISTRATOR WITH DATA PERTINENT TO MASTER SCHEDULE
    CREATION. THESE PROGRAMS ARE ALREADY AVAILABLE.
    IT CONTAINS IMPROVEMENTS OVER SIMILAR STUDENT SCHEDULING
    PROGRAMS ISSUED PREVIOUSLY. FLEXIBILITY IS ENHANCED BY
    NEW PROGRAM FEATURES SUCH AS GREATER STUDY HALL FLEXIBILITY,
    COMMON COURSE INPUT, AND EXPANDED PRE-RUN EDIT, AND ALTERNATE
    COURSE SUBSTITUTION. PARAMETERS CONTROLLING NUMBERS OF
    PERIODS PER DAY, COURSES OFFERED, SECTIONS PER COURSE, AND
    TOTAL NUMBER OF SECTIONS HAVE BEEN SIGNIFICANTLY ENLARGED.
    THE USER HAS GREATLY INCREASED CONTROL OVER PUNCHED AND
    PRINTED STUDENT SCHEDULE AND CLASS LIST FORMAT.
    FEATURES ARE- VARIABLE LENGTH ALPHAMERIC COURSE CODES /THREE
    TO SIX CHARACTERS/... INCREASED PERIOD, SECTION, SEMESTER,
    AND DAYS CAPACITY... INCREASED COURSE DESCRIPTION FIELDS...
    UNIQUE DESCRIPTIONS FOR EACH PERIOD OF BLOCKED COURSES...
    COMMON COURSE REQUEST INPUT... IMPROVED PRE-SCHEDULING EDITING...
    FEMALE - MALE BALANCING OF CLASSES... ALTERNATE COURSE
    SCHEDULING... PARTIAL SCHEDULING FOR STUDENTS WITH CONFLICTS...
    REJECT MATRIX OUTPUT FOR STUDENTS WITH CONFLICTS... DAILY
    STUDY HALL CLASS LISTS... INDEPENDENT EDITING OF PUNCHED
    AND PRINTED OUTPUT... SUB-HEADING LINES MAY BE ADDED ON PRINTED
    REPORTS... USE OF ON-LINE DISK STORAGE INCREASES THE EFFICIENCY
    OF THE PROGRAM... CORE STORAGE IS EMPLOYED FOR TABLE STRUCTURING.
    IT IS ALSO USED TO CONTAIN PART OR ALL OF THE MASTER SCHEDULE,
    REDUCING PROCESSING TIME... THE SCHEDULING PROGRAM IS MODULAR
    IN CONSTRUCTION, CONSISTING OF FIVE DISTINCT PHASES. THE INPUT,
    STUDENT SCHEDULE OUTPUT, AND CLASS LIST OUTPUT PHASES MAY
    BE RUN INDIVIDUALLY... THE LINKAGE EDITOR FUNCTION WITHIN
    THE BASIC OPERATING SYSTEM/360 8K DISK VERSION, CAN BE USED
    TO LINK THE STANDARD SCHEDULING PROGRAM TO SPECIAL OUTPUT
    ROUTINES.

CONTINUED FROM PRIOR COLUMN--
THE SCHEDULER READS ALL TYPES OF SCHEDULING INPUT, CREATES
STUDENT SCHEDULES, AND UPDATES THE MASTER SCHEDULE. THE
STUDENT SCHEDULES ARE STORED ON DISK AND MAY BE SORTED INTO
CLASS LIST SEQUENCE, WHICH ARE STORED ON A SECOND DISK PACK.
UPDATED MASTER SCHEDULE, STUDENT SCHEDULE, AND CLASS LIST
OUTPUT MAY BE PUNCHED AND/OR PRINTED., STUDENT SCHEDULE AND
CLASS LIST OUTPUT MAY BE SAVED ON DISK FOR USE AT A LATER DATE.
USER RESPONSIBILITIES ARE-
. A THOROUGH KNOWLEDGE AND UNDERSTANDING OF THE SYSTEM
  BEFORE USE.
. USE TALLY AND CONFLICT MATRIX PROGRAMS TO DESIGN OPTIONAL
  MASTER SCHEDULE.
. CREATE ERROR-FREE INPUT FILES.
PROGRAMMING SYSTEMS- THE BASIC OPERATING SYSTEM/360, 8K DISK
VERSION, IS USED TO CONTROL THE SCHEDULING PROGRAM. THE
SCHEDULER IS WRITTEN IN THE IBM BASIC OPERATING SYSTEM/360
ASSEMBLER WITH INPUT/OUTPUT MACROS /8K DISK/. IF CLASS LIST
OUTPUT IS DESIRED, THE BASIC OPERATING SYSTEM/360 SORT/MERGE
/8K DISK/ PROGRAM IS REQUIRED.

MINIMUM SYSTEMS REQUIREMENTS- A 2030 PROCESSING UNIT MODEL F
WITH DECIMAL ARITHMETIC /NO. 3237/ AND 1051 ATTACHMENT
/NO. 7915/... 1051 CONTROL UNIT MODEL N1 WITH CPU ATTACHMENT
/NO. 3130/, FIRST PUNCH ATTACHMENT /NO. 4410/, AND FIRST
READER ATTACHMENT /NO. 4411/... 1052 PRINTER-KEYBOARD MODEL 6...
2841 STORAGE CONTROL MODEL 1... THREE 2311 DISK STORAGE DRIVES
MODEL 1... 2821 CONTROL UNIT MODEL 1... 1403 PRINTER MODEL 2...
2540 CARD READ PUNCH MODEL 1.
TWO DISK UNITS ARE REQUIRED FOR THE SCHEDULER PROGRAM IN ADDITION
TO THE ONE DISK UNIT REQUIRED FOR THE 8K DISK BASIC OPERATING
SYSTEM AND OTHER NON-SCHEDULING DATA. IF NO CLASS LISTS
ARE DESIRED, ONLY ONE EXTRA DISK UNIT IS NEEDED.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION
        DESCRIPTION H20-0202... USERS MANUAL H20-0239.
    MACHINE READABLE - OBJECT PROGRAM, JOB CONTROL CARD DECKS
        AND SAMPLE PROBLEM IN CARD FORM OR ON A 7- OR 9-TRACK
        DISTRIBUTION TAPE REEL.

OPTIONAL PROGRAM MATERIAL - SYSTEM MANUAL... SOURCE PROGRAM
        ON ONE 7- OR 9-TRACK DTR OR ONE 1316 DISK PACK.
THE REQUESTOR MAY FORWARD ONE 1316 DISK PACK IN ACCORDANCE WITH
CURRENT ORDERING PROCEDURES IF HE ELECTS TO RECEIVE THE
OPTIONAL PACKAGE ON DISK. PROGRAMS ORDERED ON TAPE ARE IN
CARD-IMAGE FORM ON EITHER 7- OR 9-TRACK DISTRIBUTION TAPE REELS
/DTR/. THE USER WILL RECEIVE 9-TRACK DTR UNLESS HE SPECIFICALLY
REQUESTS A 7-TRACK DTR. BOTH ARE WRITTEN AT 800 BPI. THE
USER WHO ORDERS 7- OR 9-TRACK DTR FROM PID WILL REQUIRE ONE
2400 SERIES TAPE UNIT, WITH ITS ASSOCIATED CONTROL UNIT.
THE DATA CONVERSION FEATURE IS REQUIRED, IF 7-TRACK TAPE IS
TO BE USED. THE DTRS ARE SOLELY FOR THE PURPOSE OF PUNCHING OUT
THE REQUIRED PROGRAM DECKS. A TAPE UNIT IS NOT REQUIRED FOR
SYSTEM OPERATION. DTRS WILL BE SUPPLIED BY PID., NO TAPE
SUBMITTAL IS REQUIRED.
    REVIEW THE INFORMATION AVAILABLE IN THE APPLICATION
DESCRIPTION MANUAL BEFORE DECIDING WHETHER THE PROGRAM WILL
MEET THE SCHOOLS SCHEDULING PHILOSOPHIES AND NEEDS.

360B   IBM SYSTEM/360 BASIC
OPERATING SYSTEM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    USE BOS/360 ORDER FORM NO. 120-1411.

    USERS MAY TAILOR THE SYSTEM ACCORDING TO THEIR INSTALLATION
    CONFIGURATION AND PROCESSING REQUIREMENTS.
    THE SYSTEM CONSISTS OF THE FOLLOWING-
    THE IBM 1285 OPTICAL READER, WHICH IS USED TO READ PRINTED
    PAPER TAPES DIRECTLY INTO THE SYSTEM. UP TO EIGHT UNITS CAN
    BE ATTACHED. A BYTE MULTIPLEXING FUNCTION IS INCLUDED THAT
    PERMITS THE INTERLEAVING OF THE 1285 WITH OTHER I/O DEVICES
    THAT OPERATE IN THE BYTE MODE. UP TO TWELVE DEVICES /FOR
    EXAMPLE- 1442 CARD READ PUNCH, 2501 CARD READER OR ADDITIONAL
    1285 OPTICAL READERS/ MAY OPERATE IN THIS MODE.

        360B-CL-302   BASIC CONTROL PROGRAM

    *** BASIC CONTROL PROGRAM, 360B-CL-302 -- CONSTITUTES THE
    FRAMEWORK OF THE BASIC OPERATING SYSTEM/360. IT
    PREPARES AND CONTROLS THE EXECUTION OF ALL OTHER PROGRAMS
    EXECUTED. THE BASIC CONTROL PROGRAM IS A PREREQUISITE TO ANY
    PROGRAM IN THE BASIC OPERATING SYSTEM. ALSO A PREREQUISITE
    IS THE INITIALIZE DISK UTILITY PROGRAM. THEREFORE, ALL USERS OF
    BASIC OPERATING SYSTEM MUST ORDER THE BASIC CONTROL PROGRAM,
    360B-CL-302, AND THE INITIALIZE DISK UTILITY PROGRAM,
    360P-UT-069. THE CONTROL PROGRAM CONSISTS OF-
    - SUPERVISOR - HANDLES ALL INPUT/OUTPUT OPERATIONS, INTERRUPT
      CONDITIONS, AND OTHER FUNCTIONS FOR ALL PROBLEM PROGRAMS.
    - JOB CONTROL - RUNS BETWEEN JOBS AND PREPARES THE SYSTEM FOR
      EXECUTION OF ALL OTHER PROGRAMS.
    - IPL LOADER - LOADS THE SUPERVISOR INTO MAIN STORAGE WHEN
      SYSTEM OPERATION IS INITIATED.
    - LINKAGE EDITOR - ALL USER PROGRAMS MUST BE READ FROM CARDS,
      TAPE, OR THE RELOCATABLE LIBRARY AND EDITED INTO THE CORE
      IMAGE LIBRARY OF THE SYSTEM DISK PACK BY THIS PROGRAM. THESE
      PROGRAMS CAN BE PERMANENTLY PLACED IN THE SYSTEM, REQUIRING
      ONLY CONTROL CARDS TO CALL THEM FOR EXECUTION, OR THEY CAN BE
      STORED TEMPORARILY, EXECUTED, AND THEN OVERLAYED IN THE CORE
      IMAGE LIBRARY BY NEW PROGRAMS. MULTIPLE QUEUES MAY BE
      GENERATED WITHOUT SPECIFYING A 1285 AS ONE OF THE DEVICES
      PRESENT. MULTIPLE BYTE MODE DEVICES /INCLUDING THE SYNCHRONOUS
      DATA ADAPTER TYPE 1/ MAY BE RUN SIMULTANEOUSLY ON ONE
      MULTIPLEXOR CHANNEL. THE UNIVERSAL CHARACTER SET FEATURE IS
      ALSO SUPPORTED IN THE BASIC CONTROL PROGRAM.
    - LIBRARIAN - THIS IS ACTUALLY A GROUP OF PROGRAMS, USED FOR
      MAINTAINING AND REORGANIZING THE DISK LIBRARY AREAS AND
      PROVIDING PRINTED AND PUNCHED OUTPUT FROM THE LIBRARIES.
      CORE IMAGE LIBRARY /REQUIRED/ - ALL PROGRAMS /IBM SUPPLIED
      AND USER PROGRAMS/ ARE LOADED FOR EXECUTION FROM THIS LIBRARY
      BY THE SYSTEM LOADER ROUTINE OF THE SUPERVISOR.
    - MACRO LIBRARY /OPTIONAL/ - USED TO STORE IBM SUPPLIED AND
      USER-DEFINED MACRO ROUTINES IN RESIDENT PACKS BUILT TO
      PROVIDE PROGRAM-ASSEMBLY CAPABILITY.
    - RELOCATABLE LIBRARY /OPTIONAL/ - REQUIRED FOR
      ASSEMBLE-AND-EXECUTE OPERATIONS, UTILITIES /GROUP 1, EXCEPT
      THE CLEAR DISK PROGRAM, AND GROUP 2/, AND FOR AUTOTEST. IT
      CAN BE USED TO STORE ASSEMBLED OBJECT MODULES FOR SUBSEQUENT
      LINKAGE FOR OTHER PROGRAM SECTIONS WHEN EDITING PROGRAMS INTO
      THE CORE IMAGE LIBRARY.

IBM Programs

INUED FROM PRIOR PAGE--
- LOAD SYSTEM PROGRAM - OPERATING AS AN INDEPENDENT PROGRAM
  /LOADED FROM CARDS, WITH ITS OWN IPL PROGRAM, SUPERVISOR AND
  JOB CONTROL PROGRAM/, THE LOAD SYSTEM PROGRAM BUILDS A DISK
  RESIDENT SYSTEM FROM CARDS. THIS PROGRAM CAN BE USED TO BUILD
  MINIMUM SYSTEMS FOR SPECIALIZED APPLICATIONS. IF TWO DISK
  DRIVES ARE AVAILABLE, THE LIBRARIAN CAN BE USED INSTEAD OF
  THE LOAD SYSTEM PROGRAM TO BUILD SPECIALIZED SYSTEMS.

*** IOCS ***

360B-IO-303   CONSECUTIVE PROCESSING MACROS
360B-IO-304   IFMS- INDEXED SEQUENTIAL FILE
                MANAGEMENT SYSTEM MACROS
360B-IO-305   DAM- DIRECT ACCESS METHOD MACROS

THESE MACROS TOGETHER CONSTITUTE THE LOGICAL IOCS FACILITIES OF
THE BASIC OPERATING SYSTEM.

CONSECUTIVE PROCESSING MACROS, 360B-IO-303 THE
CONSECUTIVE-PROCESSING ROUTINES ARE USED TO READ, PROCESS, AND
WRITE SUCCESSIVE RECORDS IN A LOGICAL FILE. THESE ROUTINES
APPLY TO ALL FILES IN SERIAL-TYPE I/O DEVICES. THE CARD
READERS, CARD PUNCHES, MAGNETIC TAPE UNITS, AND PRINTERS ARE
SERIAL-TYPE DEVICES. ALSO, THESE ROUTINES CAN BE USED FOR
2311 DISK FILE RECORDS TO BE PROCESSED IN A SERIAL MANNER.

INDEXED SEQUENTIAL FILE MANAGEMENT SYSTEM, 360B-IO-304 THE
/ISFMS/ ROUTINES ARE PROVIDED TO TAKE ADVANTAGE OF THE
FLEXIBILITY OF THE 2311 DISK STORAGE DRIVE. THESE ROUTINES
PROVIDE A COMPREHENSIVE METHOD FOR ESTABLISHING AND
MAINTAINING LOGICAL FILES IN A MANNER WHICH ALLOWS RANDOM AND
SEQUENTIAL PROCESSING IN THE SAME FILE.

THE DIRECT ACCESS METHOD, 360B-IO-305 THIS
METHOD /DAM/ PROVIDES READ, WRITE, WAITF, AND CNTRL MACRO
INSTRUCTIONS FOR PROCESSING 2311 DISK FILES ONLY. THE DAM MACRO
INSTRUCTIONS CAN BE USED TO CREATE AND MAINTAIN LOGICAL FILES IN
RANDOM ORDER.

360B-UT-300   GROUP 1 UTILITIES

- CLEAR DISK - CLEARS ONE OR MORE AREAS OF 2311 DISK STORAGE,
  AND, ESTABLISHES A PREFORMATTED TRACK CONTAINING AN INDICATED
  BASE THROUGHOUT THE AREA CLEARED.
- CARD TO DISK - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO
  DISK WITH OR WITHOUT KEY FIELDS.
- DISK TO CARD - TRANSFERS DATA FROM DISK TO CARDS. THE DISK
  FILE MAY OR MAY NOT HAVE KEY FIELDS. DATA MAY BE PUNCHED IN
  EITHER EBCDIC OR BINARY.
- DISK TO PRINTER - PRINTS A DISK FILE IN EITHER THE DATA
  DISPLAY FORMAT OR THE DATA LIST FORMAT. BOTH FORMATS ARE
  EXPLAINED UNDER THE TAPE TO PRINTER PROGRAM. DISK RECORDS MAY
  OR MAY NOT CONTAIN KEY FIELDS.
- DISK TO DISK - TRANSFERS THE DATA FROM ONE DISK FILE TO
  ANOTHER. THE INPUT AND/OR OUTPUT FILE MAY OR MAY NOT CONTAIN
  KEY FIELDS. THE DISK FILE MAY BE COPIED, REBLOCKED, FIELD
  SELECTED OR REBLOCKED AND FIELD SELECTED.
- CARD TO PRINTER AND/OR PUNCH - TRANSFERS BINARY OR EBCDIC
  DATA FROM CARDS TO A PRINTER AND/OR A CARD PUNCH.

360B-UT-301   GROUP 2 UTILITIES

- CARD TO TAPE - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS
  TO MAGNETIC TAPE.
- TAPE TO PRINTER - PRINTS A TAPE FILE IN ONE OF TWO FORMATS -
  - DATA DISPLAY - PRINTS ALL, IN A SERIES OF LINES, OF THE
    TAPE BLOCK USING 100 PRINT POSITIONS FOR THE DATA /WITH
    TOP AND BOTTOM SCALE LINE/, AND PAGE NUMBERING/. TWENTY
    POSITIONS OF THE PRINTER LINE ARE USED FOR BLOCK SIZE,
    BLOCK NUMBER AND RECORD NUMBER. FIELD SELECTION OF DATA IS
    NOT AVAILABLE WITH THIS OPTION.
  - DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
    THE DATA, IF LARGER THAN THE PRINT SPAN, WOULD USUALLY
    BE EDITED TO PRINTER SIZE BY USING THE ,,FIELD SELECT,,
    FEATURE OF THE UTILITY PROGRAM. SOME OTHER OPTIONS FOR
    THE USER INCLUDE PAGE NUMBERING, HEADING LINES AND
    SPACING CONTROL.
- TAPE TO CARD - TRANSFERS DATA FROM MAGNETIC TAPE TO CARDS.
  DATA MAY BE PUNCHED IN EITHER EBCDIC OR BINARY.
- TAPE TO TAPE - TRANSFERS THE DATA FROM ONE TAPE TO ANOTHER.
  THE TAPE FILE MAY BE SIMPLY COPIED, BLOCK BY BLOCK., OR
  REORGANIZED BY ALTERING THE NUMBER OF RECORDS IN THE BLOCK
  /REBLOCKING/., OR REORGANIZED BY DELETING OR RE-POSITIONING
  THE FIELDS WITHIN THE RECORD /FIELD SELECT/ AS WELL AS
  REBLOCKING.
- DISK TO TAPE - TRANSFERS DATA FROM ONE DISK FILE TO A TAPE
  FILE. THE DISK FILE MAY OR MAY NOT CONTAIN KEY FIELDS. THE
  TAPE FILE MAY BE COPIED, REBLOCKED, FIELD SELECTED OR
  REBLOCKED AND FIELD SELECTED.
- TAPE TO DISK - TRANSFERS DATA FROM A TAPE FILE TO A DISK
  FILE. THE DISK FILE MAY OR MAY NOT CONTAIN FIELDS. THE TAPE
  FILE MAY BE COPIED, REBLOCKED, FIELD SELECTED OR REBLOCKED
  AND FIELD SELECTED.
- TAPE COMPARE - COMPARES TWO FILES FROM TWO OR MORE TAPE
  REELS TO INSURE THAT THE FILES ARE IDENTICAL. THE NUMBER OF
  REELS IN EACH FILE NEED NOT BE IDENTICAL. FILES CONTAINING
  MIXED, VARIABLE OR UNDEFINED RECORD LENGTHS MAY BE COMPARED.
  PHYSICAL RECORDS WHICH DO NOT COMPARE ARE DOCUMENTED ALONG
  WITH AN INDEX INDICATING THE BYTES THAT DO NOT MATCH, AND THE
  PHYSICAL RECORD NUMBER. A USER ROUTINE MAY BE SUPPLIED FOR
  PROCESSING ON UNEQUAL COMPARES. A COMPARE MAY BE TERMINATED
  AND A NEW CPMPARE INITIATED AT ANY TIME.

360B-PT-306   AUTOTEST

AUTOTEST IS THE DEBUGGING AID
FOR OBJECT PROGRAMS THAT HAVE BEEN ASSEMBLED BY THE
ASSEMBLER. USING AUTOTEST, RUNS CAN BE PLANNED TO PROCEED WITH
A MINIMUM OF OPERATOR INTERVENTION. /FOR USE ON SYSTEMS WITH AT
LEAST 16K BYTES OF MAIN STORAGE/. AUTOTEST RESIDES ON
DISK /SYSRES/ DURING TESTING. IT CONTROLS TESTING AND-
ALLOWS THE EXCHANGE, ADDITION, OR DELETION OF INSTRUCTIONS
WITHOUT REASSEMBLY. ALLOWS REPLACEMENT OF CONSTANTS.
PROVIDES THE DUMP OF ALL OR ANY PORTION OF MAIN STORAGE,
PERMANENT STORAGE ASSIGNMENTS, AND/OR GENERAL REGISTERS/FLOATING
REGISTERS WHENEVER A DESIGNATED ADDRESS IS REACHED DURING OBJECT
PROGRAM EXECUTION. SUCH TEST REQUEST OUTPUT CAN BE REGULATED
EVEN WITHIN USER PROGRAM LOOPS.
SYMBOLIC DEBUGGING FEATURES ARE AVAILABLE. END-OF-JOB
MAIN STORAGE PRINTOUTS CAN REFLECT USER ASSEMBLED LABELS
ASSOCIATED WITH THE APPROPRIATE MAIN STORAGE LOCATIONS. ALSO,
ADDRESS FOR TEST REQUESTS AND PATCHES CAN BE
REFERENCED SYMBOLICALLY.
WILL PRINT OUT MAIN STORAGE AT ABNOMAL END-OF-JOB, AND
OPTIONALLY AT NORMAL END-OF-JOB.

CONTINUED FROM PRIOR COLUMN--
PRE-SCAN LOADING OF THE OBJECT PROGRAM AND CLEARS UNUSED MAIN
STORAGE.
ALLOWS EXECUTION OF BOS RESIDENT UTILITIES/USER
UTILITIES TO BE RUN PRIOR TO OR FOLLOWING EXECUTION
OF THE USER TEST PROGRAM.
A CARD TO TAPE UTILITY IS SUPPLIED TO GENERATE VARIABLE LENGTH
TAPE RECORDS.
ALLOWS ASSEMBLY AND IMMEDIATE TEST CAPABILITY.

360B-RG-307   REPORT PROGRAM GENERATOR

THE REPORT PROGRAM GENERATOR /R P G/ IS A PROBLEM
ORIENTED LANGUAGE DESIGNED TO PROVIDE USERS WITH AN
EFFICIENT, EASY-TO-USE TECHNIQUE FOR GENERATING PROGRAMS
THAT CAN-
- OBTAIN DATA RECORDS FROM SINGLE OR MULTIPLE INPUT FILES
- PERFORM CALCULATIONS ON DATA TAKEN FROM INPUT RECORDS OR
  RPG LITERALS
- WRITE PRINTED REPORTS
- USE TABLE LOOKUP
- EXIT TO A USERS SUBROUTINE WRITTEN IN A LANGUAGE OTHER
  THAN RPG
- BRANCH WITHIN CALCULATIONS
- SEQUENCE-CHECK INPUT RECORDS
NOTE- THE DECIMAL ARITHMETIC FEATURE NO. 3237 IS REQUIRED BY
RPG.

360B-SM-308   SORT/MERGE

THE SORT/MERGE PROGRAM THAT IS PROVIDED HERE, ENABLES THE
USER TO SORT A FILE OF RECORDS INTO ONE SEQUENTIAL FILE. THE
CONTROL DATA INFORMATION CAN BE CONTAINED IN AS MANY AS
TWELVE FIELDS IN EACH RECORD. THE PROGRAM ASSUMES THAT INPUT
RECORDS FOR SORT OPERATION ARE IN RANDOM SEQUENCE. RECORDS
CAN BE SORTED OR MERGED INTO ASCENDING OR DESCENDING
SEQUENCE, AND AN INDIVIDUAL SEQUENCE CAN BE SPECIFIED FOR EACH
CONTROL-DATA FIELD. THE OUTPUT SEQUENCE FOR A MERGE-ONLY
OPERATION MUST BE THE SAME AS THE INPUT SEQUENCE. FILES
TO BE SORTED CAN BE READ BY THE PROGRAM FROM IBM 2311 DISK
STORAGE /EXCEPT ISFMS/, IBM 2400-SERIES MAGNETIC TAPE, OR
FROM CARDS READ THROUGH ANY OF THE CARD READERS LISTED UNDER
MINIMUM MACHINE REQUIREMENTS. OUTPUT FILES CAN BE WRITTEN ON
DISK STORAGE OR MAGNETIC TAPE. AN OPTION PROVIDED BY THE PROGRAM
IS A LIST OF DISK STORAGE ADDRESSES THAT REFLECTS THE
SORTED OUTPUT FILE. THE USER IS ALSO PERMITTED TO ENTER HIS OWN
SUBROUTINE TO HANDLE ANY UNREADABLE TAPE BLOCKS FROM THE SORT OR
MERGE INPUT FILE.

360B-SV-032   1070 PROCESS COMMUNICATION SUPERVISOR

THE PROGRAM CONSISTS OF THE FOLLOWING COMPONENTS -
- EXECUTIVE ROUTINE - WITH THE AID OF THE BOS SUPERVISOR
  IT CONTROLS THE HANDLING OF INTERRUPTS AND
  SCHEDULES LINE OPERATIONS ON A PRIORITY BASIS. IT SIMULATES
  A REAL-TIME CLOCK AND A SERIES OF INTERVAL TIMERS.
  FURTHER, IT INFORMS OF ERRORS DETECTED, RECORDS THE STATUS
  OF THE LINES AND OF THE REMOTE TERMINALS AND PERFORMS
  AUTOMATIC CODE CONVERSION BETWEEN LINE CODE AND EBCDIC
  WITHIN THE SYSTEM/360 PROCESSOR. THE USER DERIVES THIS
  ROUTINE, TAILORED TO HIS CONFIGURATION BY ASSEMBLING
  THREE TYPES OF MACRO INSTRUCTIONS.
- CONVERSION SUBROUTINE - CALIBRATES THE ADC OF THE 1070
  SYSTEMS AND CONVERTS ANALOG READINGS TO A STANDARD RANGE.
- DELTA LIMIT CHECK SUBROUTINE - PERFORMS LIMIT AND/OR DELTA
  CHECKS ON CONVERTED ANALOG READINGS.
- CONTACT SENSE SUBROUTINE - COMPARES CURRENT CONTACT SENSE
  READINGS WITH A MASTER MASK OR WITH PREVIOUS READINGS.
- THERMOCOUPLE SUBROUTINE - GENERATES TEMPERATURE VALUES FROM
  CONVERTED THERMOCOUPLE READINGS.
- PULSE COUNTER SUBROUTINE - PERFORMS BLANK, DELTA AND LIMIT
  CHECKS ON INCOMING READINGS FROM PULSE COUNTER INPUTS AT
  THE 1070 TERMINALS.
- BINARY TO DECIMAL STRING ROUTINE - CONVERTS A BINARY STRING
  INTO AN EBCDIC CHARACTER SEQUENCE, CONSISTING OF THE DIGITS
  1 AND 2. THIS ROUTINE IS DESIGNED FOR ENTRY PRIOR TO
  PERFORMING A CONTACT OPERATE FUNCTION AT THE 1070 TERMINAL.
- DECIMAL TO BINARY SUBROUTINE - CONVERTS A SEQUENCE OF
  THREE-BYTE EBCDIC NUMBERS TO A SEQUENCE OF BINARY INTEGERS,
  EACH IN TWO BYTES. THIS ROUTINE IS FOR CODE CONVERSION OF
  INCOMING ADC READINGS FROM 1070 TERMINALS WHEN THE USER
  DOES NOT WANT TO USE THE CONVERSION ROUTINE, WHICH
  INCLUDES ITS OWN DECIMAL TO BINARY CONVERSION.
- DECIMAL TO BINARY STRING ROUTINE - CONVERTS A SERIES OF
  EBCDIC BYTES CONTAINING ONLY DIGITS 1 AND 2 INTO A BINARY
  STRING. THIS ROUTINE PERFORMS THE REVERSE PROCESS OF THE
  BINARY STRING TO DECIMAL ROUTINE AND IS FOR CONVERSION OF
  INCOMING READINGS FROM CONTACT SENSE POINTS IN 1070 TERMINALS
  WHEN THE USER DOES NOT WISH TO USE THE CONTACT SENSE
  ROUTINE, WHICH HAS ITS OWN DECIMAL TO BINARY STRING
  CONVERSION BUILT IN.
- DIAGNOSTIC WRITE ROUTINE - IS USED AS A SUBROUTINE BY SOME
  OF THE OTHER SUBROUTINES. IT PRINTS ERROR MESSAGES ON THE
  CONSOLE TYPEWRITER.
THE PCS MACRO DEFINITIONS ARE INSERTED IN THE BOS
MACRO LIBRARY BY A MMAINT RUN AND THE SUBROUTINES ARE INSERTED
IN THE BOS RELOCATABLE LIBRARY BY A RMAINT RUN. THE PCS
PROVIDES THE FACILITY TO COMMUNICATE WITH THE 1070 PROCESS
COMMUNICATION TERMINALS, 1030 DATA COLLECTION TERMINALS AND
1050 DATA COMMUNICATIONS TERMINALS, THROUGH A 2701 DATA ADAPTER
UNIT OR A 2702 TRANSMISSION CONTROL. IN ADDITION, ALL IOCS
FACILITIES PROVIDED BY THE BASIC OPERATING SYSTEM MAY BE USED.

360B-AS-309   ASSEMBLER

THIS ASSEMBLER PROGRAM PROVIDES A CONVENIENT MEANS
OF SOLVING PROBLEMS BY OFFERING THE FULL FLEXIBILITY OF THE
POWERFUL SYSTEM/360 INSTRUCTION SET. THIS EASY-TO-USE SYMBOLIC
LANGUAGE IS MACHINE ORIENTED AND APPLICABLE TO BOTH
COMMERCIAL AND SCIENTIFIC PROBLEMS. THE ASSEMBLER LANGUAGE
INCLUDES A COMPLETE SET OF MACRO INSTRUCTIONS FOR ALL I/O AND
OTHER SUPERVISOR FUNCTIONS. ALSO, THE USER CAN DEFINE
FREQUENTLY USED ROUTINES AS MACROS. THE ACTUAL PROBLEM CODING
IS DONE WITH SYMBOLIC INSTRUCTIONS THAT ARE TRANSLATED, ONE FOR
ONE, TO MACHINE INSTRUCTIONS. ALL STORAGE REFERENCES CAN
BE MADE THROUGH SYMBOLIC NAMES. DATA CONSTANTS CAN BE DEFINED
IN SEVERAL DIFFERENT WAYS, EITHER AS EXPLICIT CONSTANTS OR AS
LITERALS CODED DIRECTLY INTO THE OPERAND OF AN INSTRUCTION.
CONTAINS COMPILE TIME PUNCH CHECK RECOVERING ROUTINES.

360B-IO-310   SYNCHRONOUS TRANSMITTER RECEIVER MACROS

CONTINUED FROM PRIOR PAGE--

THESE MACROS PROVIDE PROGRAMMING SUPPORT FOR SYSTEM/360 MODELS
30, 40, 50, 65 AND 75 WITH THE 2701 DATA ADAPTER UNIT AND
SYNCHRONOUS DATA ADAPTER TYPE I /NO. 7695 AND NO. 7696/,
COMMUNICATING WITH SYNCHRONOUS TRANSMITTER RECEIVER DEVICES AS
FOLLOWS-
- SYSTEM/360 MODEL 20 WITH THE COMMUNICATION ADAPTER, NO. 2073.
- SYSTEMS/360 MODELS 30, 40 50, 65 OR 75 WITH A 2701 DATA
  ADAPTER UNIT EQUIPPED WI. | THE SYNCHRONOUS DATA ADAPTER
  TYPE I /SDA-1/.
- 1978 PRINT-READ-PUNCH TERMINAL MODEL 1, 2 AND/OR 3.
- 1009 DATA TRANSMITTER UNIT.
- 1013 CARD TRANSMISSION TERMINAL.
- 7701 MAGNETIC TAPE TRANSMISSION TERMINAL.
- 7702 MAGNETIC TAPE TRANSMISSION TERMINAL.
- 7711 DATA COMMUNICATION UNIT.
- 1974 MODEL 2 DATA TRANSMISSION TERMINAL /RPQ UNIT/.
NOTE- STR WITH DIAL REQUIRES A 16K ENVIRONMENT. MOST APPLICATIONS
WITHOUT DIAL WILL PROBABLY ALSO REQUIRE 16K. HOWEVER, UTILITY
TYPE APPLICATIONS REQUIRING MINIMUM PROCESSING AND CODE
CONVERSION ARE SUPPORTED IN AN 8K ENVIRONMENT.
MACROS ARE PROVIDED TO -
- HANDLE TRANSMISSION AND RECEPTION OF DATA IN THE SYNCHRONOUS
  TRANSMITTER RECEIVER /STR/ MODE.
- ASSIST THE PROGRAMMER IN THE PROCESSING OF STR RECORDS.

MINIMUM SYSTEM REQUIREMENTS - 8,192 BYTES OF CORE STORAGE,
MODEL 30... /A 16K SYSTEM/360 MODEL 30 IS REQUIRED FOR
THE AUTOTEST PROGRAM, 360B-PT-306/... STANDARD
INSTRUCTION SET. THE REPORT PROGRAM GENERATOR /RPG/
ALSO REQUIRES THE DECIMAL ARITHMETIC FEATURE NO. 3237...
THE SYNCHRONOUS TRANSMITTER RECEIVER MACROS, 360B-IO-010 ALSO
REQUIRES ONE 2701 DATA ADAPTER UNIT EQUIPPED WITH THE SYNCHRONOUS
DATA ADAPTER TYPE I /NOT REQUIRED FOR ASSEMBLY/ AND ANY STR
SUPPORTED TERMINAL OR REMOTE PROCESSOR /NOT REQ. FOR ASSEMBLY/.
EITHER ONE MULTIPLEXOR OR ONE SELECTOR CHANNEL... ONE 2311 DISK
STORAGE DRIVE... ONE CARD READ-PUNCH /1442 N1 OR 1442 N1 AND
1442 N2, 2540, 2520 OR 2501 AND 2520...ONE 1403, 1404 OR 1443
PRINTER/... AT LEAST ONE OF THE FOLLOWING- 2401 OR 2402
MAGNETIC TAPE UNIT, MODEL 4, 5 OR 6, AND 2803 OR 2804 TAPE
CONTROL, MODEL 2 OR 2403 MAGNETIC TAPE UNIT AND CONTROL,
MODEL 4, 5 OR 6 OR 2415 MAGNETIC TAPE UNIT AND CONTROL.
MODEL 4, 5 OR 6. THE 2501 CARD READER, THE 2671 PAPER TAPE
READER AND THE 800/1600 BPI DUAL DENSITY FEATURE ARE ALSO
SUPPORTED. 1052 PRINTER KEYBOARD RECOMMENDED FOR
EFFICIENT SYSTEM COMMUNICATION. THE EXECUTION OF THE PCS,
360B-SV-032 OBJECT PROGRAM REQUIRES 16K BYTES OF CORE STORAGE...
STANDARD INSTRUCTION SET... INTERVAL TIMER... 1052 CONSOLE
PRINTER... AND 2701 DATA ADAPTER UNIT AND/OR 2702 TRANSMISSION
CONTROL.
WHEN ORDERING IBM SYSTEM/360 BASIC OPERATING SYSTEM
FOR USE ON 7-TRACK TAPES, THE 2400 SERIES MAGNETIC
TAPE UNIT REQUIRES THE DATA CONVERSION AND 7-TRACK COMPATIBILITY
FEATURES.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM WRITE-UP... PROGRAM MATERIAL LIST...
THE FOLLOWING PUBLICATIONS APPROPRIATE TO THE COMPONENT ORDERED -

SORT/MERGE SPECIFICATIONS	C24-3321
SPECIFICATIONS, ASSEMBLER WITH I/O MACROS	C24-3361
MACRO DEFINITION LANGUAGE	C24-3364
PROGRAMMING GUIDE	C24-3372
AUTOTEST SPECIFICATIONS	C24-3378
RPG SPECIFICATIONS	C24-3387
UTILITY PROGRAMS SPECIFICATIONS	C24-3409
CONTROL PROGRAMS AND ASSEMBLER OPERATING GUIDE	C24-3450
AUTOTEST OPERATING GUIDE	C24-3452
RPG OPERATING GUIDE	C24-3453
SORT/MERGE OPERATING GUIDE	C24-3454
UTILITY PROGRAMS OPERATING GUIDE	C24-3455
OPERATING GUIDE, OPERATOR MESSAGES	C24-5024
1070 PROCESS COMMUNICATION SUPERVISOR, OP GUIDE	C26-3627
1070 PROCESS COMMUNICATION SUPERVISOR	C26-5996

MACHINE READABLE -
WHEN ORDERING BOS/360 THE REQUESTOR WILL RECEIVE THE ENTIRE
COLLECTION OF MACHINE READABLE PROGRAM COMPONENTS LISTED BELOW -

ASSEMBLER	360B-AS-309
BASIC CONTROL PROGRAM	360B-CL-302
CONSECUTIVE PROCESSING MACROS	360B-IO-303
IFMS - INDEXED SEQ. FILE MGT. SYSTEM MACROS	360B-IO-304
DAM - DIRECT ACCESS METHOD MACROS	360B-IO-305
SYNCHRONOUS TRANSMITTER RECEIVER MACROS	360B-IO-310
AUTOTEST	360B-PT-306
REPORT PROGRAM GENERATOR	360B-RG-307
SORT/MERGE	360B-SM-308
GROUP 1 UTILITIES	360B-UT-300
GROUP 2 UTILITIES	360B-UT-301

BOS/360 IS DISTRIBUTED ON ONE 2400 FOOT REEL OF MAGNETIC TAPE.
9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ AT 800 CPI
OR ONE 1316 DISK PACK.

BOS/360 MUST BE ORDERED ON THE IBM SYSTEM/360 OPERATING SYSTEMS
ORDER FORM, FORM NUMBER, 120-1411.
EACH COMPONENT FOR WHICH DOCUMENTATION AND MAINTENANCE MATERIAL
IS REQUIRED MUST APPEAR ON THE ORDER FORM.
WHEN ORDERING BOS/360 ON TAPE EITHER 9-TRACK OR 7-TRACK MUST BE
SPECIFIED ON THE ORDER FORM. IF NOT SPECIFIED 9-TRACK WILL BE
FORWARDED. THE TAPE REQUIRED MAY BE SUPPLIED OR ORDERED FROM YOUR
IBM REPRESENTATIVE. THE TAPE PROVIDED MUST BE 2400 FEET IN
LENGTH.
THE DUMPED DISK PACK DATA ON THE TAPE WILL BE PRECEDED BY AN
INITIALIZE 2311 UTILITY PROGRAM AND A TAPE TO DISK PROGRAM. THE
OPERATING INSTRUCTIONS FOR CREATING A SYSTEM PACK FROM THE TAPE
ARE PROVIDED WITH THE MATERIAL LIST.

A-360C

**1401-CB-701   COBOL LANGUAGE CONVERSION
PROGRAM**
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-1401-CB-70

IT AIDS IN THE TRANSITION TO SYSTEM/360 BY CONVERTING
ACCEPTABLE CURRENT COBOL LANGUAGES TO EITHER SYSTEM/360
LEVEL E COBOL OR LEVEL F COBOL.
ACCEPTABLE LANGUAGES -- THE COBOL LCP WILL ACCEPT AS INPUT-

1401/1440/1460 COBOL	7070/7074 COBOL
1410 COBOL	7070/7074 FOS COBOL
1410/7010 COBOL	705/7080 COBOL
7040/7044 COBOL	7090/7094 COBOL

CONTINUED FROM PRIOR COLUMN--
FEATURES-
- CARD OR TAPE INPUT -- BOTH THE LCP AND THE COBOL SOURCE
  PROGRAMS CAN BE READ FROM EITHER CARDS OR TAPE.
- SINGLE OR STACKED PROGRAM CONVERSION -- A SINGLE SOURCE
  PROGRAM CAN BE PROCESSED FROM ONE OF THE THREE TAPE UNITS
  NEEDED IN A MINIMUM CONFIGURATION. STACKED PROGRAMS CAN BE
  PROCESSED IF MORE THAN THREE TAPE UNITS ARE USED.
- REPLACING THE ENVIRONMENT DIVISION -- A CONTROL CARD OPTION
  ALLOWS THE USER TO REPLACE THE ORIGINAL ENVIRONMENT DIVISION
  WITH A NEW CUSTOMER-WRITTEN SYSTEM/360 ENVIRONMENT DIVISION.
- CARD-CODE CONVERSION FOR DUAL BCD CHARACTERS -- A CONTROL
  CARD OPTION PROVIDES AUTOMATIC CONVERSION FROM BCD INPUT CODE
  TO EBCDIC OUTPUT CODE, OR VICE VERSA. IN THIS WAY, THE LCP
  CAN CONVERT THE DUAL BCD CHARACTERS, FOR EXAMPLE, TWO
  CHARACTERS WITH THE SAME CARD CODE, INTO THE PROPER SYSTEM/360
  CARD CODES.
- DOCUMENTED LISTING -- THE LCP PROVIDES A LISTING OF THE
  SOURCE AND CONVERTED PROGRAMS. THIS LISTING CONTAINS NUMERIC
  CODES THAT DOCUMENT CONVERSION ACTIONS AND FACILITATE ANALYSIS
  OF THE CONVERTED PROGRAM.
- OPTIONAL CARD OUTPUT -- WHEN SPECIFIED, THE LCP PRODUCES A
  PUNCHED-CARD DECK THAT CONTAINS THE CONVERTED PROGRAM.
- OPTIONAL OUTPUT ON TAPE -- THE USER CAN SPECIFY THAT PRINTED
  AND/OR PUNCHED OUTPUT ARE TO BE RECORDED ON TAPE.
CONVERSION SAVINGS- THE COBOL LCP WILL REDUCE THE AMOUNT
OF REPROGRAMMING NECESSARY TO CONVERT CURRENT COBOL PROGRAMS
INTO SYSTEM/360 COBOL PROGRAMS. USE OF THE LCP WILL REDUCE TIME
AND MONEY SPENT ON RECODING, CLERICAL ACTIVITIES, AND PROGRAM
DEBUGGING. ALTHOUGH THE SAVINGS TO BE REALIZED WILL VARY FOR
THE INDIVIDUAL SOURCE PROGRAMS, THE TYPICAL SAVINGS WILL BE
50 PER CENT OF THE TOTAL COBOL PROGRAM CONVERSION EFFORT
CONSISTING OF STATEMENT CONVERSION, COMPILATION, AND DEBUGGING.
MINIMUM SYSTEM REQUIREMENTS- AN 8K 1401 SYSTEM WITH ... A
1402 CARD READ PUNCH ... A 1403 PRINTER MODEL 2 ... THREE TAPE
UNITS ... THE ADVANCED PROGRAMMING FEATURE ... THE
HIGH-LOW-EQUAL COMPARE FEATURE /OR AN IBM SYSTEM/360 WITH
1401 COMPATIBILITY AND CORRESPONDING FEATURES AND I/O DEVICES/.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM MATERIAL LIST...
    COBOL TRANSITION AIDS MANUAL.
MACHINE READABLE - ONE REEL OF TAPE CONTAINING THE COBOL
    LANGUAGE CONVERSION OBJECT DECK.
OPTIONAL PROGRAM MATERIAL - ONE REEL OF TAPE CONTAINING THE
    COBOL LANGUAGE CONVERSION SOURCE DECKS.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.
THE NUMBER OF TAPES NECESSARY TO OBTAIN THE PROGRAM MATERIAL
MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE.
THE TAPES SHOULD BE 2400 FEET IN LENGTH.

360C-EU-074   1401/1460 EMULATOR PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-074

THE 1401/1460 EMULATOR PROGRAM IS A STAND-ALONE PROGRAM
THAT EXECUTES 1401/1460 PROGRAMS WHEN USED ON A SYSTEM/360
MODEL 40 EQUIPPED WITH THE 1401/1460 COMPATIBILITY FEATURE
/NO. 4457/. THE COMPATIBILITY FEATURE, WHICH EXECUTES 1401
INSTRUCTIONS /EXCLUDING I/O AND EDIT INSTRUCTIONS/ AT AN
AVERAGE INTERNAL SPEED OF APPROXIMATELY 4.5 TIMES THAT OF
THE 1401, AND THE EMULATOR PROGRAM TOGETHER COMPRISE THE
EMULATOR. CURRENTLY OPERATING, NON TIME-DEPENDENT 1401/1460
PROGRAMS CAN BE EXECUTED WITHOUT MODIFICATION, ALTHOUGH
CERTAIN SPECIAL AND CUSTOM FEATURES ARE NOT EMULATED.
BY ELIMINATING THE REQUIREMENT TO CONVERT ALL 1401/1460
PROGRAMS BEFORE INSTALLING SYSTEM/360, THE EMULATOR ALLOWS
THE USER TO APPLY MOST OF HIS PROGRAMMING RESOURCES TOWARDS
DEVELOPING NEW APPLICATIONS AND REDESIGNING EXISTING
APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360 FACILITIES.
USE OF THE EMULATOR ALSO ALLOWS IMMEDIATE PRODUCTION RUNS
UPON INSTALLATION, ALLOWS TIME FOR USER EDUCATION IN SYSTEM/360
CONCEPTS, AND EASES THE PRESSURE OF PROGRAM TESTING.

THE BASIC 1401/1460 CONFIGURATION BEING EMULATED MAY INCLUDE
SIX TAPE DRIVES, FIVE DISK STORAGE DRIVES, PUNCHED CARD
DATA PROCESSING EQUIPMENT, AND THE 1407/1447 CONSOLE.
THE EMULATOR MAKES THE MODEL 40 APPEAR TO THE 1401/1460 PROGRAM
AS A 16K 1401/1460 WITH ALL BASIC FEATURES AND THE FOLLOWING
OPTIONAL FEATURES- ADVANCED PROGRAMMING /NO. 1060/...
BIT TEST /NO. 1470/... COLUMN BINARY /NO. 1990/... EXPANDED
PRINT-EDIT /NO. 3835/... HIGH-LOW-EQUAL COMPARE /NO. 4575/...
MULTIPLY-DIVIDE /NO. 5275/... PRINT STORAGE /NO. 5585/...
ADDITIONAL PRINT CONTROL /NO. 5540/... 51-COLUMN INTERCHANGEABLE
READ FEED /NO. 4150/... PROCESSING OVERLAP /NO. 5730/...
PUNCH-FEED READ /NO. 5890/... READ-PUNCH RELEASE /NO. 4600/...
SPACE SUPPRESSION /NO. 7246/... SENSE SWITCHES /NO. 7600/...
BINARY TRANSFER /1460/ /NO. 1468/... DIRECT SEEK /1311/
/NO. 3281, NO. 3282, NO. 3283/... TRACK-RECORD /1311/
/NO. 8011/... INDEXING AND STORE ADDRESS REGISTER /1460/
/NO. 4631/.

SYSTEM REQUIREMENTS FOR CARD/TAPE SYSTEMS- 1401/1460
COMPATIBILITY FEATURE /NO. 4457/ WITH EC NO. 256221 OR
EC NO. 256226... 32,768 BYTES OF MAIN STORAGE, MINIMUM
/MODEL E40/... DECIMAL ARITHMETIC FEATURE /NO. 3237/...
1052 PRINTER-KEYBOARD AND 1052 ADAPTER /NO. 7920/...
INITIAL PROGRAM LOAD DEVICE., EITHER 2540 CARD READ PUNCH,
OR 2400-SERIES TAPE UNIT, EITHER 9-TRACK OR 7-TRACK, OR
2311 DISK STORAGE DRIVE.
IF THE EMULATOR PROGRAM IS TO BE LOADED FROM A 2400-SERIES
TAPE UNIT EQUIPPED WITH THE 7-TRACK READ-WRITE HEAD /NO. 9557/,
THE 7-TRACK COMPATIBILITY FEATURE /NOS. 7125, 7126, 7127/,
AND THE DATA CONVERSION FEATURE /NOS. 3228 OR 3236/ MUST BE
INSTALLED ON THE ASSOCIATED TAPE CONTROL UNIT. AFTER THE
EMULATOR PROGRAM HAS BEEN LOADED, THE LOAD DEVICE IS
AVAILABLE AS A 1401/1460 CORRESPONDING DEVICE. /SEE BELOW./

SYSTEM REQUIREMENTS FOR DISK SYSTEMS- ALL OF THE ABOVE PLUS --
DISK COMPATIBILITY FEATURE /NO. 9710/... 65,536 BYTES OF
MAIN STORAGE, MINIMUM /MODEL F40/.

INPUT/OUTPUT DEVICE CORRESPONDENCE IS AS FOLLOWS-

1401/1460 I/O DEVICE	SYSTEM/360 I/O DEVICE*
1402 CARD READ PUNCH, MODEL 1 OR 3.	2540 CARD READ PUNCH AND 2821 CONTROL UNIT WITH 1400 COMPATIBILITY FEATURE NO. 8065.
1403 PRINTER, MODEL 1, 2, OR 3.	1403 PRINTER, MODEL 2 OR N1, OR 1404 PRINTER, CONTINUOUS FORMS MODE ONLY.
729 II, IV, V, OR VI TAPE UNIT OR 7330 MAGNETIC TAPE UNIT.	2401, 2402, 2403, OR 2415 TAPE UNITS, MODEL 1, 2, 3, 4, 5, OR 6., OR 2404 TAPE UNIT,

IBM Programs

JED FROM PRIOR PAGE--

	MODELS 1-3.
1407/1447 CONSOLE	1052 PRINTER-KEYBOARD,
INQUIRY STATION.	MODEL 7, WITH PTTC/EBCD CODE
	PRINTING ELEMENT.
1311 DISK STORAGE DRIVE,	2311 DISK STORAGE DRIVE**
MODELS 1, 2, OR 4.	MODEL 1.

*MAGNETIC TAPE UNITS AND DISK STORAGE DRIVES MUST BE ON
SELECTOR CHANNEL 1 FOR EMULATION. ALL OTHER UNITS MUST BE
ON THE MULTIPLEXOR CHANNEL.
**THE 2311 DISK STORAGE DRIVE DOES NOT ACCEPT SOLID-HUB
1316 DISK PACKS.

INPUT/OUTPUT FEATURE CORRESPONDENCE IS AS FOLLOWS-

1401/1460 I/O FEATURES	SYSTEM/360 I/O FEATURES
1402 PUNCH-FEED READ AND	2540 PUNCH-FEED READ, FEATURE
CONTROL UNIT, FEATURE	NO. 5890., PUNCH-FEED READ
NO. 5890 AND NO. 5895.	CONTROL, FEATURE NO. 5895, ON THE
	2821 CONTROL UNIT.
COLUMN BINARY FEATURE	COLUMN BINARY FEATURE NO. 1990
NO. 1990, BINARY	MUST BE INSTALLED ON THE
TRANSFER FEATURE	2821 CONTROL UNIT.
NO. 1468.	
1402 51-COLUMN	2540 51-COLUMN INTERCHANGEABLE
INTERCHANGEABLE	READ-FEED*, FEATURE NO. 4151.
READ-FEED AND	
FEED ADAPTER, FEATURE	
NO. 4150 AND 1013.	
1403 PREFERRED CHARACTER	1403 UNIVERSAL CHARACTER SET
SET AND ADAPTER,	FEATURE NO. 8641 FOR MODEL 2,
FEATURE NOS. 5523, 5524.,	NO. 8640 FOR MODEL N1, WITH
1416 INTERCHANGEABLE	PREREQUISITE INTERCHANGEABLE
TRAIN CARTRIDGE,	CHAIN CARTRIDGE ADAPTER OR
EQUIPPED WITH	INTERCHANGEABLE TRAIN
PREFERRED CHARACTER SET	CARTRIDGE, AND THE APPROPRIATE
PRINT TRAIN.	UNIVERSAL CHARACTER
	SET ADAPTER ON THE 2821
	CONTROL UNIT.
1311 SCAN DISK FEATURE	2841 FILE SCAN FEATURE NO. 4385.
NO. 6396.	

*THIS FEATURE REDUCES THE 2540 READ SPEED FROM 1000 CPM TO
800 CPM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
        OPERATING INSTRUCTIONS... 1401/1460 EMULATION MANUAL,
        C28-6561... OPERATING GUIDE FOR BASIC ASSEMBLER AND
        UTILITIES, C28-6557.
    MACHINE READABLE - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
        FEATURE REQUIRED/ DTR CONTAINING THE SAMPLE PROBLEM DECK,
        ABSOLUTE LOADER, OBJECT DECK AND DISK LOADER OBJECT DECK.
        FOR DISK SYSTEMS, A DISK INITIALIZATION PROGRAM IS
        REQUIRED AND MUST BE ORDERED SEPARATELY. A SUITABLE
        INITIALIZATION PROGRAM IS THE INITIALIZE DISK /2311/
        PROGRAM, 360P-UT-069. THE EMULATOR DECKS MAY ALSO BE
        OBTAINED IN CARD FORM.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE, 9-TRACK OR 7-TRACK
MUST BE INDICATED ON THE REQUEST CARD. IF NOT SPECIFIED, 9-TRACK
WILL BE SUPPLIED. THE DTR WILL BE SUPPLIED BY THE PROGRAM
INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

-097   TAPE OVERLAP EMULATOR
 FOR THE SYSTEM/360 MODEL 30
 \DER THROUGH LOCAL IBM BRANCH OFFICE
 'ECIFY FILE NUMBER 360C-EU-097

    THE TAPE OVERLAP EMULATOR PROGRAM ALLOWS OVERLAP OF SELECTOR
    CHANNEL MAGNETIC TAPE OPERATIONS WITH PROCESSING OF
    1401/1440/1460 PROGRAMS BY A SYSTEM/360 MODEL 30 EQUIPPED
    WITH THE 1401/1440/1460 COMPATIBILITY FEATURE. AFTER RECEIVING
    CONTROL VIA THE PROGRAMMED MODE SWITCH FEATURE, THE TAPE
    OVERLAP EMULATOR PROGRAM INTERPRETS THE TAPE INPUT, OUTPUT,
    AND CONTROL REQUIREMENTS OF A 1400 PROGRAM, INITIATES ANY
    REQUIRED OPERATION, THEN RETURNS CONTROL TO THE 1400 PROGRAM.
    A BUFFER TRANSFER TECHNIQUE IS EMPLOYED FOR TRANSFER OF DATA
    BETWEEN THE TAPE OVERLAP EMULATOR PROGRAM AND THE 1400
    PROGRAM, ALLOWING TAPE OPERATIONS TO TAKE PLACE SIMULTANEOUSLY
    WITH EXECUTION OF THE 1400 PROGRAM BY THE COMPATIBILITY
    FEATURE.

    FEATURES-
    - USE OF THE INPUT/OUTPUT AND EXTERNAL INTERRUPTION
      FACILITIES OF SYSTEM/360 TO OPTIMIZE CHANNEL USE.
    - SUPPORT OF UP TO TWO SELECTOR CHANNELS.
    - SUPPORT OF UP TO SIX 2400-SERIES TAPE UNITS.
    - OVERLAP OF A SINGLE TAPE OPERATION WITH 1400-SERIES
      PROCESSING ON SINGLE SELECTOR CHANNEL CONFIGURATIONS.
    - OVERLAP OF TWO SIMULTANEOUS TAPE OPERATIONS WITH 1400-SERIES
      PROCESSING ON DUAL SELECTOR CHANNEL CONFIGURATIONS.
    - USE OF EITHER 7-TRACK, 9-TRACK, OR A COMBINATION OF 7-TRACK
      AND 9-TRACK TAPES.
    - USE OF AN OPTIONAL INITIALIZATION FEATURE.
    - PROCESSING OF FIXED OR VARIABLE LENGTH BLOCKED TAPE FILES
      IN EITHER MOVE OR LOAD MODE, AND IN EITHER BINARY OR BCD
      FORMAT.
    - USE OF A BLOCKED TAPE OPTION., FOR TAPE FILES CONTAINING
      FIXED OR VARIABLE LENGTH PHYSICAL RECORDS, AND INTEGRAL
      MULTIPLE OF THE ORIGINAL BLOCK SIZE CAN BE SPECIFIED AS
      THE BLOCKING FACTOR.

    PERFORMANCE- THE THROUGHPUT IMPROVEMENT THAT CAN BE EXPECTED
    WHEN USING THE TAPE OVERLAP EMULATOR PROGRAM VARIES WITH THE
    RATIO OF TAPE INPUT/OUTPUT OPERATIONS TO PROCESSING OPERATIONS
    IN A 1400 PROGRAM AND WITH THE DATA RATE CHARACTERISTICS OF
    THE SYSTEM. THE AMOUNT OF OVERLAP ACHIEVED BY THE TAPE
    OVERLAP EMULATOR PROGRAM DIMINISHES CONSIDERABLY AT DATA
    RATES IN EXCESS OF 60,000 BYTES PER SECOND. SIGNIFICANT
    THROUGHPUT IMPROVEMENTS CAN BE EXPECTED FOR 1400 PROGRAMS
    WHICH HAVE A RELATIVELY LARGE PERCENTAGE OF MAGNETIC TAPE
    OPERATIONS, AND WHICH USE EITHER TWO-SELECTOR CHANNEL
    CONFIGURATIONS OR SINGLE-CHANNEL CONFIGURATIONS USING THE
    BLOCKED TAPE OPTION OF THE TAPE OVERLAP EMULATOR PROGRAM.
    ON SINGLE-CHANNEL CONFIGURATIONS, THE GREATEST THROUGHPUT
    IMPROVEMENTS CAN BE EXPECTED FOR 1400 PROGRAMS HAVING A
    BALANCE BETWEEN TAPE INPUT/OUTPUT AND PROCESSING REQUIREMENTS.
    A REDUCTION IN THE AMOUNT OF OVERLAP AND BLOCKING POSSIBLE,
    AND THUS LESS IMPROVEMENT IN THROUGHPUT, IS TO BE EXPECTED
    FOR 1400 PROGRAMS WHICH READ AND/OR WRITE LARGE TAPE RECORDS
    SUCH AS CHECKPOINT RECORDS. IF RECORD SIZE PRECLUDES USE
    OF THE TAPE OVERLAP EMULATOR PROGRAM BUFFERS, THE FILE
    CONTAINING THAT RECORD MUST BE DEFINED AS UNBLOCKED AND THE
    READ OR WRITE FOR THE LONG RECORD WILL BE NONOVERLAPPED.

CONTINUED FROM PRIOR COLUMN--
    THE AMOUNT OF OVERALL DEGRADATION IN THROUGHPUT DEPENDS
    UPON HOW OFTEN THE UNBLOCKED FILES MUST BE ACCESSED.

    CONFIGURATION REQUIREMENTS- THE MINIMUM MACHINE CONFIGURATION
    REQUIRED TO SUPPORT THE TAPE OVERLAP EMULATOR PROGRAM ALSO
    SUPPORTS A 1400-SERIES PROGRAM USING UP TO 8,000 BYTES OF
    COMPATIBILITY STORAGE AND ADDITIONAL MAIN STORAGE OF UP TO
    2,001 BYTES THAT IS USED FOR THE COMBINATION OF TAPE OVERLAP
    EMULATOR PROGRAM INPUT/OUTPUT BUFFER AREAS AND OTHER
    USER-PROVIDED SUBROUTINES. THE MINIMUM MACHINE CONFIGURATION
    IS AS FOLLOWS-
    - A SYSTEM/360 MODEL 30 WITH A 2030 PROCESSING UNIT MODEL D30
      /16,384 BYTES OF MAIN STORAGE/.
    - AN ON-LINE CARD READER /NECESSARY FOR READING CONTROL
      CARDS AND USER SUBROUTINES/.
    - AN ON-LINE PRINTER /REQUIRED FOR INITIAL CONTROL-CARD
      DIAGNOSTICS/.
    - ONE SELECTOR CHANNEL WITH SINGLE CHANNEL TAPE CONTROL.
    - UP TO A MAXIMUM OF SIX 2400-SERIES TAPE UNITS- 2401,
      2402, 2403, AND 2415 MAGNETIC TAPE UNITS AND CONTROL
      MODELS 1-6. MODEL 6 OF 2401, 2402, AND 2403 TAPE UNITS
      CAN ONLY BE USED IN SYSTEM/360 /2030/ MODE OPERATIONS.,
      THEY CANNOT BE USED IN COMPATIBILITY MODE OPERATIONS.
      IF 7-TRACK TAPES ARE USED THEY MUST BE EQUIPPED WITH THE
      7-TRACK COMPATIBILITY FEATURE AND 7-TRACK READ/WRITE HEADS.
      ONE 2400-SERIES TAPE UNIT MUST BE ASSIGNED FOR EACH 729
      OR 7330 TAPE UNIT BEING EMULATED.
    - THE 1401/1440/1460 BASIC COMPATIBILITY FEATURE FOR THE
      SYSTEM/360 MODEL 30 /NO. 4456/.
    - THE PROGRAMMED MODE SWITCH FEATURE FOR THE SYSTEM/360
      MODEL 30 /NO. 5856/.
    - THE MAGNETIC TAPE COMPATIBILITY FEATURE FOR THE SYSTEM/360
      MODEL 30 /NO. 4468/.
    - ANY ADDITIONAL COMPATIBILITY FEATURES AND ASSOCIATED
      INPUT/OUTPUT DEVICES REQUIRED BY THE 1400-SERIES PROGRAMS
      TO BE EXECUTED.
    IN ADDITION TO THE MINIMUM CONFIGURATION SHOWN ABOVE, THE
    FOLLOWING COMPONENTS MAY ALSO BE USED IN CONJUNCTION WITH THE
    TAPE OVERLAP EMULATOR PROGRAM-
    - SYSTEM/360 MODEL 30, WITH 2030 PROCESSING UNIT MODELS E30
      AND F30 FOR OPERATIONS REQUIRING ADDITIONAL MAIN STORAGE.
      PROGRAMS WHICH DO NOT FALL WITHIN THE RESTRICTIONS
      INDICATED IN THE FIRST PARAGRAPH OF THE CONFIGURATION
      REQUIREMENTS SECTION WILL REQUIRE AT LEAST A SYSTEM/360
      MODEL E30 /32K/.
    - AN ADDITIONAL SELECTOR CHANNEL WITH SINGLE-CHANNEL TAPE
      CONTROL.
    - TWO SELECTOR CHANNELS WITH A 2404/2804 /READ-WHILE-WRITE/
      SHARED TAPE CONTROL UNIT.

    ENGINEERING CHANGE LEVEL REQUIREMENTS- THE FOLLOWING ENGINEERING
    CHANGES ARE PREREQUISITES FOR THE PROPER FUNCTIONING OF THE
    TAPE OVERLAP EMULATOR PROGRAM FOR ONE AND TWO SELECTOR-CHANNEL
    CONFIGURATIONS AND FOR TWO SELECTOR-CHANNEL CONFIGURATIONS
    WITH 2404 OR 2804 TAPE CONTROL UNIT /SIMULTANEOUS
    READ-WHILE-WRITE/-

2030 MICROPROGRAM LEVEL	128060
1400 COMPATIBILITY FEATURE MICROPROGRAM LEVEL	128120
2030 HARDWARE LOGIC LEVEL	126751

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - SPECIFICATIONS AND OPERATING GUIDE,
        C26-3564... SAMPLE PROBLEMS MANUAL, C27-6929.
        MACHINE READABLE - OBJECT DECK, LOADER DECK, EMULATOR DISK
        LOADER DECK AND SAMPLE PROBLEM DECK ARE AVAILABLE
        ON ONE 9-TRACK OR ONE 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR.

    NOTE- THE REQUESTOR MUST SPECIFY WHETHER 9-TRACK OR 7-TRACK IS
    REQUIRED. IF NOT INDICATED 9-TRACK WILL BE FORWARDED.
    THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

360C-EU-725   7074 EMULATOR PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360C-EU-725

    THE 7074 EMULATOR PROGRAM IS A STAND-ALONE PROGRAM THAT
    EXECUTES 7074 AND 7070 PROGRAMS THAT ARE 7074 COMPATIBLE,
    WHEN USED ON SYSTEM/360 MODELS 50 AND 65 EQUIPPED WITH 7070/7074
    COMPATIBILITY FEATURE /NO. 7117/. THE EMULATOR PROGRAM AND
    THE COMPATIBILITY FEATURE TOGETHER CONSTITUTE THE EMULATOR.
    CURRENTLY OPERATING NON TIME-DEPENDENT 7070/7074 PROGRAMS
    CAN BE EXECUTED WITHOUT MODIFICATION, ALTHOUGH CERTAIN
    SPECIAL AND CUSTOM FEATURES ARE NOT EMULATED. BY ELIMINATING
    THE REQUIREMENT TO CONVERT ALL 7070/7074 PROGRAMS BEFORE
    INSTALLING SYSTEM/360, THE EMULATOR ALLOWS THE USER TO APPLY
    MOST OF HIS PROGRAMMING RESOURCES TOWARD DEVELOPING NEW
    APPLICATIONS AND REDESIGNING EXISTING APPLICATIONS TO TAKE
    FULL ADVANTAGE OF SYSTEM/360 FACILITIES.
    USE OF THE EMULATOR ALSO EASES THE PRESSURE OF PROGRAM
    TESTING.

    INTERNAL PERFORMANCE OF THE EMULATOR WITH RESPECT TO THE
    7074 RANGES FROM .5 TIMES 7074 CPU SPEED /SYSTEM/360 MODEL 50/
    TO 1.8 TIMES 7074 CPU SPEED /SYSTEM/360 MODEL 65/. INTERNAL
    PERFORMANCE WITH RESPECT TO THE 7070 RANGES FROM 2.4 TIMES
    CPU SPEED /SYSTEM/360 MODEL 50/ TO 8.4 TIMES 7070 CPU SPEED
    /SYSTEM/360 MODEL 65/. TIMING INFORMATION WHICH MAY BE USED
    TO ESTIMATE THROUGHPUT IS PRESENTED IN THE SRL PUBLICATION,
    SYSTEM/360 CONVERSION AIDS- THE 7074 EMULATOR PROGRAM FOR
    SYSTEM/360 MODELS 50 AND 65, C27-6908. THE BASIC 7070/7074
    CONFIGURATION BEING EMULATED MAY INCLUDE 10 TAPE UNITS ON
    EACH OF FOUR CHANNELS ON SYSTEM/360 MODEL 65 OR THREE CHANNELS
    ON SYSTEM/360 MODEL 50, UNIT RECORD EQUIPMENT, AND THE
    7150 CONSOLE TYPEWRITER.

    MINIMUM SYSTEM REQUIREMENTS- IN ADDITION TO THE 7070/7074
    COMPATIBILITY FEATURE, SYSTEM/360 REQUIREMENTS ARE- AT LEAST
    262K BYTES OF MAIN STORAGE /MODEL H/...
    ONE 1052 PRINTER-KEYBOARD... ONE SELECTOR CHANNEL FOR EACH
    TAPE CHANNEL OF THE SYSTEM BEING EMULATED... ONE 2401 OR 2402
    MAGNETIC TAPE UNIT, MODELS 1-6., 2403 OR 2415 MAGNETIC TAPE
    UNIT AND CONTROL, MODELS 1-6., OR ONE 2404 MAGNETIC TAPE
    UNIT AND CONTROL, MODELS 1-3 FOR EACH 729 TAPE UNIT TO BE
    EMULATED. /THE 2415 MAGNETIC TAPE UNIT AND CONTROL IS NOT
    SUPPORTED WITH SYSTEM/360 MODEL 65/. IF THE EMULATOR PROGRAM
    IS TO BE LOADED FROM A MAGNETIC TAPE UNIT EQUIPPED WITH THE
    7-TRACK READ WRITE HEAD /NO. 9557/, THE 7-TRACK COMPATIBILITY
    FEATURE /NO. 7125. NO. 7127/. AND THE DATA CONVERSION FEATURE
    /NO. 3228 OR NO. 3236/ MUST BE INSTALLED ON THE ASSOCIATED
    TAPE CONTROL UNIT. AFTER THE EMULATOR PROGRAM HAS BEEN
    LOADED, THE LOAD DEVICE IS AVAILABLE AS A 7070/7074
    CORRESPONDING DEVICE.

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    INPUT/OUTPUT DEVICE CORRESPONDENCE IS AS FOLLOWS--
    I/O DEVICE CORRESPONDENCE TABLE FOR 7074 EMULATOR
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7070/7074 DEVICE	SYSTEM/360 DEVICE
7500 CARD READER	1442 CARD READ PUNCH OR
7501 CONSOLE CARD READER	2501 CARD READER OR 2520 CARD READ PUNCH OR 2540 CARD READ PUNCH
7550 CARD PUNCH	1442 CARD READ PUNCH OR 2520 CARD READ PUNCH OR 2540 CARD READ PUNCH
7400 PRINTER	1443 PRINTER OR 1403 PRINTER
7150 CONSOLE TYPEWRITER	1052 PRINTER-KEYBOARD
729 SERIES MAGNETIC TAPE UNITS	2401, 2402, OR 2403 MAGNETIC TAPE UNITS, MODELS 1-6, OR 2415* MAGNETIC TAPE UNIT AND CONTROL, MODELS 1-6 OR 2404 MAGNETIC TAPE UNIT AND CONTROL, MODELS 1-3.

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    *2415 ON MODEL 50 ONLY.

    BASIC PROGRAM MATERIAL
        DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
            OPERATING INSTRUCTIONS... CONVERSION AIDS
            MANUAL, C27-6908.
        MACHINE READABLE - SAMPLE PROBLEM CARD DECK... ONE 9-TRACK
            OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR
            CONTAINING THE 7074 EMULATOR OBJECT DECK.

    NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS
    REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
    THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -
    NO TAPE SUBMITTAL IS REQUIRED.
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360C-EU-726   MODEL 50 1410/7010 EMULATOR
PROGRAM
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    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360C-EU-726

    THE 1410/7010 EMULATOR PROGRAM IS A STAND-ALONE PROGRAM
    WHICH, WITH THE 1410/7010 COMPATIBILITY FEATURE /NO. 4478/,
    EXECUTES 1410/7010 PROGRAMS ON A SYSTEM/360 MODEL 50.
    THE EMULATOR PROGRAM IS AN INTERPRETER SIMULATOR THAT USES
    BOTH STANDARD SYSTEM/360 INSTRUCTIONS AND SPECIAL INSTRUCTIONS
    PROVIDED BY THE COMPATIBILITY FEATURE. COMBINED, THE
    EMULATOR PROGRAM AND THE COMPATIBILITY FEATURE ARE REFERRED
    TO AS AN EMULATOR. CURRENTLY OPERATING NON-TIME-DEPENDENT
    1410/7010 PROGRAMS CAN BE EXECUTED BY THE EMULATOR WITHOUT
    MODIFICATION, ALTHOUGH CERTAIN SPECIAL AND CUSTOM FEATURES
    ARE NOT EMULATED. BY ELIMINATING THE REQUIREMENT TO CONVERT
    ALL 1410/7010 PROGRAMS BEFORE INSTALLING SYSTEM/360, THE
    EMULATOR ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING
    RESOURCES TOWARDS DEVELOPING NEW APPLICATIONS AND REDESIGNING
    EXISTING APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360
    FACILITIES. USE OF THE EMULATOR ALSO ALLOWS IMMEDIATE
    PRODUCTION RUNS UPON INSTALLATION, ALLOWS TIME FOR USER
    EDUCATION IN SYSTEM/360 CONCEPTS, AND EASES THE PRESSURE OF
    PROGRAM TESTING.

    THE AVERAGE INTERNAL SPEED OF THE EMULATOR /EXCLUDING I/O
    AND EDIT INSTRUCTIONS/ IS APPROXIMATELY 3 TIMES THAT OF THE
    1410. THROUGHPUT PERFORMANCE DEPENDS ON THE MIXTURE OF
    INSTRUCTIONS AND THE COMPARATIVE PERFORMANCE OF I/O DEVICES.
    WITH EQUIVALENT I/O DEVICES, THROUGHPUT FOR MOST JOBS WHICH
    ARE NOT I/O BOUND WILL BE APPROXIMATELY THAT OF THE 7010
    SYSTEM OR UP TO 2 TIMES 1410 SYSTEM THROUGHPUT., I/O BOUND
    JOBS WILL RUN AT APPROXIMATELY THE SAME SPEED AS ON THE EMULATED
    SYSTEM. TIMING INFORMATION WHICH MAY BE USED TO ESTIMATE
    THROUGHPUT IS PRESENTED IN THE SRL PUBLICATION, SYSTEM/360
    CONVERSION AIDS- THE 1410/7010 EMULATOR PROGRAM FOR SYSTEM/360
    MODEL 50, C28-6568.
    NOTE- THE SPECIFIED PERFORMANCE CAN BE ATTAINED FOR DISK
    SYSTEMS ONLY IF EC431340 IS INSTALLED ON 2841 STORAGE CONTROL
    UNITS. THROUGHPUT WITH LOWER LEVEL 2841/S MAY BE REDUCED
    BY AS MUCH AS TWO-THIRDS. THE BASIC 1410/7010 CONFIGURATION
    BEING EMULATED MAY INCLUDE TEN DISK MODULES ON EACH OF THREE
    CHANNELS, TEN TAPE UNITS ON EACH OF THREE CHANNELS, UNIT
    RECORD EQUIPMENT ON CHANNEL 1, AND THE 1415 CONSOLE PRINTER.
    THE EMULATOR APPEARS TO THE 1410/7010 PROGRAM AS A 1410/7010
    OF ANY STANDARD MEMORY SIZE WITH THE FOLLOWING FEATURES-
    1410/7010 PROCESSING OVERLAP AND PRIORITY PROCESSING...
    1410 DUAL SYNCHRONIZER ADAPTER... 7010 SECOND AND THIRD
    CHANNELS AND STORE AND RESTORE STATUS INSTRUCTIONS.

    IN ADDITION TO THE 1410/7010 COMPATIBILITY FEATURE /NO. 4478/,
    THE SYSTEM/360 REQUIREMENTS ARE-
    - MODEL 50F FOR UP TO 40,000 POSITIONS OF 1410/7010 CORE
      STORAGE, OR
    - MODEL 50G OR LARGER FOR UP TO 100,000 POSITIONS OF
      1410/7010 CORE STORAGE.
    - ONE 1052 PRINTER-KEYBOARD, MODEL 7, AND 1052 ADAPTER
      /NO. 7920/.
    - ONE PROGRAM-LOAD DEVICE WHICH MAY BE ANY OF THE FOLLOWING-
      . 2540 CARD READ PUNCH.
      . 1442 N1 CARD READ PUNCH.
      . 2501 B1 OR B2 CARD READER.
      . 2520 B1 CARD READ PUNCH.
      . 2400-SERIES MAGNETIC TAPE UNIT.
      . 2302 DISK STORAGE.
      . 2311 DISK STORAGE DRIVE.
    THE PROGRAM IS AVAILABLE IN CARD-IMAGE FORM ON A 7- OR
    9-TRACK DISTRIBUTION TAPE REEL. LOADING OF THE EMULATOR
    PROGRAM, AS DISTRIBUTED BY PID, MUST BE FROM CARD OR TAPE.
    SUBSEQUENT LOADING CAN BE FROM CARD, TAPE, OR DISK.
    IF THE EMULATOR PROGRAM IS TO BE LOADED FROM A MAGNETIC
    TAPE UNIT EQUIPPED WITH THE 7-TRACK READ-WRITE HEAD /NO. 9557/,
    THE 7-TRACK COMPATIBILITY FEATURE /NOS. 7125, 7126, 7127/,
    AND THE DATA CONVERSION FEATURE /NO. 3228 OR NO. 3236/
    MUST BE INSTALLED ON THE ASSOCIATED TAPE CONTROL UNIT.
    AFTER THE EMULATOR PROGRAM HAS BEEN LOADED, THE LOAD DEVICE,
    EXCEPT FOR THE 2311, IS AVAILABLE AS A 1410/7010 CORRESPONDING
    DEVICE. /SEE BELOW/.
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    INPUT/OUTPUT UNIT CORRESPONDENCE IS AS FOLLOWS-
                         EQUIVALENT SYSTEM/360 MODEL 50
    1410/7010 I/O UNITS           I/O UNITS
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1410/7010 I/O UNITS	EQUIVALENT SYSTEM/360 MODEL 50 I/O UNITS
1402 CARD READ PUNCH MODEL 2*	2540 CARD READ PUNCH.
1442 CARD READER, MODEL 3*	1442 CARD READ PUNCH, MODEL N1. 2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1.
1403 PRINTER, MODEL 1, 2, OR 3*	1403 PRINTER, MODEL 2 OR N1. 1404 PRINTER, MODEL 2.
729 II, IV, V, AND VI MAGNETIC TAPE UNITS	2401, 2402, 2403, OR 2415 MAGNETIC TAPE UNITS, MODELS 1, 2, 3, 4, 5, OR 6, OR 2404 TAPE UNITS, MODELS 1, 2, OR 3., 7- OR 9-TRACK.
7330 MAGNETIC TAPE UNIT	SAME AS FOR THE 729 MAGNETIC TAPE UNITS.
1415 CONSOLE PRINTER	1052 PRINTER-KEYBOARD, MODEL 7 WITH PRINTING ELEMENT NO. 9572.
1301 DISK STORAGE	2302 DISK STORAGE.

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        MODEL CORRESPONDENCE AS FOLLOWS-
        TWO MODEL 1              ONE MODEL 3
        ONE MODEL 2              ONE MODEL 3
        FOUR MODEL 1             ONE MODEL 4
        TWO MODEL 2              ONE MODEL 4
        TWO MODEL 1 AND ONE      ONE MODEL 4
          MODEL 2
    *EMULATED PUNCHED CARD DATA PROCESSING EQUIPMENT MUST
    PREVIOUSLY HAVE BEEN ASSIGNED TO 1410/7010 CHANNEL 1.

    INPUT/OUTPUT FEATURE CORRESPONDENCE IS AS FOLLOWS -
    1410/7010 FEATURE                 MODEL 50 FEATURE
    -----------------                 ----------------
    1402 51-COLUMN INTERCHANGEABLE    2540 51-COLUMN INTERCHANGEABLE
    READ FEED,                        READ FEED, FEATURE NO. 4151.
    FEATURE NOS. 1013, 4150.

    ENGINEERING CHANGE LEVELS- THE FOLLOWING EC LEVELS ARE
    REQUIRED FOR PROPER FUNCTIONING OF THE SYSTEM/360 MODEL 50
    1410/7010 EMULATOR PROGRAM -- EC 257246 ON THE 1410/7010
    COMPATIBILITY FEATURE... EC730969 ON THE 2803 TAPE CONTROL UNIT
    MODEL 2... EC730966 ON THE 2804 TAPE CONTROL UNIT MODEL 2...
    EC730969 ON THE 2403 MODELS 4, 5 AND 6.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
            OPERATING INSTRUCTIONS... OPERATING GUIDE, C28-6557...
            EMULATION MANUAL, C28-6568.
        MACHINE READABLE - ABSOLUTE LOADER, EMULATOR OBJECT DECK,
            SAMPLE PROBLEM AND DISK LOADER ON ONE 9-TRACK OR 7-TRACK
            /DATA CONVERSION FEATURE REQUIRED/ DTR.

    NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK
    IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
    DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
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360C-EU-727   7080 EMULATOR PROGRAM
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    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360C-EU-727

    THE 7080 EMULATOR PROGRAM IS A STAND-ALONE PROGRAM THAT, WITH
    THE 7080 COMPATIBILITY FEATURE /NO. 7118/, EXECUTES
    CURRENTLY-OPERATING 7080 PROGRAMS ON A SYSTEM/360 MODEL 65.
    THE COMBINATION OF EMULATOR PROGRAM AND COMPATIBILITY FEATURE
    IS REFERRED TO AS AN EMULATOR. PROGRAMS FOR 705 I/II AND
    705 III CAN ALSO BE RUN BY THE EMULATOR, IF THEY ARE COMPATIBLE
    WITH THE 7080. THIS USUALLY REQUIRES RUNNING THESE PROGRAMS
    IN CONJUNCTION WITH INT580., HOWEVER, 705 III PROGRAMS THAT
    CAN BE RUN WITHOUT MODIFICATION ON THE 7080 WILL RUN ON
    THE EMULATOR. BY ELIMINATING THE REQUIREMENT TO CONVERT
    ALL 7080 PROGRAMS BEFORE INSTALLING THE SYSTEM/360, THE
    EMULATOR ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING
    RESOURCES TOWARD DEVELOPING NEW APPLICATIONS AND REDESIGNING
    EXISTING APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360
    FACILITIES. USE OF THE EMULATOR ALSO EASES THE PRESSURE OF
    PROGRAM TESTING.

    THE AVERAGE INTERNAL SPEED OF THE EMULATOR ON SYSTEM/360
    MODEL 65 IS EQUAL TO THAT OF THE 7080. TIMING INFORMATION
    IS PRESENTED IN THE SRL PUBLICATION, SYSTEM/360 CONVERSION
    AIDS- THE 7080 EMULATOR PROGRAM FOR SYSTEM/360 MODEL 65,
    C27-6911. THE 7080 CONFIGURATION BEING EMULATED MAY INCLUDE
    10 TAPE UNITS ON EACH OF FOUR COMMUNICATION CHANNELS, A
    7153 CONSOLE, AND A 7502 CONSOLE CARD READER.

    MINIMUM SYSTEM REQUIREMENTS- IN ADDITION TO THE COMPATIBILITY
    FEATURE, SYSTEM/360 REQUIREMENTS ARE- AT LEAST 262,144 BYTES
    OF MAIN STORAGE /MODEL H/ FOR THE EMULATION OF A 7080 WITH
    80,000 CHARACTERS OF MEMORY. 524,288 BYTES OF MAIN STORAGE
    /MODEL I/ IS THE MINIMUM REQUIREMENT TO EMULATE A 7080 WITH
    A 160,000 CHARACTER MEMORY... ONE 1052 PRINTER-KEYBOARD...
    ONE SELECTOR CHANNEL FOR EACH COMMUNICATION CHANNEL OF THE
    7080 BEING EMULATED... ONE 2401, 2402, OR 2403 MAGNETIC TAPE
    UNIT, MODEL 1-6, OR ONE 2404 MAGNETIC TAPE UNIT, MODEL 1-3
    FOR EACH 729 TAPE UNIT TO BE EMULATED. IF THE EMULATOR
    PROGRAM IS TO BE LOADED FROM A MAGNETIC TAPE UNIT EQUIPPED
    WITH THE 7-TRACK READ WRITE HEAD /NO. 9557/ AND THE 7-TRACK
    COMPATIBILITY FEATURE /NOS. 7125, 7126, OR 7127/, THE
    DATA CONVERSION FEATURE /NO. 3228 OR NO. 3236/ MUST BE
    INSTALLED ON THE ASSOCIATED TAPE CONTROL UNIT. AFTER THE
    PROGRAM HAS BEEN LOADED, THE LOAD DEVICE IS AVAILABLE AS
    7080 CORRESPONDING DEVICE /SEE BELOW/.

    INPUT/OUTPUT DEVICE CORRESPONDENCE IS AS FOLLOWS-
    I/O DEVICE CORRESPONDENCE TABLE FOR 7080 EMULATOR
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7080 DEVICE	SYSTEM/360 DEVICE
7153 CONSOLE	1052 PRINTER-KEYBOARD
7502 CONSOLE CARD READER	1442 N1 CARD READ PUNCH 2501 B1 CARD READER 2501 B2 CARD READER 2520 B1 CARD READ PUNCH 2540 CARD READ PUNCH
729 SERIES MAGNETIC TAPE UNITS	2401, 2402, OR 2403 MAGNETIC TAPE UNITS, MODEL 1-6, OR 2404 MAGNETIC TAPE UNITS, MODEL 1-3.

IBM Programs

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BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
        OPERATING INSTRUCTIONS... CONVERSION AIDS
        MANUAL, C27-6911.
    MACHINE READABLE - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
        FEATURE REQUIRED/ DTR CONTAINING THE SELF-LOADING
        EMULATOR PROGRAM FOLLOWED BY THE SAMPLE PROGRAM.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS
REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -
NO TAPE SUBMITTAL IS REQUIRED.

-728   S/360 MOD 40 1410/7010
& PROGRAM
RDER THROUGH LOCAL IBM BRANCH OFFICE
PECIFY FILE NUMBER 360C-EU-728

THIS IS A STAND-ALONE PROGRAM THAT EXECUTES 1410/7010 PROGRAMS
WHEN USED ON A SYSTEM/360 MODEL 40 EQUIPPED WITH THE 1410/7010
COMPATIBILITY FEATURE /NO. 4478/. THE EMULATOR PROGRAM USES BOTH
STANDARD S/360 INSTRUCTIONS AND SPECIAL INSTRUCTIONS PROVIDED BY
THE COMPATIBILITY FEATURE. THE EMULATOR CONSISTS OF THE
COMPATIBILITY FEATURE AND THE EMULATOR PROGRAM. CURRENTLY
OPERATING NON TIME-DEPENDENT 1410/7010 PROGRAMS CAN BE EXECUTED
WITHOUT MODIFICATION, ALTHOUGH CERTAIN SPECIAL AND CUSTOM
FEATURES ARE NOT EMULATED.
    BY ELIMINATING THE REQUIREMENT TO CONVERT ALL THE USERS
1410/7010 PROGRAMS BEFORE INSTALLING THE SYSTEM/360,
THE EMULATOR ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING
RESOURCES TOWARDS DEVELOPING NEW APPLICATIONS AND REDESIGNING
EXISTING APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360
FACILITIES. USE OF THE EMULATOR ALSO ALLOWS IMMEDIATE PRODUCTION
RUNS UPON INSTALLATION, ALLOWS TIME FOR USER EDUCATION IN
SYSTEM/360 CONCEPTS, AND EASES THE PRESSURE OF PROGRAM TESTING.

THE AVERAGE INTERNAL SPEED OF THE EMULATOR /EXCLUDING I/O AND
EDIT INSTRUCTIONS/ IS APPROXIMATELY TWICE THAT OF THE 1410.
PERFORMANCE DEPENDS ON THE MIXTURE OF INSTRUCTIONS AND THE
COMPARATIVE PERFORMANCE OF EQUIVALENT I/O DEVICES. HOWEVER,
THROUGHPUT TIME FOR MOST JOBS WILL BE EQUAL TO OR BETTER
THAN THE JOB TIME ON 1410 SYSTEMS. TIMING INFORMATION
WHICH MAY BE USED TO ESTIMATE THROUGHPUT IS PRESENTED IN THE
SRL PUBLICATION, IBM SYSTEM/360, MODEL 40, EMULATION OF THE
IBM 1410/7010 DATA PROCESSING SYSTEMS, C28-6563.
    NOTE- THE SPECIFIED PERFORMANCE CAN BE ATTAINED FOR DISK SYSTEMS
ONLY IF ENGINEERING CHANGE LEVEL 413140 IS INSTALLED ON
2841 STORAGE CONTROL UNITS. THROUGHPUT WITH LOWER LEVEL 2841/S
MAY BE REDUCED BY AS MUCH AS TWO-THIRDS.

THE BASIC 1410/7010 CONFIGURATION BEING EMULATED CAN INCLUDE TEN
DISK MODULES ON EACH OF TWO CHANNELS, TEN TAPE UNITS ON EACH OF
TWO CHANNELS, PUNCHED CARD DATA PROCESSING ON CHANNEL 1, AND THE
1415 CONSOLE PRINTER. THE EMULATOR MAKES THE MODEL 40 APPEAR
TO THE 1410/7010 PROGRAM AS A 40K OR 80K 1410/7010 WITH THE
FOLLOWING FEATURES- 1410/7010 PROCESSING OVERLAP...
WITH THE FOLLOWING FEATURES- 1410/7010 PROCESSING OVERLAP...
1410/7010 PRIORITY... 1410 DUAL SYNCHRONIZER ADAPTER...
7010 SECOND DATA CHANNEL... 7010 STORE AND RESTORE STATUS
INSTRUCTIONS.

IN ADDITION TO THE 1410/7010 COMPATIBILITY FEATURE /NO. 4478/
THE SYSTEM/360 REQUIREMENTS ARE- MODEL 40F FOR A 40K 1410/7010,
OR MODEL 40G OR LARGER FOR AN 80K 1410/7010... DECIMAL
ARITHMETIC FEATURE /NO. 3237/... ONE 1052 - MODEL 7, AND 1052
ADAPTER /NO. 7920/... ONE PROGRAM-LOAD UNIT WHICH MAY BE ANY OF
THE FOLLOWING- 2540 CARD READ PUNCH, 1442 N1 CARD READ PUNCH,
2501 B1 OR B2 CARD READER, 2520 B1 CARD READ PUNCH, 2400 SERIES
MAGNETIC TAPE UNIT, 2302 DISK STORAGE, 2311 DISK STORAGE DRIVE.
IF THE EMULATOR PROGRAM IS TO BE LOADED FROM A MAGNETIC TAPE UNIT
EQUIPPED WITH THE SEVEN-TRACK READ-WRITE HEAD /NO. 9557/ AND
THE SEVEN-TRACK COMPATIBILITY FEATURE /NO. 7125, 7126, 7127/,
THE DATA CONVERSION FEATURE /NO. 3228 OR 3236/ MUST BE INSTALLED
ON THE ASSOCIATED TAPE CONTROL UNIT. AFTER THE EMULATOR
PROGRAM HAS BEEN LOADED, THE LOAD DEVICE, EXCEPT FOR THE 2311,
IS AVAILABLE AS A 1410/7010 CORRESPONDING DEVICE.

INPUT/OUTPUT DEVICE CORRESPONDENCE IS AS FOLLOWS-

1410/7010 I/O DEVICES	EQUIVALENT SYSTEM/360, MODEL 40 INPUT/OUTPUT DEVICES
IBM 1402 CARD READ PUNCH, MODEL 2*	IBM 2540 CARD READ PUNCH
IBM 1442 CARD READER, MODEL 3*	IBM 1442 CARD READ PUNCH, MODEL N1 IBM 2501 CARD READER, MODEL B1 OR B2 IBM 2520 CARD READ PUNCH, MODEL B1
IBM 1403 PRINTER, MODEL 1, 2, OR 3*	IBM 1403 PRINTER, MODEL 2 OR N1 IBM 1404 PRINTER, MODEL 2.
IBM 729 II, IV, V AND VI MAGNETIC TAPE UNITS	IBM 2401, 2402, 2403, OR 2415 MAGNETIC TAPE UNITS, MODEL 1, 2, 3, 4, 5, OR 6** OR 2404 TAPE UNITS, MODELS 1, 2, OR 3, 7- OR 9-TRACK.
IBM 7330 MAGNETIC TAPE UNITS	SAME AS FOR THE IBM 729 MAGNETIC TAPE UNITS
IBM 1415 CONSOLE PRINTER*	IBM 1052 PRINTER KEYBOARD, MODEL 7 WITH PRINTING ELEMENT NO. 9572.
IBM 1301 DISK STORAGE	IBM 2302 DISK STORAGE
MODEL CORRESPONDENCE AS FOLLOWS--	
TWO MODEL 1	ONE MODEL 3
ONE MODEL 2	ONE MODEL 3
FOUR MODEL 1	ONE MODEL 4
TWO MODEL 2	ONE MODEL 4
TWO MODEL 1 AND ONE MDL 2	ONE MODEL 4

* EMULATED UNIT RECORD EQUIPMENT MUST PREVIOUSLY HAVE BEEN
    ASSIGNED TO 1410/7010 CHANNEL 1.
** 2401/2402/2403 MODEL 6/S MAY BE USED ON EITHER SELECTOR
    CHANNEL 1 OR 2, BUT NOT BOTH SIMULTANEOUSLY.

INPUT/OUTPUT FEATURE CORRESPONDENCE IS AS FOLLOWS-

1410/7010 FEATURE	MODEL 40 FEATURE
IBM 1402 51-COLUMN INTERCHANGEABLE READ FEED, FEATURE CODES 1015, 4150	IBM 2540 51-COLUMN INTERCHANGEABLE READ FEED, FEATURE CODE 4151

BASIC PROGRAM MATERIAL-
    DOCUMENTATION - PROGRAM MATERIAL LIST...OPERATING
        INSTRUCTIONS FOR SAMPLE PROBLEM...1410/7010 EULATOR
        MANUAL, C28-6563... OPERATING GUIDE, C28-6557.
    MACHINE READABLE - ONE DTR, EITHER 9-TRACK OR 7-TRACK /DATA

CONTINUED FROM PRIOR COLUMN--
        CONVERSION FEATURE REQUIRED/. CONTAINING THE EMULATOR
        OBJECT PROGRAM, ABSOLUTE LOADER, SAMPLE PROGRAM AND
        DISK LOADER.
    IF THE TRACK REQUIREMENT IS NOT SPECIFIED, A 9-TRACK TAPE
WILL BE SUPPLIED.
    THE DTR /DISTRIBUTION TAPE REEL/ WILL BE SUPPLIED BY
THE PROGRAM INFORMATION DEPARTMENT- NO TAPE SUBMITTAL IS
REQUIRED.

360C-EU-729   MODEL 65 EMULATOR PROGRAM
FOR 709/7090/7094
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360C-EU-729

THE 709/7090/7094/7094II EMULATOR PROGRAM IS A STAND-ALONE
PROGRAM THAT EXECUTES 7090 SERIES PROGRAMS ON A 512K SYSTEM/360
MODEL 65 EQUIPPED WITH THE 7090 COMPATIBILITY FEATURE /NO. 7119/.
THE EMULATOR PROGRAM USES STANDARD SYSTEM/360 INSTRUCTIONS AND
THE SPECIAL INSTRUCTIONS PROVIDED BY THE COMPATIBILITY FEATURE.
THE COMPATIBILITY FEATURE IS THE HARDWARE THAT IS ADDED TO
A SYSTEM/360 MODEL 65 TO PERMIT THE EXECUTION OF 7090 SERIES
PROGRAMS. THE EMULATOR PROGRAM AND THE COMPATIBILITY FEATURE
COMBINED ARE KNOWN AS THE EMULATOR. THE EMULATOR PROVIDES
AN EFFICIENT MEANS OF CONVERTING TO SYSTEM/360 BY ELIMINATING
THE NECESSITY OF CONVERTING ALL 7090 SERIES PROGRAMS BEFORE
INSTALLING SYSTEM/360. THE EMULATOR ALLOWS THE USER TO BETTER
ALLOCATE HIS PROGRAMMING RESOURCES TOWARD DEVELOPING NEW
APPLICATIONS AND REDESIGNING EXISTING APPLICATIONS TO TAKE
FULL ADVANTAGE OF SYSTEM/360 FACILITIES. MOST CURRENTLY
OPERATING, NON-TIME-DEPENDENT, 7090 SERIES PROGRAMS CAN BE
EXECUTED WITHOUT MODIFICATION, ALTHOUGH CERTAIN SPECIAL AND
CUSTOM FEATURES ARE NOT EMULATED. THE PERFORMANCE OF THE
EMULATOR WILL VARY ACCORDING TO THE INSTRUCTIONS USED AND
THE I/O ACTIVITY OF THE EMULATED 7090 SERIES PROGRAM.
A STUDY OF INSTRUCTION DISTRIBUTIONS OBTAINED FROM SAMPLE
RUNS ON A 7090 INDICATES THAT THE AVERAGE INTERNAL SPEED OF THE
EMULATOR, WHEN EXECUTING NON-I/O INSTRUCTIONS, IS APPROXIMATELY
TWICE THAT OF THE 7090. THROUGHPUT PERFORMANCE IS, OF COURSE,
HIGHLY DEPENDENT UPON THE MIXTURE OF INSTRUCTIONS AND THE
COMPARATIVE PERFORMANCE OF EQUIVALENT I/O DEVICES USED IN A
GIVEN APPLICATION. HOWEVER, EXPERIENCE TO DATE INDICATES
THROUGHPUT TIME FOR MOST JOBS WILL BE APPROXIMATELY EQUAL
TO THE JOB TIME ON THE 7094 MODEL 1. TIMING INFORMATION
THAT MAY BE USED TO ESTIMATE THROUGHPUT IS PRESENTED IN THE
PUBLICATION, SYSTEM/360 CONVERSION AIDS- THE 709/7090/7094/7094II
EMULATOR PROGRAM FOR THE SYSTEM/360 MODEL 65, C28-6565.
THE BASIC MACHINE REQUIREMENT FOR USING THE EMULATOR IS A
SYSTEM/360 MODEL 65 EQUIPPED WITH- AT LEAST 524,288 BYTES OF
MAIN STORAGE... THE 7090 COMPATIBILITY FEATURE... A 1052 MODEL 7
PRINTER-KEYBOARD WITH 1052 ADAPTER /NO. 7920/ OR WITH 2150
CONSOLE... A 2400 SERIES MAGNETIC TAPE UNIT /9-TRACK OR 7-TRACK
WITH THE DATA CONVERSION FEATURE/... TWO ADDITIONAL 2400 SERIES
MAGNETIC TAPE UNITS /OR ONE 2400 UNIT AND ONE OF THE
FOLLOWING -- 2501 CARD READER, 1442 CARD READ PUNCH,
2520 CARD READ PUNCH, OR 2540 CARD READ PUNCH/ FOR INITIALIZATION
PURPOSES. IF A 7-TRACK 2400 SERIES MAGNETIC TAPE UNIT IS USED
TO CONTAIN THE EDIT FILE, THE TAPE CONTROL UNIT MUST BE
EQUIPPED WITH THE DATA CONVERSION FEATURE AND 7-TRACK
COMPATIBILITY FEATURE. A VARIETY OF S/360 INPUT/OUTPUT
DEVICES MAY BE USED TO EMULATE THE 7090 SERIES DEVICES.
THERE ARE CERTAIN REQUIREMENTS FOR THE SYSTEM/360 DEVICES.
ALL CARD READ PUNCH UNITS MUST BE EQUIPPED WITH THE CARD
IMAGE FEATURE AND ALL TAPE DRIVES USED FOR 7-TRACK TAPES MUST
BE EQUIPPED WITH THE 7-TRACK COMPATIBILITY FEATURE.
IN ADDITION ONE OR MORE 2860 CHANNELS OR 2870 SELECTOR
SUBCHANNELS ARE RECOMMENDED FOR EACH 7090 CHANNEL EMULATED.

AS ASSEMBLED AND DISTRIBUTED THE EMULATOR SUPPORTS 7090
CHANNELS A THROUGH D. TAPES ON THE 2870 MULTIPLEXER CHANNEL MUST
BE CONNECTED THROUGH SELECTOR SUBCHANNELS. THE MAXIMUM COMBINED
RATE FOR TAPES ATTACHED TO THE MULTIPLEXER CHANNEL IS 360 KC.
ALL EMULATED 7090 UNIT-RECORD DEVICES MUST HAVE THE SAME 7090
CHANNEL ADDRESS /NORMALLY, THIS IS CHANNEL A/. THIS REQUIREMENT
DOES NOT, HOWEVER, PRECLUDE USING SEPERATE S/360 CHANNELS FOR
THE EMULATION OF THESE DEVICES.
BELOW SHOWS THE SYSTEM/360 DEVICES THAT MAY BE USED TO EMULATE
7090-SERIES DEVICES.

7090-SERIES DEVICES	SYSTEM/360 DEVICES
729 TAPE UNIT	2400-SERIES MAGNETIC TAPE UNIT**
711 CARD READER	2540 CARD READ PUNCH
	1442 CARD READ PUNCH*
	2501 CARD READER
	2520 CARD READ PUNCH*
	2400-SERIES MAGNETIC TAPE UNIT**
716 PRINTER	1052 PRINTER-KEYBOARD
	1403 PRINTER
	1443 PRINTER
	2400-SERIES MAGNETIC TAPE UNIT**
721 CARD PUNCH	2540 CARD READ PUNCH
	1442 CARD READ PUNCH*
	1442 CARD PUNCH
	2520 CARD READ PUNCH*
	2520 CARD PUNCH
	2400-SERIES MAGNETIC TAPE UNIT**

*THE 1442 AND THE 2520 CAN BE USED TO EMULATE EITHER THE 711 OR
THE 721, BUT NOT BOTH AT THE SAME TIME.
**2415 MAGNETIC TAPE UNIT IS NOT SUPPORTED.

INPUT/OUTPUT DEVICES ARE REQUIRED FOR EMULATOR-PROGRAM
RESIDENCE, CONTROL-INFORMATION INPUT, MESSAGE OUTPUT AND CONSOLE
FUNCTIONS. BELOW SHOWS S/360 DEVICES THAT MAY BE USED FOR EACH
OF THE ABOVE MENTIONED FUNCTIONS.

EMULATOR FUNCTION	SYSTEM/360 DEVICE
EMULATOR PROGRAM RESIDENCE	2400-SERIES MAGNETIC TAPE UNIT*
CONTROL-INFORMATION INPUT	1052 PRINTER-KEYBOARD
	2400-SERIES MAGNETIC TAPE UNIT*
	2540 CARD READ PUNCH
	1442 CARD READ PUNCH
	2501 CARD READER
	2520 CARD READ PUNCH
MESSAGE OUTPUT	1052 PRINTER-KEYBOARD
	1403 PRINTER
	1443 PRINTER
	2400-SERIES MAGNETIC TAPE UNIT*
CONSOLE FUNCTIONS	1052 PRINTER-KEYBOARD

*IF 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.
NOTE- THE INDICATED DEVICES NEED NOT BE IN ADDITION TO THE
DEVICES SHOWN ABOVE. ALSO, THE 1052 MAY CONCURRENTLY PERFORM
MORE THAN ONE EMULATOR FUNCTION.

IBM Programs

CONTINUED FROM PRIOR PAGE--

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
MANUAL C27-6929... CONVERSION AIDS MANUAL, C28-6565.
MACHINE READABLE - INITIALIZATION DECK... THE OBJECT PROGRAM
AND THE SAMPLE PROBLEM ARE AVAILABLE ON A 7- OR 9-TRACK
DTR. THE DATA CONVERSION FEATURE IS REQUIRED TO USE THE
7-TRACK TAPE.
IF 7-TRACK IS NOT SPECIFICALLY REQUESTED A 9-TRACK DTR
WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY
PROGRAM INFORMATION - NO TAPE SUBMITTAL IS REQUIRED.

360C-EU-731   1620 EMULATOR PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-731

THIS IS A STAND-ALONE PROGRAM THAT PROVIDES COMPATIBILITY
WITH 1620 INPUT/OUTPUT OPERATIONS AND WORKS IN CONJUNCTION
WITH THE 1620 COMPATIBILITY FEATURE /NO. 7190/ TO PROVIDE 1620
SYSTEM COMPATIBILITY. THE 1620 COMPATIBILITY FEATURE AND
THE EMULATOR PROGRAM TOGETHER COMPRISE THE SYSTEM/360 MODEL 30
1620 EMULATOR. THE 1620 EMULATOR, USING THE FACILITIES OF THE
2030 AND ASSOCIATED I/O DEVICES, EXPEDITES THE TRANSFER OF
1620 APPLICATIONS TO THE SYSTEM/360 MODEL 30. THIS ALLOWS
PROGRAMMING EFFORT TO BE DIRECTED TOWARD DEVELOPING NEW
APPLICATIONS FOR SYSTEM/360 RATHER THAN IMMEDIATE CONVERSION
OF EXISTING 1620 PROGRAMS. THE FOLLOWING SYSTEM/360 MODEL 30
FACILITIES ARE REQUIRED TO EMULATE THE 1620-

1620	SYSTEM/360 MODEL 30
STORAGE	
20,000 CHARACTERS	16,384 BYTES /2030D/
40,000 CHARACTERS	32,768 BYTES /2030E/
60,000 CHARACTERS	65,536 BYTES /2030F/
CONSOLE TYPEWRITER	1052 PRINTER-KEYBOARD WITH
	1051 CONTROL UNIT
1621 MODELS 1, 2	
/READ FUNCTIONALLY/	2671 PAPER TAPE READER WITH
PAPER TAPE	2822 CONTROL UNIT
1622 READ PUNCH	2540 CARD READ PUNCH WITH
	2821 CONTROL UNIT
	1442-N1 CARD READ PUNCH
	1442-N2 CARD PUNCH
	2501 B1, B2 CARD READER
	2520 B1 CARD READ PUNCH
	2520 B2, B3 CARD PUNCH
NOTE- SEPARATE PATHS FOR CARD READING AND CARD PUNCHING MUST	
BE PROVIDED.	
1311 DISK STORAGE DRIVE	2311 DISK STORAGE DRIVE WITH
	2841 CONTROL UNIT
1443 PRINTER	1443-N1 PRINTER
	1403-2, 3, 7, N1 PRINTER WITH
	2821 CONTROL UNIT

THESE I/O DEVICES CAN BE ATTACHED TO ANY SYSTEM/360 MODEL 30
CHANNEL. EVERY SYSTEM/360 MODEL 30 WITH THE 1620 COMPATIBILITY
FEATURE MUST HAVE A 1052/1051 AND CARD READER.

THE 1620 COMPATIBILITY FEATURE INCLUDES THE FOLLOWING 1620
FUNCTIONS AND FEATURES- ALL STANDARD 1620 OPERATIONS AND
INSTRUCTIONS... ADDITIONAL INSTRUCTIONS /TRANSFER NUMERIC STRIP,
TRANSFER NUMERIC FILL, MOVE FLAG/ /1620-1/... AUTOMATIC DIVIDE
/1620-1/... AUTOMATIC FLOATING POINT OPERATIONS... BINARY
CAPABILITIES /1620-2/... INDEX REGISTERS /1620-2/...
INDIRECT ADDRESSING /1620-1/.
INTERNAL PERFORMANCE- THE INTERNAL PERFORMANCE OF THE 1620
EMULATOR SHOULD BE AT LEAST EQUAL TO THAT OF A 1620 MODEL 2.
INPUT/OUTPUT OPERATIONS- INPUT/OUTPUT OPERATIONS ARE DEPENDENT
ON THE SPEEDS OF THE I/O DEVICES. WITH DEVICES THE EQUIVALENT
OF THOSE ON THE 1620, INPUT/OUTPUT OPERATIONS WILL TAKE
APPROXIMATELY THE SAME TIME.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
OPERATING INSTRUCTIONS... 1620 COMPATIBILITY FEATURE
MANUAL A24-3365.
MACHINE READABLE - THE FOLLOWING OBJECT DECKS IN CARD FORM
OR ON A 7- OR 9-TRACK DTR - INITIALIZATION AND I/O
CONTROL... DISK FORMAT 1... DISK FORMAT 2... ABSOLUTE
LOADER... SAMPLE PROBLEM.
IF TRACK REQUIREMENT IS NOT SPECIFIED A 9-TRACK DTR WILL BE
SUPPLIED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION
DEPARTMENT-NO TAPE SUBMITTAL IS REQUIRED.

360C-EU-733   7040/7044 EMULATOR PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-733

THE 7040 SERIES EMULATOR PROGRAM IS A STAND ALONE PROGRAM
THAT EXECUTES 7040 SERIES PROGRAMS ON A SYSTEM/360 MODEL 65
EQUIPPED WITH THE COMPATIBILITY FEATURE /NO. 7119/.
THE EMULATOR PROGRAM USES STANDARD SYSTEM/360 INSTRUCTIONS
AND THE SPECIAL INSTRUCTIONS PROVIDED BY THE COMPATIBILITY
FEATURE. THE COMPATIBILITY FEATURE IS THE FEATURE THAT IS
ADDED TO A SYSTEM/360 MODEL 65 TO PERMIT THE EXECUTION OF 7040
SERIES PROGRAMS. THE EMULATOR PROGRAM AND THE COMPATIBILITY
FEATURE COMBINED ARE KNOWN AS THE EMULATOR. REFER TO THE
,,ENGINEERING CHANGE CONSIDERATIONS,, SECTION FOR A LIST OF
ECS THAT ARE PREREQUISITES FOR USE WITH THE 7040/7044
EMULATOR PROGRAM.

THE EMULATOR PROVIDES AN EFFICIENT MEANS OF CONVERTING TO
SYSTEM/360 BY ELIMINATING THE NECESSITY OF CONVERTING ALL
7040 SERIES PROGRAMS BEFORE INSTALLING SYSTEM/360. THE EMULATOR
ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING RESOURCES
TOWARD DEVELOPING NEW APPLICATIONS AND REDESIGNING EXISTING
APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360 FACILITIES.
A 32K 7040/7044 SYSTEM WITH BASIC INSTRUCTION SET, EXTENDED
PERFORMANCE SET, SINGLE-PRECISION FLOATING-POINT,
DOUBLE-PRECISION FLOATING-POINT, AND INPUT/OUTPUT INSTRUCTIONS
IS EMULATED. STORAGE PROTECTION AND THE INTERVAL TIMER ARE
OPTIONALLY SUPPORTED. MOST CURRENTLY OPERATING,
NON-TIME-DEPENDENT, 7040 SERIES PROGRAMS CAN BE EXECUTED WITHOUT
MODIFICATION. ALTHOUGH CERTAIN SPECIAL AND CUSTOM FEATURES
ARE NOT EMULATED.

THE PERFORMANCE OF THE EMULATOR WILL VARY ACCORDING TO
THE INSTRUCTIONS USED AND THE I/O ACTIVITY OF THE EMULATED
7040 SERIES PROGRAM. THE AVERAGE INTERNAL SPEED OF THE
EMULATOR, WHEN EXECUTING NON-I/O INSTRUCTIONS, IS APPROXIMATELY
1.4 TIMES THAT OF THE 7044.
THROUGHPUT PERFORMANCE DEPENDS ON THE MIXTURE OF INSTRUCTIONS
AND THE COMPARATIVE PERFORMANCE OF EQUIVALENT I/O DEVICES.

CONTINUED FROM PRIOR COLUMN--
HOWEVER, THROUGHPUT TIME FOR MOST JOBS WILL BE APPROXIMATELY
EQUAL TO THE THROUGHPUT TIME ON THE 7044. TIMING INFORMATION
THAT MAY BE USED TO ESTIMATE THROUGHPUT IS PRESENTED IN THE
PUBLICATION, SYSTEM/360 CONVERSION AIDS- THE 7040/7044
EMULATOR PROGRAM FOR THE SYSTEM/360 MODEL 65, C28-6585.

THE BASIC MACHINE REQUIREMENT FOR USING THE EMULATOR IS A
SYSTEM/360 MODEL 65 EQUIPPED WITH-
- AT LEAST 524,288 BYTES OF MAIN STORAGE.
- THE 7040 COMPATIBILITY FEATURE /NO. 7119/.
- A 1052 PRINTER-KEYBOARD MODEL 7 WITH 1052 ADAPTER /NO. 7920/
OR WITH 2150 CONSOLE.
- A 2400 SERIES MAGNETIC TAPE UNIT /9-TRACK, OR 7-TRACK
WITH THE DATA CONVERSION FEATURE/.
- TWO ADDITIONAL UNITS FOR INITIALIZATION PURPOSES FROM THE
FOLLOWING - 2400 SERIES MAGNETIC TAPE UNIT, 1442 CARD READ
PUNCH, 2501 CARD READER, 2520 CARD READ PUNCH OR 2540 CARD
READ PUNCH. HOWEVER, CARD READ PUNCH FACILITIES MUST BE
AVAILABLE EITHER ON- OR OFF-LINE. IF A 7-TRACK 2400 SERIES
MAGNETIC TAPE UNIT IS USED TO CONTAIN THE EDIT FILE, THE UNIT
MUST BE EQUIPPED WITH THE DATA CONVERSION FEATURE.

A VARIETY OF SYSTEM/360 INPUT/OUTPUT DEVICES MAY BE USED
TO EMULATE THE 7040 SERIES DEVICES IF THE SYSTEM/360 DEVICES
SATISFY CERTAIN REQUIREMENTS. SYSTEM/360 CARD READ-PUNCH
UNITS MUST BE EQUIPPED WITH THE CARD IMAGE FEATURE IF THE
EQUIVALENT 7040 DEVICE HAS THE COLUMN BINARY FEATURE.
ALL TAPE DRIVES USED FOR 7-TRACK TAPES MUST BE EQUIPPED WITH
THE 7-TRACK COMPATIBILITY FEATURE.

AS ASSEMBLED AND DISTRIBUTED, THE EMULATOR SUPPORTS 7040
CHANNELS A THROUGH E. TAPES ON THE 2870 MULTIPLEXER CHANNEL MUST
BE CONNECTED THROUGH SELECTOR SUBCHANNELS. THE MAXIMUM COMBINED
RATE FOR TAPES ATTACHED TO THE MULTIPLEXER CHANNEL IS 360 KC.
BELOW SHOWS THE S/360 DEVICES THAT MAY BE USED TO EMULATE
7040-SERIES DEVICES.

7040 UNITS	SYSTEM/360 UNITS
729 TAPE UNIT	2400 SERIES TAPE UNIT***
7330 TAPE UNIT	
1402 CARD READER	2540 CARD READ PUNCH
	1442 CARD READ PUNCH*
	2501 CARD READER
	2520 CARD READ PUNCH*
1403 PRINTER CONSOLE	1052 PRINTER-KEYBOARD**
TYPEWRITER	1403 PRINTER**
	1443 PRINTER**
1402 CARD PUNCH	2540 CARD READ PUNCH
	1442 CARD READ PUNCH*
1622 CARD PUNCH	1442 CARD PUNCH
	2520 CARD READ PUNCH*
	2520 CARD PUNCH

*THE 1442 AND THE 2520 CAN BE USED TO EMULATE EITHER THE
1402 READER OR PUNCH, BUT NOT BOTH AT THE SAME TIME.
**THE 1052, 1403, AND THE 1443 CAN BE USED TO EMULATE
THE PRINTER OR THE TYPEWRITER, BUT NOT BOTH AT THE SAME TIME.
***2415 MAGNETIC TAPE UNIT AND CONTROL IS NOT SUPPORTED.

INPUT/OUTPUT DEVICES ARE REQUIRED FOR EMULATOR-PROGRAM
RESIDENCE, CONTROL-INFORMATION INPUT, MESSAGE OUTPUT, AND
CONSOLE FUNCTIONS. FOLLOWING ARE THE SYSTEM/360 UNITS THAT
MAY BE USED FOR EACH OF THE ABOVE-MENTIONED FUNCTIONS.

EMULATOR FUNCTION	UNITS
EMULATOR-PROGRAM	2400 SERIES TAPE UNITS*
RESIDENCE	
CONTROL-INFORMATION	1052 PRINTER-KEYBOARD
INPUT	2400 SERIES TAPE UNIT*
	2540 CARD READ PUNCH
	1442 CARD READ PUNCH
	2501 CARD READER
	2520 CARD READ PUNCH
MESSAGE OUTPUT	1052 PRINTER-KEYBOARD
	1403 PRINTER
	1443 PRINTER
	2400 SERIES TAPE UNIT
CONSOLE FUNCTIONS	1052 PRINTER-KEYBOARD

*IF 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.
NOTE- THESE UNITS NEED NOT BE IN ADDITION TO THE UNITS
PREVIOUSLY MENTIONED ABOVE. ALSO, THE 1052 MAY CONCURRENTLY
PERFORM MORE THAN ONE EMULATOR FUNCTION.

ENGINEERING CHANGE CONSIDERATIONS-
1. ENGINEERING CHANGE NUMBER 705256 WITH REQUESTS FOR
ENGINEERING ACTION NUMBER 14492 IS A PREREQUISITE FOR
USE WITH THE 7040/7044 EMULATOR PROGRAM.
2. THE INTERVAL TIME UPDATING ACCURACY MAY BE AFFECTED UNLESS
ENGINEERING CHANGE NUMBER 705234 IS INSTALLED.

RESTRICTION- IN MOST CASES, MEMORY PROTECT TRAPS ARE
DELAYED FOR ONE 7040 INSTRUCTION CYCLE. THIS RESTRICTION WILL
BE REMOVED AT A LATER DATE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... 7040/7044 EMULATOR
PROGRAM FOR THE SYSTEM/360 MODEL 65, C28-6585...
SAMPLE PROBLEMS MANUAL, C27-6929.
MACHINE READABLE - EMULATOR OBJECT PROGRAM, INITIALIZATION
DECK, SAMPLE PROGRAM AND THE EMULATOR INITIALIZATION
OBJECT PROGRAM MAY BE OBTAINED ON ONE 9-TRACK OR ON ONE
7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT INDICATED
9-TRACK WILL BE FORWARDED.
THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -
NO TAPE SUBMITTAL IS REQUIRED.

1401-RG-700   IBM 1400 RPG TO SYSTEM/360
TRANSLATOR
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER   1401-RG-700

THIS PROGRAM OPERATES ON A 1401 OR 1460 DATA PROCESSING SYSTEM.
THE PROGRAM IS PLACED IN THIS SECTION OF THE SYSTEM/360 CATALOG
TO ASSIST YOU IN CONVERTING YOUR DATA PROCESSING INSTALLATION.
ORDER THE PROGRAM BY THE FILE NUMBER -- 1401-RG-700 --.

THE TRANSLATOR CONVERTS SOURCE PROGRAMS WRITTEN FOR ANY OF THE
PROCESSORS LISTED BELOW TO SIMILAR SOURCE PROGRAMS
ACCEPTABLE TO SYSTEM/360 MODEL 20 RPG, SYSTEM/360 BASIC
PROGRAMMING SUPPORT RPG, BASIC OPERATING SYSTEM/360 RPG, OR
OPERATING SYSTEM/360 RPG. 1400 RPG PROCESSORS TO

IBM Programs

JED FROM PRIOR PAGE--
BE TRANSLATED INCLUDE-
1. 1401 RPG /2K/
2. 1401 BASIC RPG /4K/
3. 1401 RPG
4. 1401/1460 RPG /ON DISK/
5. 1440 RPG /2K/
6. 1440 BASIC RPG /4K/
7. 1440 RPG /ON DISK/
8. 1440 STERLING BASIC RPG /4K/
9. 1440 STERLING RPG /1311/
THE 1401 RPG PROCESSOR WILL BE HANDLED AFTER THE PROGRAM
HAS FIRST BEEN TRANSLATED TO 1401/1460 RPG /ON DISK/ USING THE
1401 RPG TRANSLATOR PROGRAM. PROGRAM INPUT IS 1400 SERIES RPG
SOURCE PROGRAM CARDS., OUTPUT IS SYSTEM/360 RPG SOURCE PROGRAM
CARDS FOR INPUT, CALCULATION, AND OUTPUT SPECIFICATIONS.
NON-TRANSLATABLE CONDITIONS WILL BE FLAGGED AS THEY ARE
DETECTED BY THE TRANSLATOR. MINIMUM SYSTEM REQUIREMENTS- AN
8K 1401 OR 1460 WITH 1402 CARD READ PUNCH... 1403 PRINTER,
MODEL 2 OR MODEL 3 /ON 1460/... THREE 7330 OR 729 TAPE UNITS OR
ONE 1311 DISK STORAGE DRIVE OR ONE 1301 DISK STORAGE UNIT
/ON 1460/... ADVANCED PROGRAMMING AND HIGH-LOW-EQUAL COMPARE
SPECIAL FEATURES /ON 1401/ OR INDEXING AND STORE ADDRESS
REGISTER FEATURE /ON 1460/.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM MATERIAL LIST...
        SAMPLE PROGRAM TRANSLATION LISTING...SYSTEM/360 RPG
        TRANSLATOR MANUAL...LOGIC MANUAL.
    MACHINE READABLE - CARD DECKS FOR TRANSLATOR OBJECT PROGRAM,
        SAMPLE PROGRAM 1400/RPG SOURCE, SAMPLE PROGRAM SYSTEM/360
        RPG SOURCE.
OPTIONAL PROGRAM MATERIAL - ONE REEL OF MAGNETIC TAPE CONTAINING
        THE TRANSLATOR SOURCE PROGRAM.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.
THE NUMBER OF TAPES NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY
BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPES
SHOULD BE 2400 FEET IN LENGTH.

750   7090/7094 SIMULATOR PROGRAM
DER THROUGH LOCAL IBM BRANCH OFFICE
ECIFY FILE NUMBER 360C-SI-750

THE 7090/7094 SIMULATOR IS A STAND-ALONE SYSTEM/360 PROGRAM
THAT USES SYSTEM/360 COMPONENTS AND LOGIC TO REPRESENT THE
SIMULATED SYSTEM. BY INTERPRETING 7090/7094 PROGRAMS AND
DATA, THE SIMULATOR REPRODUCES THE RESULTS THAT WOULD BE OBTAINED
ON THE ORIGINAL SYSTEM. ALL STANDARD 7090/7094 INSTRUCTIONS
AND FEATURES ARE SIMULATED, AND IN ADDITION TO 7090/7094
PROGRAMS THE SIMULATOR EXECUTES 709 PROGRAMS AND 704 PROGRAMS
DESIGNED FOR 16K RUNNING UNDER THE 704-709 INPUT/OUTPUT
COMPATIBILITY PROGRAM. THE FUNCTIONS OF 7090/7094 INPUT/OUTPUT
DEVICES ARE PERFORMED BY CORRESPONDING SYSTEM/360 DEVICES.

/NOTE- SIMULATION OF THE 704-709 I/O COMPATIBILITY PROGRAM
IS PROVIDED TO THE USERS WHO RETAINED AN OPERATIONAL COPY.
THIS PROGRAM IS WITHDRAWN AND WILL NOT BE PROVIDED./

THE SIMULATOR USES THE SYSTEM/360 STANDARD INSTRUCTION SET,
FLOATING POINT ARITHMETIC, AND THE INTERVAL TIMER.
IT ALSO REQUIRES-
 - A MINIMUM OF 262,144 BYTES OF MAIN STORAGE /MODEL H/.
 - ONE 1052 PRINTER-KEYBOARD.
 - ONE DEVICE FOR INPUT OF THE 7090/7094 PROGRAM.
 - ONE DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
 - FOR EACH DEVICE SIMULATED, ONE OF THE DEVICES SHOWN FOR
   IT IN THE FOLLOWING TABLE-

7090/7094 DEVICE	SYSTEM/360 DEVICE
7151 CONSOLE	1052 PRINTER-KEYBOARD, ANY MODEL COMPATIBLE WITH THE SYSTEM.
711 CARD READER	1442 CARD READ PUNCH, MODEL N1, EQUIPPED WITH CARD-IMAGE OPTION., OR 2540 CARD READ PUNCH., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODEL 1, 2, AND 3 /7- OR 9-TRACK/. 2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1.
721 CARD PUNCH	1442 CARD READ PUNCH, MODEL N1, EQUIPPED WITH CARD-IMAGE. OPTION., OR 2540 CARD READ PUNCH., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODEL 1, 2, AND 3 /7- OR 9-TRACK/. 1442 CARD PUNCH, MODEL N2. 2520 CARD READ PUNCH, MODEL B1. 2520 CARD PUNCH, MODEL B2 OR B3.
716 PRINTER	1443 PRINTER, MODEL N1 OR 1403 PRINTER., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODEL 1, 2, AND 3 /7- OR 9-TRACK/., OR 1052 PRINTER-KEYBOARD, MODEL 1.
729 MAGNETIC TAPE UNIT /ANY MODEL/	2401, 2402, OR 2403 MAGNETIC TAPE UNITS, MODELS 1, 2, AND 3 /7- OR 9-TRACK/.

/NOTE THAT MODELS 4, 5, AND 6 OF 2400-SERIES MAGNETIC TAPE
UNITS CANNOT BE USED./
CARD READ PUNCH DEVICES MUST BE EQUIPPED WITH THE CARD IMAGE
FEATURE /1442/ AND THE COLUMN BINARY FEATURE /2540/, NO. 1532,
OR WITH DATA MODE 2 /2501, 2520/. IN SOME CASES, THE PROGRAM
INPUT, CONTROL INFORMATION INPUT, AND SIMULATED-DEVICE
FUNCTIONS CAN BE HANDLED BY THE SAME DEVICE.
THE SIMULATOR PRODUCES CORRECT OUTPUT ONLY FOR PROGRAMS THAT
WORK PROPERLY ON THE ORIGINAL SYSTEM, BUT MAY PRODUCE INCORRECT
OUTPUT FOR TIME-DEPENDENT PROGRAMS.
INFORMATION ON SIMULATION LIMITATIONS AND PERFORMANCE UNDER
SIMULATION CAN BE FOUND IN THE SRL PUBLICATION, SYSTEM/360
CONVERSION AIDS- THE 7090/7094 SIMULATOR FOR SYSTEM/360,
C28-6532.

PERFORMANCE UNDER SIMULATION DEPENDS LARGELY ON THE BALANCE
OF CPU AND I/O OPERATIONS. ESTIMATES OF PERFORMANCE UNDER
SIMULATION ARE SHOWN AS RANGES OF THROUGHPUT RATIOS FOR
A NUMBER OF TYPICAL PROGRAMS. A RATIO GREATER THAN 1.0 MEANS
THAT SIMULATION ON SYSTEM/360 IS FASTER THAN EXECUTION ON THE
ORIGINAL SYSTEM. THESE ESTIMATES ARE BASED ON THE FOLLOWING
ASSUMPTIONS-
 - THE TAPE UNITS USED FOR SIMULATION HAVE AT LEAST THE SAME
   DATA TRANSFER RATE IN BYTES AS THOSE OF THE SIMULATED
   SYSTEM IN CHARACTERS.
 - THE TERMINATION CONDITIONS OF TAPE READ/WRITE OPERATIONS
   ARE NORMAL.
THE THROUGHPUT RATIOS ARE-

CONTINUED FROM PRIOR COLUMN--

CURRENT SYSTEM	SYSTEM/360 MODEL 50	SYSTEM/360 MODEL 65	SYSTEM/360 MODEL 75
7090	0.07 - 0.30	0.25 - 0.75	0.30 - 0.80
7094/I	0.05 - 0.20	0.20 - 0.55	0.25 - 0.60

FACTORS THAT INCREASE SIMULATION THROUGHPUT-
 - PROGRAMS THAT ARE I/O BOUND.
 - I/O DATA IN 9-TRACK SIMULATOR INTERNAL FORMAT.
FACTORS THAT DECREASE SIMULATION THROUGHPUT-
 - PROGRAMS THAT ARE PROCESS BOUND.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... THE 7090/7094
        SIMULATOR FOR SYSTEM/360 MANUAL, C28-6532.
    MACHINE READABLE - OBJECT DECK CONTAINING COMMON PROGRAMS,
        PREP 90, UPDATE 90, SIM 90, SYSINEND AND SAMPLE PROGRAM
        AVAILABLE ON A 9-TRACK DTR.

NOTE- THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION
DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360C-SI-751   IBM SYSTEM/360 7080
SIMULATOR
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360C-SI-751

    THE 7080 SIMULATOR IS A STAND-ALONE SYSTEM/360 PROGRAM THAT,
    WITHOUT ADDITIONAL HARDWARE, ENABLES PROGRAMS THAT HAVE BEEN
    OPERATING ON A 7080 TO BE EXECUTED ON ANY SYSTEM/360 HAVING
    A SUITABLE CONFIGURATION. PROGRAMS FOR 705 MODELS I, II,
    AND III CAN BE RUN IF THEY ARE COMPATIBLE WITH THE 7080.
    THIS USUALLY REQUIRES RUNNING THE PROGRAMS IN CONJUNCTION
    WITH INT580. HOWEVER, 705 MODEL III PROGRAMS THAT CAN BE
    RUN WITHOUT INT580 ON THE 7080 WILL RUN ON THE SIMULATOR
    WITHIN THE RESTRAINTS OF THE SIMULATOR SUPPORT. THE SIMULATOR
    PRODUCES CORRECT RESULTS ONLY FOR PROGRAMS THAT WORK PROPERLY
    ON THE ORIGINAL SYSTEM, AND MAY PRODUCE INCORRECT RESULTS
    FOR TIME-DEPENDENT PROGRAMS. BY ELIMINATING THE REQUIREMENT
    TO CONVERT ALL 7080 PROGRAMS, THE SIMULATOR ALLOWS THE USER
    TO APPLY MOST OF HIS PROGRAMMING RESOURCES TOWARD DEVELOPING
    NEW APPLICATIONS AND REDESIGNING EXISTING APPLICATIONS TO
    TAKE FULL ADVANTAGE OF SYSTEM/360 FACILITIES. USE OF THE
    SIMULATOR ALSO EASES THE PRESSURE OF PROGRAM TESTING.
    THE USEFULNESS OF THE SIMULATOR CAN BE EXTENDED INDEFINITELY,
    SINCE SIMULATION MAY PROVE TO BE MORE ECONOMICAL THAN
    REPROGRAMMING FOR PROGRAMS WHICH ARE RUN INFREQUENTLY.
    THE REPROGRAMMING TASK IS EASED BY ALLOWING ITS DEFERMENT
    UNTIL SYSTEM INSTALLATION AND TESTING ARE COMPLETE.

    MINIMUM SYSTEM REQUIREMENTS- THE SIMULATOR OPERATES WITH THE
    STANDARD INSTRUCTION SET AND THE DECIMAL ARITHMETIC OPTION.
    MAIN STORAGE REQUIREMENTS DEPEND ON THE 7080 MEMORY BEING
    SIMULATED, AS FOLLOWS -

7080 MEMORY /CHARACTERS/	SYSTEM/360 MAIN STORAGE /BYTES/
80,000	131,072 /MODEL G/
160,000	262,144 /MODEL H/

    THE SYSTEM/360 MUST BE EQUIPPED WITH THE DEVICES NEEDED TO
    SERVICE THE SIMULATOR, AS WELL AS THOSE REQUIRED TO PROVIDE
    A CONFIGURATION CORRESPONDING TO THAT OF THE ORIGINAL SYSTEM.
    THE SIMULATOR REQUIRES-
     - ONE 1052 PRINTER-KEYBOARD.
     - ONE SYSTEM/360 DEVICE FOR PROGRAM INPUT.
     - ONE SYSTEM/360 DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
     - ONE CORRESPONDING SYSTEM/360 DEVICE FOR EACH SIMULATED
       7080 DEVICE.
    IF THE SIMULATOR PROGRAM IS TO BE LOADED FROM A MAGNETIC TAPE
    UNIT EQUIPPED WITH THE 7-TRACK READ WRITE HEAD /NO. 9557/.,
    THE 7-TRACK COMPATIBILITY FEATURE /NO. 7125/ AND THE
    DATA CONVERSION FEATURE /NO. 3228 OR NO. 3236/ MUST BE INSTALLED
    ON THE ASSOCIATED TAPE CONTROL UNIT. AFTER THE PROGRAM HAS
    BEEN LOADED, THIS SYSTEM/360 DEVICE IS AVAILABLE FOR SIMULATING
    A 7080 CORRESPONDING DEVICE. /SEE BELOW/. FOR EACH 7080 DEVICE
    SIMULATED, ONE OF THE SYSTEM/360 DEVICES SHOWN IN THE FOLLOWING
    TABLE IS ALSO REQUIRED. IN SOME CASES, THE PROGRAM INPUT,
    CONTROL INFORMATION INPUT, AND SIMULATED 7080 DEVICE FUNCTIONS
    CAN BE HANDLED BY THE SAME SYSTEM/360 DEVICE.

7080 DEVICE	SYSTEM/360 DEVICE
7153 CONSOLE CONTROL UNIT, MODEL 1.	1052 PRINTER-KEYBOARD /ANY MODEL COMPATIBLE WITH THE SYSTEM/.
7502 CONSOLE CARD READER, MODEL 1.	2540 CARD READ PUNCH, MODEL 1. 1442 CARD READ PUNCH, MODEL N1. 2501 CARD READER, MODEL B1 AND B2. 2520 CARD READ PUNCH, MODEL B1.
729 MAGNETIC TAPE UNITS /ANY MODEL/.	2401, 2402, 2403 MAGNETIC TAPE UNITS, MODEL 1, 2, OR 3. /7- OR 9-TRACK/.

    /NOTE THAT MODELS 4, 5, AND 6 OF THE 2400 SERIES TAPE UNITS
    CANNOT BE USED./

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... IBM SYSTEM/360
            CONVERSION AIDS - THE 7080 SIMULATOR FOR IBM SYSTEM/360
            MANUAL, C28-6531.
        MACHINE READABLE - 7080 SIMULATOR OBJECT PROGRAM CONTAINING -
            COMMON PROGRAMS, SIN 80, PREP 80, UPDATE 80, SYSINEND AND
            THE SAMPLE PROGRAM MAY BE OBTAINED ON ONE 9-TRACK OR ON
            ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.
    NOTE - WHEN ORDERING, THE REQUESTOR MUST INDICATE WHETHER 9-TRACK
    OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED, 9-TRACK DTR WILL BE
    FORWARDED. DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION
    DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360C-SI-752   1620 SIMULATOR PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360C-SI-752

    THE 1620 SIMULATOR IS A STAND-ALONE SYSTEM/360 PROGRAM
    THAT USES SYSTEM/360 COMPONENTS AND LOGIC TO REPRESENT
    THE SIMULATED SYSTEM. BY INTERPRETING 1620 PROGRAMS AND DATA,
    THE SIMULATOR REPRODUCES THE OUTPUT THAT WOULD BE OBTAINED
    ON THE ORIGINAL SYSTEM. 1620 CORE STORAGE CAPACITIES FROM
    20,000 TO 60,000 DECIMAL DIGITS ARE SIMULATED, AS WELL AS
    ALL STANDARD FEATURES AND THE FOLLOWING OPTIONAL FEATURES-
     - ADDITIONAL INSTRUCTIONS FOR 1620, MODEL 1 /NO. 1021/.
     - AUTOMATIC DIVIDE FOR 1620, MODEL 1 /NO. 1285/.
     - AUTOMATIC FLOATING POINT /NOS. 1288, 1289/.
     - INDIRECT ADDRESSING /NO. 4650/.
     - INDEX REGISTERS FOR 1620, MODEL 2 /NO. 4627/.
     - ADDITIONAL CORE STORAGE - 20K AND 40K.
     - 1443 PRINTER.

A-360C

CONTINUED FROM PRIOR PAGE--
      - 1311 DISK STORAGE DRIVE, MODELS 2 AND 3.

THE SIMULATOR USES THE SYSTEM/360 STANDARD INSTRUCTION
SET. IT ALSO REQUIRES-
   - MAIN STORAGE -- 32,768 BYTES /MODEL E/ IF SIMULATED SYSTEM
     IS 20K... 65,536 BYTES /MODEL F/ IF SIMULATED SYSTEM
     IS 40K... 131,072 BYTES /MODEL G/ IF SIMULATED SYSTEM IS 60K.
   - ONE 1052 PRINTER-KEYBOARD.
   - ONE DEVICE FOR INPUT OF THE 1620 PROGRAM.
   - ONE DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
   - FOR EACH DEVICE SIMULATED, ONE OF THE DEVICES SHOWN FOR
     IT IN THE FOLLOWING TABLE-

1620 DEVICE	SYSTEM/360 DEVICE
1620 CONSOLE	1052 PRINTER-KEYBOARD WITH 1051 CONTROL UNIT FOR MODEL 30.
1622 CARD READ PUNCH	2540 CARD READ PUNCH WITH 2821 CONTROL UNIT. 1442 CARD READ PUNCH, MODEL N1. 2520 CARD READ PUNCH, MODEL B1 OR A COMBINATION OF THE FOLLOWING- 2501 CARD READER, MODEL B1 OR B2. 1442 CARD PUNCH, MODEL N2. 2520 CARD PUNCH, MODEL B2 OR B3.
1621 PAPER TAPE READER	2671 PAPER TAPE READER WITH 2822 PAPER TAPE CONTROL UNIT. 2540 CARD READ PUNCH WITH 2821 CONTROL UNIT. 1442 CARD READ PUNCH, MODEL N1. 2520 CARD READ PUNCH, MODEL B1. 2501 CARD READER, MODEL B1 OR B2.
1621 PAPER TAPE PUNCH	2540 CARD READ PUNCH WITH 2821 CONTROL UNIT. 1442 CARD READ PUNCH, MODEL N1. 1442 CARD PUNCH, MODEL N2. 2520 CARD READ PUNCH, MODEL B1. 2520 CARD PUNCH, MODEL B2 OR B3.
1443 PRINTER, MODEL 2	1443 PRINTER, MODEL N1., OR 1403 PRINTER, MODEL 2, 3, OR N1 WITH 2821 CONTROL UNIT.
1311 DISK STORAGE DRIVE, MODEL 2 OR 3	2311 DISK STORAGE DRIVE WITH 2841 CONTROL UNIT.

IN SOME CASES, THE PROGRAM INPUT, CONTROL INFORMATION INPUT,
AND SIMULATED-DEVICE FUNCTIONS CAN BE HANDLED BY THE SAME
DEVICE.
THE SIMULATOR PRODUCES CORRECT OUTPUT ONLY FOR PROGRAMS THAT
WORK PROPERLY ON THE ORIGINAL SYSTEM, AND MAY PRODUCE
INCORRECT RESULTS FOR TIME-DEPENDENT PROGRAMS. INFORMATION ON
SIMULATION LIMITATIONS AND PERFORMANCE UNDER SIMULATION CAN
BE FOUND IN THE SRL PUBLICATION, SYSTEM/360 CONVERSION AIDS-
THE 1620 SIMULATOR FOR SYSTEM/360, C28-6529.

PERFORMANCE UNDER SIMULATION DEPENDS LARGELY ON THE BALANCE
OF CPU AND I/O OPERATIONS. ESTIMATES OF PERFORMANCE UNDER
SIMULATION ARE SHOWN AS RANGES OF THROUGHPUT RATIOS FOR A
NUMBER OF TYPICAL PROGRAMS. A RATIO GREATER THAN 1.0 MEANS
THAT SIMULATION ON SYSTEM/360 IS FASTER THAN EXECUTION ON
THE ORIGINAL SYSTEM. THESE ESTIMATES ARE BASED ON THE
FOLLOWING ASSUMPTIONS-
   - THE TAPE UNITS USED FOR SIMULATION HAVE AT LEAST THE
     SAME DATA TRANSFER RATE IN BYTES AS THOSE OF THE SIMULATED
     SYSTEM IN CHARACTERS.
   - THE TERMINATION CONDITIONS OF TAPE READ/WRITE OPERATIONS
     ARE NORMAL.
THE THROUGHPUT RATIOS ARE-

1620 CONFIGURATION	SYSTEM/360 MODEL 30	SYSTEM/360 MODEL 40
MODEL 1, PAPER TAPE	.20 - 2.85	.55 - 2.85
MODEL 1, CARDS	.20 - 1.05	.55 - 1.90
MODEL 2, CARDS	.05 - .55	.15 - 1.90
MODEL 2, PAPER TAPE	.05 - 2.85	.15 - 2.85

FACTORS THAT INCREASE SIMULATION THROUGHPUT-
   - PROGRAMS THAT ARE I/O BOUND.
FACTORS THAT DECREASE SIMULATION THROUGHPUT-
   - PROGRAMS THAT ARE PROCESS BOUND.
   - PROGRAMS USING DISK OPERATIONS IN ,,TRACK MODE.,,

BASIC PROGRAM MATERIAL -
      DOCUMENTATION - PROGRAM MATERIAL LIST... THE 1620 SIMULATOR
         FOR SYSTEM/360 MANUAL, C28-6529.
      MACHINE READABLE - THE 1620 SIMULATOR OBJECT DECKS WHICH
         INCLUDE ALL SIMULATOR FUNCTIONS IN ASSEMBLED FORM, PLUS
         SAMPLE PROGRAM DECKS ARE AVAILABLE IN CARD FORM, OR ON A
         9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
         TAPE.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED. THIS TAPE MAY BE SUPPLIED OR ORDERED
FROM YOUR IBM REPRESENTATIVE. THE TAPE MUST BE 2400 FEET IN
LENGTH.

360C-SI-753   7070/7074 SIMULATOR PROGRAM
   ORDER THROUGH LOCAL IBM BRANCH OFFICE
   SPECIFY FILE NUMBER 360C-SI-753

THE 7070/7074 SIMULATOR IS A STAND-ALONE SYSTEM/360 PROGRAM
THAT USES SYSTEM/360 COMPONENTS AND LOGIC TO REPRESENT THE
SIMULATED SYSTEM. BY INTERPRETING 7070/7074 PROGRAMS AND
DATA, THE SIMULATOR REPRODUCES THE OUTPUT THAT WOULD BE OBTAINED
ON THE ORIGINAL SYSTEM. 7070/7074 CORE STORAGE CAPACITIES
FROM 5,000 TO 30,000 WORDS ARE SIMULATED, AS WELL AS ALL
STANDARD FEATURES, FLOATING DECIMAL POINT /OPTION NO. 4420/,
AND ADDITIONAL STORAGE /OPTION NO. 1017/. THE FUNCTIONS OF
7070/7074 INPUT/OUTPUT DEVICES ARE PERFORMED BY CORRESPONDING
SYSTEM/360 DEVICES.

THE SIMULATOR USES THE SYSTEM/360 STANDARD INSTRUCTION SET
AND THE DECIMAL ARITHMETIC OPTION. IT ALSO REQUIRES-
   - MAIN STORAGE -- 131,072 BYTES /MODEL G/ IF SIMULATED
     SYSTEM IS 5K OR 10K... 262,144 BYTES /MODEL H/ IF SIMULATED
     SYSTEM IS 15K TO 30K.
   - ONE 1052 PRINTER-KEYBOARD.
   - ONE DEVICE FOR INPUT OF THE 7070/7074 PROGRAM.
   - ONE DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
   - FOR EACH DEVICE SIMULATED, ONE OF THE DEVICES SHOWN FOR
     IT IN THE FOLLOWING TABLE-

7070/7074 DEVICE	SYSTEM/360 DEVICE
7150 CONSOLE	1052 PRINTER-KEYBOARD, ANY MODEL COMPATIBLE WITH THE SYSTEM.

CONTINUED FROM PRIOR COLUMN--

7500 CARD READER	2540 CARD READ PUNCH., OR 1442 CARD READ PUNCH, MODEL N1., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODELS 1, 2, AND 3 /9-TRACK ONLY/. 2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1.
7501 CONSOLE READER	2540 CARD READ PUNCH., OR 1442 CARD READ PUNCH, MODEL N1. 2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1.
7550 CARD PUNCH	2540 CARD READ PUNCH., OR 1442 CARD READ PUNCH, MODEL N1., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODELS 1, 2, AND 3 /9-TRACK ONLY/. 2520 CARD READ PUNCH, MODEL B1. 1442 CARD PUNCH, MODEL N2. 2520 CARD PUNCH, MODEL B2 OR B3.
7400 PRINTER	1403 PRINTER, MODEL 2., OR 1443 PRINTER, MODEL N1. 2401, 2402, OR 2403 MAGENTIC TAPE UNIT, MODELS 1, 2, AND 3 /9-TRACK ONLY/.
729 MAGNETIC TAPE UNIT UNIT /ANY MODEL/	2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODELS 1, 2, AND 3 /7-TRACK OR 9-TRACK/.

/NOTE THAT MODELS 4, 5, AND 6 OF THE 2400-SERIES TAPE UNITS
CANNOT BE USED/.
IN SOME CASES, THE PROGRAM INPUT, CONTROL INFORMATION INPUT,
AND SIMULATED-DEVICE FUNCTIONS CAN BE HANDLED BY THE SAME
DEVICE. THE SIMULATOR PRODUCES CORRECT OUTPUT ONLY FOR
PROGRAMS THAT WORK PROPERLY ON THE ORIGINAL SYSTEM, AND
MAY PRODUCE INCORRECT OUTPUT FOR TIME-DEPENDENT PROGRAMS.
INFORMATION ON SIMULATION LIMITATIONS AND PERFORMANCE UNDER
SIMULATION CAN BE FOUND IN THE SRL PUBLICATION, SYSTEM/360
CONVERSION AIDS- 7070/7074 SIMULATOR FOR SYSTEM/360, C28-6530.

PERFORMANCE UNDER SIMULATION DEPENDS LARGELY ON THE BALANCE
OF CPU AND I/O OPERATIONS. ESTIMATES OF PERFORMANCE UNDER
SIMULATION ARE SHOWN BELOW AS RANGES OF THROUGHPUT RATIOS
FOR A NUMBER OF TYPICAL PROGRAMS. A RATIO GREATER THAN 1.0
MEANS THAT SIMULATION ON SYSTEM/360 IS FASTER THAN EXECUTION
ON THE ORIGINAL SYSTEM. THESE ESTIMATES ARE BASED ON THE
FOLLOWING ASSUMPTIONS-
   - THE TAPE UNITS USED FOR SIMULATION HAVE AT LEAST THE
     SAME DATA RATE IN BYTES AS THOSE OF THE SIMULATED SYSTEM
     IN CHARACTERS.
   - THE TERMINATION CONDITIONS OF TAPE READ/WRITE OPERATIONS
     ARE NORMAL.
THE THROUGHPUT RATIOS ARE-

CURRENT SYSTEM	SYSTEM/360 MODEL 50	SYSTEM/360 MODEL 65
7070	0.3 - 0.8	0.8 - 1.7
7074	0.2 - 0.4	0.7 - 1.2

NOTE- INPUT AND OUTPUT ARE ASSUMED TO BE 9-TRACK AND IN
SIMULATOR INTERNAL FORMAT.

FACTORS THAT INCREASE SIMULATION THROUGHPUT-
   - USE OF THE ADDITIONAL STORAGE MODE.
   - PROGRAMS THAT ARE I/O BOUND /EXCEPT 7070 ON MODEL 65/.
FACTORS THAT DECREASE SIMULATION THROUGHPUT-
   - I/O DATA NOT IN SIMULATOR INTERNAL FORMAT.
   - PROGRAMS THAT ARE PROCESS BOUND /EXCEPT 7070 ON MODEL 65/.
   - IN 7074 PROGRAMS, A HIGH PERCENTAGE OF FLOATING POINT
     OPERATIONS.

BASIC PROGRAM MATERIAL -
      DOCUMENTATION - PROGRAM MATERIAL LIST... CONVERSION AIDS FOR
         THE 7070/7074 SIMULATOR MANUAL, C28-6530.
      MACHINE READABLE - THE OBJECT PROGRAMS /ALL SIMULATOR
         FUNCTIONS AND SUPPORTING FUNCTIONS/ AND THE SAMPLE
         PROGRAM MAY BE OBTAINED ON ONE 9-TRACK OR 7-TRACK
         /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK
WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM
INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

**360C-SI-754   IBM SYSTEM/360 1410/7010
SIMULATOR PROGRAM**
   ORDER THROUGH LOCAL IBM BRANCH OFFICE
   SPECIFY FILE NUMBER 360C-SI-754

THE 1410/7010 SIMULATOR PROGRAM IS A STAND-ALONE SYSTEM/360
PROGRAM THAT ENABLES PROGRAMS THAT HAVE BEEN OPERATING ON A
1410/7010 TO BE EXECUTED ON A SYSTEM/360 HAVING A SUITABLE
CONFIGURATION. BY PROVIDING PROGRAM ,,COMPATIBILITY,,, THE
SIMULATOR RELIEVES REPROGRAMMING SCHEDULES, AND CAN ELIMINATE
THE NEED TO CONVERT INFREQUENTLY USED PROGRAMS. THE SIMULATOR
PRODUCES CORRECT RESULTS ONLY FOR PROGRAMS THAT WORK PROPERLY
ON THE ORIGINAL SYSTEM, AND MAY PRODUCE INCORRECT RESULTS
FOR TIME-DEPENDENT PROGRAMS. THE SYSTEM/360 MUST BE EQUIPPED
WITH THE DEVICES NEEDED TO SERVICE THE SIMULATOR, AS WELL AS
THOSE REQUIRED TO PROVIDE A CONFIGURATION CORRESPONDING TO
THAT OF THE ORIGINAL SYSTEM. THE SIMULATOR REQUIRES-
   - ONE 1052 PRINTER-KEYBOARD.
   - ONE DEVICE FOR PROGRAM INPUT.
   - ONE DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
   - ONE CORRESPONDING DEVICE FOR EACH SIMULATED DEVICE.
IN SOME CASES, THE PROGRAM INPUT, CONTROL, AND SIMULATED-DEVICE
FUNCTIONS CAN BE HANDLED BY THE SAME DEVICE. PERFORMANCE UNDER
SIMULATION DEPENDS LARGELY ON THE BALANCE OF CPU AND I/O
OPERATIONS.

THROUGHPUT- ESTIMATES OF PERFORMANCE UNDER SIMULATION
ARE SHOWN BELOW AS RANGES OF THROUGHPUT RATIOS FOR A NUMBER
OF TYPICAL PROGRAMS. A RATIO GREATER THAN 1.0 MEANS THAT
SIMULATION ON SYSTEM/360 IS ESTIMATED TO BE FASTER THAN
EXECUTION ON THE ORIGINAL SYSTEM. THESE ESTIMATES ARE BASED
ON THE FOLLOWING ASSUMPTIONS-
   - THE TAPE UNITS USED FOR SIMULATION HAVE AT LEAST THE SAME
     DATA TRANSFER RATE IN BYTES AS THOSE OF THE SIMULATED
     SYSTEM IN CHARACTERS.
   - THE TERMINATION CONDITIONS OF TAPE READ/WRITE OPERATIONS
     ARE NORMAL.
THE THROUGHPUT RATIOS ARE-

CURRENT SYSTEM	SYSTEM/360 MODEL 40	SYSTEM/360 MODEL 50	SYSTEM/360 MODEL 65

IBM Programs

INUED FROM PRIOR PAGE--

1410	.20-.35	.40-.70	
7010		.25-.50	.55-.85

FACTORS THAT INCREASE SIMULATION THROUGHPUT-
- PROGRAMS WHICH ARE I/O BOUND ON 1410/7010.
- I/O DATA IN SIMULATOR INTERNAL FORMAT WITH ODD PARITY
  ALTERNATE MODE.

FACTORS THAT DECREASE SIMULATION THROUGHPUT-
- PROGRAMS WHICH ARE PROCESS BOUND ON 1410/7010.
- I/O DATA NOT IN SIMULATOR INTERNAL FORMAT.

THE 1410/7010 SIMULATOR HANDLES ALL STANDARD FEATURES AND THE
FOLLOWING OPTIONAL FEATURES OF THE SIMULATED SYSTEM-
- FLOATING POINT ARITHMETIC.
- PROCESSING OVERLAP /NO. 5730/.
- PRIORITY PROCESSING /NO. 5620/.
- INVERTED PRINT-EDIT /COMMA-PERIOD/.
- ONE TO FOUR CHANNELS.

THE MAIN RESTRICTIONS AND LIMITATIONS ARE THE FOLLOWING-
- 1401 COMPATIBILITY IS NOT SIMULATED.
- PROGRAMS WHICH RELY ON 1410/7010 INTERNAL MACHINE TIMING
  TO OVERLAP I/O AND CPU OPERATIONS MAY PRODUCE INCORRECT
  RESULTS.
- NO MORE THAN 25 I/O DEVICES CAN BE SIMULATED SIMULTANEOUSLY.
- ONLY THE MAIN CONSOLE FUNCTIONS ARE SIMULATED.
- THE LENGTH OF RECORDS IS LIMITED TO THE SIZE OF THE
  I/O BUFFERS /5K TO 120K CHARACTERS, DEPENDING ON THE MAIN
  STORAGE CAPACITY OF THE SYSTEM/360 AND ON THAT OF THE
  1410/7010 AND THE NUMBER OF CHANNELS SIMULATED/.

SYSTEM REQUIREMENTS- THE SIMULATOR OPERATES WITH THE
STANDARD INSTRUCTION SET AND THE DECIMAL ARITHMETIC OPTION.
MAIN STORAGE REQUIREMENTS DEPEND ON THE 1410 OR 7010 CORE
STORAGE BEING SIMULATED AS FOLLOWS-

1410 CORE STORAGE /CHARACTERS/	7010 CORE STORAGE /CHARACTERS/	SYSTEM/360 MAIN STORAGE /BYTES/	
10,000		65,536	/MODEL F/
20,000		65,536	/MODEL F/
40,000	40,000	131,072	/MODEL G/
60,000	60,000	131,072	/MODEL G/
80,000	80,000	131,072	/MODEL G/
	/2 CHANNELS/		
	80,000	262,144	/MODEL H/
	/4 CHANNELS/		
	100,000	262,144	/MODEL H/

A SYSTEM/360 DEVICE CORRESPONDING TO EACH 1410/7010 DEVICE TO
BE SIMULATED IS REQUIRED AS FOLLOWS-

1410/7010 DEVICE	SYSTEM/360 DEVICE
1415 CONSOLE	1052 PRINTER-KEYBOARD, ANY MODEL COMPATIBLE WITH THE SYSTEM/360 CONFIGURATION.
1402 CARD READ PUNCH MODEL 2	2540 CARD READ PUNCH.
1442 CARD READER, MODEL 3	1442 CARD READ PUNCH, MODEL N1. 2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1.
1403 PRINTER, MODEL 1, 2, OR 3	1403 PRINTER, MODEL 2. 1443 PRINTER, MODEL N1.
729 MAGNETIC TAPE UNIT MODELS II, IV, V, VI	2401, 2402, 2403 MAGNETIC TAPE MODELS 1, 2, OR 3.
7330 MAGNETIC TAPE UNIT	

NOTE- 2400 SERIES TAPE UNITS MODELS 4, 5, AND 6 CANNOT BE USED.
SIMULATION OF THE 1402 CARD READ PUNCH, MODEL 2, WITH
51-COLUMN INTERCHANGEABLE READ FEED FEATURE /NO. 4150/
REQUIRES A 2540 CARD READ PUNCH WITH 51-COLUMN INTERCHANGEABLE
READ FEED FEATURE /NO. 4151/.
SIMULATION OF THE 1402 CARD READ PUNCH, MODEL 2, WITH READ
AND PUNCH COLUMN BINARY FEATURE /NO. 6025/ REQUIRES A COLUMN
BINARY - DATA MODE 2 FEATURE ON THE 2821 CONTROL UNIT /NO. 1990/.
ANY 2400-SERIES MAGNETIC TAPE UNIT USED TO READ OR WRITE
7-TRACK TAPES MUST BE EQUIPPED WITH THE 7-TRACK COMPATIBILITY
FEATURE /NO. 7125/ AND A 7-TRACK READ/WRITE HEAD /NO. 9557/.
THE 7-TRACK COMPATIBILITY FEATURE MUST BE INSTALLED ON THE
ASSOCIATED TAPE CONTROL UNIT. INFORMATION ON SIMULATION
LIMITATIONS AND PERFORMANCES UNDER SIMULATION CAN BE FOUND
IN THE SRL PUBLICATION, IBM SYSTEM/360 CONVERSION AIDS-
THE 1410/7010 SIMULATOR FOR THE IBM SYSTEM/360, C28-6528.

BASIC PROGRAM MATERIAL -
     DOCUMENTATION - PROGRAM MATERIAL LIST... IBM SYSTEM/360
          CONVERSION AIDS - 1410/7010 SIMULATOR FOR IBM SYSTEM/360
          MANUAL, C28-6528.
     MACHINE READABLE - 9-TRACK OR 7-TRACK /DATA CONVERSION
          FEATURE REQUIRED/ DTR CONTAINING - COMMON PROGRAMS,
          SIM 10, PREP 10, UPDATE 10, SYSINEND AND SAMPLE PROGRAM.
NOTE - WHEN ORDERING THIS PROGRAM, THE REQUESTOR MUST INDICATE
WHETHER A 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
9-TRACK DTR WILL BE SUPPLIED. DTR WILL BE SUPPLIED BY THE PROGRAM
INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

401-FO-702 FORTRAN II LANGUAGE
SION PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 1401-FO-702

THE FORTRAN II LANGUAGE CONVERSION PROGRAM AIDS IN THE
TRANSITION TO SYSTEM/360 BY CONVERTING ACCEPTABLE CURRENT
FORTRAN II SOURCE PROGRAMS INTO FORTRAN IV SOURCE PROGRAMS FOR
THE SYSTEM/360. THE FORTRAN II LCP ACCEPTS AS INPUT-
     1401 FORTRAN,
     1410 FORTRAN II,
     1620 GOTRAN,
     1620 FORTRAN II,
     1620 FORTRAN WITH FORMAT,
     1620 MONITOR I FORTRAN II-D,
     1620 MONITOR II FORTRAN II-D,
     1620 FORTRAN II FOR AUTOMATIC FLOATING POINT,
     7070 SERIES FORTRAN /BASIC AND FULL/,
     7070 FOS FORTRAN,
     0705 FORTRAN,
     7080 PROCESSOR FORTRAN AND
     7090/7094 FORTRAN II
THE SOURCE PROGRAMS CAN BE CONVERTED TO ANY OF THE FOLLOWING
LEVELS OF SYSTEM/360 FORTRAN --
     OPERATING SYSTEM/360 FORTRAN IV /LEVEL H/,
     OPERATING SYSTEM/360 FORTRAN IV /E LEVEL SUBSET/ AND
     SYSTEM/360 BASIC PROGRAMMING SUPPORT FORTRAN IV /TAPE/
     SYSTEM/360 BASIC PROGRAMMING SUPPORT FORTRAN IV /CARD/
     BASIC OPERATING SYSTEM/360 WITH DOS/360
     BASIC OPERATING SYSTEM/360 WITH TOS/360

CONTINUED FROM PRIOR COLUMN--

FEATURES -- THE FORTRAN LCP HAS-
- CARD OR TAPE INPUT -- BOTH THE LCP AND THE FORTRAN II SOURCE
  PROGRAMS CAN BE READ FROM EITHER CARDS OR TAPE.
- SINGLE OR STACKED PROGRAM CONVERSION -- A SINGLE SOURCE PROG.
  CAN BE PROCESSED FROM ONE OF THE THREE TAPE UNITS NEEDED IN
  A MINIMUM CONFIGURATION. STACKED PROGRAMS CAN BE PROCESSED
  IF MORE THAN THREE TAPE UNITS ARE USED.
- CARD-CODE CONVERSION FOR DUAL BCD CHARACTERS -- A CONTROL
  CARD OPTION PROVIDES AUTOMATIC CONVERSION FROM BCD INPUT CODE TO
  EBCDIC OUTPUT CODE, OR VICE VERSA. IN THIS WAY, THE LCP CAN
  CONVERT THE DUAL BCD CHARACTERS, I.E., TWO CHARACTERS WITH THE
  SAME CARD CODE, INTO THE PROPER SYSTEM/360 CARD CODES. THE
  DUAL CHARACTERS ARE- PLUS AND AMPERSAND... EQUAL SIGN AND POUND
  SIGN... APOSTROPHE AND THE COMMERCIAL AT SIGN... LEFT PARENTHESIS
  AND PERCENT SIGN... RIGHT PARENTHESIS AND THE LOZENGE.
- DOCUMENTED LISTING -- THE LCP PROVIDES A LISTING OF THE
  CONVERTED PROGRAM. THIS LISTING CONTAINS MESSAGE CODES AND
  TABLES THAT DOCUMENT CONVERSION ACTIONS AND FACILITATE ANALYSIS
  OF THE CONVERTED PROGRAM. A LISTING OF THE SOURCE PROGRAM IS
  OPTIONAL.
- OPTIONAL CARD OUTPUT -- WHEN SPECIFIED, THE LCP PRODUCES A
  PUNCHED-CARD DECK THAT CONTAINS THE CONVERTED PROGRAM.
- OPTIONAL OUTPUT ON TAPE -- THE USER CAN SPECIFY THAT PRINTED
  AND/OR PUNCHED OUTPUT ARE TO BE RECORDED ON TAPE.
- REPLACEMENT OF TAPE REFER. -- THE USER CAN SPECIFY THAT TAPE
  CONSTANTS IN INPUT/OUTPUT STATEMENTS ARE TO BE REPLACED BY A
  VARIABLE NAME OR ANOTHER TAPE CONSTANT.
- RESOLUTION OF COMMON-EQUIVALENCE INTERACTION -- THE USER CAN
  SPECIFY THAT VARIABLES IN COMMON STATEMENTS ARE TO BE
  REORDERED SO THAT A SYSTEM/360 COMPILER WILL ALLOCATE COMMON
  STORAGE AND ESTABLISH EQUIVALENCIES IN THE SAME MANNER AS THE
  CURRENT FORTRAN II COMPILER.

THE FORTRAN II LCP WILL REDUCE THE AMOUNT OF REPROGRAMMING
NECESSARY TO CONVERT CURRENT FORTRAN II PROGRAMS INTO
SYSTEM/360 FORTRAN IV PROGRAMS. USE OF THE LCP WILL REDUCE TIME
AND MONEY SPENT ON RECODING, CLERICAL ACTIVITIES, AND PROGRAM
DEBUGGING. ALTHOUGH THE SAVINGS TO BE REALIZED FOR A SINGLE
PROGRAM MAY BE AS GREAT AS 65 PER CENT, THE OVERALL SAVINGS
TO A CUSTOMER MUST BE DETERMINED ON AN INDIVIDUAL BASIS.

MINIMUM SYSTEM REQUIREMENTS- AN 8K 1401 SYSTEM WITH... A
1402 CARD READ PUNCH... A 1403 PRINTER MODEL 2... THREE TAPE
UNITS... THE ADVANCED PROGRAMMING FEATURE... THE HIGH-LOW-EQUAL
COMPARE FEATURE /OR AN IBM SYSTEM/360 WITH 1401 COMPATIBILITY
AND CORRESPONDING FEATURES AND I/O DEVICES/.

BASIC PROGRAM MATERIAL -
     DOCUMENTATION - PROGRAM MATERIAL LIST... FORTRAN II LANGUAGE
          CONVERSION MANUAL.
     MACHINE READABLE - DTR CONTAINING LCP OBJECT DECK.

OPTIONAL PROGRAM MATERIAL - LCP SOURCE DECKS ON ONE REEL OF
     MAGNETIC TAPE.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.
THE NUMBER OF TAPES NECESSARY TO OBTAIN THE PROGRAM MATERIAL
MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE
TAPES SHOULD BE 2400 FEET IN LENGTH.
     THE DTR /DISTRIBUTION TAPE REEL/ WILL BE SUPPLIED BY
THE PROGRAM INFORMATION DEPARTMENT- NO TAPE SUBMITTAL IS
REQUIRED.

360F   SYSTEM/360 MODEL 44
PROGRAMMING SYSTEM
     ORDER THROUGH LOCAL IBM BRANCH OFFICE
     USE PS/MOD 44 ORDER FORM NO. 120-1411.

THE MODEL 44 PROGRAMMING SYSTEM PROVIDES FORTRAN AND
ASSEMBLER LANGUAGE PROCESSING AND PROGRAM EXECUTION IN A
MONITORED ENVIRONMENT, WITH AUTOMATIC JOB-TO-JOB TRANSITION,
INTERRUPTION HANDLING, AND INPUT/OUTPUT SUPERVISION.
THE SYSTEM HAS FACILITIES FOR THE CREATION AND MAINTENANCE
OF LIBRARIES AND THE MANIPULATION OF THEIR CONTENTS. IT ALSO
PROVIDES EXTENSIVE JOB CONTROL AND MODULAR PROGRAMMING
CAPABILITIES FOR FLEXIBILITY AND VERSATILITY IN THE
PREPARATION OF PROGRAMS FOR EXECUTION. IT WILL UTILIZE ALL
AVAILABLE CORE STORAGE. PROGRAMS UTILIZING DIRECT DATA
CHANNEL, DIRECT WORD, OR PRIORITY INTERRUPTION FEATURES
CANNOT BE EXECUTED UNDER THE SUPERVISOR.

THE SYSTEM RESIDES ON A 2315 DISK CARTRIDGE MOUNTED ON THE
MODEL 44 SINGLE DISK STORAGE DRIVE. IT INCLUDES A SUPERVISOR,
A SET OF SUPPORT PROGRAMS THAT PERFORM SYSTEM-RELATED AND
UTILITY FUNCTIONS, AND TWO LANGUAGE PROCESSORS- A FULL
FORTRAN IV COMPILER AND AN ASSEMBLER. IT ALSO INCLUDES
SIX STAND-ALONE /I.E., NOT OPERATING UNDER SYSTEM CONTROL/
PROGRAMS THAT ARE NOT RESIDENT ON THE 2315 DISK CARTRIDGE-
A PROGRAM TO CONSTRUCT THE EXECUTABLE PROGRAMMING SYSTEM FROM
THE DISTRIBUTED CARD DECKS., A LOADER FOR LOADING
SYSTEM-PRODUCED PROGRAMS THAT ARE IN ABSOLUTE FORM., AND ARE
TO BE EXECUTED INDEPENDENTLY OF SYSTEM CONTROL., TWO DISK
INITIALIZATION PROGRAMS /2315 AND 1316/., A SAVE/RESTORE
PROGRAM FOR SAVING THE CONTENTS OF A DISK ON TAPE AND LATER
RESTORING THE DISK., AND A SPECIAL PURPOSE PRINT/PUNCH
PROGRAM FOR PRINTING OR PUNCHING SELECTED FILES OF THE TAPE
CONTAINING THE IBM-DISTRIBUTED SYSTEM. THE SYSTEM REQUIRES
16,896 BYTES TO BE PERMANENTLY RESIDENT IN CORE STORAGE AND
104 TRACKS /APPROXIMATELY 290,000 BYTES/ FOR THE ENTIRE
SYSTEM RESIDENCE ON THE SINGLE DISK STORAGE DRIVE /SDSD/.
ADDITIONAL SPACE MUST BE RESERVED ON THE SDSD WHEN THE
SYSTEM IS INITIALLY CREATED FOR SYSTEM SCRATCH AREAS AND
USER ADDITIONS TO THE PHASE AND MODULE LIBRARIES.

     SUPERVISOR - 360F-IO-613.

THE SUPERVISOR CONTROLS THE ENTIRE SYSTEM AND PROVIDES A
COMMON INTERFACE TO ALL PROCESSING PROGRAMS, INCLUDING THE
FORTRAN COMPILER, THE ASSEMBLER, THE SYSTEM SUPPORT PROGRAMS,
AND USER-WRITTEN PROGRAMS. SPECIFICALLY, THE SUPERVISOR-
- MANAGES THE USE OF SYSTEM RESOURCES.
- LOADS THE APPROPRIATE EXECUTION PHASES FROM THE PHASE
  LIBRARY /I.E., THE LIBRARY OF PROGRAMS IN ABSOLUTE FORM,
  READY FOR EXECUTION/.
- HANDLES ALL STANDARD LABEL CHECKING, INPUT/OUTPUT
  REQUIREMENTS, AND INPUT/OUTPUT ERROR RECOVERY PROCEDURES.
- SERVICES INTERRUPTIONS AND PASSES CONTROL TO THE
  APPROPRIATE SYSTEM OR USER ROUTINE FOR INTERRUPTION
  PROCESSING.
- SCHEDULES CHANNEL USE TO EFFECT OVERLAP OF PROCESSING WITH

CONTINUED FROM PRIOR PAGE--
INPUT/OUTPUT OPERATIONS.
- PROVIDES FOR COMMUNICATION WITH THE CONSOLE OPERATOR.

ASSEMBLER - 360F-AS-616.

THE ASSEMBLER TRANSLATES SYSTEM/360 ASSEMBLER LANGUAGE
PROGRAMS TO RELOCATABLE OBJECT PROGRAM MODULES. THE ASSEMBLER
LANGUAGE CONSISTS OF ALL SYSTEM/360 MODEL 44 INSTRUCTION
MNEMONICS, LITERALS, AND A SET OF ASSEMBLER INSTRUCTIONS THAT
DIRECT THE ASSEMBLY PROCESS. IT INCLUDES AN OPTIONAL UPDATE
FACILITY. OBSERVING THE QUALIFICATIONS LISTED BELOW, PROGRAMS
WRITTEN FOR THE MODEL 44 ASSEMBLER MAY BE ASSEMBLED BY THE
TOS/DOS ASSEMBLERS AND THE OS/360 ASSEMBLER. SIMILARLY,
PROGRAMS WRITTEN FOR THE BPS ASSEMBLERS MAY BE ASSEMBLED BY
THE MODEL 44 ASSEMBLER.
- THE MODEL 44 ASSEMBLER WILL ONLY ASSEMBLE INSTRUCTIONS
  INCLUDED IN THE MODEL 44 INSTRUCTION SET. THERE ARE FOUR
  SPECIAL INSTRUCTIONS UNIQUE TO THE MODEL 44 THAT CANNOT
  BE ASSEMBLED ON OTHER SYSTEM/360 ASSEMBLERS.
- THE ASSEMBLERS UPDATE INSTRUCTIONS ARE UNIQUE TO THE
  MODEL 44 AND CANNOT BE PROCESSED BY ANY OTHER ASSEMBLER.
- IF VARIABLE SYMBOLS ARE USED, CARE MUST BE TAKEN PRIOR
  TO ASSEMBLY IN OTHER SYSTEMS TO ENSURE THAT LCLA DECLARATION
  EXISTS FOR ALL VARIABLE SYMBOLS.
- THE USER MUST ENSURE THAT EACH PROGRAM OBSERVES THE
  SUBROUTINE LINKAGES AND SUPERVISOR CALLS APPROPRIATE TO THE
  SYSTEM THAT THE PROGRAM WILL RUN UNDER.

FORTRAN IV - 360F-FO-618.

THE FORTRAN IV COMPILER TRANSLATES PROGRAMS WRITTEN IN THE
FORTRAN LANGUAGE TO RELOCATABLE OBJECT PROGRAM MODULES.
THE COMPILER ACCEPTS PROGRAMS WRITTEN IN THE FULL FORTRAN IV
LANGUAGE. NO DEBUG FACILITIES ARE AVAILABLE HOWEVER.
PROGRAMS MAY BE WRITTEN IN EITHER BCD OR EBCDIC. THE COMPILER
TESTS FOR USAGES OF OFFICIAL FORTRAN LIBRARY ROUTINE NAMES
TO ENSURE CORRESPONDENCE WITH RESPECT TO THE NUMBER AND
TYPE OF ARGUMENTS USED. THE FORTRAN LANGUAGE MANUAL WARNS
AGAINST THE DECLARATION OF COMMON AND EQUIVALENCE DATA IN
SUCH A WAY AS TO CAUSE DATA TO BE IMPROPERLY ALIGNED, E.G.,
DOUBLE PRECISION DATA NOT ON DOUBLE WORD BOUNDARIES. IF SUCH
A CONDITION IS DETECTED, A WARNING MESSAGE WILL BE PRINTED AT
COMPILE TIME BUT EXECUTION WILL BE ALLOWED TO BEGIN. IF A
SPECIFICATION CONDITION OCCURS AT EXECUTION TIME, A FIX-UP
ROUTINE WILL BE LOADED AUTOMATICALLY INTO MAIN STORAGE AND
THE DATA ADJUSTED SO THAT EXECUTION CAN CONTINUE. A FACILITY
IS PROVIDED IN THE FORTRAN LIBRARY FOR CALLING THE FETCH
AND LOAD SUPERVISOR FACILITIES OF THE 44 PS. THE MODEL 44
FORTRAN IV IS COMPATIBLE WITH AND ENCOMPASSES THE STANDARD
/USA/ FORTRAN. PROGRAMS WRITTEN IN BPS, TOS, DOS FORTRAN
OR OS E LEVEL FORTRAN MAY BE COMPILED BY THE MODEL 44 FORTRAN IV.
OS/360 FORTRAN IV G AND H ARE COMPATIBLE WITH MODEL 44
FORTRAN IV.

FORTRAN IV LIBRARY - 360F-LM-619.

THE FORTRAN LIBRARY CONTAINS SUBPROGRAMS WHICH CAN BE CALLED
BY FORTRAN OBJECT PROGRAMS.

JOB CONTROL - 360F-CL-614.

THE SYSTEMS JOB CONTROL PROCESSOR IS LOADED BEFORE EACH
JOB STEP. IT READS AND INTERPRETS THE PROBLEM PROGRAMS
JOB CONTROL STATEMENTS AND PROVIDES REQUESTED SERVICES AND
FACILITIES. THE STATEMENTS, IN GENERAL, DESCRIBE THE
MACHINE AND SYSTEM RESOURCES THAT WILL BE REQUIRED TO
EXECUTE THE PROGRAM. THEY INDICATE WHICH OPTIONAL SYSTEM
FEATURES WILL BE DESIRED, AND THEY SPECIFY ADMINISTRATIVE
FUNCTIONS THAT SHOULD BE PERFORMED.
WHEN THE JOB CONTROL PROCESSOR FINISHES PROCESSING CONTROL
STATEMENTS, IT CAUSES LOADING OF THE REQUIRED INTO MAIN
STORAGE FROM THE PHASE LIBRARY AND INITIATES EXECUTION OF
THE JOB STEP. AT THE END OF THE JOB, THE JOB CONTROL PROCESSOR
PROVIDES REQUESTED END-OF-JOB SERVICES AND RESTORES THE
SYSTEM TO ITS STATUS AS OF THE BEGINNING OF THE JOB. IT THEN
BEGINS PROCESSING CONTROL STATEMENTS FOR THE NEXT JOB.

LINKAGE EDITOR - 360F-ED-615.

THE SYSTEMS LINKAGE EDITOR PROGRAM CONVERTS ASSEMBLER AND
COMPILER OUTPUT MODULES INTO A FORM SUITABLE FOR LOADING AND
EXECUTION. ALL PROGRAMS TO BE EXECUTED UNDER SYSTEM CONTROL
MUST FIRST BE PROCESSED BY THE LINKAGE EDITOR.
A PROBLEM PROGRAM MAY CONSIST OF ONE LANGUAGE PROCESSOR
OUTPUT MODULE, OR IT MAY BE MADE UP OF SEVERAL MODULES,
INCLUDING SOME FROM PREVIOUSLY EXECUTED JOBS, THAT MUST BE
COMBINED WITH NEW MODULES. A MODULE MAY BE INDEPENDENT AND
SELF-CONTAINED, OR THERE MAY BE NUMEROUS CROSS-REFERENCES
BETWEEN MODULES AND BETWEEN CONTROL SECTIONS WITHIN MODULES.
IN PROCESSING A PROBLEM PROGRAM, THE LINKAGE EDITOR CONVERTS
INPUT MODULES INTO ONE OR MORE PHASES. A PHASE IS A
SEGMENT OF MACHINE-LANGUAGE CODE THAT IS LOADED INTO MAIN
STORAGE BY A SINGLE FETCH OR LOAD SUPERVISOR CALL. IT MAY
CONTAIN ONE OR MORE OF THE MODULES THAT WERE INPUT TO THE
LINKAGE EDITOR. ITS SIZE AND COMPOSITION ARE DETERMINED BY THE
PROGRAMMER. MORE THAN ONE PHASE MAY BE RESIDENT IN MAIN
STORAGE AT A TIME, AND A PROGRAM MAY BE DESIGNED SO THAT
ONE PHASE IS NOT LOADED UNTIL EXECUTION OF ANOTHER PHASE IN
THE SAME PROGRAM HAS BEEN COMPLETED.

UTILITIES - 360F-UT-617.

THE SYSTEMS UTILITY ROUTINES HANDLE MANY OF THE ROUTINE
TASKS THAT ARE COMMON TO ALL COMPUTER INSTALLATIONS. THESE
INCLUDE INITIALIZATION OF DISKS AND MAGNETIC TAPES, LISTING
THE CONTENTS OF STORAGE VOLUMES AND TRANSFERRING DATA FROM
ONE TYPE OF STORAGE TO ANOTHER, SUCH AS FROM CARDS TO TAPE.

STAND-ALONE PROGRAMS.

IN ADDITION TO THE MODEL 44 PROGRAMMING SYSTEM, SIX STAND-ALONE
PROGRAMS ARE PROVIDED. THEY OPERATE INDEPENDENTLY OF SYSTEM
CONTROL. THEY ARE STAND-ALONE BECAUSE THEY ARE REQUIRED TO
CONSTRUCT THE SYSTEM AND ARE ALSO USED TO MODIFY IT.

2315 DISK INITIALIZATION - 360F-UT-607.

THE 2315 DISK INITIALIZATION PROGRAM PREPARES A DISK FOR
PROGRAM USE, ASSIGNING AN ALTERNATE TRACK TO ANY TRACK THAT
THE DISK INITIALIZATION PROGRAM HAS RECOGNIZED AS DEFECTIVE.
IT ALSO ASSIGNS AN ALTERNATE TRACK FOR A TRACK RECOGNIZED AS
DEFECTIVE DURING NORMAL SYSTEM OPERATION.

CONTINUED FROM PRIOR COLUMN--

2311 DISK INITIALIZATION - 360F-UT-608.

THE 2311 DISK INITIALIZATION PROGRAM PREPARES A DISK FOR
PROGRAM USE, ASSIGNING AN ALTERNATE TRACK TO ANY TRACK
THAT THE DISK INITIALIZATION PROGRAM HAS RECOGNIZED AS
DEFECTIVE. IT ALSO ASSIGNS AN ALTERNATE TRACK FOR A TRACK
RECOGNIZED AS DEFECTIVE DURING NORMAL SYSTEM OPERATION.

SYSTEM CONSTRUCTION - 360F-UT-612.

THIS PROGRAM CONSTRUCTS AN IBM MODEL 44 PROGRAMMING SYSTEM
RESIDENCE VOLUME /ON A 2315 DISK CARTRIDGE/ FROM PUNCHED CARDS.

ABSOLUTE LOADER - 360F-UT-611.

THIS PROGRAM LOADS CARD DECKS THAT ARE TO BE EXECUTED
INDEPENDENTLY OF SYSTEM CONTROL.

SAVE/RESTORE - 360F-UT-609.

THIS PROGRAM COPIES ON TAPE THE CONTENTS OF A 2315 DISK
CARTRIDGE OR 1316 DISK PACK AND COPIES ONTO A 2315 DISK
CARTRIDGE OR 1316 DISK PACK THE DATA PREVIOUSLY SAVED ON TAPE.

PRINT/PUNCH - 360F-UT-610.

THIS PROGRAM PUNCHES THE TEXT OF THE DISTRIBUTED TAPE REEL
/DTR/ AND PRINTS THE TABLE OF CONTENTS AND ANY OTHER EBCDIC
FILE THAT IS ON THE DTR.

MINIMUM MACHINE CONFIGURATION-
- 2044 PROCESSING UNIT WITH ITS CONSOLE PRINTER-KEYBOARD,
  SINGLE DISK STORAGE DRIVE, AND AT LEAST 65,536 BYTES OF
  MAIN STORAGE.
- ONE MULTIPLEXOR CHANNEL /NO. 5248 OR NO. 4598/.
- ONE 2315 DISK CARTRIDGE /USED FOR SYSTEMS RESIDENCE/.
- ONE OF THE FOLLOWING INPUT UNITS- 1442 MDL N1 CARD
  READ/PUNCH... 2501 MDL B1 OR B2 CARD READER... 2520 MDL B1
  CARD READ/PUNCH... 2540 MDL 1 CARD READ/PUNCH...
  2401 OR 2402 MDL 1, 2, 3, 4, 5, OR 6 MAGNETIC TAPE UNIT...
  2403 MDL 1, 2, 3, 4, 5, OR 6 MAGNETIC TAPE UNIT CONTROL...
  2404 MDL 1, 2, OR 3 MAGNETIC TAPE UNIT AND CONTROL...
  2311 DISK STORAGE DRIVE.
- ONE OF THE FOLLOWING OUTPUT LISTING UNITS- 1403 MDL 2, 3, 7
  OR N1 PRINTER... 1443 MDL N1 PRINTER... ANY OF THE MAGNETIC
  TAPE UNITS LISTED ABOVE... 2311 DISK STORAGE DRIVE.
- ONE OF THE FOLLOWING OUTPUT PUNCHING UNITS- 1442 MDL N2
  PUNCH... 2520 MDL B2 OR B3 PUNCH... ANY OF THE CARD
  READ/PUNCHES LISTED ABOVE... ANY OF THE MAGNETIC TAPE
  UNITS LISTED ABOVE... 2311 DISK STORAGE DRIVE.

NOTES ON CONFIGURATIONS-
- IN ADDITION TO THE ABOVE REQUIREMENTS, THE SYSTEM SUPPORTS
  THE ATTACHMENT OF -- A SECOND SINGLE DISK STORAGE DRIVE
  /WITH 2315 CARTRIDGE/, WHICH, ALTERNATIVELY, MAY BE USED
  FOR SYSTEMS RESIDENCE... ADDITIONAL 2311 DISK STORAGE
  DRIVES /WITH 1316 DISK PACK/... ADDITIONAL MAGNETIC TAPE
  UNITS /ANY OF THE MODULES LISTED ABOVE/... ADDITIONAL
  MULTIPLEXOR CHANNELS TO A MAXIMUM OF 3.
- A SYSTEM-RESIDENCE 2315 DISK CARTRIDGE CAN BE CREATED USING
  THE MINIMUM MACHINE CONFIGURATION, PROVIDED THE INPUT
  DEVICE IS A CARD READER. ASSEMBLY IS NOT REQUIRED IN THIS
  PROCEDURE. HOWEVER, IF IT IS DESIRED TO ASSEMBLE THE
  SOURCE LANGUAGE VERSION OF THE IBM-SUPPLIED COMPONENTS
  OF THE SYSTEM, AT LEAST ONE MAGNETIC TAPE DRIVE IS REQUIRED.
  IF RE-ASSEMBLY IS DESIRED, A SECOND SINGLE DISK STORAGE
  DRIVE AND A SECOND MAGNETIC TAPE DRIVE SHOULD BE INCLUDED
  FOR OPTIMUM SYSTEM EDITING.
- IF MORE THAN 65,536 BYTES OF MAIN STORAGE ARE AVAILABLE,
  THE SYSTEM WILL TAKE ADVANTAGE OF THEIR AVAILABILITY.
- THE FORTRAN COMPILER REQUIRES THAT THE 2044 BE EQUIPPED
  WITH THE FLOATING-POINT ARITHMETIC FEATURE /NO. 4427/.
  THE ASSEMBLER ALSO REQUIRES THIS FEATURE IF IT IS DESIRED
  TO ASSEMBLE FLOATING-POINT CONSTANTS.
- THE USER MAY MODIFY THE SUPERVISOR TO INCLUDE INPUT/OUTPUT
  ROUTINES FOR ADDITIONAL DEVICES /PROVIDED THESE DEVICES
  HAVE START, DEVICE END, AND CHANNEL END CHARACTERISTICS
  SIMILAR TO THOSE OF THE SUPPORTED DEVICES/. THESE
  CHARACTERISTICS ARE DETAILED IN SYSTEM/360 PRINCIPLES OF
  OPERATION, A22-6821, AND THE APPROPRIATE UNIT MANUALS.
- THE READ-BACKWARD FEATURE OF THE 2400 SERIES MAGNETIC
  TAPE UNITS IS NOT SUPPORTED.

EC LEVEL REQUIREMENTS-
THE FOLLOWING ENGINEERING CHANGE LEVELS ARE REQUISITE FOR
PROPER FUNCTIONING OF THE MODEL 44 PROGRAMMING SYSTEM.

UNIT		E.C.
2044*	PROCESSING UNIT	390110
2821	CONTROL UNIT FOR UNIT RECORD DEVICES	125628
1403	PRINTER	125746
2520*	CARD READ PUNCH	812321
2540	CARD READ PUNCH	812356
1442	CARD READ PUNCH	812198
1443	PRINTER	305531
2841	CONTROL UNIT FOR 2311	413173
2311	DISK STORAGE DEVICE	411189
2803	TAPE CONTROL UNIT MODEL 1 FOR 2401 AND/OR 2402 MODELS 1, 2, 3	730033
2803	TAPE CONTROL UNIT MODEL 2 FOR 2401 AND/OR 2402 MODELS 4, 5, 6	730907
2401	MAGNETIC TAPE UNIT - MODELS 1, 2, 3	730172
2402	MAGNETIC TAPE UNIT - MODELS 1, 2, 3	730172
2402	MAGNETIC TAPE UNIT - MODELS 4, 5, 6	730174

*IF THE 2520 IS ATTACHED TO THE HIGH-SPEED MULTIPLEXOR CHANNEL,
THE EC LEVEL REQUIRED FOR THE 2044 IS 257555 OR REA NO. 83-131.
RESTRICTION- THE MODEL 44 PROGRAMMING SYSTEM WILL NOT, IN
GENERAL, BE ABLE TO READ DATA SETS ON DIRECT ACCESS DEVICES
PRODUCED BY BOS/TOS/DOS. THIS RESTRICTION WILL BE REMOVED
AT A LATER DATE.

BASIC PROGRAM MATERIAL
DOCUMENTATION - PROGRAM MATERIAL LIST... GUIDE TO SYSTEM
  USE, C28-6812... FORTRAN PROGRAMMERS GUIDE, C28-6813...
  SYSTEMS PROGRAMMERS GUIDE, C28-6814... OPERATORS
  GUIDE, C28-6815.
MACHINE READABLE - THE SYSTEM IS AVAILABLE IN CARD FORM OR
  ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
  REQUIRED/ DTR.

IBM Programs

IUED FROM PRIOR PAGE--

NOTES- THE SYSTEM MUST BE ORDERED ON THE SYSTEM/360 OPERATING
SYSTEM ORDER FORM, FORM NUMBER 120-1411, SPECIFYING THE
PROGRAM NUMBER FOR EACH COMPONENT ORDERED.
WHEN ORDERING THE SYSTEM ON DTR THE REQUESTOR WILL RECEIVE THE
ENTIRE COLLECTION OF PROGRAM COMPONENTS. WHEN ORDERING IN CARD
FORM ONLY THOSE COMPONENTS LISTED ON THE ORDER FORM WILL BE
SHIPPED. MAINTENANCE WILL BE PROVIDED ONLY FOR THOSE COMPONENTS
SPECIFIED ON THE ORDER FORM.
DTR ORDERS NOT SPECIFYING TRACK REQUIREMENT WILL BE SUPPLIED
AT 9-TRACK. DTR WILL BE PROVIDED BY PID - NO TAPE SUBMITTAL IS
REQUIRED.

;-603   MODEL 44 BPS BASIC ASSEMBLER
I
IRDER THROUGH LOCAL IBM BRANCH OFFICE
;PECIFY FILE NUMBER 360F-AS-603

THE BASIC ASSEMBLER IS A TWO-PHASE, ONE-FOR-ONE ASSEMBLY
PROGRAM WHICH TRANSLATES SOURCE PROGRAMS WRITTEN IN THE
SYSTEM/360 BASIC ASSEMBLER LANGUAGE INTO MACHINE LANGUAGE
OBJECT PROGRAMS. A PROGRAM LISTING WITH ERROR INDICATORS IS
ALSO PROVIDED. IF AVAILABLE, FROM ONE TO FIVE MAGNETIC TAPE
UNITS MAY BE UTILIZED TO SPEED THE ASSEMBLY PROCESS.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A
SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET ON THE STANDARD
INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE...
CONSOLE PRINTER-KEYBOARD... 2540 OR 1402 OR 1442 CARD READ PUNCH.
OPTIONAL DEVICES INCLUDE THE 1403 OR 1443 PRINTER AND 1 TO 5
2400 SERIES TAPE UNITS.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
        OPERATING INSTRUCTIONS... OPERATING GUIDE, C28-6621.
    MACHINE READABLE - THE OBJECT DECKS FOR PHASE I AND PHASE II
        AND THE SAMPLE PROGRAM DECK ARE AVAILABLE IN CARD FORM.

I-604   MODEL 44 BPS FORTRAN IV
COMPILER
IRDER THROUGH LOCAL IBM BRANCH OFFICE
;PECIFY FILE NUMBER 360F-FO-604

THE SYSTEM/360 MODEL 44 BASIC PROGRAMMING SUPPORT FORTRAN IV
/TAPE/ SYSTEM COMPRISES A COMPILER /INCLUDING LIBRARY
SUBROUTINES/, A LOADER, AND AN EDITOR.

BPS FORTRAN IV /TAPE/ COMPILER -- THE COMPILER IS A
SEVEN-PHASE PROGRAM WHICH TRANSLATES PROGRAMS WRITTEN IN THE
FORTRAN IV LANGUAGE INTO RELOCATABLE OBJECT PROGRAMS.
A SOURCE PROGRAM LISTING ALONG WITH ERROR INDICATORS AND A
STORAGE MAP OF THE VARIABLES, EXTERNAL REFERENCES, AND
CONSTANTS ARE PROVIDED ON REQUEST. A COMPILE-AND-GO FEATURE
IS PROVIDED. THE JOB TO BE PERFORMED MAY CONSIST OF SOURCE
PROGRAM/S/, PREVIOUSLY ASSEMBLED OR COMPILED OBJECT PROGRAM/S/,
OR A COMBINATION OF THESE. ALSO PROVIDED ARE CONTROL CARD
CAPABILITIES WHICH ENABLE THE USER TO CHANGE DEVICE
ASSIGNMENTS AT EDIT, COMPILE OR OBJECT TIME.

LOADER -- THE FORTRAN LOADER IS A TWO-PASS RELOCATING
LOADER THAT CAN LOAD SEPARATELY COMPILED PROGRAMS INTO
STORAGE AND COMPLETE THE LINKAGES BETWEEN THEM. IT PROVIDES
AN AUTOMATIC LIBRARY SEARCH FOR MATHEMATICAL AND INPUT/OUTPUT
CONVERSION SUBROUTINES. THIS LOADER WILL ALSO LOAD INPUT
ACCEPTABLE TO THE BPS BASIC UTILITIES RELOCATING LOADER
/360F-UT-605/.

EDITOR -- THE FORTRAN EDITOR ENABLES LIBRARY SUBROUTINES
TO BE DELETED, ADDED, OR CHANGED, AS WELL AS PROPRIETARY
CHANGES TO THE COMPILER AND THE EDITOR ITSELF.

MINIMUM SYSTEM REQUIREMENTS-
THE COMPILER WILL OPERATE ON A SYSTEM/360 MODEL 44 WITH THE
SCIENTIFIC SUBSET OF THE STANDARD INSTRUCTION SET...
THE CONSOLE PRINTER-KEYBOARD... THE FLOATING POINT OPTION...
32,768 OR MORE BYTES OF MAIN STORAGE... 2540, 1402, OR 1442
CARD READ PUNCH FOR INPUT AND/OR OUTPUT, WHICH MAY BE REPLACED
BY ONE OR TWO OPTIONAL 2400 SERIES MAGNETIC TAPE UNITS...
1403 OR 1443 PRINTER, WHICH MAY BE REPLACED BY AN OPTIONAL
2400 SERIES MAGNETIC TAPE UNIT... THREE 2400 SERIES PMAGNETIC
TAPE UNITS, EITHER 9-TRACK OR 7-TRACK WITH THE DATA CONVERSION
FEATURE. /THE 7-TRACK COMPATIBILITY FEATURE IS REQUIRED
ONLY WHEN 7-TRACK SYMBOLIC TAPE IS ORDERED./... AN OPTIONAL
2400 SERIES MAGNETIC TAPE UNIT FOR COMPILE-AND-GO.

			COMPILER	GO	OBJECT PROGRAM
	SYSIN	PUNCH	PRINT	WORK FILES	FILE	WORK FILES
2540	X	X				X
1402	X	X				X
1442	X	X				X
1403			X			X
1443			X			X
CONSOLE PRINTER-KEYBOARD			X			X
2400**	X	X	X	X	X	X

**NEW 1600 BPI TAPE DRIVES ARE NOT SUPPORTED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... REBLOCK OPERATING
        INSTRUCTIONS... SAMPLE PROGRAM OPERATING INSTRUCTIONS...
        ATTACHMENT... BPS FORTRAN IV PROGRAMMERS GUIDE, C28-6622.
    MACHINE READABLE - THE DEBLOCKED SYSTEM TAPE CONTAINING THE
        FORTRAN IV COMPILER MAY BE OBTAINED ON ONE 9-TRACK OR
        ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. THE
        SAMPLE PROGRAM DECK IS AVAILABLE IN CARD FORM.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK
WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM
INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

-602   MODEL 44 BPS INPUT/OUTPUT
:
RDER THROUGH LOCAL IBM BRANCH OFFICE
PECIFY FILE NUMBER 360F-IO-602

CONTINUED FROM PRIOR COLUMN--

INPUT/OUTPUT ROUTINES IS A MODULAR SET OF BASIC ASSEMBLER
LANGUAGE SUBROUTINES WHICH PROVIDE THE USER WITH STANDARD,
TESTED I/O SUPPORT. THE DESIRED FUNCTIONS ARE SELECTED BY
THE USER AND EITHER COMBINED WITH HIS SOURCE PROGRAM AS
INPUT TO THE BASIC ASSEMBLER, OR ARE PRE-ASSEMBLED INTO
RELOCATABLE TEXT AND COMBINED WITH THE RELOCATABLE TEXT
OF INDEPENDENT ASSEMBLIES FOR LOADING BY THE RELOCATING
LOADER.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A
SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET OF THE STANDARD
INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE...
CONSOLE PRINTER-KEYBOARD. SINCE THE I/O SUBROUTINES MAY BE
LOADED INTO STORAGE WITH A USERS PROGRAM THE INPUT DEVICES ARE
NOT SPECIFIED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM
        OPERATING INSTRUCTIONS... ATTACHMENT... OPERATING GUIDE,
        C28-6621... BPS BASIC UTILITIES MANUAL, C28-6619.
    MACHINE READABLE - THE SYMBOLIC DECK FOR INPUT/OUTPUT SUPPORT
        AND THE SAMPLE PROGRAM DECK ARE AVAILABLE IN CARD FORM.

360F-UT-600   MODEL 44 BPS ABSOLUTE
PROGRAM LOADER
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360F-UT-600

THE ABSOLUTE LOADER LOADS ASSEMBLED PROGRAMS INTO THE
STORAGE LOCATIONS ASSIGNED BY THE ASSEMBLER. FACILITIES
FOR MAKING CORRECTIONS OR REPLACEMENTS TO THE ASSEMBLED
PROGRAM AT LOAD TIME ARE ALSO PROVIDED. THE FUNCTIONS OF
THE ABSOLUTE LOADER ARE ALSO PROVIDED BY THE RELOCATING LOADER.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A
SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET OF THE STANDARD
INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE...
CONSOLE PRINTER-KEYBOARD... 2540 OR 1402 OR 1442 CARD READ PUNCH.
OPTIONAL DEVICES INCLUDE THE 1403 OR 1443 PRINTER AND ONE 2400
SERIES TAPE UNIT.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM
        OPERATING INSTRUCTIONS... ATTACHMENT... OPERATING GUIDE,
        C28-6621... BPS BASIC UTILITIES MANUAL, C28-6619.
    MACHINE READABLE - THE OBJECT DECKS FOR THE LOW CORE AND HIGH
        CORE LOADERS AND THE SAMPLE PROBLEM DECK ARE AVAILABLE
        IN CARD FORM.

360F-UT-601   MODEL 44 BPS DUMP ROUTINE
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360F-UT-601

DUMP ROUTINE PROVIDES THE FACILITY TO PRINT THE CONTENTS
OF ALL OR A PORTION OF MAIN STORAGE AND THE GENERAL AND
FLOATING POINT REGISTERS AT SELECTED POINTS DURING OBJECT
PROGRAM EXECUTION. THE OUTPUT WILL BE SUPPRESSED IF THE
OBJECT TIME REQUEST NUMBER DOES NOT MATCH THAT SPECIFIED
WITH A CONTROL CARD AT LOAD TIME, THUS PROVIDING THE FACILITY
FOR SELECTIVE STORAGE DUMPING.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A
SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET OF THE STANDARD
INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE...
CONSOLE PRINTER-KEYBOARD. SINCE THE DUMP ROUTINE MAY BE LOADED
INTO STORAGE WITH A USERS PROGRAM, THE INPUT DEVICES ARE NOT
SPECIFIED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM
        OPERATING INSTRUCTIONS... ATTACHMENT... OPERATING GUIDE,
        C28-6621... BPS BASIC UTILITIES MANUAL, C28-6619.
    MACHINE READABLE - THE OBJECT DECKS FOR THE DUMP ROUTINE AND
        SELF LOADING DUMP AND THE SAMPLE PROGRAM DECK ARE
        AVAILABLE IN CARD FORM.

360F-UT-605   MODEL 44 BPS RELOCATING
PROGRAM LOADER
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360F-UT-605

THE DISTINGUISHING FEATURE OF THE RELOCATING LOADER IS
ITS ABILITY TO RELOCATE SEPARATE ASSEMBLIES AND TO COMPLETE
THE LINKAGE BETWEEN THEM. THE FUNCTIONS OF THE ABSOLUTE
LOADER ARE ALSO PROVIDED BY THE RELOCATING LOADER. IN ADDITION,
THE RELOCATING LOADER CAN LIST THE STORAGE LOCATIONS OF THE
SEPARATE ASSEMBLIES WHICH IT LOADS.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A
SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET OF THE STANDARD
INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE...
CONSOLE PRINTER-KEYBOARD... 2540 OR 1402 OR 1442 CARD READ PUNCH.
OPTIONAL DEVICES INCLUDE THE 1403 OR 1443 PRINTER AND ONE 2400
SERIES TAPE UNIT.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM
        OPERATING INSTRUCTIONS... ATTACHMENT... OPERATING GUIDE,
        C28-6621... BPS BASIC UTILITIES MANUAL, C28-6619.
    MACHINE READABLE - THE OBJECT DECKS FOR THE LOW CORE AND HIGH
        CORE LOADERS AND THE SAMPLE PROBLEM DECK ARE AVAILABLE
        IN CARD FORM.

A-360M

360M   IBM SYSTEM/360 BASIC
OPERATING SYSTEM /TAPE/
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    USE TOS/360 ORDER FORM NO. 120-1411.

WITH THE IBM BASIC OPERATING SYSTEM/360 /TAPE/, USERS
MAY TAILOR THE SYSTEM ACCORDING TO THEIR INSTALLATION
CONFIGURATION AND PROCESSING REQUIREMENTS.
THE FOLLOWING COMPONENTS OF TOS/360 ARE DESCRIBED TO
AID IN DETERMINING THE PROPER GROUP TO MEET INSTALLATION
REQUIREMENTS. ALL COMPONENTS ARE OPTIONAL WITH THE EXCEPTION
OF THE SYSTEM CONTROL PROGRAM AND ONE OF THE TWO AVAILABLE
SUPERVISORS WHICH MUST BE INCLUDED WHEN ORDERING ANY OF THE

IBM Programs

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CONTINUED FROM PRIOR PAGE--
    OTHER COMPONENTS.

360M-CL-405   SYSTEM CONTROL PROGRAM

SYSTEM CONTROL, 360M-CL-405 - A PREREQUISITE TO ANY COMPONENT
IN TOS/360. THE PROGRAM FORMS THE NUCLEUS OF
THE SYSTEM AND PROVIDES THE FUNCTIONS OF SYSTEM CONTROL,
GENERATION AND EDITING. CONTROL PROGRAM INPUT/OUTPUT ASSIGNMENTS
ARE- SYSTEM RESIDENCE - SYSTEM RESIDENCE UNIT... SYSTEM READER -
UNIT USED FOR JOB CONTROL CARDS... SYSTEM INPUT - MAIN SYSTEM
INPUT UNIT FOR CONTROL PROGRAMS... SYSTEM LIST - SYSTEM PRINTER
UNIT FOR CONTROL PROGRAMS... SYSTEM PUNCH - SYSTEM OUTPUT
UNIT FOR CONTROL PROGRAMS... SYSTEM COMMUNICATION - MEDIUM USED
FOR OPERATOR COMMUNICATION.

CONTROL FUNCTIONS-
 - INITIAL PROGRAM LOAD - TO INITIALIZE OPERATION OF THE SYSTEM.
 - JOB CONTROL - BROUGHT INTO MAIN STORAGE BY THE SUPERVISOR
   TO PROVIDE -- JOB-TO-JOB TRANSITION, E.G., COMPILE AND
   EXECUTE... SYMBOLIC DEVICE ASSIGNMENT WITHIN DEVICE DEPENDENT
   ENVIRONMENT... ENTRY OF ADDITIONAL INFORMATION.
 - SUPERVISOR - THE TOS/360 SUPERVISOR IS TO PROVIDE MAIN
   STORAGE RESIDENT CONTROL FUNCTIONS IN A MINIMUM OF 6144
   BYTES. THE SIZE OF THE SUPERVISOR DEPENDS ON THE OPTIONS
   SPECIFIED AT SYSTEM GENERATION TIME.
THE CONFIGURATION OF CONTROL FUNCTIONS CONTAINED WITHIN
6144 BYTES IS -- SCHEDULING OF I/O OPERATIONS ON THE MULTIPLEXOR
AND UP TO SIX SELECTOR CHANNELS /SEE NOTE/... SYSTEM LOADER FOR
PROGRAM FETCHING... TRANSIENT AREA FOR FUNCTIONS SUCH AS - ERROR
RECOVERY, FILE MANAGEMENT, /OPEN, CLOSE, END OF VOLUME/ END OF
JOB, CHECKPOINT, RESTART, STORAGE PRINT, OPERATOR COMMUNICATIONS
VIA 1052... 7-TRACK TAPE HANDLING... PHYSICAL I/O TABLES FOR
TEN DEVICES.

NOTE- BURST MODE ON THE MULTIPLEXOR CHANNEL CAN BE INCLUDED
IN THE MINIMUM SUPERVISOR IN LIEU OF SELECTOR CHANNEL
SCHEDULING. /BURST MODE IS REQUIRED IF TAPES ARE INTERMIXED
WITH BYTE INTERLEAVE DEVICES./

DEPENDING ON THE COMBINATION OF SUPERVISORY FUNCTIONS CHOSEN
THE FOLLOWING REPRESENT OPTIONS WHICH MAY CAUSE THE GENERATION
OF A SUPERVISOR GREATER THAN 6144 BYTES -
 - PROBLEM PROGRAM EXITS FOR INTERNAL INTERRUPTS SUCH AS
   OPERATOR INQUIRY AND INTERVAL TIMER.
 - STORAGE PROTECTION
 - INTERVAL TIMER
 - TAPE ERROR STATISTICS
 - I/O TABLES FOR ADDITIONAL DEVICES
 - CHANNEL SWITCHING
 - PROGRAM CHECK INTERRUPT EXIT
IT CAN BE ASSUMED AS A MINIMUM THAT AT LEAST AS MANY AS 12
I/O DEVICES AND EITHER PROGRAM CHECK INTERRUPT EXIST OR CHANNEL
SWITCHING CAN BE INCLUDED WITHIN A 6144 BYTE SUPERVISOR.

A TOS/360 SUPERVISOR GENERATED WITH THE MULTIPROGRAMMING
OPTION WILL REQUIRE A MINIMUM OF 8192 BYTES. IN MANY TYPICAL
CONFIGURATIONS THE MULTIPROGRAMMING OPTION CAN BE INCLUDED IN
AN 8192 BYTE TOS/360 SUPERVISOR.
MULTIPROGRAMMING WILL REQUIRE AS A MINIMUM A SYSTEM/360
CONFIGURATION WITH 32K BYTES OF STORAGE. THE INCLUSION OF
MULTIPROGRAMMING CAPABILITY IN THE SYSTEM WILL RESULT IN THE
GENERATION OF A SUPERVISOR GREATER THAN 6K BYTES REGARDLESS
OF THE COMBINATION OF OTHER SUPERVISORY OPTIONS WHICH MAY
BE SPECIFIED.
THE TOTAL CORE REQUIREMENTS OF THE SYSTEM SUPERVISOR IS
DEPENDENT ON THE COMBINATION OF OPTIONAL SUPERVISORY FUNCTIONS
SELECTED AT SYSTEM GENERATION. FURTHERMORE, THE INCLUSION OF
THE STORAGE PROTECTION FEATURE, WHICH IS REQUIRED FOR
MULTIPROGRAMMING, IMPOSES A 2K BOUNDARY ON THE SUPERVISOR
STORAGE REGARDLESS OF THE ACTUAL STORAGE UTILIZED. THERE ARE
TWO CONDITIONS WHICH MITIGATE AN ARBITRARY 2K BOUNDARY FOR
SUPERVISOR STORAGE. THEY ARE -
 - VARIOUS PORTIONS OF THE SUPERVISORY TRANSIENT AREAS CAN
   RESIDE IN UNPROTECTED STORAGE /SAME AS BACKGROUND PROBLEM
   PROGRAM/.
 - LABEL STORAGE AREAS NORMALLY PART OF THE PROBLEM PROGRAM
   AREA CAN RESIDE WITHIN THE UNUSED AREA PROTECTED BY THE
   SUPERVISOR.
IT IS REASONABLE TO ASSUME THAT 10,240 BYTES REPRESENTS THE
MAXIMUM SUPERVISOR CAPABLE OF GENERATION IN TOS/360 WITH RESPECT
TO THE COMPLEMENT OF CURRENTLY ANNOUNCED SUPERVISORY OPTIONS.
THE STORAGE PROTECTION FEATURE IS REQUIRED FOR THE
MULTIPROGRAMMING OPTION. THIS REQUIREMENT RESULTS FROM THE FACT
THAT A MULTIPROGRAMMING SYSTEM CANNOT EFFECTIVELY FUNCTION
WITHOUT THE ASSURANCE OF CONTINUOUS SYSTEM OPERATION IN SPITE
OF ERRANT PROBLEM PROGRAMS.
THE REQUIREMENT FOR THE INTERVAL TIMER IS OPTIONAL AND IS
CONDITIONED ONLY ON THE APPLICATION REQUIREMENTS AND THE USE OF
CERTAIN SYSTEM MACRO FACILITIES. NO ARBITRARY REQUIREMENT FOR THE
INTERVAL TIMER IS IMPOSED BY TOS/360.

GENERATION AND EDITING FUNCTIONS-
 - SYSTEM GENERATION - TO INITIALIZE THE SYSTEM RESIDENCE,
   ESTABLISH SUPERVISOR CAPABILITIES, INCLUDE DESIRED SYSTEM
   FUNCTIONS AND PROCESSING PROGRAMS.
 - LIBRARIAN - USED FOR MAINTAINING THE TAPE LIBRARIES AND
   PROVIDING PRINTED AND PUNCHED OUTPUT FROM THE LIBRARIES.
   THREE LIBRARIES ARE USED - CORE IMAGE LIBRARY, RELOCATABLE
   LIBRARY, AND SOURCE STATEMENT LIBRARY.
 - LINKAGE EDITOR - FOR LINKING AND RELOCATING SEPARATE PROGRAM
   SECTIONS FROM RELOCATABLE LIBRARIES AND/OR FROM A SYSTEM INPUT
   UNIT, AND EDITING INTO CORE IMAGE LIBRARIES FOR LOADING BY
   SYSTEM LOADER.

360M-SV-413   SUPERVISOR, 6K
360M-SV-414   SUPERVISOR, 8K

THE TWO SUPERVISOR COMPONENTS ARE IDENTICAL IN CONTENT AND
FUNCTION EXCEPT FOR THE ENDING ADDRESS. THE USER WHO DOES NOT
EXPECT TO GENERATE A SUPERVISOR IN EXCESS OF 6144 BYTES
SHOULD ORDER THE SYSTEM WITH THE 6K SUPERVISOR COMPONENT.
THE USER WHO EXPECTS TO GENERATE A SUPERVISOR IN EXCESS OF
6144 BYTES SHOULD ORDER THE SYSTEM WITH THE 8K SUPERVISOR
COMPONENT, THIS WILL ALLOW HIM TO ASSEMBLE AND CATALOG THE
TAILORED SUPERVISOR WITHOUT LINK-EDITING ALL OF THE DESIRED
SYSTEM COMPONENTS RESIDING IN THE CORE IMAGE LIBRARY. HOWEVER, IF
THE TAILORED SUPERVISOR EXCEEDS THE SIZE OF THE SUPERVISOR
COMPONENT ON THE SYSTEM, A COMPLETE LINKAGE EDIT RUN MUST BE
PERFORMED.
    ONE SUPERVISOR COMPONENT MUST BE SPECIFIED WHEN ORDERING
THE SYSTEM. IF NOT SPECIFIED, THE 6K SUPERVISOR WILL BE SHIPPED.

A-360M

CONTINUED FROM PRIOR COLUMN--

360M-IO-404   INPUT/OUTPUT CONTROL SYSTEM

INPUT/OUTPUT CONTROL SYSTEM /IOCS/, 360M-IO-404 -- LOGICAL IOCS
IS A SET OF MACRO INSTRUCTIONS WHICH HANDLE LOGICAL FILES OF
DATA FOR THE USER ON THE DEVICES SUPPORTED. AMONG THESE
FUNCTIONS ARE-
 - REQUEST PHYSICAL I/O OPERATIONS TO BE PERFORMED WHEN
   NECESSARY.
 - BLOCK AND DEBLOCK LOGICAL RECORDS WITHIN PHYSICAL RECORDS.
 - PROVIDE LABEL HANDLING CAPABILITIES VIA OPEN/CLOSE/EOV
   ROUTINES.
 - SWITCHING BETWEEN I/O AREAS WHEN TWO AREAS ARE SPECIFIED FOR
   A FILE.
 - AUTOMATIC VOLUME SWITCHING OF SYSTEM OUTPUT FILE ON
   MAGNETIC TAPE
 - COMBINED SYSTEM OUTPUT FILES ON A SINGLE MAGNETIC VOLUME.
 - 7-TRACK CHECKPOINT WITH TRANSLATE MODE DATA ON MAGNETIC
   TAPE /DATA CONVERSION FEATURE REQUIRED/
 - DUAL DENSITY RECORDING /800/1600 BPI/
 - ENABLE/DISABLE MODE FOR UNIVERSAL CHARACTER SET
 - ERROR RECOVERY INVOLVING COMMAND CHAINNING OPERATIONS
 - AUTOMATIC RETRY OF DEVICES MADE READY FOLLOWING OPERATOR
   INTERVENTION TYPE INPUT/OUTPUT ERRORS.

360M-IO-412   COMPILER INPUT/OUTPUT MODULES

THESE INPUT/OUTPUT MODULES USED BY COBOL AND RPG OBJECT
PROGRAMS ARE PRE-ASSEMBLED AND INCORPORATED INTO THE RELOCATABLE
LIBRARY. THEY PROVIDE ALL NECESSARY INPUT/OUTPUT OPERATIONS SO
THAT THE USER CAN EXECUTE PROGRAMS WRITTEN IN COBOL AND/OR RPG
WITHOUT HAVING TO GENERATE INPUT/OUTPUT MODULES.

360M-IO-417   1285 OPTICAL CHARACTER READER

OPTICAL CHARACTER READER PROVIDES SUPPORT OF THE IBM 1285
OPTICAL READER WHICH READS TAPES, SUCH AS THOSE PRODUCED ON CASH
REGISTERS AND ADDING MACHINES, DIRECTLY INTO THE SYSTEM. THE
1285 IS NOW SUPPORTED IN A MULTIPROGRAMMING ENVIRONMENT
UNDER DOS/360.
THE ONLY RESTRICTION IMPOSED IS THAT THE SYMBOLIC REGISTER
NOTATION MAY NOT BE USED WITH THE RDLINE MACRO. THIS RESTRICTION
WILL BE REMOVED AT A LATER DATE.

360M-UT-403   UTILITY PROGRAMS

UTILITY PROGRAMS, 360M-UT-403 -- THE FOLLOWING UTILITY PROGRAMS
WILL BE ON THE DISTRIBUTED TAPE.
 - CARD TO PRINTER AND/OR PUNCH - THIS PROGRAM TRANSFERS BINARY
   OR EBCDIC DATA FROM CARDS TO A PRINTER AND/OR A CARD PUNCH.
 - CARD TO TAPE - THIS PROGRAM TRANSFERS BINARY OR EBCDIC DATA
   FROM CARDS TO MAGNETIC TAPE.
 - TAPE TO CARD - THIS PROGRAM TRANSFERS DATA FROM MAGNETIC
   TAPE TO CARDS. DATA MAY BE PUNCHED IN EITHER EBCDIC
   OR BINARY.
 - TAPE COMPARE - THE TAPE COMPARE PROGRAM COMPARES TWO FILES
   FROM TWO OR MORE TAPES TO ENSURE THAT THE FILES ARE
   IDENTICAL.
 - TAPE TO PRINTER - THIS PROGRAM WILL PRINT A TAPE FILE IN
   ONE OF TWO FORMATS --
   - DATA DISPLAY - PRINTS ALL OF THE TAPE BLOCK.
   - DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
 - TAPE TO TAPE - THIS PROGRAM TRANSFERS THE DATA FROM ONE
   TAPE TO ANOTHER

360M-UT-411   MULTIPROGRAMMING SUPPORT UTILITY
                  MACROS

THESE MACROS MAY BE UTILIZED TO GENERATE THE FOLLOWING
CONCURRENT PERIPHERAL SELF-RELOCATION UTILITY PROGRAMS WHICH
WILL OPERATE IN 2K BYTES OF PROBLEM PROGRAM STORAGE -
 - CARD TO PRINT
 - CARD TO TAPE
 - TAPE TO PRINT
 - TAPE TO CARD
THE INCLUSION OF ANY USER PROGRAMMING WITH THE ABOVE UTILITIES
MAY CAUSE THE STORAGE REQUIREMENTS TO EXCEED 2K BYTES.
/SEE DESCRIPTION UNDER MULTIPROGRAMMING/.

360M-PT-407   AUTOTEST

AUTOTEST, 360M-PT-407 -- A DEBUGGING AID FOR OBJECT PROGRAMS
ASSEMBLED BY THE TOS/360 ASSEMBLER AND EXECUTED UNDER THE
BASIC OPERATING SYSTEM. USING AUTOTEST, A TEST RUN CAN BE
PERFORMED AS A NORMAL JOB IN A BATCH, WITH A MINIMUM OF
OPERATOR INTERVENTION. AUTOTEST MONITORS THE EXECUTION OF THE
PROGRAM UNDER TEST AND PROVIDES THE FOLLOWING FACILITIES-
 - THE CREATION OF INPUT DATA FILES BY MEANS OF STANDARD
   UTILITY PROGRAMS /IBM OR USER SUPPLIED/.
 - EXCHANGE, ADDITION OR DELETION OF INSTRUCTIONS WITHOUT
   REASSEMBLY.
 - DUMP OF ANY PORTION/S/ OF MAIN STORAGE, PERMANENT STORAGE
   ASSIGNMENTS, GENERAL REGISTERS AND/OR FLOATING POINT
   REGISTERS WHENEVER A DESIGNATED ADDRESS IS REACHED DURING
   PROGRAM EXECUTION. THE MAIN STORAGE DUMP CAN BE IN
   HEXADECIMAL, CHARACTER, FLOATING POINT, FIXED POINT, OR
   MNEMONIC REPRESENTATION.
 - DUMP OF MAIN STORAGE AT NORMAL OR ABNORMAL END OF JOB
   IN HEXADECIMAL, CHARACTER AND/OR MNEMONIC REPRESENTATION.
   SOURCE SYMBOLS CAN ALSO BE PRINTED WITH THE END OF JOB DUMP.
 - A LIST OF ALL PHASES IN THE SEQUENCE THAT THEY ARE CALLED
   INTO MAIN STORAGE.
 - PRINT OUT OF ANY OUTPUT DATA FILES BY MEANS OF STANDARD
   UTILITY PROGRAMS /IBM OR USER SUPPLIED/.

360M-SM-400   SORT/MERGE PROGRAM

SORT/MERGE PROGRAM, 360M-SM-400 -- ORDERS UNSEQUENCED DATA
INTO EITHER ASCENDING OR DESCENDING SEQUENCE AS SPECIFIED ON
THE SORT CONTROL CARDS. THE SORT CONTROL STATEMENT CARDS
PERMIT A DEVERSIFICATION OF PARAMETERS TO MEET THE NEEDS OF THE
MAGNETIC TAPE USER. THESE ASSIGNMENTS OF SPECIFIED PARAMETERS
MAXIMIZES THE SORT PERFORMANCE TO MEET THE CONFIGURATION OF THE
INDIVIDUAL USER. THE SORT EMPLOYS IOCS STANDARD LABEL CHECK
OR ENABLES THE USER TO BYPASS OR PROCESS HIS NON-STANDARD
LABELS. THE UTILIZATION OF THE CHECK POINT-RESTART FACILITY
PERMITS THE USER TO INTERRUPT AND CONTINUE DURING THE MERGING
PHASES OF THE SORT. THE MERGE ONLY OPTION GIVES THE USER THE
FACILITY OF COMBINING FROM ONE TO SEVEN PRESEQUENCED FILES INTO
A SINGLE OUTPUT FILE. A SEQUENCE CHECK AND REBLOCKING CAPABILITY
FORM AN INTEGRAL PART OF THE MERGE OPTION.

IBM Programs

360M-AS-465   ASSEMBLER

ASSEMBLER, 360M-AS-465 -- A SYMBOLIC PROGRAMMING LANGUAGE
USED TO WRITE PROGRAMS FOR THE IBM SYSTEM/360.
THE TOS/360 ASSEMBLER PROGRAM PROCESSES THE LANGUAGE
AND PROVIDES AUXILIARY FUNCTIONS USEFUL IN THE PREPARATION
AND DOCUMENTATION OF A PROGRAM, AND INCLUDES FACILITIES FOR
PROCESSING MACRO INSTRUCTIONS. INCLUDED IN THE LANGUAGE ARE -
THE STANDARD AND OPTIONAL INSTRUCTION SETS, MNEMONICS, EXTENDED
MNEMONICS, LITERALS AND MACRO FACILITIES. AN EXTENSIVE MACRO
LIBRARY IS ALSO INCLUDED TO PROVIDE FACILITIES FOR SYSTEM
GENERATION AND I/O DEVICE MACRO SUPPORT FOR PROCESSING PROGRAMS.

360M-RG-408   REPORT PROGRAM GENERATOR

REPORT PROGRAM GENERATOR, 360M-RG-408 -- AN EXPANDED LANGUAGE
FUNCTION THAT HAS THE CAPABILITY OF COMPILING PROGRAMS WHICH
CAN PRODUCE A WIDE VARIETY OF REPORTS RANGING FROM A SIMPLE
LISTING TO A COMPLETE REPORT THAT INCORPORATES CALCULATION
AND EDITING. STERLING CONVERSION, ARITHMETIC, TABLE LOOKUP,
BRANCHING CAPABILITIES, INDICATOR CONTROL, SPLIT CONTROL
FIELDS, MOVE LEFT, AND THE DESIGNATION OF MULTIPLE INPUT AND
OUTPUT FILES ARE ALSO PROVIDED.

360M-CB-402   COBOL

COBOL PROVIDES A CONVENIENT METHOD OF CODING PROGRAMS TO
HANDLE COMMERCIAL DATA PROCESSING PROBLEMS. IT HAS THE
FOLLOWING ADVANCED FEATURES- SOURCE PROGRAM LIBRARY FACILITY...
COBOL DEBUGGING LANGUAGE... INTERNAL/EXTERNAL FLOATING POINT
ITEMS AND FLOATING-POINT LITERALS... THE LINKAGE SECTION OF
THE DATA DIVISION... OPTIONS 1, 2 AND 3 OF THE USE SENTENCE...
THE TRANSFORM STATEMENT... OPTION 2 OF THE APPLY CLAUSE...
INVERTED PRINT EDIT.

360M-FO-409   FORTRAN IV

FORTRAN IV, 360M-FO-409 -- THE FORTRAN LANGUAGE IS ESPECIALLY
USEFUL IN WRITING PROGRAMS FOR SCIENTIFIC AND ENGINEERING
APPLICATIONS THAT INVOLVE MATHEMATICAL COMPUTATIONS. THE
IBM TOS/360 FORTRAN LANGUAGE IS
COMPATIBLE WITH AND ENCOMPASSES THE PROPOSED AMERICAN STANDARDS
ASSOCIATION /ASA/ BASIC FORTRAN, INCLUDING ITS MATHEMATICAL
SUBROUTINE PROVISIONS. TOS/360 FORTRAN OFFERS
THE FOLLOWING ADVANCED FEATURES- MIXED-MODE... SPACING FORMAT
CODE... LITERAL FORMAT CODE... THE A FORMAT CODE...
SCALE FACTOR... CARRIAGE CONTROL... DOUBLE PRECISION DATA TYPE...
THREE DIMENSION ARRAYS... FUNCTIONAL SUBPROGRAMS MAY RETURN
RESULTS VIA THE ARGUMENT LIST... PROGRAMS CODED IN BCD AND EBCDIC
CAN BE COMPILED.

MINIMUM SYSTEM REQUIREMENTS - THE TOS/360 SYSTEM
IS PROVIDED SPECIFICALLY FOR THE 16K AND LARGER TAPE-ONLY
CONFIGURATIONS.
MINIMUM FEATURES REQUIRED -- 16K BYTES OF MAIN STORAGE*...
STANDARD INSTRUCTION SET**... ONE I/O CHANNEL /EITHER MULTIPLEXOR
OR SELECTOR/... ONE CARD READER***... ONE CARD PUNCH***... ONE
PRINTER***... ONE 1052 PRINTER-KEYBOARD... ONE 2400 SERIES
MAGNETIC TAPE UNIT FOR SYSTEM RESIDENCE AND THREE 2400 SERIES
MAGNETIC TAPE UNITS FOR LANGUAGE TRANSLATION FUNCTIONS. AN
ADDITIONAL TAPE DRIVE IS REQUIRED FOR COMPILE-AND-EXECUTE
OPTIONS. 7-TRACK TAPE UNITS CAN BE USED, BUT THE DATA CONVERSION
FEATURE NO. 3228 OR NO. 3236 IS REQUIRED. 9-TRACK RESIDENCE IS
RECOMMENDED BECAUSE OF THE SIGNIFICANT PERFORMANCE ADVANTAGE IT
TO THE PROGRAM FETCH FUNCTION.

  * A 32K MINIMUM SYSTEM IS RECOMMENDED FOR COBOL OBJECT
    PROGRAM EXECUTION, AND REQUIRED FOR MULTIPROGRAMMING.

  ** EXPANDED INSTRUCTION SETS MAY BE REQUIRED DEPENDING UPON
    THE SPECIFIC REQUIREMENT OF THE LANGUAGE TRANSLATORS
    UTILIZED.

  *** SEE CONTROL PROGRAM INPUT/OUTPUT CHART FOR ACCEPTABLE UNITS.
    NOTE THAT ONE 2400 SERIES MAGNETIC TAPE UNIT MAY BE
    TAPE IS SUBSTITUTED FOR A PRINTER.
    SUBSTITUTED FOR THOSE UNITS. IF 7-TRACK DRIVES ARE USED,
    THE DATA CONVERSION FEATURE IS REQUIRED, EXCEPT WHEN A

CONTROL PROGRAM INPUT/OUTPUT - TOS/360

UNITS	SUPPORTED	RESIDENCE	READER	INPUT	WORK*	PUNCH	LIST	LOG**
1052								X
2540			X	X		X		
1403							X	X
1404							X	X
1442 N1			X	X		X		
1442 N2						X		
1443							X	X
2501			X	X				
2520 B1			X	X		X		
2520 B2, B3						X		
2400		X	X	X	X	X	X	
2400 DUAL DENS.		X	X	X	X	X	X	

NOTES -
7-TRACK TAPES REQUIRE DATA CONVERSION FEATURE NO. 3228 OR
NO. 3236 /EXCEPT LIST/.
SYSTEM RESIDENCE MAY BE EITHER 7- OR 9-TRACK.
SYSTEM INPUT AND SYSTEMS READER MAY BE DESIGNATED THE SAME UNIT.
SYSTEMS INPUT, SYSTEMS PUNCH AND SYSTEMS LIST ARE REQUIRED FOR
SYSTEMS GENERATION AND EDITING FUNCTIONS.
  * THREE /3/ REQUIRED.
  ** IN THE EVENT THAT THE 1052 IS INOPERATIVE, PRINTER DEVICES
    MAY BE ASSIGNED TEMPORARILY TO SYSLOG.

THE LOGICAL SUPPORT OF INPUT/OUTPUT FILE REQUIREMENTS FOR
PROBLEM PROGRAMS IS PROVIDED AS FOLLOWS -
    PROBLEM PROGRAMS COMPILED BY TOS/360

UNITS	ASSEMBLER	RPG	COBOL	PL/1	FORTRAN
2540	X	X	X	X	X
1403	X	X	X	X	X
1404 CONTINUOUS FORMS	X	X	X	X	X
1442	X	X	X	X	X
1443	X	X	X	X	X
1445	X	X	X	X	X
2501	X	X	X	X	X
2520	X	X	X	X	X
2400 /7- OR 9-TRACK/	X	X	X	X	X
2400 DUAL DENSITY	X	X	X	X	X

1052 CONSOLE /NOTE 1/	X	X	X	X	X
2671	X				

NOTE 1 - COBOL ACCEPT AND DISPLAY ONLY... FORTRAN OUTPUT ONLY...
PL/I DISPLAY ONLY.

ENGINEERING CHANGES - THE FOLLOWING CHANGES ARE PREREQUISITE
FOR PROPER FUNCTIONING OF TOS/360 -
  2030 HARDWARE...EC 126737
  2030 MICRO......EC 128053
  1445...........EC 305247 AND EC 305252
  2040 HARDWARE...EC 255262
  2040 MICRO......EC 255261
  2050...........EC 255458
  2821...........EC 125598
  1443...........EC 305560 AND EC 305564
  2540...........EC 124270
NOTES - IF THE MULTIPROGRAMMING SUPPORT FACILITIES OF TOS/360
ARE USED, THE 2030 HARDWARE EC 126751 AND 2030 MICRO EC 128058
MUST BE INSTALLED.
IN A STORAGE PROTECTED BATCH JOB ENVIRONMENT, THE 2030 MICRO
EC IS 128058.
THE FOLLOWING ENGINEERING CHANGES ARE NOT REQUIRED, HOWEVER,
IN ORDER TO ACHIEVE THE BEST PERFORMANCE, THEY ARE RECOMMENDED -
  2401...........EC 254969
  2402...........EC 254969
  2403...........EC 254969 AND EC 255981
  2404...........EC 254969 AND EC 255982

BASIC PROGRAM MATERIAL -
  DOCUMENTATION - PROGRAM MATERIAL LISTS TOS/360 AND EACH
    COMPONENT WHICH IS ORDERED... ATTACHMENT 1...
    TOS/360 RESTRICTIONS.
  SRL PUBLICATIONS, APPROPRIATE TO THE COMPONENT ORDERED,
  WILL BE SHIPPED, EACH HAS THE TITLE HEADING ,,IBM SYSTEM/360
  TAPE OPERATING SYSTEM,,

ASSEMBLER SPECIFICATIONS	C24-3414
DATA MANAGEMENT CONCEPTS	C24-3430
COBOL LANGUAGE SPECIFICATIONS	C24-3433
TAPE SORT/MERGE PROGRAM SPECIFICATIONS	C24-3438
AUTOTEST SPECIFICATIONS	C24-3441
UTILITY PROGRAM SPECIFICATIONS	C24-3465
SYSTEM GENERATION AND MAINTENANCE	C24-5015
PERFORMANCE ESTIMATES	C24-5020
OPERATING GUIDE	C24-5021
UTILITY MACRO SPECIFICATIONS	C24-5042
COBOL PROGRAMMERS GUIDE	C24-5025
CONCEPTS AND FACILITIES	C24-5030
SYSTEM CONTROL AND SERVICE PROGRAMS	C24-5034
SUPERVISOR AND INPUT/OUTPUT MACROS	C24-5035
BASIC FORTRAN IV PROGRAMMERS GUIDE	C24-5038
RPG SPECIFICATIONS	C26-3570
BASIC FORTRAN IV LANGUAGE	C28-6629

  MACHINE READABLE
    WHEN ORDERING TOS/360, THE REQUESTOR WILL RECEIVE THE
    ENTIRE COLLECTION OF MACHINE READABLE PROGRAM COMPONENTS
    LISTED BELOW -

ASSEMBLER	360M-AS-465
COBOL	360M-CB-402
SYSTEM CONTROL PROGRAM	360M-CL-405
FORTRAN IV	360M-FO-409
INPUT/OUTPUT CONTROL SYSTEM	360M-IO-404
COMPILER INPUT/OUTPUT MODULES	360M-IO-412
OPTICAL CHARACTER READER	360M-IO-417
AUTOTEST	360M-PT-407
REPORT PROGRAM GENERATOR	360M-RG-408
SORT/MERGE	360M-SM-400
SUPERVISOR, 6K	360M-SV-413
SUPERVISOR, 8K	360M-SV-414
UTILITY PROGRAMS	360M-UT-403
MULTIPROGRAMMING SUPPORT UTILITY MACROS	360M-UT-411

    THE ABOVE MATERIAL IS AVAILABLE ON ONE REEL OF 9-TRACK OR
    7-TRACK /DATA CONVERSION FEATURE REQUIRED/ MAGNETIC TAPE.

TOS/360 MUST BE ORDERED ON THE IBM SYSTEM/360 OPERATING SYSTEMS
ORDER FORM, FORM NUMBER 120-1411.
EACH COMPONENT FOR WHICH PROGRAM DOCUMENTATION AND MAINTENANCE
MATERIAL IS REQUIRED MUST APPEAR ON THE ORDER FORM.
ONE SUPERVISOR COMPONENT MUST BE SPECIFIED WHEN ORDERING
THE SYSTEM. IF NOT SPECIFIED, THE 6K SUPERVISOR WILL BE SHIPPED.
THE PROGRAM CAN BE OBTAINED ON EITHER 9-TRACK OR 7-TRACK /DATA
CONVERSION FEATURE REQUIRED/ TAPE. EITHER 9-TRACK OR 7-TRACK
MUST BE INDICATED ON THE ORDER FORM. IF NOT SPECIFIED 9-TRACK
WILL BE FORWARDED.
THE TAPES NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY BE
SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPES
PROVIDED MUST BE 2400 FEET IN LENGTH.

360N   IBM SYSTEM/360 DISK   *R
OPERATING SYSTEM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    USE DOS/360 ORDER FORM NO. 120-1411.

    DOS/360 IS DESIGNED IN MODULAR FORM TO FIT A WIDE RANGE OF
    SYSTEM/360 CONFIGURATIONS AND APPLICATIONS FOR MODELS 30, 40, 50,
    65 AND 75, BEGINNING AT 16K BYTES OF MAIN STORAGE. A DESCRIPTION
    OF EACH COMPONENT, FUNCTIONS AND FEATURES, THE PROGRAM
    DOCUMENTATION, AND ORDERING PROCEDURE FOLLOWS. THESE SHOULD
    BE USED AS GUIDES FOR ORDERING THE PROPER ITEMS TO MEET
    INDIVIDUAL REQUIREMENTS.

      SYSTEM CONTROL AND BASIC IOCS, 360N-CL-453.

    A PREREQUISITE TO ANY COMPONENT IN DOS/360. THE PROGRAM FORMS
    THE NUCLEUS OF THE SYSTEM AND PROVIDES THE FUNCTIONS OF SYSTEM
    CONTROL, GENERATION, AND EDITING. CONTROL PROGRAM INPUT/OUTPUT
    ASSIGNMENTS ARE -- SYSTEM RESIDENCE - SYSTEM RESIDENCE UNIT...
    SYSTEM READER - UNIT USED FOR JOB CONTROL CARDS... SYSTEM INPUT -
    MAIN SYSTEM INPUT UNIT... SYSTEM LIST - SYSTEM PRINTER UNIT...
    SYSTEM PUNCH - SYSTEM OUTPUT UNIT... SYSTEM LOG - MEDIUM USED
    FOR OPERATOR COMMUNICATION.

      CONTROL FUNCTIONS-
     - INITIAL PROGRAM LOADING - TO INITIALIZE OPERATION OF THE
      SYSTEM.
     - SUPERVISOR - TO PROVIDE MAIN STORAGE RESIDENT CONTROL
      FUNCTIONS IN A MINIMUM OF 6,144 BYTES. THE SIZE OF THE
      SUPERVISOR DEPENDS ON THE OPTIONS SPECIFIED AT SYSTEM
      GENERATION TIME.

CONTINUED FROM PRIOR PAGE--
THE CONFIGURATION OF CONTROL FUNCTIONS CONTAINED WITHIN
6,144 BYTES IS -- SCHEDULING OF I/O OPERATIONS ON THE
MULTIPLEXER CHANNEL AND UP TO SIX SELECTOR CHANNELS...
SYSTEM LOADER FOR PROGRAM FETCHING... TRANSIENT AREA FOR
FUNCTIONS SUCH AS - ERROR RECOVERY, FILE MANAGEMENT /OPEN,
CLOSE, END-OF-VOLUME/, END-OF-JOB, CHECKPOINT, RESTART,
STORAGE PRINT, OPERATOR COMMUNICATIONS VIA 1052...
7-TRACK TAPE HANDLING... PHYSICAL I/O TABLES FOR IO DEVICES.
  NOTE- BURST MODE ON THE MULTIPLEXER CHANNEL CAN BE
    INCLUDED IN THE MINIMUM SUPERVISOR IN LIEU OF
    SELECTOR CHANNEL SCHEDULING. /BURST MODE IS
    REQUIRED IF TAPES ARE INTERMIXED WITH BYTE
    INTERLEAVE DEVICES/.
THE TOTAL CORE REQUIREMENT OF THE SUPERVISOR IS DEPENDENT
ON THE COMBINATION OF OPTIONAL SUPERVISORY FUNCTIONS
SELECTED AT SYSTEM GENERATION. FURTHERMORE, THE INCLUSION
OF THE STORAGE PROTECTION FEATURE, WHICH IS REQUIRED FOR
MULTIPROGRAMMING, IMPOSES A 2K BOUNDARY ON THE SUPERVISOR
STORAGE REGARDLESS OF THE ACTUAL STORAGE UTILIZED.
A DOS/360 SUPERVISOR GENERATED WITH ANY OF THE FOLLOWING
OPTIONS WILL REQUIRE A MINIMUM OF 8,192 BYTES-
- MULTIPROGRAMMING.
- TELECOMMUNICATIONS.
- DASD FILE PROTECTION.
- 2311 SYSTEM INPUT/OUTPUT.
THE INTERVAL TIMER FEATURE IS OPTIONAL AND IS CONDITIONED
ONLY ON THE APPLICATION REQUIREMENTS AND THE USE OF CERTAIN
SYSTEM MACRO FACILITIES. NO ARBITRARY REQUIREMENT FOR THE
INTERVAL TIMER IS IMPOSED BY DOS/360. FOR EXAMPLE, THE
INTERVAL TIMER IS NOT REQUIRED FOR THE TELECOMMUNICATIONS
CAPABILITY IN DOS/360. IT IS, HOWEVER, RECOMMENDED IN
ORDER TO BE ABLE TO TAKE ADVANTAGE OF ALL SYSTEMS
FACILITIES AVAILABLE WITH THE TELECOMMUNICATIONS CAPABILITY.
A TELECOMMUNICATIONS CONFIGURATION, IN ADDITION TO A
MINIMUM STORAGE REQUIREMENT OF 32K BYTES, MUST INCLUDE
ONE SELECTOR CHANNEL FOR AT LEAST THE SYSTEM RESIDENT
DEVICE /2311/, SINCE NO BURST MODE DEVICE CAN CO-EXIST
WITH TELECOMMUNICATION DEVICES ON THE MULTIPLEXER CHANNEL.
THE AMOUNT OF STORAGE REQUIRED FOR A TELECOMMUNICATIONS
APPLICATION, IN ADDITION TO THE SYSTEM SUPERVISOR /8K BYTES
MINIMUM/, IS DEPENDENT ON THE EXTENT OF THE BTAM FACILITIES
UTILIZED AND THE SIZE OF THE USER DETERMINED AREAS AND
ROUTINES. THE MINIMUM STORAGE FOR THE BTAM MODULE IS
3K BYTES.
- JOB CONTROL - BROUGHT INTO MAIN STORAGE BY THE SUPERVISOR
TO PROVIDE JOB-TO-JOB TRANSITION, E.G., COMPILE AND
EXECUTE... SYMBOLIC DEVICE ASSIGNMENT WITHIN DEVICE
DEPENDENT ENVIRONMENT... ENTRY OF ADDITIONAL INFORMATION.

GENERATION AND EDITING FUNCTIONS-
- SYSTEM GENERATION - TO INITIALIZE THE SYSTEM RESIDENCE,
ESTABLISH SUPERVISOR CAPABILITIES, AND INCLUDE DESIRED
SYSTEM FUNCTIONS AND PROCESSING PROGRAMS.
- LIBRARIAN - USED FOR MAINTAINING THE LIBRARIES AND
PROVIDING PRINTED AND PUNCHED OUTPUT FROM THE RELOCATABLE
AND SOURCE STATEMENT LIBRARIES. THREE LIBRARIES ARE USED -
CORE IMAGE LIBRARY, RELOCATABLE LIBRARY, AND SOURCE
STATEMENT LIBRARY.
- LINKAGE EDITOR - FOR LINKING AND RELOCATING SEPARATE
PROGRAM SECTIONS FROM THE RELOCATABLE LIBRARY AND/OR
FROM A SYSTEM INPUT UNIT., AND EDITING INTO THE CORE
IMAGE LIBRARY FOR LOADING BY SYSTEM LOADER.

BASIC INPUT/OUTPUT CONTROL SYSTEM /IOCS/-
LOGICAL IOCS IS A SET OF ROUTINES AND MACRO INSTRUCTIONS
THAT HANDLE LOGICAL FILES OF DATA FOR THE USER ON THE DEVICES
SUPPORTED. AMONG THESE FUNCTIONS ARE-
- REQUEST PHYSICAL I/O OPERATIONS TO BE PERFORMED WHEN
NECESSARY.
- BLOCK AND DEBLOCK LOGICAL RECORDS WITHIN PHYSICAL RECORDS.
- PROVIDE LABEL HANDLING CAPABILITIES VIA OPEN/CLOSE/EOV
ROUTINES.
- SWITCHING BETWEEN I/O AREAS WHEN TWO AREAS ARE SPECIFIED
FOR A FILE.
- OVERLAPPING READING/WRITING AND PROCESSING OPERATIONS.
THE IOCS ROUTINES ARE TABULAR-MODULAR TYPE. THE
TABULAR-MODULAR CONCEPT SEPARATES AN IOCS INPUT/OUTPUT ROUTINE
IN TWO PARTS-
- THE TABULAR SECTION IS A SET OF PARAMETERS DESCRIBING
THE CHARACTERISTICS OF THE FILE.
- THE MODULAR SECTION CONTAINS THE LOGICAL MODULE NECESSARY
TO THE I/O OPERATION., THESE LOGICAL I/O MODULES MAY BE
PREASSEMBLED AND ARE INCORPORATED IN THE PROBLEM-PROGRAM
AT LINKAGE EDITOR TIME.
A SINGLE LOGIC MODULE MAY SUPPORT MORE THAN ONE TABULAR SECTION.
OTHER FEATURES OF IOCS ARE-
- GREATER FLEXIBILITY IS PROVIDED IN THE ASSIGNMENT AND
CONTROL OF SYSTEM INPUT AND OUTPUT FILES TO FACILITATE
AND ENCOURAGE CONCURRENT PERIPHERAL OPERATIONS.
- SYSTEM INPUT AND OUTPUT FILES ON 2311 DISK STORAGE DRIVE.
- SELF-RELOCATING FACILITIES.
- AUTOMATIC VOLUME SWITCHING FOR SYSTEM OUTPUT FILES ON
MAGNETIC TAPES.
- COMBINED SYSTEM OUTPUT FILES ON A SINGLE MAGNETIC TAPE
VOLUME.
- MULTIPLE PROGRAM CHECKPOINTS ON 2311 DISK STORAGE DRIVE.
- 7-TRACK CHECKPOINT WITH TRANSLATE MODE DATA ON MAGNETIC
TAPE. /DATA CONVERSION FEATURE IS REQUIRED/.
- DASD FILE PROTECTION FROM ERRANT INPUT/OUTPUT OPERATIONS.
- DUAL DENSITY MAGNETIC TAPE RECORDING /800/1600 BPI/.
- ENABLE/DISABLE MODE FOR THE UNIVERSAL CHARACTER SET /UCS/.
- ERROR RECOVERY INVOLVING COMMAND CHAINING OPERATIONS.
- AUTOMATIC RETRY OF DEVICES MADE READY FOLLOWING OPERATOR
INTERVENTION TYPE I/O ERRORS.

    SUPERVISOR /6K/, 360N-SV-474.

    SUPERVISOR /8K/, 360N-SV-475.

    SUPERVISOR /10K/, 360N-SV-473.

THE PREGENERATED SUPERVISOR, /6 OR 8K/, IS CONTAINED IN THE
CORE IMAGE LIBRARY WHEN RECEIVED BY THE REQUESTER. THIS
WILL ALLOW THE USER TO USE THE MACHINE COMPONENTS WHICH ARE
ALSO IN THE CORE IMAGE LIBRARY WITHOUT ASSEMBLY OR CATALOGING.
SEE THE DESCRIPTION OF SYSTEM CONTROL AND BASIC IOCS, 360N-CL-453
FOR DESCRIPTION OF THE 6K CONFIGURATION. THE 8K SUPERVISOR
HAS THE SAME CONFIGURATION, BUT HAS BEEN GENERATED TO RESERVE
UP TO THE 8K BOUNDARY, AND WILL REQUIRE A 32K SYSTEM.
REQUIRE A 32K SYSTEM.

CONTINUED FROM PRIOR COLUMN--

    CONSECUTIVE DISK INPUT/OUTPUT CONTROL SYSTEM /IOCS/
    MACROS, 360N-IO-455.

CONSECUTIVE DISK MACROS /GET/PUT/ ARE USED TO SEQUENTIALLY
PROCESS SUCCESSIVE RECORDS IN A LOGICAL FILE. DASD RECORDS
ARE PROCESSED STARTING WITH A BEGINNING DASD ADDRESS AND
CONTINUING IN ORDER THROUGH THE RECORDS ON SUCCESSIVE TRACKS
AND CYLINDERS TO THE ENDING ADDRESS. THE PROGRAM MAY
CONTINUE IMMEDIATELY FOLLOWING THE GET/PUT MACRO BEFORE THE INPUT
OR OUTPUT OPERATION IS COMPLETED. THESE MACROS ARE USED
FOR PROCESSING RECORDS ON A 2311 DISK STORAGE DRIVE OR A
2321 DATA CELL DRIVE.

    CONSECUTIVE TAPE INPUT/OUTPUT CONTROL SYSTEM /IOCS/
    MACROS, 360N-IO-456.

CONSECUTIVE TAPE MACROS /GET/PUT/ ARE USED TO SEQUENTIALLY
PROCESS SUCCESSIVE RECORDS IN A LOGICAL FILE. MAGNETIC TAPE
RECORDS ARE PROCESSED STARTING WITH THE FIRST RECORD OF A
FILE THROUGH THE END.

    DIRECT ACCESS METHOD MACROS, 360N-IO-454.

RECORDS WITHIN A LOGICAL FILE ARE ORGANIZED ON DIRECT-ACCESS
VOLUMES IN ANY MANNER CHOSEN BY THE USER. STORAGE OR
RETRIEVAL OF A RECORD /READ/WRITE/ IS BY ACTUAL ADDRESS OR
BY RELATIVE ADDRESS WITHIN A LOGICAL FILE. THIS ADDRESS CAN
BE THAT OF THE DESIRED RECORD, OF A STARTING POINT WITHIN THE
LOGICAL FILE WHERE A SEARCH FOR THE RECORD BEGINS. THE
STARTING POINT IS BASED ON A RECORD KEY FURNISHED BY THE USER.
THE DIRECT ACCESS METHOD MACROS ARE USED FOR PROCESSING RECORDS
ORGANIZED IN A RANDOM MANNER ON A 2311 DISK STORAGE DRIVE OR
A 2321 DATA CELL DRIVE.

    INDEXED SEQUENTIAL FILE MANAGEMENT
    SYSTEM MACROS, 360N-IO-457.

THE INDEXED SEQUENTIAL FILE MANAGEMENT SYSTEM /ISFMS/
MACROS PERMITS DASD RECORDS TO BE PROCESSED IN RANDOM ORDER,
OR IN SEQUENTIAL ORDER BY CONTROL INFORMATION. FOR RANDOM
PROCESSING, THE USER SUPPLIES THE KEY /CONTROL INFORMATION/
OF THE DESIRED RECORD TO ISFMS, AND ISSUES A READ OR WRITE
MACRO INSTRUCTION TO TRANSFER THE SPECIFIED RECORD.
FOR SEQUENTIAL PROCESSING BY CONTROL INFORMATION, ISFMS
ALLOWS THE USER TO CONSTRUCT DATA FILES BY KEY SEQUENCE IN A
MANNER THAT PERMITS INSERTIONS /ADDITIONS/ WITHOUT SORTING,
RECOPYING, OR MERGING. ISFMS CAN BE USED ON A
2311 DISK STORAGE DRIVE OR A 2321 DATA CELL DRIVE.

    CONSECUTIVE PAPER TAPE INPUT/OUTPUT CONTROL
    SYSTEM /IOCS/ MACROS, 360N-IO-458.

CONSECUTIVE PAPER TAPE MACROS ARE USED FOR PROCESSING
PAPER TAPE RECORDS, WITH OR WITHOUT TRANSLATION OF ANY CODE.
A USER MAY SPECIFY ONE OR TWO I/O AREAS AS DESIRED, BUT WORK
AREAS ARE NOT SERVICED. TWO RECORD FORMATS ARE ACCEPTABLE-
FIXED-UNBLOCKED /END-OF-RECORD CHARACTER PROHIBITED/...
UNDEFINED /END-OF-RECORD CHARACTER MANDATORY/.

    BASIC TELECOMMUNICATIONS ACCESS METHOD, 360N-CQ-469.

BTAM IS DESIGNED TO PROVIDE MACROS TO FACILITATE WRITING
TELECOMMUNICATION PROGRAMS. THESE INCLUDE FACILITIES FOR
PERFORMING THE FOLLOWING OPERATIONS-
- ESTABLISHING, FOR SWITCHED NETWORKS, LINE CONNECTION
WITH TERMINALS BY CALLING THE TERMINALS OR BY ANSWERING
CALLS FROM THE TERMINALS.
- POLLING AND ADDRESSING TERMINALS ACCORDING TO USER ESTABLISHED
TERMINAL LISTS, AND CHANGING THE POLLING OR ADDRESSING
SCHEMES AT EXECUTION TIME.
- TRANSMITTING AND RECEIVING MESSAGES AND POSTING COMPLETION.
- BUFFER POOL MANAGEMENT.
- CHECKING FOR TRANSMISSION ERRORS AND POSTING ERROR
CONDITIONS.
- SHARING PROCESSING TIME WITH OTHER PARTITIONS IN ORDER
TO MORE EFFECTIVELY UTILIZE THE CPU.
- ERROR RECOVERY PROCEDURES
- ERROR COUNTS
- ON-LINE TERMINAL TESTS
IT IS EXPECTED THAT THE TELEPROCESSING PROGRAM WILL NORMALLY
OPERATE IN A FOREGROUND PARTITION THAT WILL INCLUDE THE
BTAM MODULE COMBINED WITH THE USERS MESSAGE PROCESSING
ROUTINES. THE USER MAY EMPLOY ANY OF THE IOCS MACROS
AVAILABLE IN THE SYSTEM IN DESIGNING HIS TELECOMMUNICATIONS
APPLICATION. THE SIZE OF THE TELECOMMUNICATIONS PROBLEM
PROGRAM IS DEPENDENT UPON THE BTAM MODULE AND THE EXTENT
OF THE FOLLOWING USER DETERMINED AREAS AND FUNCTIONS-
- I/O BUFFER AREAS.
- NUMBER AND SIZE OF TERMINAL LISTS.
- MESSAGE PROCESSING ROUTINES.
- NUMBER OF MACRO INSTRUCTIONS ISSUED.
- NUMBER OF LINES.
- NUMBER OF TERMINALS PER LINE.
- NUMBER OF LINE GROUPS.
BTAM PROVIDES A MULTIPLE WAIT MACRO-INSTRUCTION FOR USE IN
T/P LINE OPERATIONS ONLY. THIS MACRO-INSTRUCTION ENABLES
THE TELECOMMUNICATION PROGRAM TO RELEASE CONTROL OF THE
CPU UNTIL ONE OR MORE OF A SERIES OF EVENTS HAS OCCURRED
/SUCH AS THE COMPLETION OF A T/P READ OR WRITE OPERATION/,
THUS PROVIDING EFFICIENT CONCURRENT OPERATION FOR LOWER
PRIORITY PROGRAMS.

    QUEUED TELECOMMUNICATIONS ACCESS METHOD, 360N-CQ-470

WITH QTAM, THIS HIGH LEVEL TELE-PROCESSING LANGUAGE, THE USER
CAN SIGNIFICANTLY REDUCE THE TIME TO IMPLEMENT THE COMPLEXITY
ASSOCIATED WITH THE MULTIPLE T/P LINE HANDLING.
QTAM IS A GENERALIZED IOCS THAT EXTENDS THE TECHNIQUES OF
LOGICAL IOCS TO THE TELECOMMUNICATIONS ENVIRONMENT. UNLIKE
OTHER COMMONLY USED ACCESS METHODS, QTAM FURNISHES FAR MORE THAN
THE MECHANICS FOR INPUT/OUTPUT OPERATIONS. IN ADDITION TO THE
STANDARD GET/PUT MACRO INSTRUCTION SUPPORT FOR MESSAGE
PROCESSING PROGRAMS, QTAM PROVIDES A HIGH-LEVEL AND FLEXIBLE
MESSAGE CONTROL LANGUAGE.
A TELECOMMUNICATIONS SYSTEM BUILT UPON QTAM FACILITIES CONSISTS
OF TWO MAJOR COMPONENTS -
1. A MESSAGE CONTROL PROGRAM /FOREGROUND 1 ONLY/ TO CONTROL THE
FLOW OF MESSAGE TRAFFIC FROM ONE REMOTE TERMINAL TO ANOTHER
/MESSAGE SWITCHING APPLICATION/ AND BETWEEN REMOTE TERMINALS
AND ANY MESSAGE PROCESSING PROGRAM /MESSAGE PROCESSING
APPLICATIONS/.
2. MESSAGE PROCESSING PROGRAMS /FOREGROUND 2 AND/OR BACKGROUND/
TO PERFORM MESSAGE PROCESSING REQUIRED BY USERS APPLICATION.

IBM Programs

NOTE- DOS/360 WITH MULTIPROGRAMMING REQUIRES A 10K MINIMUM
BACKGROUND ALLOCATION AT ALL TIMES. THE BACKGROUND MAY OR
MAY NOT BE QTAM RELATED /MESSAGE PROCESSING PROGRAMMING/.
QTAM ALLOWS A SYNCHRONOUS OPERATION OF ALL PARTITIONS OF THE
SYSTEM. THIS METHOD OF EXECTUION IS BASED ON THE COMPLETION OF
QUEUED EVENTS AND ON THE ESTABLISHED PRIORITIES OF FOREGROUND 1,
FOREGROUND 2 AND BACKGROUND. A TELECOMMUNICATIONS SYSTEM
OPERATING UNDER DOS/QTAM CAN BE DESIGNED FOR A WIDE VARIETY OF
APPLICATIONS, INCLUDING MESSAGE SWITCHING, DATA COLLECTION,
PROCESSING COLLECTED DATA AND INQUIRY PROCESSING.
  SOME OF THE CAPABILITIES PROVIDED BY QTAM THROUGH THE USE OF
MACRO INSTRUCTIONS ARE -
  - AUTOMATIC CONTROL OF SWITCHED NETWORKS
  - POLLING TERMINALS
  - RECEIVING AND EDITING MESSAGES FROM TERMINALS
  - ADDRESSING TERMINALS
  - SENDING AND EDITING MESSAGES TO TERMINALS
  - DYNAMIC BUFFER MANAGEMENT
  - QUEUEING MESSAGES ON A DIRECT-ACCESS STORAGE DEVICE.
THE SIZE OF THE TELECOMMUNICATION PROBLEM PROGRAM IS DEPENDENT
UPON THE QTAM MODULE AND THE EXTENT OF FOLLOWING USER DETERMINED
AREAS AND FUNCTIONS -
  - I/O BUFFER AREAS
  - TERMINAL LISTS
  - MESSAGE PROCESSING ROUTINES
  - NUMBER OF MACRO INSTRUCTIONS ISSUED
  - NUMBER OF TERMINALS PER LINE
THE FOLLOWING CONFIGURATION AND SYSTEM DESIGN CONSIDERATIONS ARE
APPLICABLE TO THE DOS/360 TELECOMMUNICATION ENVIRONMENT -
  - ALL TELECOMMUNICATION DEVICES MUST BE ON THE MULTIPLEXER
    CHANNEL AND NO BURST MODE DEVICES MAY COEXIST ON THE CHANNEL.
  - ALL TERMINALS ON A LINE MUST BE OF THE SAME TYPE. TERMINALS
    MAY BE MIXED WITHIN THE SAME PROBLEM PROGRAM.
QTAM SYSTEM REQUIREMENTS - 32K BYTES OF MAIN STORAGE /WHILE A
MINIMUM NUMBER OF COMMUNICATION LINES WILL OPERATE IN 32K, MOST
QTAM APPLICATIONS WILL REQUIRE AT LEAST 64K/... STANDARD
INSTRUCTION SET... STORAGE PROTECTION... ONE CARD READER*...
ONE CARD PUNCH*... ONE PRINTER*... ONE 1052 KEYBOARD... ONE 2311
FOR SYSTEM RESIDENCE ON A SELECTOR CHANNEL... COMMUNICATIONS
EQUIPEMNT NECESSARY TO INTERFACE TO THE COMMUNICATION LINES...
A 2701/2702 ATTACHED TO A MULTIPLEXER CHANNEL.
  * SEE CONTROL PROGRAM INPUT/OUTPUT CHART FOR ACCEPTABLE UNITS.

THE FOLLOWING QTAM RESTRICTIONS WILL BE REMOVED IN LATER
RELEASES -
  - QTAM SUPPORT FOR DASD MESSAGE QUEUES FILE IS LIMITED TO ONE
    1316 DISK PACK WITH A SINGLE XTENT DEFINITION FOR THE
    MESSAGE QUEUES FILE.
  - IF ANY QTAM PARTITION TERMINATES ABNORMALLY, ALL QTAM
    PARTITIONS MUST TERMINATE, AND THEY CAN BE RE-LOADED ONLY
    AFTER AN IPL PROCEDURE.
  - THE STOPLN MACRO CANNOT BE ISSUED FROM A MESSAGE PROCESSING
    PARTITION TO A TELECOMMUNICATIONS LINE IN A ,,SWITCHED,,
    NETWORK.
  - DOS/360 QTAM-I DOES NOT RECOGNIZE ZERO LENGTH ,,PUTS,,.
  - THE WORK AREA FOR A ,,GET,, MUST BE LOCATED ON A HALF-WORD
    BOUNDARY
  - NO ENDING STATUS IS RETURNED TO QTAM AND AN INDIVIDUAL LINE
    BECOMES INOPERATIVE IF A WRITE COMMAND AND INCOMING DATA
    OCCUR SIMULTANEOUSLY OR A NON-DATA SET CALL IS PLACED TO A
    2702 LINE.

COMPILER INPUT/OUTPUT MODULES, 360N-IO-476.

THESE INPUT/OUTPUT MODULES USED BY COBOL AND RPG OBJECT
PROGRAMS ARE PRE-ASSEMBLED AND INCORPORATED INTO THE
RELOCATABLE LIBRARY. THEY PROVIDE ALL NECESSARY INPUT/OUTPUT
OPERATIONS SO THAT THE USER CAN EXECUTE PROGRAMS WRITTEN IN
COBOL AND/OR RPG WITHOUT HAVING TO GENERATE INPUT/OUTPUT
ROUTINES.

OPTICAL CHARACTER READER IOCS, 360N-IO-478.

OPTICAL CHARACTER READER IOCS PROVIDES SUPPORT OF THE IBM 1285
OPTICAL READER WHICH READS TAPES, SUCH AS THOSE PRODUCED ON CASH
REGISTERS AND ADDING MACHINES, DIRECTLY INTO THE SYSTEM. THE
1285 IS NOW SUPPORTED IN A MULTIPROGRAMMING ENVIRONMENT
UNDER DOS/360.
THE ONLY RESTRICTION IMPOSED IS THAT SYMBOLIC REGISTER NOTATION
MAY NOT BE USED WITH THE RDLNE MACRO. THIS RESTRICTION WILL BE
REMOVED AT A LATER DATE.

MULTIPROGRAMMING SUPPORT UTILITY MACROS, 360N-UT-471.

THESE MACROS PROVIDE THE USER OF DOS/360 WITH A DIRECT AND
EASY MEANS OF GENERATING EFFICIENT FILE-TO-FILE UTILITY
PROGRAMS TAILORED TO HIS SPECIFIC NEEDS. THE GENERATED
UTILITY PROGRAMS ARE DESIGNED TO OPERATE AS FOREGROUND
PROGRAMS WITHIN THE MULTIPROGRAMMING ENVIRONMENT OF DOS/360,
BUT CAN ALSO OPERATE AS BACKGROUND PROGRAMS. THESE MACROS
MAY BE COMBINED WITH USER PROGRAMS TO PRODUCE EITHER
GENERALIZED OR SPECIFIC FILE PROCESSING PROGRAMS.
THESE MACROS WILL PRODUCE SELF-RELOCATING OBJECT CODE WHICH
WILL PROVIDE INPUT/OUTPUT CONTROL FUNCTIONS SUCH AS-
  - OPENING AND CLOSING FILES, INCLUDING LABEL PROCESSING.
  - BLOCKING/DEBLOCKING OF FIXED LENGTH RECORDS.
  - PRINTER FORMS AND STACKER SELECTION CONTROL.
  - USER EXITS BEFORE, DURING, AND UPON COMPLETION OF
    RECORD PROCESSING.

DOS/360 UTILITIES.

THE DOS/360 UTILITIES HAVE BEEN DIVIDED INTO THREE GROUPS
IN ORDER TO SIMPLIFY ORDERING AND MAINTENANCE. EACH GROUP
IS ITEMIZED AND DESCRIBED BELOW. THE FOLLOWING FEATURES
ARE AVAILABLE IN MOST OF THE PROGRAMS-
  - MOVING AND COPYING A LOGICAL FILE OR PART OF A LOGICAL
    FILE FROM ONE VOLUME TO ANOTHER.
  - MOVING A LOGICAL FILE FROM ONE LOCATION TO ANOTHER ON
    THE SAME VOLUME.
  - PRINTING AND/OR PUNCHING A LOGICAL FILE.
  - FIELD SELECTING, BLOCKING, AND DEBLOCKING OF RECORDS.
  - COMPUTING I/O AREA ASSIGNMENTS BASED ON AVAILABLE STORAGE
    SPACE AND THE SIZE OF THE INPUT AND OUTPUT BLOCKS.
    MAXIMUM ADVANTAGE OF DEVICE AND PROCESS OVERLAP FOR A
    GIVEN BLOCK SIZE IS TAKEN.
  - LABEL CHECKING.
  - SKIPPING A NUMBER OF INPUT RECORDS BEFORE PROCESSING BEGINS.
GROUP 1 UTILITIES /360N-UT-461/ IS A PREREQUISITE FOR USING
GROUP 2 AND/OR GROUP 3.

GROUP 1 /UNIT RECORD AND DISK/ UTILITIES, 360N-UT-461.

  - CARD TO PRINTER AND/OR PUNCH - TRANSFERS BINARY OR
    EBCDIC DATA FROM CARDS TO A PRINTER AND/OR A CARD PUNCH.
    FOR CARD TO PRINTER ONLY - PRINTS IN ONE OF TWO FORMATS-
  - DATA DISPLAY - PRINTS ALL OF THE BLOCK.
  - DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
  - CARD TO DISK - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS
    TO DISK, WITH OR WITHOUT KEY FIELDS.
  - DISK TO CARD - TRANSFERS DATA FROM DISK TO CARDS.
    THE DISK FILE MAY OR MAY NOT HAVE KEY FIELDS. DATA MAY
    BE PUNCHED IN EITHER EBCDIC OR BINARY.
  - DISK TO PRINTER - PRINTS A DISK FILE IN ONE OF TWO FORMATS-
  - DATA DISPLAY - PRINTS ALL OF A DISK BLOCK.
  - DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
  - DISK TO DISK - TRANSFERS THE DATA FROM ONE DISK FILE TO
    ANOTHER. THE INPUT AND/OR OUTPUT FILE MAY OR MAY NOT HAVE
    KEY FIELDS.
  - CLEAR DISK - CLEARS ONE OR MORE AREAS OF 2311 DISK STORAGE,
    AND ESTABLISHES PRE-FORMATTED TRACKS CONTAINING AN INDICATED
    BASE THROUGHPUT THE AREA CLEARED.

GROUP 2 /MAGNETIC TAPE/ UTILITIES, 360N-UT-462.

  - TAPE TO PRINTER - PRINTS A TAPE FILE IN ONE OF TWO FORMATS-
  - DATA DISPLAY - PRINTS ALL OF A TAPE BLOCK.
  - DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
  - CARD TO TAPE - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS
    TO MAGNETIC TAPE.
  - TAPE TO CARD - TRANSFERS DATA FROM MAGNETIC TAPE TO CARDS.
    DATA MAY BE PUNCHED IN EITHER EBCDIC OR BINARY.
  - DISK TO TAPE - TRANSFERS DATA FROM A DISK FILE TO A TAPE
    FILE. THE DISK FILE MAY OR MAY NOT HAVE KEY FIELDS.
  - TAPE TO DISK - TRANSFERS DATA FROM A TAPE FILE TO A DISK
    FILE. THE DISK FILE MAY OR MAY NOT HAVE KEY FIELDS.
  - TAPE TO TAPE - TRANSFERS THE DATA FROM ONE TAPE TO ANOTHER.
  - DATA CELL TO TAPE - TRANSFERS DATA FROM A DATA CELL FILE
    TO A TAPE FILE. THE DATA CELL FILE MAY OR MAY NOT HAVE
    KEY FIELDS.
  - TAPE TO DATA CELL - TRANSFERS DATA FROM A TAPE FILE TO
    A DATA CELL FILE. THE DATA CELL FILE MAY OR MAY NOT
    HAVE KEY FIELDS.
  - TAPE COMPARE - COMPARES TWO FILES FROM TWO OR MORE TAPES
    TO ENSURE THAT THE FILES ARE IDENTICAL.

GROUP 3 /DATA CELL/ UTILITIES, 360N-UT-463.

  - DATA CELL TO PRINTER - PRINTS A DATA CELL FILE IN ONE
    OF TWO FORMATS-
  - DATA DISPLAY - PRINTS ALL OF A DATA CELL BLOCK.
  - DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
  - DISK TO DATA CELL - TRANSFERS DATA FROM A DISK FILE TO
    A DATA CELL FILE. THE INPUT AND/OR OUTPUT FILE MAY OR
    MAY NOT HAVE KEY FIELDS.
  - DATA CELL TO DISK - TRANSFERS DATA FROM A DATA CELL FILE TO
    A DISK FILE. THE INPUT AND/OR OUTPUT FILE MAY OR MAY NOT
    HAVE KEY FIELDS.
  - DATA CELL TO DATA CELL - TRANSFERS THE DATA FROM ONE
    DATA CELL FILE TO ANOTHER. THE INPUT AND/OR OUTPUT FILE
    MAY OR MAY NOT HAVE KEY FIELDS.
  - CLEAR DATA CELL - CLEARS ONE OR MORE AREAS OF 2321 DATA
    CELL STORAGE, AND ESTABLISHES PREFORMATTED TRACKS CONTAINING
    AN INDICATED BASE THROUGHOUT THE AREA CLEARED.

VOCABULARY FILE UTILITY, 360N-UT-472.

THIS PROGRAM PROVIDES FOR THE CREATION AND UPDATING OF AN
AUDIO VOCABULARY FILE. THE CUSTOMER RECEIVES THE INPUT
VOCABULARY FILE CONTAINING WORDS IN DIGITALLY CODED FORM ON
EITHER PUNCHED CARDS OR MAGNETIC TAPE. THE PROGRAM ALLOWS THE
USER TO SELECT THE WORDS HE NEEDS, BY MEANS OF CONTROL STATEMENTS
FROM THIS FILE AND TO ORGANIZE THEM ON DISK /2311/ IN THE MANNER
BEST SUITED TO HIS APPLICATION.
THE PROGRAM ALSO PROVIDES THE ABILITY TO LIST THE INPUT
VOCABULARY FILE AND THE OPERATING VOCABULARY FILE CREATED BY
THE USER.

TAPE SORT/MERGE, 360N-SM-400.

THE SORT PROGRAM ENABLES THE USER TO SORT FILES OF UNSEQUENCED
TAPE RECORDS INTO ONE SEQUENTIAL FILE. THE MERGE PROGRAM
ENABLES THE USER TO MERGE /COLLATE/ UP TO SEVEN PRESORTED
TAPE FILES INTO ONE FILE. SIGNIFICANT FEATURES OF TAPE
SORT/MERGE ARE-
  - SORTING OR MERGING ON AS MANY AS TWELVE CONTROL-DATA FIELDS.
  - COLLATING SEQUENCES AND DATA FORMAT CAN BE SPECIFIED
    SEPARATELY FOR EACH CONTROL FIELD.
  - RECORDS CAN BE SORTED OR MERGED INTO ASCENDING OR DESCENDING
    SEQUENCE.
  - THE SORT EMPLOYS IOCS STANDARD LABEL CHECKING OR ENABLES
    THE USER TO BYPASS OR PROCESS HIS NON-STANDARD LABELS.
  - THE CHECKPOINT-RESTART FACILITY PERMITS THE USER TO
    INTERRUPT AND CONTINUE DURING THE MERGING PHASES OF THE SORT.
  - MAGNETIC TAPES ARE USED AS WORK FILES.
  - AN ALTERNATE WORK DRIVE IS AVAILABLE DURING SORT AND
    WILL ALLOW THE MAXIMUM INPUT FILE SIZE TO BE APPROXIMATELY
    DOUBLED.

DISK SORT/MERGE, 360N-SM-450.

THE SORT PROGRAM ENABLES THE USER TO SORT FILES OF UNSEQUENCED
DISK /2311/ OR TAPE RECORDS INTO ONE SEQUENTIAL FILE.
THE MERGE PROGRAM ENABLES THE USER TO MERGE /COLLATE/ UP TO
FOUR PRE-SORTED DISK OR TAPE FILES INTO ONE FILE. THE PROGRAM
ASSUMES THAT INPUT RECORDS FOR A SORT OPERATION ARE IN
RANDOM SEQUENCE. RECORDS CAN BE SORTED OR MERGED INTO
ASCENDING OR DESCENDING SEQUENCE. THE OUTPUT SEQUENCE FOR
A MERGE-ONLY OPERATION MUST BE THE SAME AS THE INPUT SEQUENCE.
SIGNIFICANT FEATURES OF THE SORT/MERGE ARE-
  - SORTING OR MERGING ON AS MANY AS TWELVE CONTROL-DATA FIELDS.
  - COLLATING SEQUENCES AND DATA FORMAT CAN BE SPECIFIED
    SEPARATELY FOR EACH CONTROL FIELD.
  - OPTION OF WRITING AN OUTPUT FILE ON DISK COMPOSED OF THE
    DISK ADDRESSES OR DISK-ADDRESSES-PLUS-CONTROL-DATA FOR THE
    SORTED RECORDS.
  - PROVIDES EXITS TO STORAGE AREAS FOR USER-WRITTEN ROUTINES.
  - SORTS MULTIPLE INPUT FILES.
  - INPUT AND OUTPUT CAN BE FROM EITHER TAPE OR DISK.
  - DISK INTERMEDIATE STORAGE MAY BE DESIGNATED ON THE SYSTEM
    RESIDENCE DEVICE ASSUMING SUFFICIENT WORKING STORAGE IS
    AVAILABLE.
  - DISK STORAGE IS USED AS WORK AREAS.

IBM Programs

CONTINUED FROM PRIOR PAGE--

AUTOTEST, 360N-PT-459.

AUTOTEST IS A DEBUGGING AID FOR OBJECT PROGRAMS ASSEMBLED BY
THE ASSEMBLER AND EXECUTED UNDER DOS/360. IT MONITORS THE
EXECUTION OF THE PROGRAM UNDER TEST AND HAS THE FOLLOWING
FACILITIES -
- CREATION OF INPUT DATA BY MEANS OF STANDARD UTILITY PROGRAMS.
- EXCHANGE, ADDITION OR DELETION OF INSTRUCTION WITHOUT
  REASSEMBLY.
- ,,SNAP-SHOT,, OF REGISTERS, MAIN STORAGE AND PERMANENT
  STORAGE ASSIGNMENTS.
- DUMP AT NORMAL OR ABNORMAL END OF JOB.
- LIST OF ALL PHASES IN SEQUENCE OF CALLING.
- POINT OF ANY OUTPUT FILE.
AUTOTEST RUNS IN THE BACKGROUND PARTITION ONLY WITH ALL OTHER
PARTITIONS REDUCED TO ZERO.

ASSEMBLER, 360N-AS-465.

ASSEMBLER LANGUAGE IS A SYMBOLIC PROGRAMMING LANGUAGE USED
TO WRITE PROGRAMS FOR THE SYSTEM/360. THE DOS/360 ASSEMBLER
PROGRAM PROCESSES THE LANGUAGE, PROVIDES AUXILIARY FUNCTIONS
USEFUL IN THE PREPARATION AND DOCUMENTATION OF A PROGRAM,
AND INCLUDES FACILITIES FOR PROCESSING MACRO INSTRUCTIONS.
INCLUDED IN THE LANGUAGE ARE THE STANDARD AND OPTIONAL
INSTRUCTION SETS, MNEMONICS, EXTENDED MNEMONICS, LITERALS,
AND MACRO FACILITIES. AT SYSTEM GENERATION TIME, THE USER
HAS THE OPTION TO GENERATE AN ASSEMBLER USING-
- THREE 2311 DISK STORAGE EXTENTS AS WORK FILES, USING
  16K BYTES OF CORE STORAGE. /MINIMUM REQUIRED BACKGROUND 10K/.
- THREE 2400 SERIES MAGNETIC TAPE UNITS /EITHER 7-TRACK OR
  9-TRACK/ AS WORK FILES, USING 16K BYTES OF CORE STORAGE.
  /MINIMUM REQUIRED BACKGROUND 10K/. THE DATA CONVERSION
  FEATURE IS REQUIRED FOR 7-TRACK OPERATION.
- 32K BYTES OF CORE STORAGE. THIS ASSEMBLER PERMITS THE
  USER TO SELECT AT EXECUTION TIME THREE 2311 DISK STORAGE
  EXTENTS OR THREE 2400 SERIES MAGNETIC TAPE UNITS AS WORK
  FILES. 2311 DISK STORAGE EXTENTS MAY BE ON THE SAME
  DEVICE THAT CONTAINS THE DOS/360 SYSTEM RESIDENCE.
  /MINIMUM REQUIRED BACKGROUND 14K/.
ASSEMBLER ALSO PROVIDES THE FOLLOWING FEATURES-
- PUNCH ERROR RECOVERY PROCEDURES.
- SUPPORT FOR MULTIVOLUME SYSTEM OUTPUT.
- SUPPORT FOR A 2311 AS SYSIN, SYSLST, SYSPCH /USING 32K BYTES
  OF CORE STORAGE/.

REPORT PROGRAM GENERATOR /RPG/, 360N-RG-460.

DOS/360 RPG IS A POWERFUL, HIGH LEVEL, PROBLEM ORIENTED
LANGUAGE CAPABLE OF GENERATING PROGRAMS THAT RANGE FROM
PRODUCING SIMPLE REPORTS TO FULL FILE MAINTENANCE. THE
GENERATED PROGRAMS WILL READ DATA FROM PUNCHED CARDS, TAPE
AND DISK., UPDATE RECORDS ACCORDING TO USER SPECIFICATIONS.,
WRITE OUTPUT RECORDS ON TAPE AND DISK., PUNCH CARDS AND PREPARE
PRINTED REPORTS. RPG OFFERS A RAPID METHOD OF CONVERTING
DEFINED APPLICATIONS TO OPERATIONAL PROGRAMS PRODUCING RESULTS.
WITH MINIMAL SPECIFICATIONS, RPG GENERATED PROGRAMS CAN-
- OBTAIN DATA RECORDS FROM SINGLE OR MULTIPLE INPUT FILES.
- PERFORM RECORD IDENTIFICATION.
- SEQUENCE CHECK INPUT FILES.
- DETERMINE LOGICAL ORDER OF RECORD PROCESSING.
- PERFORM CALCULATIONS ON DATA TAKEN FROM INPUT RECORDS
  OR LITERALS.
- PERFORM AUTOMATIC DECIMAL ALIGNMENT.
- PERFORM TEST AND/OR COMPARISONS WHICH MAY INFLUENCE
  PROCESSING.
- EXIT TO USER SUBROUTINES WRITTEN IN A LANGUAGE OTHER THAN
  IN RPG.
- PRODUCE REPORTS WITH UNLIMITED NUMBER OF HEADING AN DETAIL
  UP TO NINE LEVELS OF TOTAL PLUS AN END-OF-JOB TOTAL.
IN ADDITION, RPG HAS THE CAPABILITIES OF PROCESSING THE
FOLLOWING WORLD TRADE REQUIREMENTS-
- AUTOMATIC HANDLING OF STERLING FIELDS.
- ALTERNATE COLLATING PURPOSES.
- INVERTED FIELD IN EDITING.
RPG REQUIRES THE STANDARD INSTRUCTION SET AND DECIMAL
ARITHMETIC FEATURE NO. 3237.

COBOL, 360N-CB-452.

COBOL /COMMON BUSINESS ORIENTED LANGUAGE/ IS SIMILAR TO
ENGLISH. COBOL PROVIDES A CONVENIENT METHOD OF CODING
PROGRAMS TO HANDLE COMMERCIAL DATA PROCESSING PROBLEMS.
DOS/360 COBOL PROVIDES IMPORTANT NEW FEATURES THAT REDUCE THE
COST OF PROGRAMMING AND EXTEND THE USE OF THE LANGUAGE TO
NEW AREAS OF APPLICATION. AMONG THE NEW FEATURES FURNISHED BY
THE COBOL COMPILER ARE-
- FLOATING POINT FACILITY.
- DEBUGGING SOURCE STATEMENTS.
- DEBUGGING PACKETS THAT MAY BE COMPILED TOGETHER WITH THE
  SOURCE PROGRAM AND EXECUTED AT OBJECT TIME WITHOUT
  ALTERATIONS TO THE ORIGINAL SOURCE PROGRAM.
- SUBPROGRAM FACILITY.
- COPY AND INCLUDE FROM A USERS SOURCE PROGRAM LIBRARY.
- IMPROVED OBJECT CODE EFFICIENCY.
- IMPROVED OBJECT PROGRAM EXECUTION TIME.
- IMPROVED PERFORM PERFORMANCE.
- DASD STATEMENTS HANDLED BY THE COBOL COMPILER FOR
  2311 DISK STORAGE DRIVE AND 2321 DATA CELL DRIVE. THESE ARE-
- FOR INDEXED SEQUENTIAL - LOAD, ADD, RETRIEVE, RETRIEVE
  AND UPDATE.
- FOR DIRECT ACCESS - SEQUENTIAL BUILD, RETRIEVE, RETRIEVE
  AND UPDATE.
- SEQUENTIAL PROCESSING FOR 2321 DATA CELL DRIVE.
- USE AFTER ERROR CLAUSE HANDLED FOR UTILITY AND DIRECT ACCESS
  FILES.
- APPLY WRITE-ONLY CLAUSE HANDLED.
- INVERTED PRINT EDIT.
A COBOL LIBRARY CONSISTS OF SUBROUTINES CALLED BY THE COMPILER
TO PERFORM CONVERSIONS, COMPLEX ARITHMETIC OPERATIONS, AND
CERTAIN I/O FUNCTIONS.
COBOL REQUIRES THE STANDARD INSTRUCTION SET AND THE DECIMAL
ARITHMETIC FEATURE NO. 3237. THE FLOATING POINT ARITHMETIC
FEATURE NO. 4427 IS ALSO REQUIRED IF FLOATING POINT LITERALS,
DATA ITEMS OR NON-INTEGER EXPONENTS ARE USED. THE COBOL
COMPILER DESIGN POINT IS 14K OF CORE STORAGE. FOR THIS REASON A
32K SYSTEM IS REQUIRED FOR COMPILATION OF COBOL PROGRAMS.

COBOL DASD MACROS, 360N-CB-468.

CONTINUED FROM PRIOR COLUMN--

THESE MACROS ENABLE A USER OF DOS/360 COBOL TO ACCESS THE
2311 DISK STORAGE DRIVE BY USING INDEXED SEQUENTIAL OR
DIRECT ACCESS IOCS. THE FOLLOWING FUNCTIONS ARE PROVIDED-
- FOR INDEXED SEQUENTIAL - LOAD, SEQUENTIAL AND/OR RANDOM
  RETRIEVAL, RANDOM RETRIEVAL AND ADD.
- FOR DIRECT ACCESS - LOAD, SEQUENTIAL AND/OR RANDOM RETRIEVAL.
THESE MACROS ARE ASSEMBLED USING THE DOS/360 ASSEMBLER AND
ARE LINK-EDITED WITH THE OBJECT PROGRAM PRODUCED BY THE
COBOL COMPILER.

FORTRAN IV, 360N-FO-451.

THE FORTRAN IV LANGUAGE IS ESPECIALLY USEFUL IN WRITING
PROGRAMS FOR SCIENTIFIC AND ENGINEERING APPLICATIONS THAT
INVOLVE MATHEMATICAL COMPUTATIONS. THE DOS/360 FORTRAN IV
LANGUAGE IS COMPATIBLE WITH AND ENCOMPASSES THE AMERICAN
STANDARDS ASSOCIATION /ASA/ BASIC FORTRAN, INCLUDING ITS
MATHEMATICAL SUBROUTINE PROVISIONS.
DOS/360 FORTRAN IV OFFERS THE FOLLOWING ADVANCED FEATURES --
MIXED-MODE... SPACING FORMAT... LITERAL FORMAT CODE...
THE A FORMAT CODE... SCALE FACTOR... CARRIAGE CONTROL...
DOUBLE PRECISION DATA TYPE... THREE DIMENSION ARRAYS...
FUNCTIONAL SUBPROGRAMS MAY RETURN RESULTS VIA THE ARGUMENT LIST.
THE FORTRAN IV COMPILER ALLOWS THE INTRODUCTION OF SOURCE
PROGRAMS IN EITHER BCD OR EBCDIC CHARACTER CODES. THE FORTRAN IV
COMPILER AND OBJECT PROGRAMS REQUIRE THE STANDARD INSTRUCTION
SET AND THE FLOATING POINT FEATURE NO. 4427.

PL/I, 360N-PL-464

THE BASIC PL/I COMPILER PROVIDES, IN A SINGLE HIGH-LEVEL
LANGUAGE, MANY NEW AND SIGNIFICANT FEATURES, SUCH AS-
- COMPREHENSIVE DATA CONVERSION AND EDITING FACILITIES.
- DATA STRUCTURES FOR ALPHAMERIC INFORMATION.
- ABILITY TO PROCESS A WIDE RANGE OF DATA TYPES, INCLUDING
  CHARACTER AND BIT STRINGS, FIXED AND FLOATING DECIMAL, AND
  FIXED AND FLOATING BINARY.
- BOTH STRUCTURED DATA AND ARRAY DATA HAVE ARITHMETIC
  CAPABILITY, INCLUDING EXPRESSIONS WHOSE ELEMENTS ARE SIMPLE
  VARIABLES, STRUCTURED DATA, AND ARRAYS.
- DATA STREAM TRANSMISSION.
- RECORD TRANSMISSION CAPABILITY.

THE PL/I SOURCE PROGRAM MAY EMPLOY A SET OF DASD MACROS
/360N-CB-468/ THAT ENABLE THE DOS USER TO ACCESS THE 2311 DISK
STORAGE DRIVE BY USING INDEXED SEQUENTIAL IOCS MACROS TO PERFORM
THESE FUNCTIONS FOR ISFMS FILES-
- LOAD.
- SEQUENTIAL RETRIEVAL AND UPDATE.
- RANDOM RETRIEVAL AND UPDATE.
- RANDOM RETRIEVAL, UPDATE, AND ADD.

THE PROGRAMMER SUPPLIES PARAMETERS WHICH DESCRIBE THE FILE TO
THE MACRO, AND THE MACRO IS THEN ASSEMBLED BY THE DOS/360
ASSEMBLER. THE ASSEMBLED MACRO CAN BE CATALOGED INTO THE
RELOCATABLE LIBRARY, FROM WHICH IT IS LINK EDITED WITH AN OBJECT
PROGRAM PRODUCED BY THE BASIC PL/I COMPILER. THE BASIC PL/I
SOURCE PROGRAM ACCESSES THESE MACROS WITH A CALL STATEMENT.
SPECIFIC MACROS CAN BE PRE-ASSEMBLED, CATALOGED, AND USED BY ANY
BASIC PL/I PROGRAM USING THE SAME FILE. NOTE THAT THIS FACILITY
IS EMPLOYED ONLY FOR INDEXED SEQUENTIAL FILES, THE BASIC PL/I
COMPILER SERVICES DIRECT ACCESS METHOD FILES DIRECTLY.

MINIMUM SYSTEM REQUIREMENTS- MINIMUM FEATURES REQUIRED --
16,384 BYTES OF MAIN STORAGE FOR BATCH JOB PROCESSING*...
32,768 BYTES OF MAIN STORAGE FOR 2311 AS SYSTEM INPUT/OUTPUT,
MULTIPROGRAMMING AND/OR TELECOMMUNICATIONS... STANDARD
INSTRUCTION SET**... STORAGE PROTECTION FEATURE /REQUIRED FOR
MULTIPROGRAMMING/... ONE I/O CHANNEL /EITHER MULTIPLEXER
OR SELECTOR/***... ONE CARD READER /1442, 2501, 2520, OR
2540/****... ONE PRINTER /1403, 1404, OR 1443/****...
ONE 1052 PRINTER-KEYBOARD... ONE 2311 DISK STORAGE DRIVE.
  * THE COBOL COMPILER DESIGN POINT IS 14K. FOR THIS REASON
    32K BYTES ARE REQUIRED FOR COMPILATION.
 ** RPG AND COBOL REQUIRE THE DECIMAL ARITHMETIC FEATURE
    /NO. 3237/. FORTRAN REQUIRES THE FLOATING POINT FEATURE
    /NO. 4427/. THE FLOATING POINT FEATURE /NO. 4427/ IS
    ALSO REQUIRED IN COBOL IF FLOATING POINT LITERALS, DATA
    ITEMS, OR NON-INTERGER EXPONENTS ARE USED.
*** TELECOMMUNICATIONS REQUIRES A MULTIPLEXER CHANNEL AND
    AT LEAST ONE SELECTOR CHANNEL.
**** ONE 2400 SERIES MAGNETIC TAPE DRIVE MAY BE SUBSTITUTED
    FOR EACH DEVICE. IF 7-TRACK DRIVES ARE USED, THE DATA
    CONVERSION FEATURE NO. 3228 OR NO. 3236 IS REQUIRED
    EXCEPT WHEN A TAPE IS SUBSTITUTED FOR A PRINTER.

SYSTEMS GENERATION UTILIZES THE ASSEMBLER TO PERFORM
FUNCTIONS AND THEREFORE REQUIRES THREE /3/ LOGICAL FILES FOR
WORKING STORAGE. IF SUFFICIENT WORKING STORAGE IS NOT
AVAILABLE ON THE SYSTEMS RESIDENT UNIT, EITHER A SECOND
2311 DISK STORAGE DRIVE OR THREE /3/ 2400 MAGNETIC TAPE UNITS
WILL BE REQUIRED. IT IS RECOMMENDED THAT A MULTIPLE DISK
OR DISK/TAPE SYSTEM BE USED.

THE FOLLOWING FEATURES AND I/O DEVICES ARE SUPPORTED BY
THE DOS/360 -- INTERVAL TIMER... SIMULTANEOUS READ-WHILE-WRITE
TAPE CONTROL /2404 OR 2804/... ONE MULTIPLEXER CHANNEL AND
UP TO SIX SELECTOR CHANNELS... STORAGE PROTECTION FEATURE
/REQUIRED FOR MULTIPROGRAMMING/... ADDITIONAL MAIN STORAGE
UP TO A SYSTEM/360 MODEL J... UNIVERSAL CHARACTER SET...
1442 CARD READ PUNCH... 1442 CARD PUNCH... 2501 CARD READER...
2520 CARD PUNCH... 2520 CARD READ PUNCH... 2540 CARD READ
PUNCH... 1403 PRINTER... 1404 PRINTER /FOR CONTINUOUS FORMS
ONLY/... 1443 PRINTER... 1445 PRINTER... 1052 PRINTER-KEYBOARD
/USED FOR OPERATOR COMMUNICATIONS/... 2311 DISK STORAGE DRIVE...
2321 DATA CELL DRIVE... 2401, 2402, 2403, 2404, AND 2415
MAGNETIC TAPE UNITS... 2671 PAPER TAPE READER...
2816 TAPE SWITCHING UNIT.

THE DOS/360 BTAM FACILITIES SUPPORT THE FOLLOWING CONTROL
UNITS, FEATURES, AND TERMINALS -- 2701 DATA ADAPTER UNIT
WITH AUTO CALL /NO. 1302, NO. 1303/ FEATURE... 2702 TRANSMISSION
CONTROL UNIT WITH FEATURES - AUTO CALL ADAPTER /NO. 1290/,
1032 ATTACHMENT /NO. 7918/... 2703 TRANSMISSION CONTROL UNIT
WITH AUTO CALL ADAPTER /NO. 1315/ FEATURE... 2740 COMMUNICATION
TERMINAL... 7770/7772 AUDIO RESPONSE UNITS... 2260 DISPLAY
/LOCAL/ STATION.
THE FOLLOWING TERMINALS CAN BE ATTACHED BY MEANS OF A PRIVATE,
LEASED, OR COMMON-CARRIER NETWORK TO THE MULTIPLEXER CHANNEL
THROUGH A 2701, 2702, OR 2703 CONTROL UNIT -- 1030 DATA
COLLECTION SYSTEM... 1050 DATA COMMUNICATION SYSTEM...
1060 DATA COMMUNICATION SYSTEM... 2260 LOW COST DISPLAY
/REMOTE/ /2701 ONLY WITH 2848 CONTROL UNIT/... AT+T 83B3

IBM Programs

IED FROM PRIOR PAGE--
SELECTIVE CALLING STATIONS... AT+T TELETYPEWRITER TERMINAL
MODELS 33 AND 35... WESTERN UNION PLAN 115A OUTSTATIONS.

THE FOLLOWING CONFIGURATION AND SYSTEM DESIGN CONSIDERATIONS
ARE APPLICABLE TO THE DOS/360 TELECOMMUNICATION ENVIRONMENT-
 - ALL TELECOMMUNICATION DEVICES MUST BE ON THE MULTIPLEXER
   CHANNEL AND NO BURST MODE DEVICES MAY COEXIST ON THE CHANNEL.,
 - ALL TERMINALS ON A LINE MUST BE OF THE SAME TYPE. THE
   TERMINALS MAY BE MIXED WITHIN THE SAME PROBLEM PROGRAM.

CONTROL PROGRAM INPUT/OUTPUT - DOS/360

UNITS SUPPORTED	RESIDENCE	READER	INPUT	WORK*	PUNCH	LIST	LOG**
1052							X
2540		X	X		X		
1403						X	X
1404						X	X
1442 N1		X	X		X		
1442 N2					X		
1443						X	X
2501		X	X				
2520 B1		X	X		X		
2520 B2, B3					X		
2311	X	X	X	X	X	X	
2400 DUAL DENS.		X	X	X	X	X	

  * 2311 IS REQUIRED FOR CONTROL PROGRAM WORKING STORAGE., I.E.,
    COMPILE AND GO LINKAGE EDITOR.
 ** IN THE EVENT THE 1052 IS INOPERATIVE, PRINTER DEVICES MAY BE
    TEMPORARILY ASSIGNED TO SYSLOG.
2400 MAY BE USED FOR WORKING STORAGE ONLY BY LANGUAGE PROCESSORS
/3 REQUIRED/. 7-TRACK TAPES REQUIRE DATA CONVERSION FEATURE
/EXCEPT LIST/. WORK DEVICES MAY NOT BE MIXED BETWEEN DISK
AND TAPE.

THE LOGICAL SUPPORT OF INPUT/OUTPUT FILE REQUIREMENTS FOR
PROBLEM PROGRAMS IS PROVIDED AS FOLLOWS -

PROBLEM PROGRAMS COMPILED BY DOS/360

UNITS	ASSEMBLER	RPG	COBOL	PL/I	FORTRAN
2540	X	X	X	X	X
1403	X	X	X	X	X
1404 CONTINUOUS FORMS	X	X	X	X	X
1442 N1 AND N2	X	X	X	X	X
1443	X	X	X	X	X
1445	X	X	X	X	X
2501	X	X	X	X	X
2520 B1, B2 AND B3	X	X	X	X	X
2400 /7- OR 9-TRACK/	X	X	X	X	X
2400 DUAL DENSITY	X	X	X	X	X
2311 CONSECUTIVE ORG.	X	X	X	X	X
2311 DIRECT ACCESS ORG.	X	X	X	X	X
2311 INDEXED SEQ. ORG.	X	X	X		
2321 CONSECUTIVE ORG.	X		X		
2321 DIRECT ACCESS ORG.	X		X		
2321 INDEXED SEQ. ORG.	X		X		
1052 CONSOLE /NOTE 1/	X		X	X	X
2671	X				
2260 LOCAL	X				
2701, 2702, 2703, WITH 1030, 1050, 1060, 2740, 2260 /2701 ONLY/, AND TELETYPE TERMINALS /WU 115A, AT+T 83B3 AND MODELS 33/35/	X				
2701, 2703 BINARY SYNCHRONOUS AND 2780	X				
7770/72	X				

NOTE 1 - COBOL ACCEPT AND DISPLAY ONLY, FORTRAN OUTPUT ONLY,
PL/I DISPLAY ONLY.

ENGINEERING CHANGES - THE FOLLOWING ENGINEERING CHANGES ARE
PREREQUISITE FOR PROPER FUNCTIONING OF DOS/360-
2030 HARDWARE LOGIC LEVEL .... EC 126737
2030 MICRO PROGRAM LEVEL .... EC 128053
1445 .... EC 305247
2841 HARDWARE LOGIC LEVEL .... EC 413160
2841 MICRO PROGRAM LEVEL .... EC 413140
2821 .... EC 125598
NOTE 1- IF THE MULTIPROGRAMMING AND/OR TELECOMMUNICATIONS
         SUPPORT FACILITIES OF DOS/360 ARE USED, THE 2030 HARDWARE
         LOGIC LEVEL EC 126751 AND 2030 MICROPROGRAMMING
         LEVEL EC 128058 MUST BE INSTALLED.
NOTE 2- IN A STORAGE PROTECTED BATCH JOB ENVIRONMENT, THE
         2030 MICROPROGRAMMING LEVEL EC IS 128058.
NOTE 3- THE FOLLOWING ENGINEERING CHANGES ARE NOT REQUIRED,
         HOWEVER, IN ORDER TO ACHIEVE IMPROVED PERFORMANCE,
         THEY ARE RECOMMENDED.
         2401 ... EC 254969
         2402 ... EC 254969
         2403 ... EC 254969 AND EC 255981
         2404 ... EC 254969 AND EC 255982
QUESTIONS REGARDING ENGINEERING CHANGE LEVEL REQUIREMENTS
SHOULD BE DIRECTED TO THE SERVICING FE BRANCH OFFICE.

RESTRICTIONS-
COBOL, FORTRAN, SYSTEMS CONTROL AND BASIC IOCS AND THE
MPS UTILITIES CONTAIN PROCEDURE AND CODING RESTRICTIONS
WHICH WILL BE CORRECTED AT A LATER DATE. DETAILED INFORMATION
CONCERNING THESE RESTRICTIONS ARE CONTAINED IN THE DOCUMENTATION
DISTRIBUTED WITH THE SYSTEM.

BASIC PROGRAM MATERIAL -
THE FOLLOWING SRL PUBLICATIONS APPROPRIATE TO THE COMPONENT
ORDERED WILL BE SHIPPED WITH INITIAL ORDER FOR DOS/360 -
ASSEMBLER SPECIFICATIONS	C24-3414
DATA MANAGEMENT CONCEPTS	C24-3427
COBOL LANGUAGE SPECIFICATIONS	C24-3433
TAPE SORT/MERGE PROGRAM SPECIFICATIONS	C24-3438
SORT/MERGE PROGRAM SPECIFICATIONS	C24-3444
UTILITY PROGRAMS SPECIFICATIONS	C24-3465
OPERATING GUIDE	C24-5022
COBOL PROGRAMMERS GUIDE	C24-5025
CONCEPTS AND FACILITIES	C24-5030
PERFORMANCE ESTIMATES	C24-5032
SYSTEM GENERATION AND MAINTENANCE	C24-5033
SYSTEM CONTROL AND SYSTEM SERVICE PROGRAMS	C24-5036
SUPERVISOR AND INPUT/OUTPUT MACROS	C24-5037
FORTRAN IV PROGRAMMERS GUIDE	C24-5038
COBOL DASD MACROS	C24-5039

CONTINUED FROM PRIOR COLUMN--
UTILITY MACRO SPECIFICATIONS	C24-5042
PL/I DASD MACROS	C24-5059
AUTOTEST SPECIFICATIONS	C24-5062
PL/I PROGRAMMERS GUIDE	C24-9005
REPORT PROGRAM GENERATOR SPECIFICATIONS	C26-3570
VOCABULARY FILE UTILITY FOR 7772 AUDIO RESPONSE UNIT	C27-6924
FORTRAN IV LANGUAGE	C28-6629
PL/I SUBSET LANGUAGE SPECIFICATIONS	C28-6809
BASIC TELECOMMUNICATIONS ACCESS METHOD	C30-5001
QTAM MESSAGE CONTROL PROGRAM	C30-5002
QTAM MESSAGE PROCESSING PROGRAM SERVICES	C30-5003

A PROGRAM MATERIAL LIST AND TEMPORARY RESTRICTIONS WILL ALSO BE
SHIPPED BY PID WHEN DOS/360 IS ORDERED.

MACHINE READABLE - DOS/360 IS DISTRIBUTED AS ONE PRE-GENERATED
SYSTEM WITH A 6K SUPERVISOR /360N-SV-474/...OR... ONE
PREGENERATED SYSTEM WITH AN 8K SUPERVISOR /360N-SV-475/.
OR...ONE PREGENERATED SYSTEM WITH AN 10K SUPERVISOR
/360N-SV-473/.
WHEN ORDERING DOS/360, THE REQUESTOR WILL RECEIVE THE ENTIRE
COLLECTION OF MACHINE READABLE PROGRAM COMPONENTS IN BOTH
CORE IMAGE AND RELOCATABLE LIBRARIES, LISTED BELOW -
ASSEMBLER	360N-AS-465
COBOL	360N-CB-452
COBOL DASD MACROS	360N-CB-468
SYSTEM CONTROL AND BASIC IOCS*	360N-CL-453
BASIC TELECOMMUNICATIONS ACCESS	360N-CQ-469
QUEUED TELECOMMUNICATIONS ACCESS METHOD	360N-CQ-470
FORTRAN IV	360N-FO-451
DIRECT ACCESS METHOD	360N-IO-454
CONSECUTIVE DISK IOCS	360N-IO-455
CONSECUTIVE TAPE IOCS	360N-IO-456
INDEXED SEQUENTIAL FILE MANAGEMENT	360N-IO-457
CONSECUTIVE PAPER TAPE IOCS	360N-IO-458
COMPILER I/O MODULES	360N-IO-476
OPTICAL CHARACTER READER IOCS	360N-IO-478
PL/I	360N-PL-464
AUTOTEST	360N-PT-459
REPORT PROGRAM GENERATOR	360N-RG-460
TAPE SORT/MERGE	360N-SM-400
DISK SORT/MERGE	360N-SM-450
SUPERVISOR /10K/*	360N-SV-473
SUPERVISOR /6K/*	360N-SV-474
SUPERVISOR /8K/*	360N-SV-475
GROUP 1 UTILITIES	360N-UT-461
GROUP 2 UTILITIES	360N-UT-462
GROUP 3 UTILITIES	360N-UT-463
MPS UTILITY MACROS	360N-UT-471
VOCABULARY FILE UTILITY FOR 7772	360N-UT-472

*THE SYSTEM CONTROL AND BASIC IOCS COMPONENT AND ONE OF THE
TWO SUPERVISOR COMPONENTS ARE REQUIRED.

TO ORDER THE COMPONENTS THE NEW PROGRAM ORDER FORM ,,IBM
PROGRAM ORDER FOR IBM SYSTEM/360 OPERATING SYSTEMS,, FORM
NUMBER, 120-1411 MUST BE USED.
EACH COMPONENT FOR WHICH PROGRAM DOCUMENTATION AND MAINTENANCE
MATERIAL IS REQUIRED MUST APPEAR ON THE ORDER FORM. IF NO
SUPERVISOR IS INDICATED, PID WILL SUPPLY THE /6K/, 360N-SV-474.

DOS/360 MACHINE READABLE IS AVAILABLE ON -
READABLE IS AVAILABLE ON -
   ONE 2400 FOOT REEL OF MAGNETIC TAPE - 9-TRACK /800 BPI
   OR 1600 BPI/

   ONE 2400 FOOT REEL OF MAGNETIC TAPE - 7-TRACK AT 800 BPI
   /DATA CONVERSION FEATURE REQUIRED/

                          OR

TELE-PROCESSING COMPONENTS ARE AVAILABLE ON -
   ONE 2400 FOOT REEL OF MAGNETIC TAPE - 9-TRACK /800 BPI
   OR 1600 BPI/

   ONE 2400 FOOT REEL OF MAGNETIC TAPE - 7-TRACK AT 800 BPI
   /DATA CONVERSION FEATURE REQUIRED/

                          OR

   ONE 1316 DISK PACK.

THE MAGNETIC TAPES ARE IN DISK PACK RESTORE FORM. THE DOS/360
DATA ARE PRECEDED BY AN INITIALIZE 2311 UTILITY PROGRAM AND A
TAPE-TO-DISK PROGRAM.
WHEN ORDERING DOS/360 ON MAGNETIC TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED.
THE TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED.

A-360P

360P-AS-021   SYSTEM/360 BASIC ASSEMBLER
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-AS-021

    THE BASIC ASSEMBLER IS A TWO-PHASE, ONE-FOR-ONE ASSEMBLY PROGRAM
    WHICH TRANSLATES SOURCE PROGRAMS WRITTEN IN THE SYSTEM/360 BASIC
    ASSEMBLER LANGUAGE INTO MACHINE LANGUAGE OBJECT PROGRAMS. THIS
    OUTPUT IS IN RELOCATABLE DECK FORMAT AND CAN BE LOADED WITH
    EITHER THE ABSOLUTE OR THE RELOCATING LOADERS PROVIDED WITH THE
    BASIC UTILITY PROGRAMS. A PROGRAM LISTING WITH ERROR INDICATORS
    IS ALSO PROVIDED. IF AVAILABLE, FROM ONE TO FIVE MAGNETIC TAPE
    UNITS MAY BE UTILIZED TO SPEED THE ASSEMBLY PROCESS.
    MINIMUM SYSTEM REQUIREMENTS - STANDARD S/360 INSTRUCTION SET...8K
    MAIN STORAGE...2540 OR 1442 CARD READ PUNCH OR 2501 CARD READER
    AND THE 2520 CARD PUNCH AND/OR CARD READER PUNCH...1403 OR 1443
    PRINTER /OPTIONAL/...1052 PRINTER KEYBOARD /OPTIONAL/...ONE TO
    FIVE 2400 SERIES TAPE UNITS /OPTIONAL/. NOTE - THE BASIC CARD
    ASSEMBLER DOES NOT CONTAIN PUNCH ERROR RECOVERY CAPABILITY FOR
    THE 2520.

    BASIC PROGRAM MATERIAL-
        DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM MATERIAL LIST...
            SAMPLE PROBLEM OPERATING INSTRUCTIONS...BASIC ASSEMBLER
            LANGUAGE MANUAL...OPERATING GUIDE.
        MACHINE READABLE - SAMPLE PROBLEM SYMBOLIC DECK...
            NON-RELOCATABLE SELF-LOADING ASSEMBLED DECKS FOR PHASE 1
            AND PHASE 2.

IBM Programs

360P-AS-091   BPS BASIC TAPE SYSTEM /8K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-AS-091

THE BASIC TAPE SYSTEM CONSISTS OF THE 8K TAPE ASSEMBLER AND
THE 8K TAPE IOCS/SYSTEM CONTROL AND SYNCHRONOUS TRANSMITTER/
RECEIVER MACROS. THE STR MACROS PROVIDE DIAL AND LEASED LINE
PROGRAMMING SUPPORT FOR SYSTEM/360 MODELS 30, 40, 50, 65 AND 75
WITH 2701 DATA ADAPTER UNIT AND SYNCHRONOUS DATA ADAPTER TYPE I
/NOS. 7695 AND 7696/, COMMUNICATING WITH THE FOLLOWING STR
DEVICES --
  - S/360 MOD 20 WITH THE COMMUNICATION ADAPTER, FEATURE NO. 2073.
  - S/360 MODEL 30, 40, 50, 65 OR 75 WITH A 2701
    ADAPTER UNIT EQUIPPED WITH THE SYNCHRONOUS DATA ADAPTER
    TYPE I /SDA-I/.
  - 1009 DATA TRANSMISSION UNIT... 1013 CARD TRANSMISSION
    TERMINAL... 7701 MAGNETIC TAPE TRANSMISSION TERMINAL...
    7702 MAGNETIC TAPE TRANSMISSION TERMINAL... 7711 DATA
    COMMUNICATION UNIT... 1974 MODEL 2 DATA TRANSMISSION TERMINAL
    /RPQ UNIT/... 1978 MODELS 1, 2 AND 3 PRINT-READ-PUNCH
    TERMINAL /RPQ UNIT/.
PUNCH ERROR RECOVERY FOR THE 1442 AND 2540 IS ALSO PROVIDED BY
THIS PROGRAM AND 800/1600 BPI DUAL DENSITY FEATURE IS SUPPORTED.
ALL TAPE FILES PRESENTLY RECORDED IN 800 BPI CAN BE RUN WITHOUT
ALTERATION ON DRIVES HAVING THE DUAL DENSITY FEATURE.

MINIMUM SYSTEM REQUIREMENTS -
AN 8K SYSTEM/360, MODEL 30 WITH -- THREE 2400 SERIES MAGNETIC
TAPE UNITS /ONE MUST BE 9-TRACK/... ONE 2540, /ONE 2501
CARD READER, A 2671 PAPER TAPE READER/ OR 1442 CARD READER OR
2520 CARD READ PUNCH MODEL B1 OR CARD PUNCH MODELS B2 AND/OR B3
/ALL 2520 MODELS HAVE ENGINEERING CHANGES 811839 AND 811842/...
ONE 1403, 1404, OR 1443 PRINTER... ONE I/O CHANNEL /EITHER
MULTIPLEX OR SELECTOR/... STANDARD INSTRUCTION SET... 2701 DATA
ADAPTER UNIT WITH SDA-I /NO. 7695 AND NO. 7696/... AT LEAST ONE
OF THE FOLLOWING- 2401 OR 2402 MAGNETIC TAPE UNIT, MODEL 4, 5
OR 6, AND 2803 OR 2804 TAPE CONTROL, MODEL 2... 2403 MAGNETIC
TAPE UNIT AND CONTROL, MODEL 4, 5 OR 6... 2415 MAGNETIC TAPE UNIT
AND CONTROL, MODEL 4, 5 OR 6.
THE IBM 1285 OPTICAL READER, WHICH IS USED TO READ PRINTED
PAPER TAPES DIRECTLY INTO THE SYSTEM. UP TO EIGHT UNITS CAN
BE ATTACHED. A BYTE MULTIPLEXING FUNCTION IS INCLUDED THAT
PERMITS THE INTERLEAVING OF THE 1285 WITH OTHER I/O DEVICES
THAT OPERATE IN THE BYTE MODE. UP TO TWELVE DEVICES /FOR
EXAMPLE- 1442 CARD READ PUNCH, 2501 CARD READER OR ADDITIONAL
1285 OPTICAL READERS/ MAY OPERATE IN THIS MODE.
MOST STR APPLICATIONS WILL PROBABLY REQUIRE 16K, HOWEVER,
UTILITY TYPE APPLICATIONS REQUIRING MINIMUM PROCESSING AND CODE
CONVERSION ARE SUPPORTED IN AN 8K ENVIRONMENT.
SUPPORTED DEVICES MUST BE AT OR ABOVE THE FOLLOWING ENGINEERING
CHANGE LEVELS -

UNIT NUMBER	ENGINEERING CHANGE LEVEL
2040	255490
7702	706973 ERC R0641
7711	254441
1978	892559
1009	123005
1974	120593
2701	707484
2020	11924

BASIC PROGRAM MATERIAL-
    DOCUMENTATION- PROGRAM MATERIAL LIST...
        SAMPLE PROBLEM OPERATING INSTRUCTIONS... PROGRAMMERS
        GUIDE C24-3354... ASSEMBLER WITH INPUT/OUTPUT
        MACROS MANUAL C24-3355... OPERATING GUIDE C24-3391...
        MACRO DEFINITION LANGUAGE MANUAL, C24-3364.
    MACHINE READABLE - A 9-TRACK OR 7-TRACK CONTAINING THE ASSEMBLER
        IOCS/SYSTEM CONTROL PROGRAM. THE SAMPLE PROBLEM
        DECK IN CARD FORM.

THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -
NO TAPE SUBMITTAL IS REQUIRED.

360P-FO-031   BASIC PROGRAMMING SUPPORT
FORTRAN TAPE SYSTEM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-FO-031

BPS/360 FORTRAN /TAPE/ SYSTEM COMPRISES A COMPILER /INCLUDING
LIBRARY SUBROUTINES/, A LOADER, AND AN EDITOR.
  - BPS FORTRAN TAPE COMPILER - THE COMPILER IS AN EIGHT-PHASE
    PROGRAM WHICH TRANSLATES PROGRAMS WRITTEN IN THE FORTRAN IV
    LANGUAGE INTO RELOCATABLE OBJECT PROGRAMS. A SOURCE
    PROGRAM LISTING ALONG WITH ERROR INDICATORS AND A STORAGE
    MAP OF THE VARIABLES, EXTERNAL REFERENCES, AND CONSTANTS
    ARE PROVIDED ON REQUEST. A COMPILE-AND-GO FEATURE IS
    PROVIDED. THE JOB TO BE PERFORMED MAY CONSIST OF SOURCE
    PROGRAM/S/, PREVIOUSLY COMPILED OBJECT PROGRAM/S/, OR A
    COMBINATION OF THE TWO, ALSO PROVIDED ARE CONTROL CARD
    CAPABILITIES WHICH ENABLE THE USER TO CHANGE DEVICE
    ASSIGNMENTS AT EDIT, COMPILER, OR OBJECT TIME.
  - LOADER - THE FORTRAN LOADER IS A TWO-PHASE RELOCATING
    LOADER THAT CAN LOAD SEPARATELY COMPILED PROGRAMS INTO
    STORAGE AND COMPLETE THE LINKAGES BETWEEN THEM. THIS
    LOADER WILL ALSO LOAD INPUT ACCEPTABLE TO THE BPS/360
    BASIC UTILITIES RELOCATING LOADER /360P-UT-020/.
  - EDITOR - THE FORTRAN EDITOR ENABLES LIBRARY SUBROUTINES
    TO BE DELETED, ADDED, OR CHANGED, AS WELL AS PROPRIETARY
    CHANGES TO THE COMPILER AND EDITOR ITSELF.

MINIMUM SYSTEM REQUIREMENTS- A SYSTEM/360 WITH A SCIENTIFIC
INSTRUCTION SET AND 16K OR MORE BYTES OF MAIN STORAGE AND
THE FOLLOWING MINIMUM I/O UNITS- ONE OR ANY COMBINATION OF THE
FOLLOWING DEVICES THAT PROVIDES FOR CARD READING AND PUNCHING
-1442 CARD READ PUNCH, 2501 CARD READER, 2520 CARD READ PUNCH,
2520 CARD PUNCH, 2540 CARD READ PUNCH... 1403 OR 1443 PRINTER...
THREE 2400 SERIES MAGNETIC TAPE UNITS, EITHER 9-TRACK OR 7-TRACK
WITH THE DATA CONVERSION AND 7-TRACK COMPATIBILITY FEATURES...
AN OPTIONAL 2400 SERIES MAGNETIC TAPE UNIT FOR COMPILE-AND-GO...
AN OPTIONAL 1052 PRINTER KEYBOARD.
                  MACHINE CONFIGURATION

	SYSIN	PUNCH	PRINT	COMPILER WORK FILES	GO FILE	OBJECT PROGRAM WORKFILES
2501	X					X
2520	X	X				X
2540	X	X				X
1442	X	X				X
1403			X			X

CONTINUED FROM PRIOR COLUMN--

1443			X			X
1052			X			X
2400	X	X	X		X	X

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... REBLOCK OPERATING
        INSTRUCTIONS... ATTACHMENT... PROGRAMMERS
        GUIDE, C28-6583... LANGUAGE MANUAL, C28-6629.
    MACHINE READABLE - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
        FEATURE REQUIRED/ DTR CONTAINING THE COMPILER,
        LOADER, LIBRARY AND EDITOR.

NOTE- THE DTR WILL BE PROVIDED BY PID - NO TAPE SUBMITTAL IS
REQUIRED.
THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS
REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.

360P-FO-205   BPS FORTRAN IV /16K-CARD/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-FO-205

IBM SYSTEM/360 BASIC PROGRAMMING SUPPORT FORTRAN IV-
SYSTEM/360 BPS FORTRAN IV /16K CARD/, CONSISTS OF A COMPILATION
SYSTEM, AN EXECUTION SYSTEM AND A FORTRAN LIBRARY.

COMPILATION SYSTEM -- A TWELVE-PHASE PROGRAM WHICH TRANSLATES
A SOURCE PROGRAM WRITTEN IN SYSTEM/360 FORTRAN IV LANGUAGE
INTO A RELOCATABLE OBJECT PROGRAM. A SOURCE PROGRAM LISTING
IS PROVIDED ON REQUEST ALONG WITH ERROR INDICATIONS AND A
LIST OF EXTERNAL REFERENCES. ERROR RECOVERY PROCEDURES ARE
PROVIDED FOR READING, PRINTING, AND PUNCHING.

EXECUTION SYSTEM -- CAN LOAD SEPARATELY COMPILED PROGRAMS
INTO STORAGE AND COMPLETE THE LINKAGES BETWEEN THEM.
THE SYSTEM WILL ALSO LOAD ANY INPUT ACCEPTABLE TO THE BPS/360
BASIC UTILITIES RELOCATING LOADER /360P-UT-020/. LARGE JOBS
WHICH EXCEED AVAILABLE CORE MAY BE BROKEN INTO SEGMENTS AND
LOADED SEQUENTIALLY INTO THE SAME CORE AREA... INFORMATION
IS PASSED BETWEEN THE SEGMENTS THROUGH COMMON STORAGE, WHICH
IS PRESERVED. ALSO PROVIDED ARE CONTROL CARD CAPABILITIES
WHICH ENABLE THE USER TO CHANGE DEVICE ASSIGNMENTS AT OBJECT
TIME, AS WELL AS ERROR RECOVERY PROCEDURES FOR READING, PRINTING,
AND PUNCHING.

LIBRARY -- THE ROUTINES PROVIDED ARE- FDXPD... FDXPI... FIXPI...
FRXPI... FRXPR... EXIT... ALOG, ALOG 10... SQRT... ATAN...
TANH... EXP... COS, SIN... DUMP, PDUMP... DLOG, DLOG 10...
DSQRT... DATAN... DTANH... DCOS, DSIN... DEXP... MOD...
AMOD, DMOD... MAXO, MINO, AMAXO, AMINO... MAX1, MIN1, AMAX1,
AMIN1... DMAX1, DMIN1... FLOAT, DFLOAT... IFIX, INT, IDINT...
AINT... SLITE, SLITET... OVERFL... DVCHK... IBCOM, NIBCOM...
DIM, IDIM... SIGN, ISIGN... SNGL... DBLE... ABS, IABS, DABS.
MINIMUM SYSTEM REQUIREMENTS- A 16K SYSTEM/360 WITH THE FOLLOWING
MINIMUM I/O DEVICES FOR COMPILATION OF SOURCE PROGRAMS --
ONE 1442 CARD READ PUNCH OR 2540 CARD READ PUNCH OR
2520 CARD READ PUNCH. ONE 1443 PRINTER OR 1403 PRINTER.
A 1052 PRINTER-KEYBOARD IS OPTIONAL. IN ADDITION, THE FLOATING
POINT ARITHMETIC FEATURE IS REQUIRED FOR THE EXECUTION OF
OBJECT PROGRAMS.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... PROGRAMMERS
        GUIDE C21-5000... LANGUAGE SPECIFICATIONS
        MANUAL C21-9040.
    MACHINE READABLE - THE COMPILATION SYSTEM, EXECUTION SYSTEM,
        LIBRARY AND I/O ROUTINES, AND SAMPLE PROGRAM ARE
        AVAILABLE IN CARD FORM OR ON A 7- OR 9-TRACK DTR.
        7-TRACK DTR REQUIRES THE DATA CONVERSION FEATURE.

IF TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

360P-IO-058   IBM SYSTEM/360 BPS
INPUT/OUTPUT 1412/1419
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-IO-058

THE PROGRAM PROVIDES FOR BANKING APPLICATIONS THE USE OF ONE
1412 ATTACHED TO A S/360 MODEL 30 OR ONE OR TWO 1419/S
ATTACHED TO A S/360 MODEL 30, 40, 50 OR 65. THE
PROGRAM CAN CONTROL THE INPUT AND OUTPUT FUNCTIONS THAT ARE
ASSOCIATED WITH SUCH TYPICAL MICR PROCESSING AS DEMAND DEPOSIT
CAPTURE, OUTGOING TRANSIT AND PROFF OF DEPOSIT. THE PROGRAM HAS
THESE FUNCTIONS- ENGAGING AND DISENGAGING THE MICR READERS...
READING MICR DOCUMENTS... BATCH NUMBERING.
MAINTENANCE OF A DOCUMENT INPUT BUFFER/S/... PRESENTING DATA
FOR USER PROCESSING INCLUDING FIELD VALIDITY INDICATORS...
CONTROL OF I/O COMMANDS FOR ALL SUPPORTED DEVICES AND APPROPRIATE
ERROR ROUTINES... SERVICING OF INTERRUPTS... SYSTEM/360 STANDARD
TAPE LABEL OR 2311 DISK LABEL PROCESSING. WITH THE I/O PROGRAM
THE USER CAN INSERT HIS ROUTINES FOR SUCH FUNCTIONS AS- STACKER
DETERMINATION... FORMATTING OF PRINTER OUTPUT, PUNCH OUTPUT, AND
MAGNETIC TAPE OR DISK OUTPUT... DOCUMENT ARITHMETIC PROCESSING...
RECOGNITION OF CONTROL LEVERS...MULTIPLEX CAPABILITY WHICH
PROVIDES FOUR REQUEST QUEUES WHICH WILL PERMIT 4 UNBUFFERED BYTE
MODE I/O DEVICES TO OPERATE IN A DATA INTERLEAVED MODE ON THE
MULTIPLEX CHANNEL. THE 1412 AND 1419S HAVE THEIR OWN QUEUES AND
ARE INTERLEAVED IN ADDITION TO THE FOUR REQUEST QUEUES. IF ANY
BURST MODE OPERATIONS ARE ATTEMPTED ON A MULTIPLEX CHANNEL QUEUE,
I/O OPERATIONS WHICH CAN BE MULTIPLEXED ON THE REMAINING QUEUES
WILL BE PROCESSED PRIOR TO THE BURST MODE OPERATION. THE EXPANDED
MULTIPLE PROGRAM FACILITY PROVIDED WILL PERMIT CONTROL OF UP TO
FOUR USER PROGRAMS CONCURRENTLY. THESE FOUR PROGRAMS, REFERRED TO
AS A USER/S PROGRAM SET CAN CONTAIN /A/ ONE 1412 OR 1419 PROGRAM
AND UP TO THREE ADDITIONAL USER PROGRAMS... OR /B/ TWO 1419
PROGRAMS AND UP TO TWO ADDITIONAL USER PROGRAMS... OR /C/ ONE TO
FOUR USER PROGRAMS WHICH DO NOT INCLUDE 1412 OR 1419 INPUT. A
USER PROGRAM SET ONCE LOADED MUST COMPLETE PROCESSING OF ALL
PROGRAMS WITHIN THAT SET PRIOR TO LOADING A NEW PROGRAM SET.
MAINTAINS MAXIMUM MICR READER-PRINTER THRUPUT. THRUPUT SPEEDS
WILL VARY WITH DOCUMENT LENGTH, AMOUNT OF USER PROCESSING TIME,
OTHER INPUT AND/OR OUTPUT OPERATIONS AND SYSTEM CONFIGURATION.
THE MINIMUM TIME AVAILABLE FOR STACKER SELECTION FOR EACH
MICR READER IS --
                    1412 --- 7.5 MILLISECONDS
                    1419 --- 9.5 MILLISECONDS
AT LEAST 9.5 MILLISECONDS ARE AVAILABLE FOR STACKER DECISIONS ON
THE 1419 FOR 100 PER CENT OF THE DOCUMENTS READ. FOR THOSE CASES
WHERE THE 9.5 MILLISECONDS /7.5 MILLISECONDS FOR THE 1412/ OF
STACKER SELECTION TIME ARE EXCEEDED AND WORST CASE CONDITIONS
SUCH AS MINIMUM DOCUMENT SPACING OCCUR, AN INCREASE IN REJECTS
CAN BE EXPECTED. ASSUME A SYSTEM/360 MODEL 30 WITH A

D FROM PRIOR PAGE--
2 MICROSECOND STORAGE CYCLE. /THE TIMINGS IN PARENTHESIS PERTAIN
TO SYSTEM/360 MODEL 40/. ONE READER/SORTER- THE I/O PROGRAM
WILL USE 2.0 /1.2/ MILLISECONDS /MINIMUM/ TO PROCESS THE EXTERNAL
INTERRUPT AND 2.8 /1.4/ MILLISECONDS /MAXIMUM/ IF A UNIT CHECK
HAS OCCURRED ON THE READER/SORTER. TWO READER/SORTERS- THE I/O
PROGRAM WILL USE 2.1 /1.20/ MILLISECONDS TO PROCESS THE INTERRUPT
FROM EACH MICR READER WHENEVER THE INTERRUPTS ARE NOT CONCURRENT.
WHENEVER BOTH MICR READERS INTERRUPT CONCURRENTLY, THE I/O
PROGRAM WILL USE 4.1 /2.10/ MILLISECONDS TO PROCESS BOTH
INTERRUPTS. IF EACH MICR READER HAS A UNIT CHECK AT THE TIME OF
CONCURRENT INTERRUPTION, THE I/O PROGRAM WILL USE 5.6 /2.8/
MILLISECONDS OF THE AVAILABLE DOCUMENT GAP TIME. THE AVAILABLE
TIME FOR SELECTION PROCESSING WILL BE REDUCED BY THE CHARACTER
TRANSFER TIME ASSOCIATED WITH CONCURRENT I/O OPERATIONS AND THE
TIME NEEDED TO COMPLETE INSTRUCTION EXECUTION PRIOR TO
INTERRUPTION. THE I/O CONTROL PROGRAM MAY TAKE UP TO AN
ADDITIONAL .5 /.25/ MILLISECONDS TO PROCESS THE EXTERNAL
INTERRUPTION, IF ANY OTHER INTERRUPTION IS BEING SERVICED. IN
MAKING TIMING CALCULATIONS, ONLY ONE PRINTER CAN AFFECT, AND
THEREBY REDUCE, THE MICR READER DOCUMENT SELECTION TIME.
NOTE- CHANNEL CONTENTION PROBLEMS MAY BE MINIMIZED BY -- PLACING
THE 1412 OR 1419/S AT THE HIGHEST PRIORITY ON THE MULTIPLEXOR
CHANNEL... DISENGAGING THE 1412 OR 1419/S WHENEVER OTHER I/O
OPERATIONS MIGHT CONFLICT. THE AVERAGE DOCUMENT CYCLE TIMES
/WITHOUT CONSIDERING THE PRINTER/ ARE-

	1412	1419
DOCUMENT LENGTH - 6 INCHES	60 MS.	37.4 MS.
DOCUMENT LENGTH - 8 3/4 INCHES	87.5 MS.	54.5 MS.

TO DETERMINE THE PROCESSING TIME AVAILABLE, IT IS NECESSARY TO
SUBTRACT THE TIME REQUIRED FOR THE FOLLOWING FACTORS FROM THE
AVERAGE DOCUMENT CYCLE TIME. THIS APPLIES FOR EITHER ONE OR TWO
MICR READERS.
1. MICR READER/S/ INTERRUPT SERVICING TIME.
2. USERS DOCUMENT SELECTION TIME/S/.
3. THE TIME REQUIRED TO GET DOCUMENT RECORD/S/.
4. THE TIME REQUIRED FOR EACH I/O OPERATION /EXCLUSIVE OF THE
   MICR READER/S/.
5. CHARACTER TRANSFER INTERFERENCE TIMES FOR ALL I/O OPERATIONS
   INCLUDING THE MICR READER/S/.
APPROXIMATELY 5 /2.5/ MILLISECONDS WILL BE TAKEN FOR EACH I/O
OPERATION EXCLUSIVE OF THE READER/SORTER. THIS TIME INCLUDES --
START I/O, INTERRUPT SERVICING AND RECOGNITION OF ERRORS.
APPROXIMATELY 2 /1.0/ MILLISECONDS WILL BE TAKEN TO GET EACH
DOCUMENT RECORD FROM THE INPUT BUFFER.

CORE STORAGE REQUIREMENTS- THE I/O 1412/1419 PROGRAM HAS THE
FOLLOWING CORE SIZE REQUIREMENTS --

	MODEL 30	MODEL 40
A 1412 OR 1419 WITH 2400 SERIES TAPE	4400 BYTES	4650 BYTES
A 1412 OR 1419 WITH 2311 DISK	4400 BYTES	4650 BYTES
TWO 1419/S WITH 2400 SERIES TAPE	5600 BYTES	5600 BYTES
TWO 1419/S WITH 2311 DISK	5600 BYTES	5600 BYTES

- WHEN THE MULTIPLEX CAPABILITY IS USED, AN ADDITIONAL 160
  BYTES IS REQUIRED FOR THE CONTROL PROGRAM.

MINIMUM SYSTEM REQUIREMENTS- ONE 1412 OR ONE 1419 MICR READER
WITH ADAPTER FEATURE /ADAPTER FEATURE NO. 7720 IS REQUIRED IF
USER PROGRAM INCLUDES 1419 OR 1412 INPUT/... 2030 PROCESSING UNIT
/BEYOND ENGINEERING CHANGE LEVEL 125919/ /A MODEL D IS REQUIRED
FOR DUAL 1419 OPERATION/ OR 2040 PROCESSING UNIT MODEL D/ 1419
ONLY...1412 IS NOT SUPPORTED ON 2040/ OR 2050 PROCESSING UNIT
MODEL F /1419 ONLY...1412 IS NOT SUPPORTED ON 2050/...
A CARD READER /1442, 2501, 2520 OR 2540 N1/... A PRINTER /1403,
1404, 1443, 1445 OR 1052 PRINTER KEYBOARD/... EXTERNAL INTERRUPT
/2030 ONLY/ OR DIRECT CONTROL... STANDARD INSTRUCTION SET...
APPROPRIATE CONTROL UNITS.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... BPS INPUT/OUTPUT
        SPECIFICATIONS, C24-3398...OPERATING GUIDE, C24-3419.
    MACHINE READABLE - IPL LOADER AND SYMBOLIC DECKS FOR
        SUPERVISOR... JOB CONTROL... TAPE LABEL ROUTINES... DISK
        INPUT LABELS... DISK OUTPUT LABELS. THESE DECKS ARE
        AVAILABLE ON CARD OR TAPE, EITHER 9-TRACK OR 7-TRACK DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE, 9-TRACK OR 7-TRACK
MUST BE INDICATED ON THE PROGRAM REQUEST CARD. IF NOT SPECIFIED
9-TRACK WILL BE SUPPLIED. IF THE 7-TRACK IS REQUESTED THE
DATA CONVERSION FEATURE IS REQUIRED. DTR WILL BE SUPPLIED BY THE
PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

059   INPUT/OUTPUT 1418/1428

DER THROUGH LOCAL IBM BRANCH OFFICE
ECIFY FILE NUMBER 360P-IO-059

THE BASIC CONTROL PROGRAM PROVIDES A SINGLE REQUEST QUEUE
FOR INPUT/OUTPUT OPERATIONS ON THE MULTIPLEXOR CHANNEL.
THE MULTIPLEX CAPABILITY PROVIDES FOUR REQUEST QUEUES WHICH
WILL PERMIT FOUR UNBUFFERED DEVICES /WHICH DO NOT OPERATE
IN THE BURST MODE/ TO OPERATE IN THE DATA INTERLEAVED MODE.
IF ANY BURST MODE /TAPE OR DISK/ OPERATIONS ARE ATTEMPTED
ON A MULTIPLEXOR CHANNEL QUEUE, INPUT/OUTPUT OPERATIONS
WHICH CAN BE MULTIPLEXED ON THE REMAINING QUEUES WILL BE
PROCESSED FIRST UNTIL ALL SUCH REQUESTS HAVE BEEN SERVICED.

THE MULTIPLE PROGRAM FACILITY PROVIDED TO HANDLE FOUR
APPLICATIONS CONSISTS OF SEVERAL SUBROUTINES THAT BECOME AN
INTEGRAL PART OF THE 1418/1428 CONTROL PROGRAM. THE MULTIPLE
PROGRAM FACILITY USES PROGRAM CONTROL WORDS /PCW/S/ TO TRANSFER
CONTROL AMONG THE USER PROGRAMS. A PCW IS A 240 BYTE AREA
RESERVED BY THE USER FOR EACH OF HIS PROGRAMS. THE CONTROL
PROGRAM STORES THE STATUS OF THE SYSTEM/360 WHEN CONTROL IS
BEING TRANSFERRED FROM ONE USER PROGRAM TO ANOTHER. THIS
FACILITY PERMITS THE USER TO OPERATE ONE 1418/1428 READER
ON-LINE WITH A SYSTEM/360 WITH UP TO THREE OTHER NON 1418/1428
PROGRAMS. EACH OF THE APPLICATIONS IS CONTROLLED BY A
SEPARATE USER PROGRAM.

A USER PROGRAM WRITTEN FOR A SINGLE 1418/1428 READER PROGRAM
MAY BE EASILY ADAPTED FOR USE IN A MULTIPLE PROGRAM APPLICATION.
IN ORDER TO ADAPT A USERS SINGLE 1418/1428 PROGRAM TO A
MULTIPLE APPLICATION-
- A PROGRAM CONTROL WORD MUST BE PROVIDED TO CONTROL
  TRANSFER FROM ONE USER PROGRAM TO ANOTHER USER PROGRAM.
- ENTRY POINTS MUST BE PROVIDED TO THE SUBROUTINES ASSOCIATED
  WITH THE MULTIPLE PROGRAM FACILITY.

CONTINUED FROM PRIOR COLUMN--

THE INPUT/OUTPUT 1418/1428 PROGRAM CONTROLS THE INPUT AND
OUTPUT FUNCTIONS THAT ARE ASSOCIATED WITH SUCH TYPICAL OCR
PROCESSING AS FORMATTING, BLOCKING AND CONVERSION TO
MAGNETIC TAPE OR DISK STORAGE, BATCH BALANCING AND PUNCHING
OF OUT-OF-BALANCE DATA.

THE CONTROL PROGRAM PROVIDES MAXIMUM PROGRAMMING FLEXIBILITY
IN THE TIME DEPENDENT OCR APPLICATIONS. THE FOLLOWING
FUNCTIONS ARE PROVIDED FOR THE USERS PROBLEM PROGRAM-
- CHANNEL SCHEDULER AND COMPLETE ERROR ROUTINES FOR I/O
  DEVICES OTHER THAN THE 1418/1428.
- MAINTENANCE OF A DOCUMENT INPUT BUFFER.
- OPERATOR COMMUNICATION ROUTINE.
- TAPE LABEL PROCESSING OR DISK LABEL PROCESSING.
THE I/O PROGRAM ALLOWS THE USER TO INSERT HIS ROUTINES FOR
SUCH FUNCTIONS AS-
- STACKER DETERMINATION.
- FORMATTING OF PRINTER, PUNCH, AND MAGNETIC TAPE OR DISK
  OUTPUT.
- DOCUMENT ARITHMETIC PROCESSING.
- RECOGNITION OF CONTROL LEVELS.

THE PROGRAM CONSISTS OF -- SUPERVISOR... JOB CONTROL...
TAPE AND DISK PROCESSING ROUTINES...
INITIAL PROGRAM LOADER /IPL/. THESE COMPONENTS /EXCEPT IPL/ AND
THE USER-PROVIDED PROBLEM PROGRAM/S/ ARE ASSEMBLED, AND THE
RESULTING OBJECT DECKS /WITH IPL/ ARE LOADED INTO MAIN STORAGE
FROM CARDS. THE COMBINED DECK /INPUT/OUTPUT 1418/1428 PROGRAM
AND THE USERS PROBLEM PROGRAM/S// ALLOWS THE PROCESSING OF
DATA READ AND EFFECTS THE READING AND WRITING OF OTHER
INPUT/OUTPUT DEVICES WHICH THE USER MAY REQUIRE. INPUT/OUTPUT
OPERATIONS AND OTHER SUPERVISORY FUNCTIONS ARE REQUESTED
THROUGH THE USE OF THE SUPERVISOR-CALL /SVC/ INTERRUPTION
FEATURE OF THE SYSTEM/360.

THE 1418/1428 CONTROL PROGRAM IS DESIGNED TO MAKE POSSIBLE
MAXIMUM OCR THROUGHPUT. THROUGHPUT SPEEDS WILL VARY WITH
DOCUMENT LENGTH AMOUNT OF USER PROCESSING TIME, AND OTHER
I/O OPERATIONS. DISENGAGING THE 1418 OR 1428 IN ORDER TO
PERFORM A BURST MODE OPERATION ON THE MULTIPLEXOR CHANNEL
OR ANY OTHER OPERATION REQUIRING A DISENGAGE WILL DECREASE
THROUGHPUT. THE MAXIMUM STACKER SELECT TIME FOR THE 1418
AND 1428 IS 10 MS PLUS ANY ADDITIONAL TIME PROVIDED BY
TERMINATING THE LAST READ COMMAND PRIOR TO THE TRAILING
EDGE OF THE DOCUMENT PASSING THE ,,DOCUMENT END 4,,
SENSING STATION. IF THE READ COMMAND IS TERMINATED WITH THE
TRAILING EDGE OF THE DOCUMENTS PASSING THE SELECTED DOCUMENT
END SWITCH SETTING, THE FOLLOWING TIMES ARE AVAILABLE-

DOCUMENT END	1	94 MS
	2	63 MS
	3	25 MS
	4	10 MS

ASSUME A SYSTEM/360 MODEL 30 WITH A 1.5 MICROSECOND STORAGE.
THE TIMES FOR A 2 MICROSECOND STORAGE CYCLE ARE SHOWN IN
PARENTHESES. THE CONTROL PROGRAM WILL USE A MAXIMUM OF
1.5 /2.0/ MILLISECONDS TO PROCESS EACH EXTERNAL INTERRUPT
AND .75 /1.0/ MILLISECOND /MAXIMUM/ ADDITIONAL IF A UNIT
CHECK HAS OCCURED. CONCURRENT I/O OPERATIONS WILL DEDUCT
FROM THE USERS STACKER SELECTION ROUTINE. THE TIME NEEDED
TO COMPLETE THE INSTRUCTION BEING EXECUTED WHEN THE INTERRUPT
OCCURS WILL ALSO REDUCE THE AVAILABLE TIME. THE I/O PROGRAM
CAN DELAY THE EXTERNAL INTERRUPT UP TO .38 /.5/ MILLISECONDS
IF ANOTHER INTERRUPT IS CURRENTLY BEING PROCESSED.
DOCUMENT REJECTS WILL OCCUR WHEN THE AVAILABLE STACKER
SELECT TIME IS EXCEEDED.

NOTE- CHANNEL CONTENTION PROBLEMS MAY BE MINIMIZED BY --
/1/ PLACING THE 1418 OR 1428 AS THE HIGHEST PRIORITY ON THE
MULTIPLEXOR CHANNEL... /2/ DISENGAGING THE 1418 OR 1428
WHERE OTHER I/O OPERATIONS WOULD CONFLICT.
THE USER WILL HAVE THE FOLLOWING TIMES AVAILABLE FOR HIS
OVERLAPPED PROCESS TIME IN THE MAIN LINE PROGRAM ASSUMING
NO CONCURRENT I/O OPERATIONS. THESE TIMES CONSIDER INTERFERENCE
FROM 39 OCR CHARACTERS PER 6 INCH DOCUMENT WITH A SINGLE
READ COMMAND IN THE CCW CHAIN

1418	113 MILLISECONDS
1428	113 MILLISECONDS

APPROXIMATELY 3.8 /5.0/ MILLISECONDS WILL BE REQUIRED FOR
EACH I/O OPERATION REQUESTED /THIS INCLUDES START I/O,
INTERRUPT SERVICINGS, AND RECOGNITION OF ERRORS/.
APPROXIMATELY 1.5 /2.0/ MILLISECONDS WILL BE REQUIRED TO
GET A DOCUMENT RECORD FROM THE INPUT BUFFER. CONCURRENT I/O
OPERATIONS WILL DEDUCT FROM THE USERS AVAILABLE PROCESS TIME.

MINIMUM SYSTEM REQUIREMENTS- ONE 1418 OR ONE 1428 OPTICAL
READER WITH ADAPTER FEATURE /NO. 7720/... 2030 /MODEL C/.
/NOTE THAT A MODEL D IS REQUIRED IF THE MULTIPLE PROGRAM
FACILITY IS USED/ OR 2040 /MODEL D/ OR 2050 /MODEL F/...
2540, 2520, 2501, OR 1442 N1 CARD READ PUNCH... EXTERNAL
INTERRUPT FEATURE /2030 ONLY/ OR DIRECT CONTROL SPECIAL
FEATURE... STANDARD INSTRUCTION SET... APPROPRIATE CONTROL
UNITS... ONE PRINTER /1403 - 2, 3, N1., 1443 N1, OR 1052
PRINTER-KEYBOARD/... ONE CARD READER /1442 N1, 2540, 2520 B1,
2501 B1 OR 2501 B2/.

NOTE- THE MODEL 2030 MUST BE AT OR BEYOND ENGINEERING
CHANGE LEVEL 125919.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... BPS INPUT/OUTPUT
        MANUAL C24-3437... OPERATING GUIDE C24-5023.
    MACHINE READABLE - INPUT/OUTPUT 1418/1428 PROGRAM DECKS
        CONSISTING OF- /IPL/ INITIAL PROGRAM LOADER...
        SYMBOLIC DECKS FOR SUPERVISOR, JOB CONTROL, TAPE
        LABEL ROUTINES, DISK INPUT AND OUTPUT LABEL ROUTINES.
    THESE DECKS ARE AVAILABLE IN CARD FORM OR ON A 9- OR 7-TRACK
DTR /DATA CONVERSION FEATURE REQUIRED/. IF TRACK REQUIREMENT
IS NOT SPECIFIED A 9-TRACK DTR WILL BE SUPPLIED.
    NO TAPE SUBMITTAL IS REQUIRED.

360P-IO-060   BPS/360 INPUT OUTPUT 1231-N1
PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-IO-060

    THE BASIC CONTROL PROGRAM PROVIDES A SINGLE REQUEST QUEUE
    FOR INPUT/OUTPUT OPERATIONS ON THE MULTIPLEXOR CHANNEL.
    THE MULTIPLEX CAPABILITY PROVIDES FOUR REQUEST QUEUES WHICH
    WILL PERMIT FOUR UNBUFFERED DEVICES /WHICH DO NOT OPERATE
    IN THE BURST MODE/ TO OPERATE IN THE DATA INTERLEAVED MODE.
    THE MULTIPLEX CAPABILITY PERMITS THE USER TO OPERATE UP TO
    FOUR 1231 N1 READERS ON-LINE WITH A SYSTEM/360. IF ANY BURST

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CONTINUED FROM PRIOR PAGE--
    MODE /TAPE OR DISK/ OPERATIONS ARE ATTEMPTED ON A MULTIPLEXOR
    CHANNEL QUEUE, INPUT/OUTPUT OPERATIONS WHICH CAN BE MULTIPLEXED
    ON THE REMAINING QUEUES WILL BE PROCESSED FIRST UNTIL ALL
    SUCH REQUESTS HAVE BEEN SERVICED.
    THE MULTIPLE PROGRAM FACILITY PROVIDED TO HANDLE UP TO
    FOUR APPLICATIONS CONSISTS OF SEVERAL SUBROUTINES THAT
    BECOME AN INTEGRAL PART OF THE 1231 N1 CONTROL PROGRAM.
    THE MULTIPLE PROGRAM FACILITY USES PROGRAM CONTROL WORDS /PCW/
    TO TRANSFER CONTROL AMONG THE USER PROGRAMS. A PCW IS A 240
    BYTE AREA RESERVED BY THE USER FOR EACH OF HIS PROGRAMS.
    THE CONTROL PROGRAM STORES THE STATUS OF THE SYSTEM/360 WHEN
    CONTROL IS BEING TRANSFERRED FROM ONE USER PROGRAM TO ANOTHER.
    UP TO FOUR 1231 N1 READERS MAY BE DISTRIBUTED IN ANY MANNER
    AMONG THE FOUR PROGRAMS.

    A PROGRAM WRITTEN FOR A SINGLE PROGRAM APPLICATION MAY BE
    EASILY ADAPTED FOR USE IN A MULTIPLE PROGRAM APPLICATION.
    IN ORDER TO ADAPT A SINGLE APPLICATION TO A MULTIPLE APPLICATION-
    1- A PROGRAM CONTROL WORD MUST BE PROVIDED TO CONTROL TRANSFER
       FROM ONE USER READER PROGRAM TO ANOTHER USER READER PROGRAM.
    2- ENTRY POINTS MUST BE PROVIDED TO THE SUBROUTINES ASSOCIATED
       WITH THE MULTIPLE PROGRAM FACILITY.

    THE INPUT/OUTPUT 1231 N1 PROGRAM IS DESIGNED TO ELIMINATE
    THE NEED TO PROGRAM LOGICAL DETAILS ASSOCIATED WITH INPUT
    AND OUTPUT OF 1231 N1 DATA SHEET PROCESSING. IN ADDITION,
    THE ABILITY TO CONVENIENTLY READ, WRITE AND CONTROL OTHER
    I/O DEVICES /TAPE, DISK AND PUNCHED CARD DATA PROCESSING/
    IS INCLUDED.

    FEATURES-
    - PROVISION FOR CONTROLLING FUNCTIONS OF THE MASTER MARK
      SPECIAL FEATURE. THE MASTER MARK SPECIAL FEATURE PERMITS
      READING DATA THAT IS RECORDED COMMON TO A SPECIFIC BATCH OF
      DOCUMENTS.
    - AUTOMATIC SERVICING OF INTERRUPTS.
    - COMPLETE DISK AND/OR TAPE LABEL CHECKING.
    - CONTROL OF SUCH 1231 N1 FUNCTIONS AS - FEEDING DOCUMENTS...
      READING DOCUMENTS... STACKER SELECTING DOCUMENTS...
      HANDLING VALIDITY CHECK CONDITIONS.

    THE INPUT/OUTPUT 1231 N1 PROGRAM CONSISTS OF -- SUPERVISOR...
    JOB CONTROL... TAPE AND DISK LABEL PROCESSING ROUTINES...
    INITIAL PROGRAM LOADER /IPL/. THESE COMPONENTS AND THE USER
    PROVIDED PROBLEM PROGRAM/S/ ARE ASSEMBLED, AND THE RESULTING
    OBJECT DECKS /WITH IPL/ ARE LOADED INTO MAIN STORAGE FROM
    CARDS. THE COMBINED DECK /INPUT/OUTPUT 1231 N1 PROGRAM
    AND THE USERS PROBLEM PROGRAM/S// ALLOWS THE PROCESSING OF
    DATA READ FROM THE OPTICAL MARK PAGES AND EFFECTS THE READING
    AND WRITING OF OTHER INPUT/OUTPUT DEVICES WHICH THE USER
    MAY REQUIRE IN HIS 1231 N1 APPLICATIONS. INPUT/OUTPUT
    OPERATIONS AND OTHER SUPERVISORY FUNCTIONS ARE REQUESTED
    THROUGH THE USE OF THE SUPERVISOR-CALL /SVC/ INTERRUPTION
    FEATURE OF THE SYSTEM/360.
    IN A 1231 N1 CONFIGURATION, THROUGHPUT WILL VARY WITH USER
    PROCESSING TIME REQUIREMENTS AND OTHER INPUT/OUTPUT OPERATIONS.
    HOWEVER, THE INPUT/OUTPUT 1231 N1 PROGRAM IS DESIGNED TO MAKE
    POSSIBLE THE MAXIMUM 1231 N1 READER THROUGHPUT WHICH IS A
    RATED SPEED OF 2,000 DATA SHEETS PER HOUR /THE IOCP IS DESIGNED
    TO MAKE POSSIBLE THIS THROUGHPUT RATE FOR EACH 1231 N1 READER
    UP TO A MAXIMUM OF FOUR/.

    MINIMUM SYSTEM REQUIREMENTS- 2030 /MODEL C/ /A MODEL D IS
    REQUIRED IF THE MULTIPLE PROGRAM FACILITY IS USED/ OR 2040
    /MODEL D/ OR 2050 /MODEL F/ OR 2065 /MODEL G/... STANDARD
    INSTRUCTION SET... ONE 1231 OPTICAL MARK PAGE READER MODEL N1...
    ONE CARD READER /1442 N1, 2540, 2520 B1, 2501 B1 OR 2501 B2/...
    ONE PRINTER /1403 - 2, 3, N1., 1443 N1., OR 1052
    PRINTER-KEYBOARD/... APPROPRIATE CONTROL UNITS.

    BASIC PROGRAM MATERIAL -
       DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
          MANUAL C24-3408... OPERATING GUIDE C24-3460.
       MACHINE READABLE - THE FOLLOWING PROGRAMS MAY BE OBTAINED
          IN THE FORM OF CARDS OR ON A 7- OR 9-TRACK DTR* -
          INITIAL PROGRAM LOADER /IPL/... SYMBOLIC DECKS FOR -
          SUPERVISOR, JOB CONTROL, TAPE LABEL ROUTINES, DISK INPUT
          LABEL ROUTINES, DISK OUTPUT LABEL ROUTINES.
    IF THE PROGRAM IS ORDERED ON A DTR AND THE TRACK REQUIREMENT
    IS NOT SPECIFIED A 9-TRACK DTR WILL BE SUPPLIED. NO TAPE
    SUBMITTAL IS REQUIRED - THE DTR WILL BE SUPPLIED BY PROGRAM
    INFORMATION DEPARTMENT.
    * THE DATA CONVERSION FEATURE IS REQUIRED TO USE THE 7-TRACK
    DTR.

360P-PT-045   BPS AUTOTEST /8K-TAPE/
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-PT-045

    AUTOTEST /8K TAPE/ IS A DEBUGGING AID FOR OBJECT PROGRAMS
    ASSEMBLED WITH THE BPS BASIC TAPE SYSTEM /8K/, MAY BE ORDERED
    FOR USE ON EITHER 9- OR 7-TRACK TAPE. USING AUTOTEST, RUNS
    CAN BE PLANNED TO PROCEED WITH A MINIMUM OF OPERATOR
    INTERVENTION.
    AUTOTEST RESIDES ON TAPE DURING TESTING. IT CONTROLS
    TESTING AND-
    - PROVIDES FOR THE CREATION OF TAPE DATA FILES PRIOR TO
      THE TEST OF EACH PROGRAM.
    - LOADS THE OBJECT PROGRAM, AND CLEARS UNUSED CORE.
    - ALLOWS THE EXCHANGE, ADDITION, OR DELETION OF INSTRUCTIONS
      WITHOUT RE-ASSEMBLY.
    - MONITORS THE EXECUTION OF THE OBJECT PROGRAM.
    - PROVIDES THE DUMP OF ALL OR ANY PORTION OF CORE STORAGE,
      PERMANENT STORAGE ASSIGNMENTS, AND/OR GENERAL REGISTERS
      WHENEVER A DESIGNATED ADDRESS IS REACHED DURING OBJECT
      PROGRAM EXECUTION.
    - ALLOWS AUTOTEST OUTPUT TO BE STORED ON AN AVAILABLE
      SCRATCH TAPE FOR LATER OFF-LINE PRINTING.
    - WILL DUMP CORE STORAGE AT NORMAL OR ABNORMAL END OF JOB.
    - PRINTS FIXED OR VARIABLE LENGTH, BLOCKED OR UNBLOCKED
      TAPE RECORDS.
    - PROVIDES AN 80-80 LISTING OF INPUT/OUTPUT CARDS AT END OF
      TEST SESSION.
    MINIMUM SYSTEM REQUIREMENTS - A 16K SYSTEM/360 WITH - A 2520
    2540, OR 1442 CARD READ PUNCH, OR A 2501 CARD READER...
    A 7-TRACK OR 9-TRACK 2400 SERIES MAGNETIC TAPE UNIT FOR
    SYSTEM RESIDENCE /7-TRACK REQUIRES THE DATA CONVERSION
    FEATURE/... STANDARD INSTRUCTION SET... A 1403, 1404, OR 1443
    PRINTER OR ONE 2400 SERIES MAGNETIC TAPE UNIT. SUPPORTED
    OPTIONALLY -- STORAGE - 32K OR 64K... 1052 PRINTER-KEYBOARD.
    THE PROGRAM MAINTENANCE WILL BE SUPPLIED IN THE TRACK FORM
    ORIGINALLY REQUESTED.

CONTINUED FROM PRIOR COLUMN--

    BASIC PROGRAM MATERIAL -
       DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
          MANUAL C24-3343... OPERATING GUIDE C24-3417.
       MACHINE READABLE - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
          FEATURE REQUIRED/ DTR CONTAINING THE AUTOTEST PROGRAM
          AND SAMPLE PROBLEM DECK IN OBJECT FORM.

    IF TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.
    THE PROGRAM INFORMATION DEPARTMENT WILL SUPPLY THE DTR. NO
    TAPE SUBMITTAL IS REQUIRED.

360P-RG-200   SYSTEM/360 BPS REPORT
PROGRAM GENERATOR /CARD/
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-RG-200

    THE BPS/360 REPORT PROGRAM GENERATOR /CARD/ IS A PROGRAM
    LANGUAGE AND A PROCESSOR PROGRAM THAT IS USED TO PRODUCE
    MACHINE LANGUAGE OBJECT PROGRAMS. THE OBJECT PROGRAMS WILL BE
    USED PRIMARILY TO PRODUCE BUSINESS REPORTS, BUT THE REPORTS
    MAY RANGE FROM A SIMPLE CARD-TO-PRINTER LISTING TO A COMPLETE
    REPORT THAT INCORPORATES NUMEROUS CALCULATIONS AND EDITING.
    SOME OF THE CAPABILITIES OF THE LANGUAGE ARE-
    - THE OBJECT PROGRAM CAN OBTAIN DATA RECORDS FROM AS MANY
      AS THREE CARD-INPUT FILES.
    - THE OBJECT PROGRAM CAN MATCH RECORDS IN AS MANY AS THREE
      CARD FILES TO GOVERN PROCESSING OF THE REPORT.
    - INPUT RECORDS MAY BE CHECKED FOR SEQUENCE.
    - THE OBJECT PROGRAM CAN SEARCH TABLES, AND IT CAN USE DATA
      FOUND IN THE TABLES TO PRODUCE THE REPORT.
    - CALCULATIONS MAY BE PERFORMED ON DATA TAKEN FROM INPUT
      RECORDS OR RPG LITERALS.
    - THE PROGRAM CAN BRANCH TO A SUBROUTINE THAT HAS BEEN
      WRITTEN IN A LANGUAGE OTHER THAN RPG, PERFORM CALCULATIONS,
      AND RETURN TO THE RPG PROGRAM.
    - THE REPORT CAN BE PRODUCED ON AS MANY AS THREE PRINTER
      OR PUNCH FILES.

    MACHINE REQUIREMENTS- TO GENERATE AN RPG OBJECT PROGRAM,
    THE FOLLOWING ARE THE MINIMUM MACHINE REQUIREMENTS -- 8K BYTES OF
    MAIN STORAGE /UP TO 32K BYTES OF MAIN STORAGE MAY BE
    UTILIZED/... CARD READER... CARD PUNCH /IF OBJECT PROGRAM CARD
    DECK IS DESIRED/... PRINTER /IF DIAGNOSTICS ARE DESIRED/...
    STANDARD INSTRUCTION SET... DECIMAL ARITHMETIC FEATURE.
    TO EXECUTE AN RPG OBJECT PROGRAM, THE FOLLOWING ARE REQUIRED --
    8K BYTES OF MAIN STORAGE /UP TO 32K BYTES OF MAIN STORAGE
    MAY BE UTILIZED/... STANDARD INSTRUCTION SET... DECIMAL
    ARITHMETIC FEATURE... I/O UNITS AS REQUIRED BY THE OBJECT
    PROGRAM.
    THE FOLLOWING CARD I/O DEVICES AND PRINTERS ARE SUPPORTED -
    1442 CARD READ PUNCH... 2501 CARD READER... 2520 CARD READ
    PUNCH, MODEL B1... 2520 CARD PUNCH, MODEL B2... 2520 CARD PUNCH,
    MODEL B3... 2540 CARD READ PUNCH, MODEL 1... 1403 PRINTER...
    1404 PRINTER*... 1443 PRINTER... 1052 PRINTER-KEYBOARD**.
      *THE 1404 PRINTER MAY BE UTILIZED FOR CONTINUOUS FORMS
      OPERATIONS ONLY.
      **THE 1052 MAY BE USED ONLY AS AN OUTPUT LOGGING DEVICE.
    UP TO THREE CARD INPUT DEVICES AND UP TO THREE CARD OUTPUT
    DEVICES OR PRINTERS MAY BE USED IN ANY COMBINATION. THE OBJECT
    PROGRAM REQUIRES AT LEAST ONE CARD INPUT DEVICE AND ONE CARD
    OUTPUT OR PRINTER DEVICE.

    BASIC PROGRAM MATERIAL -
       DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
          DESCRIPTION... SPECIFICATIONS MANUAL C24-3374...
          OPERATING GUIDE C24-3464.
       MACHINE READABLE - RPG NON-RELOCATABLE ASSEMBLED DECK AND
          SAMPLE PROBLEM SOURCE PROGRAM MAY BE OBTAINED ON ONE
          9-TRACK OR 7-TRACK DTR /DATA CONVERSION FEATURE
          REQUIRED/, OR IN CARD FORM.

    WHEN ORDERING THIS PROGRAM, THE REQUESTOR MUST INDICATE THE
    MODE OF SHIPMENT DESIRED. IF IT IS NOT INDICATED A 9-TRACK
    DTR WILL BE FORWARDED.
    NO TAPE SUBMITTAL IS REQUIRED, THE DTR WILL BE SUPPLIED.

360P-RG-201   S/360 BPS REPORT PROGRAM
GENERATOR PROGRAM /8K TAPE/
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-RG-201

    THIS IS A PROBLEM-ORIENTED LANGUAGE DESIGNED TO PROVIDE USERS
    WITH AN EFFICIENT, EASY-TO-USE TECHNIQUE FOR GENERATING
    PROGRAMS THAT CAN- OBTAIN DATA RECORDS FROM SINGLE-OR
    MULTIPLE-INPUT FILES... PERFORM CALCULATIONS ON DATA TAKEN FROM
    INPUT RECORDS OR RPG LITERALS... WRITE PRINTED REPORTS...
    USE TABLE LOOKUP... EXIT TO A USERS SUBROUTINE WRITTEN IN
    A LANGUAGE OTHER THAN RPG... BRANCH WITHIN THE CALCULATIONS...
    SEQUENCE-CHECK INPUT RECORDS.

    MINIMUM SYSTEM REQUIREMENTS-
    SOURCE PROGRAM GENERATION -- 8K BYTES CORE STORAGE WITH...
    ONE 2540, 1442 OR 2520 B1 CARD READ PUNCH OR 2520 B2 AND/OR B3
    CARD PUNCH /THE 2520 MAY NOT BE USED FOR A COMBINED FILE/...
    ONE 1443 PRINTER, 1403 PRINTER, OR 1404 PRINTER /CONTINUOUS
    FORMS OPERATION ONLY/... THREE 2400 SERIES MAGNETIC TAPE
    UNITS, ONE OF WHICH MUST BE 9-TRACK /IF 7-TRACK TAPE UNITS
    ARE USED, THE DATA CONVERSION FEATURE IS REQUIRED/...
    STANDARD INSTRUCTION SET... DECIMAL ARITHMETIC FEATURE...
    THIS PROGRAM MUST BE INTEGRATED INTO THE 360P-AS-091 BASIC
    PROGRAMMING SUPPORT ASSEMBLER/IOCS SYSTEM TAPE.
    OBJECT PROGRAM EXECUTION -- ALTHOUGH THE RPG COMPILER WILL
    OPERATE IN 8K, MOST USER OBJECT PROGRAMS WILL REQUIRE 16K...
    I/O UNITS AS REQUESTED BY THE SPECIFICATIONS... STANDARD
    INSTRUCTION SET... DECIMAL ARITHMETIC FEATURE.
    ADDITIONAL MACHINE FEATURES SUPPORTED- PROGRAM GENERATION --
    16K, 32K, OR 65K CORE STORAGE BYTES... 2501 CARD READER.
    OBJECT PROGRAM EXECUTION -- 16K, 32K, OR 65K CORE STORAGE
    BYTES... 2400 SERIES MAGNETIC TAPE UNITS /7- OR 9-TRACK/...
    UP TO TEN I/O DEVICES /3 OF WHICH MAY BE PRINTERS/ MAY BE
    USED - ONE INPUT FILE IS REQUIRED... 2501 CARD READER.
    OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

    BASIC PROGRAM MATERIAL -
       DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM
          DESCRIPTION... SYSTEM UPDATE INSTRUCTIONS...
          RESTRICTIONS... BPS-RPG SPECIFICATIONS /TAPE/, C24-3418..
          BPS-RPG OPERATING GUIDE 18K TAPE/, C24-3391.
       MACHINE READABLE - 9-TRACK DTR /SEE NOTE BELOW/ CONTAINING -
          ASSEMBLED DECK... SAMPLE PROBLEM /SOURCE LANGUAGE/.

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OPTIONAL PROGRAM MATERIAL - 9-TRACK TAPE CONTAINING THE SOURCE
    DECK. OPTIONAL PROGRAM MATERIAL LIST AND SYMBOLIC DECK
    ASSEMBLY INSTRUCTIONS.

NOTE- NO TAPE SUBMITTAL IS REQUIRED FOR THE BASIC PROGRAM
MATERIAL - THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION
DEPARTMENT. OPTIONAL PROGRAM MATERIAL MUST BE INDICATED ON THE
ORDER CARD. THE TAPE REQUIRED TO OBTAIN IT MAY BE SUPPLIED OR
ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE MUST BE 2400 FEET
IN LENGTH.

360P-SM-043   BPS SORT MERGE /8K-TAPE/
1 CHANNEL
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-SM-043

    THE 8K TAPE SORT/MERGE PROGRAM IS A GENERALIZED SORT/MERGE
    PROGRAM DESIGNED TO OPERATE ON THE SYSTEM/360. WITH THIS
    PROGRAM THE USER CAN SORT RECORDS INTO ONE SEQUENTIAL FILE,
    OR MERGE MULTIPLE PRESORTED FILES INTO ONE CONTINUOUS
    SEQUENTIAL FILE. CONTROL-DATA INFORMATION CAN BE CONTAINED
    IN AS MANY AS TWELVE FIELDS IN EACH RECORD. THE SORT/MERGE
    PROGRAM IS IN THE FORM OF AN ASSEMBLED OBJECT PROGRAM WHEN
    IT IS RECEIVED BY THE USER. IN ADDITION, THE FACILITY TO
    CREATE A PROGRAM TAPE /9-TRACK, OR 7-TRACK IF THE DATA
    CONVERSION FEATURE IS PRESENT/ IS PROVIDED. CONTROL CARD
    STATEMENTS TAILOR THE GENERALIZED SORT/MERGE PROGRAM TO THE
    USERS SPECIFIC APPLICATION. IF THE PROGRAM WILL BE LOADED
    FROM CARDS, THE CONTROL STATEMENTS ARE INSERTED INTO THE
    PROGRAM DECK. IF THE PROGRAM WILL BE LOADED FROM MAGNETIC
    TAPE, THE CONTROL STATEMENTS ARE PLACED IN THE CARD READER.
    THE PROGRAM ASSUMES THAT INPUT RECORDS FOR A SORT OPERATION
    ARE IN RANDOM SEQUENCE., HOWEVER, IF ANY INHERENT SEQUENCING
    EXISTS WITHIN THE INPUT FILE, THE PROGRAM WILL TAKE ADVANTAGE
    OF IT. RECORDS CAN BE SORTED OR MERGED INTO ASCENDING OR
    DESCENDING SEQUENCE, AND AN INDIVIDUAL SEQUENCE CAN BE
    SPECIFIED BY THE USER FOR EACH CONTROL DATA FIELD. THE OUTPUT
    SEQUENCE FOR A MERGE-ONLY OPERATION MUST BE THE SAME AS THE
    INPUT SEQUENCE.

    FEATURES OF THE SORT/MERGE PROGRAM ARE -
    - TRANSLATES MNEMONIC CONTROL-CARD INFORMATION THAT DESCRIBES
      THE FILE PARAMETERS FOR EACH INPUT AND OUTPUT FILE.
    - SORTS SINGLE OR MULTIPLE INPUT FILES UNDER CONTROL OF THE
      VOLUME ENTRY IN THE INPFIL STATEMENT.
    - MERGES A MINIMUM OF ONE TO A MAXIMUM OF FIVE INPUT FILES.
    - ALLOWS MULTIVOLUME INPUT AND/OR OUTPUT.
    - PROVIDES FOR SPECIFICATION OF AN ALTERNATE INPUT DRIVE
      /SORT ONLY/ AND AN ALTERNATE OUTPUT DRIVE /SORT OR MERGE/.
    - PROVIDES FOR INPUT FROM AND OUTPUT TO 7-TRACK AND/OR
      9-TRACK MAGNETIC TAPES.
    - PROVIDES CHECKPOINT, INTERRUPT, AND RESTART PROCEDURES
      DURING THE MERGE PHASE /PHASE 2/ OF A SORT OPERATION.
    - PROVIDES EXITS TO USER-WRITTEN ROUTINES.
    - PRINTS OUT- THE CONTROL CARD INFORMATION /OPTIONAL/,
      RECORD COUNTS AT THE END OF PHASE 1 AND PHASE 2 /OPTIONAL/,
      AND NECESSARY DIAGNOSTICS.
    - PROVIDES THE OPTION TO BYPASS UNREADABLE DATA BLOCKS OR
      TO INDICATE THE NEED FOR OPERATOR INTERVENTION.
    - SEQUENCE-CHECKS THE RECORDS DURING THE FINAL PASS.
    - SORTS OR MERGES ON EACH CONTROL FIELD INDEPENDENTLY,
      PERMITTING THE USER TO SPECIFY EITHER ASCENDING OR DESCENDING
      SEQUENCE FOR EACH INDIVIDUAL FIELD.
    - PROCESSES STANDARD SYSTEM/360 VOLUME AND FILE LABELS.
    - PROVIDES STANDARD SYSTEM/360 IOCS ERROR PROCEDURES.
    - ALLOWS AN ALTERNATE WORK DRIVE TO BE SPECIFIED. THIS ALLOWS
      THE MAXIMUM INPUT FILE SIZE TO BE APPROXIMATELY DOUBLED.
    - SUPPORTS THE 800/1600 BPI DUAL DENSITY FEATURE.

    MINIMUM SYSTEM REQUIREMENTS -
    FOR 1 CHANNEL PROGRAM /360P-SM-043/ -- 8,192 BYTES OF MAIN
    STORAGE... ONE MULTIPLEXOR OR ONE SELECTOR CHANNEL...
    THREE 2400 SERIES MAGNETIC TAPE UNITS /7- AND/OR 9-TRACK/ /IF THE
    OPTIONAL ALTERNATE WORK DRIVE IS USED FOUR UNITS ARE REQUIRED/...
    A PRINTER /1403, 1404, OR 1443, OR A 1052 PRINTER KEYBOARD/...
    A CARD READER /1442, 2501, 2520 OR 2540/... STANDARD INSTRUCTION
    SET.
    - ONE 2816 SWITCHING UNIT WITH TWO 2403 MAGNETIC TAPE AND
      CONTROL UNITS OR TWO 2803 TAPE CONTROL UNITS ATTACHED ONE TO
      EACH OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES A
      READ-WRITE-COMPUTE ENVIRONMENT/.
    - TWO 2403 MAGNETIC TAPE AND CONTROL UNITS OR TWO 2803 TAPE
      CONTROL UNITS ATTACHED ONE TO EACH OF TWO SELECTOR
      CHANNELS. /THIS COMBINATION PRODUCES A READ-COMPUTE AND
      WRITE-COMPUTE ENVIRONMENT ONLY/.
    - TWO 2415 MAGNETIC TAPE AND CONTROL UNITS ATTACHED ON TO EACH
      OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES A
      READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/. THE POOLED
      ENTRY /ALL READING DONE ON ONE CHANNEL AND ALL WRITING DONE
      ON THE OTHER/ OF THE OPTION STATEMENT CANNOT BE SPECIFIED
      WITH THIS CONFIGURATION.
    THE PROGRAM TAKES ADVANTAGE OF... A MAXIMUM OF 65,534 BYTES
    OF MAIN STORAGE... UP TO ELEVEN 2400 SERIES MAGNETIC TAPE UNITS
    /7-TRACK AND/OR 9-TRACK/, AS FOLLOWS- UP TO TWO FOR
    INPUT DRIVES... UP TO SIX FOR WORK DRIVES... UP TO TWO FOR
    OUTPUT DRIVES... ONE FOR PROGRAM RESIDENCE.
    7-TRACK AND 9-TRACK TAPE CONSIDERATIONS- THE POSSIBLE
    COMBINATIONS OF 7-TRACK OR 9-TRACK TAPES FOR A SORT
    OPERATION ARE --

	CHARACTER DATA ONLY	ANY DATA
INPUT	7T OR 9	7D OR 9
WORK	7T AND/OR 9	9 ONLY
OUTPUT	7T OR 9	7D OR 9

    NOTE- 7T EQUALS 7-TRACK IN 6-BIT TRANSLATE MODE.
        7D EQUALS 7-TRACK IN DATA CONVERSION MODE.
        9 EQUALS 9-TRACK.
    WHEN 7T IS USED, THE DATA MUST BE FIXED-LENGTH AND 6-BIT
    FORMAT BECAUSE BLOCK AND RECORD LENGTH FIELDS OF VARIABLE
    LENGTH RECORDS ARE IN BINARY AND CANNOT BE READ BACKWARDS.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
            DESCRIPTION... SPECIFICATIONS MANUAL C24-3320...
            OPERATING PROCEDURES MANUAL C24-3413.
        MACHINE READABLE - NON-RELOCATABLE ASSEMBLED DECK IN CARD
            FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
            FEATURE REQUIRED/ DTR.

CONTINUED FROM PRIOR COLUMN--

DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
    IF TRACK REQUIREMENT IS NOT SPECIFIED, A 9-TRACK DTR WILL
    BE FORWARDED.

360P-SM-044   BPS SORT MERGE /8K-TAPE/
2 CHANNEL
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-SM-044

    THE 8K TAPE SORT/MERGE PROGRAM IS A GENERALIZED SORT/MERGE
    PROGRAM DESIGNED TO OPERATE ON THE SYSTEM/360. WITH THIS
    PROGRAM THE USER CAN SORT RECORDS INTO ONE SEQUENTIAL FILE, OR
    MERGE MULTIPLE PRESORTED FILES INTO ONE CONTINUOUS SEQUENTIAL
    FILE. CONTROL-DATA INFORMATION CAN BE CONTAINED IN AS MANY
    AS TWELVE FIELDS IN EACH RECORD. THE SORT/MERGE PROGRAM IS
    IN THE FORM OF AN ASSEMBLED OBJECT PROGRAM WHEN IT IS RECEIVED
    BY THE USER. IN ADDITION, THE FACILITY TO CREATE A PROGRAM
    TAPE /9-TRACK, OR 7-TRACK IF THE DATA CONVERSION FEATURE IS
    PRESENT/ IS PROVIDED. CONTROL CARD STATEMENTS TAILOR THE
    GENERALIZED SORT/MERGE PROGRAM TO THE USERS SPECIFIC
    APPLICATION. IF THE PROGRAM WILL BE LOADED FROM CARDS, THE
    CONTROL STATEMENTS ARE INSERTED INTO THE PROGRAM DECK. IF THE
    PROGRAM WILL BE LOADED FROM MAGNETIC TAPE, THE CONTROL STATEMENTS
    ARE PLACED IN THE CARD READER. THE PROGRAM ASSUMES THAT
    INPUT RECORDS FOR A SORT OPERATION ARE IN RANDOM SEQUENCE.,
    HOWEVER, IF ANY INHERENT SEQUENCING EXISTS WITHIN THE INPUT
    FILE, THE PROGRAM WILL TAKE ADVANTAGE OF IT. RECORDS CAN BE
    SORTED OR MERGED INTO ASCENDING OR DESCENDING SEQUENCE, AND A
    IN INDIVIDUAL SEQUENCE CAN BE SPECIFIED BY THE USER FOR EACH
    CONTROL DATA FIELD. THE OUTPUT SEQUENCE FOR A MERGE-ONLY
    OPERATION MUST BE THE SAME AS THE INPUT SEQUENCE. THE 2-CHANNEL
    SORT/MERGE PROGRAM IS DESIGNED PRIMARILY FOR USE ON A 2-CHANNEL
    SYSTEM CONFIGURATION OPERATING IN EITHER A READ-WRITE-COMPUTE
    OR A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT. IT MAY,
    HOWEVER, BE USED ON SYSTEMS HAVING ONLY ONE CHANNEL /READ-COMPUTE
    AND WRITE-COMPUTE ENVIRONMENT ONLY/. THE PERFORMANCE OBTAINED
    BY USING THE 2-CHANNEL PROGRAM ON A 1-CHANNEL SYSTEM WILL
    GENERALLY SURPASS THAT OF THE 1-CHANNEL PROGRAM ON THE SAME
    SYSTEM PROVIDED THE SYSTEM HAS MORE THAN 8K BYTES OF MAIN
    STORAGE. THIS IS DUE TO THE FACT THAT THE 2-CHANNEL PROGRAM
    USES DUAL OUTPUT AREAS, WHILE THE 1-CHANNEL PROGRAM USES ONLY
    ONE.

    FEATURES OF THE SORT/MERGE PROGRAM ARE -
    - TRANSLATES MNEMONIC CONTROL-CARD INFORMATION THAT DESCRIBES
      THE FILE PARAMETERS FOR EACH INPUT AND OUTPUT FILE.
    - SORTS SINGLE OR MULTIPLE INPUT FILES UNDER CONTROL OF THE
      VOLUME ENTRY IN THE INPFIL STATEMENT.
    - MERGES A MINIMUM OF ONE TO A MAXIMUM OF FIVE INPUT FILES.
    - ALLOWS MULTIVOLUME INPUT AND/OR OUTPUT.
    - PROVIDES FOR SPECIFICATION OF AN ALTERNATE INPUT DRIVE
      /SORT ONLY/ AND AN ALTERNATE OUTPUT DRIVE /SORT OR MERGE/.
    - PROVIDES FOR INPUT FROM AND OUTPUT TO 7-TRACK AND/OR 9-TRACK
      MAGNETIC TAPES.
    - PROVIDES CHECKPOINT, INTERRUPT, AND RESTART PROCEDURES
      DURING THE MERGE PHASE /PHASE 2/ OF A SORT OPERATION.
    - PROVIDES EXITS TO USER-WRITTEN ROUTINES.
    - PRINTS OUT- THE CONTROL CARD INFORMATION /OPTIONAL/,
      RECORD COUNTS AT THE END OF PHASE 1 AND PHASE 2 /OPTIONAL/,
      AND NECESSARY DIAGNOSTICS.
    - PROVIDES THE OPTION TO BYPASS UNREADABLE DATA BLOCKS OR
      TO INDICATE THE NEED FOR OPERATOR INTERVENTION.
    - SEQUENCE-CHECKS THE RECORDS DURING THE FINAL PASS.
    - SORTS OR MERGES ON EACH CONTROL FIELD INDEPENDENTLY,
      PERMITTING THE USER TO SPECIFY EITHER ASCENDING OR
      DESCENDING SEQUENCE FOR EACH INDIVIDUAL FIELD.
    - PROCESSES STANDARD SYSTEM/360 VOLUME AND FILE LABELS.
    - PROVIDES STANDARD SYSTEM/360 IOCS ERROR PROCEDURES.
    - ALLOWS AN ALTERNATE WORK DRIVE TO BE SPECIFIED. THIS ALLOWS
      THE MAXIMUM INPUT FILE SIZE TO BE APPROXIMATELY DOUBLED.
    - SUPPORTS THE 800/1600 BPI DUAL DENSITY FEATURE.

    MINIMUM SYSTEM REQUIREMENTS -
    /360P-SM-044/ -- 8,192 BYTES OF MAIN STORAGE... EITHER ONE OR
    TWO SELECTOR CHANNELS... THREE 2400 SERIES MAGNETIC TAPE UNITS
    /7- AND/OR 9-TRACK/ /IF THE OPTIONAL ALTERNATE WORK DRIVE IS
    USED FOUR UNITS ARE REQUIRED/... A PRINTER /1403, 1404, 1443 OR A
    1052 PRINTER KEYBOARD/... A CARD READER /1442, 2501, 2520
    OR 2540/... STANDARD INSTRUCTION SET.
    TAPE CONTROL UNIT CONSIDERATIONS FOR 2-CHANNEL PROGRAM-
    IF THE SYSTEM HAS ONE SELECTOR CHANNEL AND THE 2-CHANNEL
    PROGRAM WILL BE EXECUTED, ONE OF THE FOLLOWING MINIMUMS MUST
    BE OBSERVED-
    - ONE 2415 MAGNETIC TAPE UNIT AND CONTROL. /THIS COMBINATION
      PRODUCES A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/.
    - ONE 2403 MAGNETIC TAPE UNIT AND CONTROL OR 2803 TAPE
      CONTROL. /THIS COMBINATION PRODUCES A READ-COMPUTE AND
      WRITE-COMPUTE ENVIRONMENT ONLY/.
    IF THE SYSTEM HAS TWO SELECTOR CHANNELS AND THE 2-CHANNEL
    PROGRAM WILL BE EXECUTED, ONE OF FOUR MINIMUM COMBINATIONS
    MUST BE OBSERVED-
    - ONE 2404 MAGNETIC TAPE UNIT AND CONTROL, OR ONE 2804
      TAPE CONTROL. /THIS COMBINATION PRODUCES A READ-WRITE-COMPUTE
      ENVIRONMENT/.
    - ONE 2816 SWITCHING UNIT WITH TWO 2403 MAGNETIC TAPE AND
      CONTROL UNITS OR TWO 2803 TAPE CONTROL UNITS ATTACHED ONE TO
      EACH OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES
      A READ-WRITE-COMPUTE ENVIRONMENT/.
    - TWO 2403 MAGNETIC TAPE AND CONTROL UNITS OR TWO 2803 TAPE
      CONTROL UNITS ATTACHED ONE TO EACH OF TWO SELECTOR CHANNELS.
      /THIS COMBINATION PRODUCES A READ-COMPUTE AND WRITE-COMPUTE
      ENVIRONMENT ONLY/.
    - TWO 2415 MAGNETIC TAPE AND CONTROL UNITS ATTACHED ONE TO
      EACH OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES
      A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/.
      THE POOLED ENTRY /ALL READING DONE ON ONE CHANNEL AND ALL
      WRITING DONE ON THE OTHER/ OF THE OPTION STATEMENT CANNOT
      BE SPECIFIED WITH THIS CONFIGURATION.
    ADDITIONAL MACHINE FEATURES SUPPORTED -
    THE PROGRAM TAKES ADVANTAGE OF... A MAXIMUM OF 65,534 BYTES
    OF MAIN STORAGE... UP TO ELEVEN 2400 SERIES MAGNETIC TAPE UNITS
    /7-TRACK AND/OR 9-TRACK/, AS FOLLOWS- UP TO TWO FOR INPUT
    DRIVES... UP TO SIX FOR WORK DRIVES... UP TO TWO FOR OUTPUT
    DRIVES... ONE FOR PROGRAM RESIDENCE.
    7-TRACK AND 9-TRACK TAPE CONSIDERATIONS-
    THE POSSIBLE COMBINATIONS OF 7-TRACK OR 9-TRACK TAPES FOR A
    SORT OPERATION ARE --

	CHARACTER DATA ONLY	ANY DATA
INPUT	7T OR 9	7D OR 9
WORK	7T AND/OR 9	9 ONLY

CONTINUED FROM PRIOR PAGE--
          OUTPUT   7T OR 9   7D OR 9
          NOTE- 7T EQUALS 7-TRACK IN 6-BIT TRANSLATE MODE.
                7D EQUALS 7-TRACK IN DATA CONVERSION MODE.
                9 EQUALS 9-TRACK.
          WHEN 7T IS USED, THE DATA MUST BE FIXED-LENGTH AND 6-BIT
          FORMAT BECAUSE BLOCK AND RECORD LENGTH FIELDS OF VARIABLE
          LENGTH RECORDS ARE IN BINARY AND CANNOT BE READ BACKWARDS.

          BASIC PROGRAM MATERIAL -
              DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
                  DESCRIPTION... SPECIFICATIONS MANUAL C24-3320...
                  OPERATING PROCEDURES MANUAL C24-3413.
              MACHINE READABLE - NON-RELOCATABLE ASSEMBLED DECK IN CARD
                  FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
                  FEATURE REQUIRED/ DTR.
              THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPT.
              IF TRACK REQUIREMENT IS NOT SPECIFIED, A 9-TRACK DTR WILL
              BE FORWARDED.

360P-UT-017   SYSTEM/360 ABSOLUTE PROGRAM
LOADER
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-017

    THE SYSTEM/360 ABSOLUTE PROGRAM LOADER /360P-UT-017/ LOADS
    ASSEMBLED PROGRAMS INTO THE STORAGE LOCATIONS ASSIGNED BY THE
    ASSEMBLER. FACILITIES FOR MAKING CORRECTIONS OR REPLACEMENTS
    TO THE ASSEMBLED PROGRAM AT LOAD TIME ARE ALSO PROVIDED. THE
    FUNCTIONS OF THE ABSOLUTE LOADER ARE ALSO PROVIDED BY THE
    RELOCATING LOADER. THIS PROGRAM USES SERUP INTERFACE RATHER THAN
    READ ERROR RECOVERY ROUTINES.
    MINIMUM REQUIREMENTS - STANDARD S/360 INSTRUCTION SET... 8K MAIN
    STORAGE... 2540 OR 1442 CARD READ PUNCH OR ONE 2400 SERIES TAPE
    UNIT OR 2501 CARD READER AND THE 2520 MODEL B1 CARD READ PUNCH...
    OPTIONAL I/O DEVICES - 1403 OR 1443 PRINTER OR 1052 PRINTER
    KEYBOARD.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM SUPPORT MANUAL...
            OPERATING GUIDE...SAMPLE PROBLEM OPERATING INSTRUCTIONS..
            .PROGRAM MATERIAL LIST...SPECIAL INFORMATION ATTACHMENT.
        MACHINE READABLE - ASSEMBLED NON-RELOCATABLE DECKS- BOTH
            LOW AND HIGH SELF LOADING DECKS...SAMPLE PROBLEM SYMBOLIC
            DECK.

360P-UT-018   SYSTEM/360 CARD/TAPE I/O
SUBROUTINES
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-018

    THE CARD/TAPE I/O SUBROUTINES IS A MODULAR SET OF BASIC
    ASSEMBLER LANGUAGE SUBROUTINES WHICH PROVIDE THE USER WITH
    STANDARD, TESTED I/O SUPPORT. THE DESIRED FUNCTIONS ARE SELECTED
    BY THE USER AND EITHER COMBINED WITH HIS SOURCE PROGRAM AS INPUT
    TO THE BASIC ASSEMBLER, OR ARE PRE-ASSEMBLED INTO RELOCATABLE
    TEXT AND COMBINED WITH THE RELOCATABLE TEXT OF INDEPENDENT
    ASSEMBLIES FOR LOADING BY THE RELOCATING LOADER.
    MINIMUM REQUIREMENTS - STANDARD S/360 INSTRUCTION SET...8K MAIN
    STORAGE... ONE 2501 CARD READER AND 2520 MODELS B1
    /CARD READ PUNCH/, B2 AND B3 /CARD PUNCHES OR
    ONE 2540 OR 1442 CARD READ PUNCH OR 1403 OR 1443
    PRINTER OR 1052 PRINTER KEYBOARD OR ONE 2400 SERIES TAPE UNIT.
    OPTIONAL I/O DEVICES - ANY NUMBER OF EACH UNIT.
    BECAUSE THE I/O SUBROUTINES ARE LOADED INTO STORAGE WITH AND AT
    THE SAME TIME AS THE USERS PROGRAM THE INPUT DEVICES FOR LOADING
    ARE NOT INCLUDED.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT NO. 1
            /SPECIAL INFORMATION/... BASIC UTILITIES MANUAL,
            C28-6505... OPERATING GUIDE, C28-6557.
        MACHINE READABLE - SAMPLE PROBLEM SYMBOLIC DECK AND I/O
            SUPPORT PACKAGE SYMBOLIC DECK IN CARD FORM OR ON ONE
            9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR

    NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK
    IS REQUIRED. IF NOT SPECIFIED A 9-TRACK DTR WILL BE FORWARDED.
    THE DTR WILL BE PROVIDED BY THE PROGRAM INFORMATION DEPARTMENT -
    NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-019   SYSTEM/360 DUMP PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-019

    THE SYSTEM/360 DUMP PROGRAM /360P-UT-019/ PROVIDES THE FACILITY
    TO PRINT THE CONTENTS OF ALL OR A PORTION OF MAIN STORAGE AND THE
    GENERAL AND FLOATING POINT REGISTERS AT SELECTED POINTS DURING
    OBJECT PROGRAM EXECUTION. THE OUTPUT WILL BE SUPPRESSED IF THE
    ASSOCIATED PRIORITY NUMBER DOES NOT MATCH THAT REQUESTED BY THE
    USER WITH A CONTROL CARD AT OBJECT TIME, THUS PROVIDING THE
    FACILITY TO ACTIVATE STORAGE DUMPING AT LOAD TIME. A TWO-PHASE
    VERSION OF THIS PROGRAM IS PROVIDED TO ECONOMIZE ON STORAGE
    REQUIREMENTS DURING THE EXECUTION OF THE USER/S PROGRAM.
    THIS PROGRAM USES SERUP INTERFACE RATHER THAN READ/PUNCH ERROR
    ROUTINES.
    MINIMUM REQUIREMENTS- STANDARD INSTRUCTION SET...8K MAIN STORAGE
    /SINGLE PHASE/- 1403 OR 1443 PRINTER OR 1052 PRINTER KEYBOARD...
    ALLOWANCES FOR OPERATOR MESSAGES ARE MADE WITH THESE
    OPTIONAL I/O DEVICES - 1403 OR 1443 PRINTER OR 1052 PRINTER
    KEYBOARD. /TWO PHASE/- 2540 OR 1442 CARD READ PUNCH WITH 1403 OR
    1443 PRINTER OR 1052 PRINTER KEYBOARD- 2501 CARD READER AND 2520
    MODELS B1, B2 OR B3...OR...ONE 2400 SERIES TAPE UNIT WITH A 1403
    OR 1443 PRINTER OR 1052 PRINTER KEYBOARD. OPTIONAL I/O DEVICES -
    1403 OR 1443 PRINTER OR 1052 PRINTER KEYBOARD. USED FOR ERROR
    MESSAGES.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM SUPPORT MANUAL...
            OPERATING GUIDE...SAMPLE PROBLEM OPERATING INSTRUCTIONS..
            PROGRAM MATERIAL LIST...SPECIAL INFORMATION ATTACHMENT.
        MACHINE READABLE - ASSEMBLED DECKS FOR - SINGLE PHASE DUMP
            RELOCATABLE...TWO PHASE DUMP- PHASE 1 RELOCATABLE...TWO
            PHASE DUMP- PHASE 2 NON-RELOCATABLE /SELF-LOADING/...
            SAMPLE PROBLEM SYMBOLIC DECK.

360P-UT-020   SYSTEM/360 RELOCATING PROG.
LOADER
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-020

CONTINUED FROM PRIOR COLUMN--

    THE DISTINGUISHING FEATURE OF THE RELOCATING LOADER IS ITS
    ABILITY TO RELOCATE SEPARATE ASSEMBLIES AND TO COMPLETE THE
    LINKAGES BETWEEN THEM. THE FUNCTIONS OF THE ABSOLUTE LOADER ARE
    ALSO PROVIDED BY THE RELOCATING LOADER. IN ADDITION, THE
    RELOCATING LOADER LISTS THE STORAGE LOCATIONS OF THE SEPARATE
    ASSEMBLIES WHICH IT LOADS. THIS PROGRAM USES SEREP INTERFACE
    RATHER THAN READ ERROR RECOVERY ROUTINES.
    MINIMUM REQUIREMENTS - STANDARD S/360 INSTRUCTION SET...8K
    MAIN STORAGE...2540 OR 1442 CARD READ PUNCH OR 2400 SERIES TAPE
    UNIT OR 2501 CARD READER AND THE 2520 MODEL B1 CARD READ PUNCH.
    OPTIONAL I/O DEVICES - 1403 OR 1443 PRINTER OR 1052 PRINTER
    KEYBOARD.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM MATERIAL LIST...
            SAMPLE PROBLEM OPERATING INSTRUCTIONS...PROGRAM SUPPORT
            MANUAL...OPERATING GUIDE...SPECIAL INFORMATION ATTACHMENT
        MACHINE READABLE - SAMPLE PROBLEM SYMBOLIC DECK...RELOCATING
            LOADER NON-RELOCATABLE ASSEMBLED DECK /LOW SELF-LOADING/.

360P-UT-048   UNIVERSAL CHARACTER SET
UTILITY PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-048

    THE BPS UNIVERSAL CHARACTER SET UTILITY PROGRAM IS PROVIDED
    TO LOAD THE SPECIAL 1403/2821 READ/WRITE STORAGE. STORAGE
    IS LOADED WITH THE PROPER ARRANGEMENT OF 240 SELECTED EXTENDED
    BINARY CODE DECIMAL INTERCHANGE CODES TO CAUSE THE PROPER
    SELECTION OF GRAPHICS TO BE PRINTED.
    AFTER LOADING READ/WRITE STORAGE, THE PROGRAM- PRINTS A
    UNIQUE MESSAGE TO IDENTIFY ALL ARRANGEMENTS OTHER THAN
    SPECIAL CUSTOM-DESIGNED OR 1400 SERIES ARRANGEMENTS... PRINTS
    THE TRAIN OR CHAIN IMAGE, AND... PRINTS ANY CUSTOMER
    IDENTIFICATION MESSAGE PROVIDED BY AN OPTION CARD.
    THIS PROGRAM WILL HANDLE THE LOADING OF ANY NUMBER OF UCS
    PRINTERS.
    MINIMUM SYSTEM REQUIREMENTS- AN 8K SYSTEM/360 WITH A 2520,
    2540, 1442, OR 2501 CARD READER... A 1403 PRINTER MODEL 2, 3,
    OR N1... AND UNIVERSAL CHARACTER SET SPECIAL FEATURE.
    OPTIONAL MATERIAL REQUESTED MUST BE ITEMIZED ON THE ORDER CARD.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM WRITE-UP...REFERENCE MANUAL...
            OPERATING GUIDE.
        MACHINE READABLE - NON-RELOCATABLE ASSEMBLED DECK...UTILITY
            PROGRAM LOADER.

    OPTIONAL PROGRAM MATERIAL - UTILITY SYMBOLIC DECK.

360P-UT-050   CARD TO PRINTER AND/OR PUNCH
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-050

    TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO A PRINTER
    AND/OR PUNCH.

    CARD TO PRINTER
    THE CARD-TO-PRINTER FUNCTION PRODUCES PRINTED OUTPUT IN TWO
    FORMATS-
    - DISPLAY - TRANSFERS THE CONTENTS OF A CARD FILE TO A
      PRINTER WITH EACH RECORD BEING PLACED ON ONE PRINT LINE.
      THE FIELD-SELECT OPTION CANNOT BE PERFORMED WITH DISPLAY.
      IN THIS FORMAT THE FIRST 20 POSITIONS OF THE PRINT LINE
      ARE RESERVED FOR INFORMATION DESCRIBING THE FILE.
    - LIST - INPUT RECORDS ARE TRANSFERRED TO THE PRINTER WITH
      EACH RECORD BEING FULLY PRINTED. THE FIELD SELECT
      OPTION MAY BE USED. IN THIS FORMAT THE ENTIRE PRINT LINE
      IS AVAILABLE TO THE USER.
    SEQUENCE CHECKING CAN BE PERFORMED ON CARD INPUT.

    CARD TO PUNCH
    THE CARD-TO-PUNCH FUNCTION ACCEPTS INPUT RECORDS PUNCHED
    IN EITHER EBCDIC OR BINARY. OUTPUT RECORDS MAY ALSO BE
    IN EITHER EBCDIC OR BINARY. THE RECORDS MAY BE COPIED OR
    FIELD-SELECTED. INPUT CARDS CANNOT BE SEQUENCED-CHECKED.

    CARD TO PRINTER AND PUNCH
    THE CARD-TO-PRINTER AND PUNCH FUNCTION ALLOWS EBCDIC INPUT
    AND OUTPUT RECORDS. PRINTED RECORDS ARE IN THE LIST FORMAT.
    INPUT CARDS CANNOT BE SEQUENCED-CHECKED.

    THE FEATURES ARE-
    - JOB DESCRIPTION MESSAGES MAY BE PRINTED OR SUPPRESSED
      USING UPSI JOB-CONTROL CARD OPTION.
    - THE 1052 IS ASSIGNED THROUGH SYSLOG.
    - PUNCH-CHECK ERROR RECOVERY FOR 2540 CARD READ PUNCH FOR
      THE CARD TO PRINTER AND/OR PUNCH AND TAPE TO CARD PROGRAMS.
    - STACKER CONTROL FOR THE CARD TO PRINTER AND/OR PUNCH PROGRAM.
    - FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
      STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
    - I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
      STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO
      ALLOW MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
      OVERLAP FOR A GIVEN BLOCK SIZE.
    - CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED PARAMETERS
      OF THE PROGRAM MEET JOB REQUIREMENTS. /FOR EXAMPLE, THE
      TAPE TO PRINTER PROGRAM IS PRESET TO DATA DISPLAY MODE
      FOR UP TO A 1000 BYTE BLOCK WITH SINGLE SPACING. THESE
      ASSUMED PARAMETERS CAN BE ALTERED BY THE USER TO SUIT
      ANY PERMANENT SCHEME HE EMPLOYS IN HIS INSTALLATION./
    - 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

    MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
    - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
      OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540
      CARD READ PUNCH.
    - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
      SPECIFIC PROGRAM.
    - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
      PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
      1052 PRINTER-KEYBOARD.
    - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400
      SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.
    *THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
    /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

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BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-5026... OPERATING GUIDE C24-5027.
    MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A
        7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED,
        THE DECK MAY ALSO BE OBTAINED IN CARD FORM.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE
REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS
NOT SPECIFIED ON THE REQUEST CARD.

THE PROGRAM WILL BE MAINTAINED IN THE FORM ORIGINALLY REQUESTED.

360P-UT-051   CARD TO TAPE
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-051

THIS PROGRAM TRANSFERS THE CONTENTS OF A CARD FILE FROM
CARD TO TAPE. THE CARDS MAY BE PUNCHED IN EITHER EBCDIC OR
BINARY. THE INPUT RECORDS MUST BE FIXED-LENGTH UNBLOCKED,
AND EACH LOGICAL RECORD MUST FIT ON ONE CARD. THE MAXIMUM
SIZE RECORD IS 80 BYTES FOR EXTENDED BCD AND 160 BYTES FOR
BINARY.
THESE FILES MAY BE COPIED, REBLOCKED, FIELD-SELECTED, OR
REBLOCKED AND FIELD-SELECTED. AN OPTION IS AVAILABLE FOR
SPECIFYING THE NUMBER OF LOGICAL RECORDS TO BE BYPASSED
BEFORE PROCESSING STARTS.

THE FEATURES ARE-
 - JOB DESCRIPTION MESSAGES MAY BE PRINTED OR SUPPRESSED
   USING UPSI JOB-CONTROL CARD OPTION.
 - THE 1052 IS ASSIGNED THROUGH SYSLOG.
 - USER FILE LABEL ROUTINE COMMUNICATION AND LINKAGE IS
   PERFORMED THROUGH GENERAL REGISTERS.
 - ABILITY TO LOG A FILE LABEL WHEN LABEL DISCREPANCIES
   OCCUR.
 - WRITING OF INITIAL TAPE MARK ON AN UNLABELED OUTPUT FILE
   MAY BE PREVENTED USING UPSI JOB-CONTROL CARD OPTION.
 - FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
   STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
 - I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
   STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO
   ALLOW MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
   OVERLAP FOR A GIVEN BLOCK SIZE.
 - CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED PARAMETERS
   OF THE PROGRAM MEET JOB REQUIREMENTS.
 - 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540
   CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
   PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
   1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400
   SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-5026... OPERATING GUIDE C24-5027.
    MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A
        7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE
REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS
NOT SPECIFIED ON THE REQUEST CARD.

MODIFICATIONS WILL BE DISTRIBUTED ON 9-TRACK OR 7-TRACK DTR.

360P-UT-052   TAPE TO PRINTER
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-052

THIS PROGRAM CAN DISPLAY A TAPE FILE IN TWO FORMATS- DATA
DISPLAY AND DATA LIST.
DATA DISPLAY PROVIDES A BYTE-FOR-BYTE REPRESENTATION OF THE
DATA FILE. THIS FORMAT CAN HANDLE FIXED, VARIABLE, AND
UNDEFINED RECORDS.
DATA LIST PROVIDES A SIMPLE EDITED REPRESENTATION OF THE FILE.
INPUT RECORDS FOR THIS FORMAT MUST BE FIXED OR VARIABLE
LENGTH, AND THE FIELD-SELECT OPTION MAY BE USED. AN OPTION
IS AVAILABLE FOR SPECIFYING THE NUMBER OF LOGICAL RECORDS
TO BE BYPASSED BEFORE PRINTING STARTS.

THE FEATURES ARE-
 - JOB DESCRIPTION MESSAGES MAY BE PRINTED OR SUPPRESSED
   USING UPSI JOB-CONTROL CARD OPTION.
 - THE 1052 IS ASSIGNED THROUGH SYSLOG. USER FILE LABEL
   ROUTINE COMMUNICATION AND LINKAGE IS NOW PERFORMED
   THROUGH GENERAL REGISTERS.
 - ABILITY TO LOG A FILE LABEL WHEN LABEL DISCREPANCIES OCCUR.
 - FIRST CHARACTER FORMS CONTROL.
 - FIELD SELECTION CAPABILITIES FOR VARIABLE LENGTH RECORDS.
 - SUPPORT FOR MULTI-FILE REELS ON LABELED AND UNLABELED
   INPUT TAPES.
 - FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
   STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
 - I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
   STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO
   ALLOW MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
   OVERLAP FOR A GIVEN BLOCK SIZE.
 - CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED
   PARAMETERS OF THE PROGRAM MEET JOB REQUIREMENTS.
   /FOR EXAMPLE, THE PROGRAM IS PRESET TO DATA DISPLAY MODE
   FOR UP TO A 1000 BYTE BLOCK WITH SINGLE SPACING. THESE
   ASSUMED PARAMETERS CAN BE ALTERED BY THE USER TO SUIT
   ANY PERMANENT SCHEME HE EMPLOYS IN HIS INSTALLATION/.
 - 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540
   CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404

CONTINUED FROM PRIOR COLUMN--
    PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
    1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400
   SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-5026... OPERATING GUIDE C24-5027.
    MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A
        7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE
REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS
NOT SPECIFIED ON THE REQUEST CARD.

MODIFICATIONS WILL BE DISTRIBUTED ON 9-TRACK OR 7-TRACK DTR.

360P-UT-053   TAPE TO CARD
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-053

THIS PROGRAM TRANSFERS THE CONTENTS OF A TAPE FILE TO A
CARD FILE. THE OUTPUT FILE MAY BE IN EITHER EBCDIC OR BINARY.
EACH LOGICAL OUTPUT RECORD MUST FIT INTO ONE CARD /80 BYTES
FOR EXTENDED BCD OR 160 BYTES FOR BINARY/. UNLESS ONLY A
PORTION OF THE INPUT RECORD IS TRANSFERRED THROUGH THE
FIELD-SELECT OR REBLOCK-AND-FIELD-SELECT OPTION, THE INPUT
RECORD SIZE WILL BE RESTRICTED TO 80 OR 160. INPUT RECORDS
TO THE PROGRAM MUST BE FIXED LENGTH.
THESE FILES MAY BE COPIED, REBLOCKED, FIELD-SELECTED, OR
REBLOCKED AND FIELD-SELECTED. BLOCKED INPUT RECORDS MUST BE
REBLOCKED. AN OPTION IS AVAILABLE FOR SPECIFYING THE NUMBER
OF LOGICAL RECORDS TO BE BYPASSED BEFORE PUNCHING STARTS.

THE FEATURES ARE-
 - JOB DESCRIPTION MESSAGES MAY BE PRINTED OR SUPPRESSED
   USING UPSI JOB-CONTROL CARD OPTION.
 - THE 1052 IS ASSIGNED THROUGH SYSLOG.
 - USER FILE LABEL ROUTINE COMMUNICATION AND LINKAGE IS
   PERFORMED THROUGH GENERAL REGISTERS.
 - ABILITY TO LOG A FILE LABEL WHEN LABEL DISCREPANCIES OCCUR.
 - PUNCH-CHECK ERROR RECOVERY FOR 2540 CARD READ PUNCH.
 - FIRST CHARACTER STACKER SELECT.
 - SUPPORT FOR MULTI-FILE REELS ON LABELED AND UNLABELED
   INPUT TAPES.
 - FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
   STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
 - I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
   STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO ALLOW
   MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
   OVERLAP FOR A GIVEN BLOCK SIZE.
 - CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED PARAMETERS
   OF THE PROGRAM MEET JOB REQUIREMENTS.
 - 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS-.1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540
   CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
   PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
   1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400
   SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-5026... OPERATING GUIDE C24-5027.
    MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A
        7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED.
        THE DECK MAY ALSO BE OBTAINED IN CARD FORM.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE
REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS
NOT SPECIFIED ON THE REQUEST CARD.
THE PROGRAM WILL BE MAINTAINED IN TAPE FORM ONLY, IF THE
PROGRAM IS REQUESTED IN CARD FORM THE USER MUST SPECIFY WHETHER
MAINTENANCE IS REQUIRED ON 9- OR 7-TRACK DTR.

360P-UT-054   TAPE TO TAPE
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-054

THIS PROGRAM TRANSFERS A FILE FROM ONE OR MORE TAPE REELS
TO ONE OR MORE OTHER REELS. THE FILES MAY BE COPIED, REBLOCKED,
FIELD-SELECTED, OR REBLOCKED AND FIELD-SELECTED. IF THE
REBLOCK OR FIELD-SELECT OPTIONS ARE USED, THE INPUT RECORDS MUST
BE FIXED OR VARIABLE LENGTH. AN OPTION IS AVAILABLE FOR
SPECIFYING THE NUMBER OF LOGICAL RECORDS TO BE BYPASSED
BEFORE THE COPY FUNCTION IS INITIATED.

THE FEATURES ARE-
 - JOB DESCRIPTION MESSAGES FOR ALL PROGRAMS MAY BE PRINTED
   OR SUPPRESSED USING UPSI JOB-CONTROL CARD OPTION.
 - THE 1052 IS ASSIGNED THROUGH SYSLOG.
 - USER FILE LABEL ROUTINE COMMUNICATION AND LINKAGE IS
   PERFORMED THROUGH GENERAL REGISTERS.
 - ABILITY TO LOG A FILE LABEL WHEN LABEL DISCREPANCIES OCCUR.
 - WRITING OF INITIAL TAPE MARK ON AN UNLABELED OUTPUT FILE
   MAY BE PREVENTED USING UPSI JOB-CONTROL CARD OPTION.
 - FIELD SELECTION CAPABILITIES FOR VARIABLE LENGTH RECORDS.
 - BLOCKING AND DEBLOCKING OF VARIABLE LENGTH RECORDS.
 - SUPPORT FOR MULTI-FILE REELS ON LABELED AND UNLABELED
   INPUT TAPES.
 - FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
   STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
 - I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
   STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO ALLOW
   MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
   OVERLAP FOR A GIVEN BLOCK SIZE.
 - CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED PARAMETERS
   OF THE PROGRAM MEET JOB REQUIREMENTS.
 - 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

IBM Programs

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
  OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540
  CARD READ PUNCH.
- FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
  SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
  PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
  1052 PRINTER KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400
  SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-5026... OPERATING GUIDE C24-5027.
    MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A
        7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE
REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS
NOT SPECIFIED ON THE REQUEST CARD.

MODIFICATIONS WILL BE DISTRIBUTED ON 9-TRACK OR 7-TRACK DTR.

360P-UT-055   BASIC PROGRAMMING SUPPORT
MULTIPLE UTILITY PROGRAMS
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-055

ALLOWS ONE TO THREE UTILITY OPERATIONS TO BE PERFORMED
SIMULTANEOUSLY. THE OPERATIONS WHICH CAN BE PERFORMED ARE-
CARD-TO-TAPE, TAPE-TO-PRINTER, AND TAPE-TO-CARD. ANY
COMBINATION OF UTILITY OPERATIONS MAY BE INITIALLY SELECTED
/E.G., TWO TAPE-TO-PRINTER AND ONE CARD-TO-TAPE OPERATION/.
    1/ CARD-TO-TAPE
       TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO MAGNETIC TAPE.
    2/ TAPE-TO-PRINTER
       TRANSFERS DATA FROM MAGNETIC TAPE TO PRINTER. THE DATA MAY
       BE LISTED /ONE LOGICAL RECORD PER LINE/. THE OPERATION
       WILL ALSO RECOGNIZE THE FIRST CHARACTER OF A RECORD AS A
       FORMS CONTROL CHARACTER ON FORMATTED TAPES.
    3/ TAPE-TO-CARD
       TRANSFERS DATA FROM MAGNETIC TAPE TO CARDS. DATA CAN
       BE PUNCHED IN EBCDIC OR BINARY.
THE MULTIPLE UTILITY PROGRAM ASSIGNS I/O AREAS BASED ON THE
SIZE OF INPUT AND OUTPUT BLOCKS. THIS FEATURE ALLOWS MAXIMUM
PROGRAM EFFICIENCY THROUGH DEVICE AND PROCESSING OVERLAP. THE
ASSIGNMENT IS DYNAMIC IN THE MULTIPLE UTILITY ENVIRONMENT,
THUS GIVING MAXIMUM EFFICIENCY AT ALL TIMES.
THE MULTIPLE UTILITY PROGRAM WILL PROCESS 7 AND/OR 9-TRACK
TAPES.

MINIMUM SYSTEM REQUIREMENTS - 8K MAIN STORAGE... 1442 OR 2540
OR 2501 CARD-READ-PUNCH OR 2520 MODEL B1 CARD-READ-PUNCH OR 2520
MODELS B2 AND B3 CARD PUNCH FOR PROG. LOADING AND CONTROL CARDS..
ONE OR MORE 1443, 1403, OR 1404 /CONTINUOUS FORMS ONLY/
PRINTERS... SYSLOG DEVICE /TYPEWRITER OR PRINTER, 1052 PRINTER
KEYBOARD IS REQUIRED FOR THE MULTIPLE UTILITY PROGRAM... OPERATES
ON SYSTEMS WITH MULTIPLEXOR ONLY, OR WITH MULTIPLEXOR CHANNEL AND
SELECTOR CHANNEL. 2400 SERIES MAGNETIC TAPE UNITS,
MODELS 4, 5 AND 6 MAY ALSO BE USED AS INPUT AND/OR OUTPUT
DEVICES.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM MATERIAL LIST...
        UTILITY PROGRAMS MANUAL...OPERATING GUIDE.
    MACHINE READABLE - OBJECT DECK IN CARD FORM OR ON ONE 9-TRACK
        OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL - SYMBOLIC DECK ASSEMBLING
        INSTRUCTIONS... SOURCE DECKS AVAILABLE ON ONE 9-TRACK OR
        7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.
WHEN ORDERING THIS PROGRAM ON TAPE, EITHER 9-TRACK OR 7-TRACK
MUST BE SPECIFIED ON THE PROGRAM REQUEST CARD. IF NOT SPECIFIED
9-TRACK WILL BE SUPPLIED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-056   BPS STORAGE PRINT PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-056

A PROGRAM THAT PRODUCES A PRINTOUT OF STORAGE AND REGISTERS
TO AID THE USER IN LOCATING THE REASON/S/ FOR A PROGRAM
MALFUNCTION. MINIMUM SYSTEM REQUIREMENTS- 8K OF MAIN STORAGE...
MINIMUM SYSTEM REQUIREMENTS- 8K OF MAIN STORAGE... 2520-B1 OR
2540 CARD READER PUNCH FOR PROGRAM LOADING AND CONTROL CARDS...
ONE OR MORE 1443, 1403, OR 1404 /CONTINUOUS FORMS ONLY/
PRINTERS... 2501 CARD READER MAY ALSO BE USED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... UTILITY PROGRAMS
        MANUAL C24-5026... OPERATING GUIDE C24-5027.
    MACHINE READABLE - STORAGE PRINT ASSEMBLED DECK.

360P-UT-057   BPS INITIALIZE TAPE PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-057

IN ORDER TO PERFORM IBM STANDARD LABEL CHECKING ON TAPES, IBM
STANDARD VOLUME LABELS MUST BE PRESENT. THIS PROGRAM PLACES
VOLUME LABELS ON TAPE. THE INITIALIZE TAPE PROGRAM PREPARES
UP TO EIGHT VOLUME LABELS, ONE DUMMY HEADER LABEL /HDR1 FOLLOWED
BY BINARY ZEROS/, AND A TAPE MARK ON ANY NUMBER OF TAPES
SUPPLIED. NO LABEL CHECKING IS PERFORMED.
THE USER HAS TWO OPTIONS FOR CREATING THE VOLUME LABELS ON TAPE.
1. A SINGLE CONTROL CARD CAN BE USED TO PROVIDE /FOR EXAMPLE/ THE
   STARTING VOLUME SERIAL NUMBER, THE OWNER NAME AND ADDRESS
   CODE, AND THE PROTECTION CODE. THIS INFORMATION WILL BE
   WRITTEN ON THE FIRST TAPE SUPPLIED. EACH SUCCEEDING TAPE
   WILL HAVE THE SAME VOLUME LABEL WRITTEN ON IT WITH THE
   EXCEPTION THAT THE SERIAL NUMBER WILL BE INCREMENTED BY ONE.
2. FROM ONE TO EIGHT VOLUME LABEL IMAGE CARDS CAN BE USED AS A
   SET TO WRITE UNIQUE VOLUME LABEL/S/ ON EACH TAPE INITIALIZED.
   THIS CARD IS THE EXACT IMAGE OF THE 80 CHARACTER LABEL. THIS
   OPTION SHOULD BE USED WHEN THE VOLUME SERIAL NUMBER FIELD
   CONTAINS ANY ALPHAMERIC VALUES.
FOLLOWING THE VOLUME LABEL/S/, A DUMMY HEADER LABEL IS WRITTEN,
FOLLOWED BY A TAPE MARK. THIS COMPLETES INITIALIZATION. THE

TAPES MAY THEN BE EITHER REQOUND OR REWOUND AND UNLOADED AS
THE USER SPECIFIED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
  OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540
  CARD READ PUNCH.
- FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
  SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
  PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
  1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400
  SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL, C24-5026... OPERATING GUIDE, C24-5027.
    MACHINE READABLE - ASSEMBLED DECK MAY BE OBTAINED ON 7-TRACK
        /DATA CONVERSION FEATURE REQUIRED/ OR 9-TRACK DTR.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE
PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

MODIFICATIONS WILL BE DISTRIBUTED ON 9-TRACK OR 7-TRACK DTR.

360P-UT-061   COPY DISK TO TAPE AND
RESTORE TAPE TO DISK
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-061

THIS PROGRAM CONSISTS OF TWO SEPARATE DECKS, ONE TO COPY
A DISK ONTO ONE OR MORE TAPES., AND THE OTHER TO RESTORE A
DISK FROM THE PREVIOUS TAPES. THE PROGRAM WILL COPY AND
RESTORE A DISK IN ONE OF TWO WAYS-
- COPY AND RESTORE VOLUME - WITH THIS OPTION ONE ENTIRE DISK
  PACK IS COPIED AND RESTORED, INCLUDING RO, IPL RECORDS,
  DATA RECORDS, VOLUME LABEL/S/, AND THE VTOC.
- COPY AND RESTORE FILE - WITH THIS OPTION, ONE DATA FILE MAY
  BE COPIED AND RESTORED. THE FILE MAY CONSIST OF MORE
  THAN ONE VOLUME. RO/S ARE COPIED FOR THE AREA OCCUPIED BY THE
  FILE, AND IPL RECORDS MAY BE OPTIONALLY COPIED.
THE PROGRAM ASSIGNS I/O AREAS BASED ON THE SIZE OF CORE
STORAGE. I/O OVERLAP IS PERFORMED IF CORE STORAGE IS EQUAL
TO OR GREATER THAN 16K AND CHANNEL ASSIGNMENT PERMITS.
THE RESTORED RECORDS OCCUPY AREAS OF THE 2311 IDENTICAL TO
THE ORIGINAL FILE.   .

PERFORMANCE- THE PERFORMANCE FIGURES BELOW ARE BASED ON THE
FOLLOWING MACHINE CONFIGURATIONS-
- 8K SYSTEM/360 MODEL 30.
- 2540 CARD READ/PUNCH.
- FOR 360P-UT-061, A PRINTER /AS DESCRIBED IN MINIMUM SYSTEM
  REQUIREMENTS/, ONE 2311 DISK DRIVE AND ONE 2400 SERIES
  9-TRACK MAGNETIC TAPE DRIVE /90KC/, BOTH ATTACHED TO THE
  SELECTOR CHANNEL.
THE FIGURES ARE ALSO BASED UPON PROCESSING A 1316 DISK PACK
ON WHICH EACH TRACK CONTAINS 9 DATA RECORDS OF 300 BYTES EACH.
- COPY DISK TO TAPE REQUIRES APPROXIMATELY 4 MINUTES IF NO
  ERRORS OCCUR.
- RESTORE TAPE TO DISK REQUIRES APPROXIMATELY 5.5 MINUTES
  IF NO ERRORS OCCUR.
USAGE CONSIDERATIONS-
- NO RECORD ID /COUNT FIELD/ MAY BE REPEATED ON A TRACK.
- RO MUST BE WRITTEN ACCORDING TO IBM STANDARDS.
  /K SUB L EQUALS 0, D SUB L EQUALS 8/.
- NO ID /COUNT FIELD/ OTHER THAN RO MAY CONTAIN A RECORD
  NUMBER INDICATION OF ZERO.
- A FILE COPIED TO TAPE ON A MACHINE SIZE OF 16K OR GREATER
  CANNOT BE RESTORED TO DISK ON A MACHINE SMALLER THAN 16K.
- 1316 DISK PACKS MUST HAVE BEEN INITIALIZED WITH STANDARD
  HOME ADDRESSES, RO/S AND A VOLUME LABEL, ACCORDING TO
  IBM STANDARDS. THE DISK PACK MAY HAVE BEEN USED BETWEEN
  INITIALIZATION AND RESTORING A FILE FROM TAPE.

MINIMUM SYSTEM REQUIREMENTS-
- 8,192 BYTES OF MAIN STORAGE...
- A CARD READER /1442, 2501, 2520 MODEL B1, OR 2540/ FOR
  PROGRAM LOADING AND CONTROL CARDS...
- AT LEAST ONE 2311 AND ONE 2400 SERIES TAPE DRIVE /IF 7-TRACK
  TAPE THE DATA CONVERSION FEATURE MUST BE PRESENT/...
- AN IBM 1403, 1445 OR 1404 /CONTINUOUS FORMS ONLY/
  PRINTER OR AN IBM 1052 CONSOLE PRINTER FOR PROGRAM LOGGING
  AND DIAGNOSTIC MESSAGES.
THIS PROGRAM HAS THE SAME ENGINEERING CHANGE LEVEL REQUIREMENTS
AS IBM SYSTEM/360 DISK OPERATING SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS.
        C24-3363... OPERATING GUIDE, C24-3392.
    MACHINE READABLE - ONE 9-TRACK OR ONE 7-TRACK /DATA
        CONVERSION FEATURE REQUIRED/ DTR CONTAINING THE ASSEMBLED
        DECKS.
NOTE- WHEN ORDERING THE REQUESTOR MUST SPECIFY WHETHER 9-TRACK OR
7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK DTR WILL BE
FORWARDED. DTRS WILL BE SUPPLIED BY THE PROGRAM INFORMATION
DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-062   BPS COPY DISK TO CARD AND
RESTORE CARD TO DISK
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-062

BPS/360 COPY DISK TO CARD AND RESTORE CARD TO DISK CONSISTS
OF TWO DECKS, ONE TO COPY A DISK ONTO CARDS., AND THE OTHER
TO RESTORE A DISK FROM THOSE CARDS. THE PROGRAM COPIES
AND RESTORES A DISK IN ONE OF TWO WAYS-
- COPY AND RESTORE VOLUME - WITH THIS OPTION ONE ENTIRE
  DISK PACK WILL BE COPIED AND RESTORED, INCLUDING RO,
  IPL RECORDS, DATA RECORDS, VOLUME LABLE/S/, AND THE VTOC.
- COPY AND RESTORE FILE - WITH THIS OPTION, ONE DATA FILE
  MAY BE COPIED AND RESTORED. THE FILE MAY CONSIST OF MORE
  THAN ONE VOLUME. RO/S ARE COPIED FOR THE AREA OCCUPIED
  BY THE FILE, AND IPL RECORDS MAY BE OPTIONALLY COPIED.

IBM Programs

CONTINUED FROM PRIOR PAGE--

THE PROGRAM WILL ASSIGN I/O AREAS BASED ON THE SIZE OF
CORE STORAGE. I/O OVERLAP WILL BE PERFORMED IF THE CORE
STORAGE IS EQUAL TO OR GREATER THAN 16K AND CHANNEL ASSIGNMENT
PERMITS. THE RESTORED RECORDS WILL OCCUPY AREAS OF THE 2311
IDENTICAL TO THE ORIGINAL FILE. AN OPTION IS AVAILABLE IN
BOTH THE COPY DECK AND THE RESTORE DECK TO RESTART AT THE
BEGINNING OF ANY TRACK THAT HAS BEEN PROCESSED, OR, IN THE
CASE OF THE CONSECUTIVE OPEN AT THE BEGINNING OF THE PACK,
IF THE PROGRAM HAS BEEN TERMINATED PRIOR TO COMPLETION.

THE PERFORMANCE FIGURES CONTAINED IN THIS SECTION ARE BASED
ON THE FOLLOWING MACHINE CONFIGURATION -- SYSTEM/360, MODEL 30
WITH 8K OF MAIN STORAGE... A 2540 CARD READ/PUNCH... A PRINTER
/AS DESCRIBED IN MINIMUM SYSTEM REQUIREMENTS/... ONE 2311
DISK DRIVE AND ONE 2540 PUNCH. THE PERFORMANCE IS FURTHER
BASED UPON PROCESSING A 1316 DISK PACK ON WHICH EACH TRACK
CONTAINS NINE DATA RECORDS OF 300 BYTES EACH... COPY DISK TO
CARD RUNS AT APPROXIMATELY 300 CPM IF NO ERRORS OCCUR...
RESTORE CARD TO DISK RUNS AT APPROXIMATELY 1000 CPM IF NO
ERRORS OCCUR.

MINIMUM SYSTEM REQUIREMENTS- 8,192 BYTES OF MAIN STORAGE...
A CARD READER FOR PROGRAM LOADING AND CONTROL CARD READING
/1442, 2501, 2520 MODEL B1, OR 2540/... APPROPRIATE INPUT/OUTPUT
DEVICES - AT LEAST ONE 2311 AND ONE PUNCH /2540, 2520,
AND 1442/... A 1403, 1443, 1445, OR 1404 /CONTINUOUS FORMS ONLY/
PRINTER OR A 1052 PRINTER KEYBOARD FOR PROGRAM LOGGING AND
DIAGNOSTIC MESSAGES. THIS PROGRAM HAS THE SAME ENGINEERING
CHANGE LEVEL REQUIREMENTS AS SYSTEM/360 DISK OPERATING SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS,
        C24-3363... OPERATING GUIDE, C24-3392.
    MACHINE READABLE - THE ASSEMBLED DECKS MAY BE OBTAINED IN
        CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
        FEATURE REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON DTR THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE
PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-063   BPS CARD TO DISK
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-063

THE CARD-TO-DISK PROGRAM TRANSFERS THE CONTENTS OF A CARD
FILE FROM CARDS TO AN AREA OF DISK. THE CARDS MAY BE PUNCHED IN
EXTENDED BINARY CODED DECIMAL OR IN BINARY. THE INPUT RECORDS
MUST BE FIXED-LENGTH UNBLOCKED, AND EACH LOGICAL RECORD MUST FIT
ON ONE CARD. THE MAXIMUM-SIZE INPUT RECORD IS 80 BYTES, OR
160 FOR BINARY. THESE FILES MAY BE SIMPLY COPIED, BLOCK BY
BLOCK., OR REORGANIZED BY ALTERING THE NUMBER OF RECORDS IN
THE BLOCK /REBLOCKING/., OR REORGANIZED BY DELETING OR
RE-POSITIONING THE FIELDS WITHIN THE RECORD /FIELD SELECTING/ AS
WELL AS REBLOCKING.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR
   2540 CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
   PRINTER /CONTINUOUS FORMS ONLY/... OR 1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK
   STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE
   7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-3363... OPERATING GUIDE C24-3392.
    MACHINE READABLE - ASSEMBLED DECKS MAY BE OBTAINED IN CARD
        FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE
PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-064   BPS DISK TO CARD
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-064

THE DISK-TO-CARD PROGRAM TRANSFERS THE CONTENTS OF A DISK FILE
TO A CARD FILE. THE OUTPUT FILE MAY BE PUNCHED IN EITHER
EXTENDED BINARY CODED DECIMAL OR BINARY. EACH LOGICAL-OUTPUT
RECORD MUST FIT ON ONE CARD /I.E., 80 BYTES FOR EXTENDED BCD OR
160 BYTES FOR BINARY/. UNLESS ONLY A PORTION OF THE INPUT
RECORD IS TRANSFERRED THROUGH THE FIELD-SELECT OPTION, THE
INPUT-RECORD SIZE WILL BE RESTRICTED TO 80 OR 160. INPUT
RECORDS TO THIS PROGRAM MUST BE FIXED LENGTH. FILES IN THIS
PROGRAM MAY BE COPIED, REBLOCKED, FIELD SELECTED, OR REBLOCKED
AND FIELD SELECTED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR
   2540 CARD READ PUNCH.
 - FOR PROGRAM OPERATION - INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR
   1404 PRINTER. /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER...
   OR 1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK
   STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE
   THE 7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-3363... OPERATING GUIDE C24-3392.
    MACHINE READABLE - ASSEMBLED DECKS MAY BE OBTAINED IN CARD
        FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR.

CONTINUED FROM PRIOR COLUMN--

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE
PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-065   BPS DISK TO TAPE
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-065

THE DISK-TO-TAPE PROGRAM TRANSFERS A FILE FROM ONE OR MORE DISK
UNITS TO ONE OR MORE TAPE UNITS. THESE FILES MAY BE COPIED,
REBLOCKED, FIELD SELECTED, OR REBLOCKED AND FIELD SELECTED. IF
THE FIELD-SELECT OR REBLOCK OPTIONS ARE TO BE USED, THE INPUT
RECORDS MUST BE FIXED-LENGTH. THE DATA PORTION OF THE OUTPUT
TAPE IS PRECEDED BY A TAPE MARK.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR
   2540 CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
   PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
   1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK
   STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE
   7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-3363... OPERATING GUIDE C24-3392.
    MACHINE READABLE - ASSEMBLED DECK MAY BE OBTAINED ON 7-TRACK
        /DATA CONVERSION FEATURE REQUIRED/ OR 9-TRACK DTR.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK
WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM
INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-066   BPS TAPE TO DISK
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-066

THE TAPE-TO-DISK PROGRAM TRANSFERS A FILE FROM ONE OR MORE TAPE
REELS TO A MAXIMUM OF FIVE DISK UNITS. THESE FILES MAY BE
COPIED, FIELD SELECTED, REBLOCKED, OR REBLOCKED AND FIELD
SELECTED. IF THE FIELD-SELECT OR REBLOCK OPTIONS ARE TO BE USED,
THE INPUT RECORDS MUST BE FIXED LENGTH.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR
   2540 CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
   PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
   1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK
   STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE
   7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-3363... OPERATING GUIDE C24-3392.
    MACHINE READABLE - ASSEMBLED DECK MAY BE OBTAINED ON 7-TRACK
        /DATA CONVERSION FEATURE REQUIRED/ OR 9-TRACK DTR.

WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER
9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE
FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION
DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-067   BPS DISK TO DISK
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-067

THE DISK-TO-DISK PROGRAM TRANSFERS A FILE BETWEEN DISK UNITS,
OR BETWEEN AREAS OF THE SAME UNIT. A MAXIMUM OF SIX DRIVES CAN
BE ASSIGNED BY ASSIGNING ONE AS INPUT, ONE AS OUTPUT, AND THE
REMAINING AS BOTH INPUT AND OUTPUT. USING THE SAME DEVICE FOR
INPUT AND OUTPUT CAN CAUSE A REDUCTION IN PERFORMANCE. FILES
CAN BE COPIED, REBLOCKED, FIELD SELECTED, OR REBLOCKED AND
FIELD SELECTED. IF THE FIELD-SELECT OR REBLOCK OPTIONS ARE
TO BE USED, THE INPUT RECORDS MUST BE FIXED LENGTH.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR
   2540 CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
   PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
   1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK
   STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE
   7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
        MANUAL C24-3363... OPERATING GUIDE C24-3392.
    MACHINE READABLE - ASSEMBLED DECKS MAY BE OBTAINED IN CARD
        FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE
PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

IBM Programs

360P-UT-068   BPS CLEAR DISK
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-068

THE CLEAR DISK PROGRAM CLEARS ONE OR MORE AREAS OF IBM
2311 DISK STORAGE, AND ESTABLISHES A PRE-FORMATTED TRACK
CONTAINING AN INDICATED BASE THROUGHOUT THE AREA CLEARED. FOR
EACH TRACK CLEARED, RECORDS ARE FORMATTED TO THE END OF THE
TRACK. THE MAXIMUM NUMBER OF RECORDS DEPENDS ON THE SIZE OF THE
RECORDS. THE AREA TO BE CLEARED CAN BE AS SMALL AS ONE TRACK
OR UP TO A MAXIMUM OF A COMPLETE DISK PACK. AS MANY AS FIVE
AREAS CAN BE DESIGNATED TO BE CLEARED WITH ONE RUN OF THIS
PROGRAM. WHEN AN AREA OF DISK IS CLEARED, FIXED-LENGTH BLOCKS
CONTAINING COUNT, KEY, AND DATA AREAS ARE ESTABLISHED ON THE
DISK. THE INFORMATION DEFINING THE KEY AND DATA AREAS IS
INDICATED IN THE UTILITY-MODIFIER CARD, OR, IF A UTILITY-MODIFIER
CARD IS NOT ENTERED, ASSUMED VALUES ARE MADE. THE KEY AND DATA
AREAS DEFINED ARE FILLED WITH A USER-DEFINED CHARACTER.
LABEL-CHECKING IS DONE TO DETERMINE IF THE AREA TO BE CLEARED
CONTAINS ALL OR PART OF AN UNEXPIRED FILE. EXPIRED LABELS FOR
THE AREA TO BE CLEARED ARE DELETED FROM THE VTOC.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR
   2540 CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
   PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
   1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK
   STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE
   7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
      MANUAL C24-3363... OPERATING GUIDE C24-3392.
    MACHINE READABLE - ASSEMBLED DECKS MAY BE OBTAINED IN CARD
      FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
      REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE
PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-069   BPS INITIALIZE DISK
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-069

THE INITIALIZE DISK PROGRAM PREPARES FROM ONE TO FIVE COMPLETE
DISK PACKS FOR USE ON IBM 2311 DISK DRIVES. THE PREPARATION
OF A PACK CONSISTS OF THE FOLLOWING-
 - VTOC LABEL CHECK
 - HOME-ADDRESS GENERATION
 - SURFACE ANALYSIS AND TRACK DESCRIPTOR /RO/ RECORD GENERATION
 - VOLUME-LABEL CREATION
 - IPL AND VTOC FORMAT CREATION

VTOC LABEL CHECK- BEFORE A PACK IS INITIALIZED, IT IS CHECKED TO
SEE IF ANY LABELS PRESENT IN THE VTOC ARE EXPIRED. IF THE FILE
HAS NOT EXPIRED, A MESSAGE IS PRINTED. IF THE USER STILL WISHES
TO INITIALIZE THE DISK PACK AFTER RECEIVING THE MESSAGE, HE CAN
BYPASS THE LABEL AND CONTINUE TO PROCESS. IF THE USER DOES NOT
WISH TO BYPASS THE PACK/S/ WITH UNEXPIRED LABELS, THE PACK OR
PACKS ARE DELETED FROM THE JOB.

HOME-ADDRESS GENERATION- FIVE BYTES OF THE SEVEN-BYTE HOME
ADDRESS ARE WRITTEN BY THIS PROGRAM IN BINARY REPRESENTATION. IF
THE HOME-ADDRESS CANNOT BE WRITTEN ON A TRACK, A MESSAGE IS
PRINTED TO IDENTIFY EACH HOME-ADDRESS THAT CANNOT BE WRITTEN. IF
A HOME-ADDRESS CANNOT BE WRITTEN FOR EVERY TRACK OF A PACK, THAT
PACK IS DELETED FROM THE JOB.

SURFACE ANALYSIS AND TRACK DESCRIPTOR /RO/ RECORD GENERATION-
SURFACE ANALYSIS IS PERFORMED FIRST ON THE ALTERNATE CYLINDERS
/200, 201, AND 202/. WHEN A TRACK ON AN ALTERNATE CYLINDER IS
FOUND TO BE DEFECTIVE, THE TRACK IS FLAGGED AS DEFECTIVE AND
CANNOT BE ASSIGNED AS AN ALTERNATE TRACK. SURFACE ANALYSIS
IS THEN PERFORMED ON ALL REMAINING TRACKS. IF A TRACK IS
DETECTED TO HAVE A DEFECTIVE SURFACE AREA UPON WHICH DATA CANNOT
BE WRITTEN, AN ALTERNATE TRACK IS ESTABLISHED TO RECORD THE
DATA. A MESSAGE IS PRINTED TO NOTIFY THE USER OF DEFECTIVE
TRACKS. PROCESSING IS TERMINATED AFTER DETECTION OF THE
THIRTY-FIRST DEFECTIVE TRACK /30 ALTERNATE TRACKS/. THE
DEFECTIVE TRACKS ARE LOGGED TO PROVIDE A RECORD OF THE CONDITION
OF EACH PACK PROCESSED. WHEN ANALYSIS HAS SHOWN THAT A TRACK IS
NOT DEFECTIVE, THE TRACK DESCRIPTOR RECORD /RO/ IS WRITTEN.
IF THE TRACK-DESCRIPTOR RECORD CANNOT BE WRITTEN ON A TRACK, A
MESSAGE IS PRINTED TO IDENTIFY THE ERROR. THE PROGRAM CONTINUES
ANALYSIS AND RO GENERATION TO LOG ANY OTHER DEFECTIVE TRACKS.
THE PACK ON WHICH THE ERROR OCCURS IS DELETED FROM THE JOB.

VOLUME-LABEL CREATION- THROUGH THE USE OF A CONTROL CARD
UNIQUE TO THIS PROGRAM, A VOLUME LABEL IS CREATED IN THE
STANDARD FORMAT /VOL1/ FOR EACH PACK PROCESSED. THE VOLUME
LABEL IS WRITTEN ON CYLINDER ZERO, TRACK ZERO, RECORD THREE OF
EACH DISK PACK. SEVEN ADDITIONAL /VOL2-VOL8/ USER VOLUME LABELS
CAN BE CREATED, IF DESIRED, AND WILL BE PLACED IN RECORDS FOUR
THROUGH TEN.

IPL FORMAT CREATION- THIS PROGRAM FORMATS TWO IPL RECORDS.
THESE RECORDS ARE WRITTEN ON CYLINDER ZERO, TRACK ZERO, RECORDS
ONE AND TWO. RECORD ONE IS WRITTEN WITH A 24-BYTE DATA FIELD
OF BINARY ZEROS. RECORD TWO IS WRITTEN WITH A 144-BYTE DATA
FIELD OF BINARY ZEROS.

VTOC FORMAT CREATION- THE INITIALIZE DISK PROGRAM PRE-FORMATS
THE VOLUME TABLE OF CONTENTS /VTOC/. THE LOCATION ON THE DISK IN
WHICH THE VTOC IS TO BE PLACED IS INDICATED IN A CONTROL CARD.
THE STANDARD LOCATION OF THE VTOC IS ON CYLINDER ZERO IMMEDIATELY
FOLLOWING THE VOLUME LABEL/S/, AND EXTENDING TO THE END OF THE
CYLINDER. HOWEVER, THE VTOC CAN APPEAR ON ANY CYLINDER
/EXCLUDING ALTERNATE CYLINDERS/, BUT CANNOT EXCEED CYLINDER
BOUNDARIES. A VTOC PLACED ANYWHERE OTHER THAN IN THE STANDARD
LOCATION CAN BE ANY NUMBER OF TRACKS DESIRED ON THE CYLINDER.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
   OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR
   2540 CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
   SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
   PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
   1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK
   STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE
   7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
      MANUAL C24-3363... OPERATING GUIDE C24-3392.
    MACHINE READABLE - ASSEMBLED DECKS MAY BE OBTAINED IN CARD
      FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
      REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE PROVIDED BY THE
PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-071   BPS COPY DATA CELL TO TAPE
AND RESTORE TAPE TO DATA CELL
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-071

BPS/360 DASD UTILITY PROGRAM, COPY DATA CELL TO TAPE AND
RESTORE TAPE TO DATA CELL CONSISTS OF TWO DECKS, ONE TO
COPY A DATA CELL ONTO ONE OR MORE TAPES., AND THE OTHER TO
RESTORE A DATA CELL FROM THE TAPE/S/. THE PROGRAM COPIES
AND RESTORES A DATA CELL IN ONE OF TWO WAYS-
 - COPY AND RESTORE VOLUME - WITH THIS OPTION ONE ENTIRE
   DATA CELL WILL BE COPIED AND RESTORED, INCLUDING RO,
   IPL RECORDS, DATA RECORDS, VOLUME LABEL/S/, AND THE VTOC.
 - COPY AND RESTORE FILE - WITH THIS OPTION ONE DATA FILE
   MAY BE COPIED AND RESTORED. THE FILE MAY CONSIST OF MORE
   THAN ONE VOLUME. RO/S ARE COPIED FOR THE AREA OCCUPIED
   BY THE FILE, AND IPL RECORDS MAY BE OPTIONALLY COPIED.

THE PROGRAM WILL ASSIGN I/O AREAS BASED ON THE SIZE OF
MAIN STORAGE. I/O OVERLAP WILL BE PERFORMED IF THE MAIN
STORAGE IS EQUAL TO OR GREATER THAN 16K AND CHANNEL ASSIGNMENT
PERMITS. THE RESTORED RECORDS WILL OCCUPY AREAS OF THE 2321
IDENTICAL TO THE ORIGINAL FILE. AN OPTION IS AVAILABLE TO
CHECKPOINT AND RESTART DURING PROGRAM EXECUTION. AN ADDITIONAL
TAPE DRIVE IS REQUIRED TO SUPPORT THIS OPTION.

THE PERFORMANCE FIGURES CONTAINED IN THIS SECTION ARE BASED
ON THE FOLLOWING MACHINE CONFIGURATION -- SYSTEM/360, MODEL 30
WITH 16K OF MAIN STORAGE... ONE 2400 SERIES MOD 3 TAPE DRIVE...
A PRINTER /AS DESCRIBED IN MINIMUM SYSTEM REQUIREMENTS/...
ONE 2321 DATA CELL DRIVE. THE PERFORMANCE IS FURTHER BASED
UPON PROCESSING A COMPLETE 3021 DATA CELL ON WHICH EACH TRACK
CONTAINS FIVE DATA RECORDS OF 300 BYTES EACH... COPY DATA CELL
TO TAPE TAKES APPROXIMATELY 40 MINUTES IF NO ERRORS OCCUR...
RESTORE TAPE TO DATA CELL TAKES APPROXIMATELY 80 MINUTES IF
NO ERRORS OCCUR.

MINIMUM SYSTEM REQUIREMENTS- 16,384 BYTES OF MAIN STORAGE...
A CARD READER FOR PROGRAM LOADING AND CONTROL CARD READING,
/1442, 2501, 2520, AND 2540/... APPROPRIATE INPUT/OUTPUT
DEVICES -- ONE 2321 AND ONE 2400 SERIES TAPE DRIVE /IF 7-TRACK
TAPE THE DATA CONVERSION FEATURE MUST BE PRESENT/... A 1403,
1443, 1445, OR 1404 /CONTINUOUS FORM ONLY/ PRINTER., OR
1052 PRINTER KEYBOARD FOR PROGRAM LOGGING AND DIAGNOSTIC
MESSAGES. THIS PROGRAM HAS THE SAME ENGINEERING CHANGE LEVEL
REQUIREMENTS AS SYSTEM/360 DISK OPERATING SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS,
      C24-3363... OPERATING GUIDE, C24-3392.
    MACHINE READABLE - THE ASSEMBLED DECKS MAY BE OBTAINED ON ONE
      9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK
WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM
INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-072   COPY DISK TO DISK
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-072

THIS PROGRAM CONSISTS OF ONE DECK THAT COPIES ONE DISK TO
ANOTHER. IT PERFORMS THE IDENTICAL FUNCTIONS OF 360P-UT-061,
WITH THE EXCEPTION THAT THERE IS NO INTERMEDIATE STORAGE
MEDIUM USED. TWO DISK DRIVES ARE REQUIRED., FILES MAY NOT
BE COPIED FROM ONE AREA TO ANOTHER ON THE SAME PACK.

PERFORMANCE- THE PERFORMANCE FIGURES BELOW ARE BASED ON THE
FOLLOWING MACHINE CONFIGURATIONS-
 - 8K SYSTEM/360 MODEL 30.
 - 2540 CARD READ/PUNCH.
 - FOR 360P-UT-072, TWO 2311 DISK DRIVES, BOTH ATTACHED TO
   THE SELECTOR CHANNEL.
THE FIGURES ARE ALSO BASED UPON PROCESSING A 1316 DISK PACK
ON WHICH EACH TRACK CONTAINS 9 DATA RECORDS OF 300 BYTES EACH.
 - APPROXIMATELY 4 MINUTES ARE REQUIRED TO COPY DISK TO DISK
   IF NO ERRORS OCCUR.
USAGE CONSIDERATIONS-
 - NO RECORD ID /COUNT FIELD/ MAY BE REPEATED ON A TRACK.
 - RO MUST BE WRITTEN ACCORDING TO IBM STANDARDS.
   /K SUB L EQUALS 0, D SUB L EQUALS 8/.
 - NO ID /COUNT FIELD/ OTHER THAN RO MAY CONTAIN A RECORD
   NUMBER INDICATION OF ZERO.
 - A FILE COPIED TO TAPE ON A MACHINE SIZE OF 16K OR GREATER
   CANNOT BE RESTORED TO DISK ON A MACHINE SMALLER THAN 16K.
 - 1316 DISK PACKS MUST HAVE BEEN INITIALIZED WITH STANDARD
   HOME ADDRESSES, RO/S AND A VOLUME LABEL, ACCORDING TO
   IBM STANDARDS. THE DISK PACK MAY HAVE BEEN USED BETWEEN
   INITIALIZATION AND RESTORING A FILE FROM TAPE.

IBM Programs

CONTINUED FROM PRIOR PAGE--

MINIMUM SYSTEM REQUIREMENTS-
- 8,192 BYTES OF MAIN STORAGE...
- A CARD READER /1442, 2501, 2520 MODEL B1, OR 2540/ FOR
  PROGRAM LOADING AND CONTROL CARDS...
- TWO 2311/S, ONE FOR INPUT AND ONE FOR OUTPUT...
- AN IBM 1403, 1443, 1445 OR 1404 /CONTINUOUS FORMS UNLY/
  PRINTER OR AN IBM 1052 CONSOLE PRINTER FOR PROGRAM LOGGING
  AND DIAGNOSTIC MESSAGES.
THIS PROGRAM HAS THE SAME ENGINEERING CHANGE LEVEL REQUIREMENTS
AS IBM SYSTEM/360 DISK OPERATING SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS,
        C24-3363... OPERATING GUIDE, C24-3392.
    MACHINE READABLE - ONE 9-TRACK OR ONE 7-TRACK /DATA
        CONVERSION FEATURE REQUIRED/ DTR CONTAINING THE ASSEMBLED
        DECKS.
NOTE- WHEN ORDERING THE REQUESTOR MUST SPECIFY WHETHER 9-TRACK OR
7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK DTR WILL BE
FORWARDED. DTRS WILL BE SUPPLIED BY THE PROGRAM INFORMATION
DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-073   BPS DISK TO PRINTER
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-073

    THE DISK-TO-PRINTER PROGRAM CAN DISPLAY A DISK FILE IN TWO
    DIFFERENT FORMATS- DATA-DISPLAY AND DATA-LIST. DATA-DISPLAY
    PROVIDES A VISUAL PICTURE OF THE DATA WHERE EVERY BYTE APPEARS
    IN THE PRINTED OUTPUT. THIS FORMAT CAN HANDLE FIXED, VARIABLE,
    AND UNDEFINED RECORDS. DATA-LIST PROVIDES A SIMPLE EDITED LIST
    OF THE FILE. INPUT RECORDS MUST BE FIXED LENGTH, AND THE FIELD
    SELECT OPTION CAN BE USED. THE INPUT FILE CAN COME FROM A
    MAXIMUM OF FIVE DISK UNITS.

    MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
    - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
      OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR
      2540 CARD READ PUNCH.
    - FOR PROGRAM OPERATION-INPUT/OUTPUT DEVICES REQUIRED BY THE
      SPECIFIC PROGRAM.
    - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
      PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
      1052 PRINTER-KEYBOARD.
    - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK
      STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE
      7-TRACK FEATURE/.
    *THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
    /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
            MANUAL C24-3363... OPERATING GUIDE C24-3392.
        MACHINE READABLE - ASSEMBLED DECKS MAY BE OBTAINED IN CARD
            FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
            REQUIRED/ DTR.

    NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST
    INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
    9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE
    PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-098   ALTERNATE TRACK ASSIGNMENT
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-098

    THIS PROGRAM IS DESIGNED TO ASSIGN AN ALTERNATE TRACK TO A
    DEFECTIVE TRACK ON AN IBM 2311 DISK PACK AT ANY TIME OTHER THAN
    WHEN INITIALIZING THE PACK.
    WHEN A DEFECTIVE TRACK IS ENCOUNTERED, THE VOLUME TABLE OF
    CONTENTS IS CHECKED TO DETERMINE THE NEXT ALTERNATE TRACK TO
    BE ASSIGNED. IF AN ALTERNATE TRACK IS AVAILABLE, THE RECORDS
    CONTAINED ON THE DEFECTIVE TRACK ARE TRANSFERRED TO IT.
    SURFACE ANALYSIS IS PERFORMED ON THE TRACK IN ERROR AFTER ALL
    RECORDS HAVE BEEN TRANSFERRED TO THE ALTERNATE TRACK. IF THE
    /HOME ADDRESS AND/OR THE TRACK DESCRIPTOR RECORD /RO/ AREA/S/
    IS DEFECTIVE, ALL RECORDS ASSOCIATED WITH THE TRACK IN ERROR
    ARE PRINTED, AND THE PROGRAM IS TERMINATED. *IF THESE AREAS
    ARE NOT DEFECTIVE, BUT A PERMANENT ERROR EXISTS ELSEWHERE ON
    THE TRACK, THE DATA RECORDS REMAIN ON THE ALTERNATE TRACK,
    AND THE JOB IS COMPLETED. IF THE ERROR IS ONLY TEMPORARY,
    THE DATA RECORDS ARE TRANSFERRED BACK TO THE ORIGINALLY
    DEFECTIVE TRACK./
    AN INDICATION IS GIVEN TO SHOW WHERE ERRORS OCCUR AND THE
    ACTION THAT IS TO BE TAKEN. AN OPTION IS AVAILABLE ALLOWING
    ALL RECORDS, OR ONLY THE INVALID RECORDS TRANSFERRED TO AN
    ALTERNATE TRACK, TO BE PRINTED ON THE PRINTER, OR ON THE
    PRINTER-KEYBOARD. IF AN ERROR IS FOUND IN THE HOME ADDRESS
    OR RO AREA, THIS OPTION IS IGNORED AND ALL RECORDS ARE PRINTED.

    MINIMUM SYSTEM REQUIREMENTS- 8,192 POSITIONS OF CORE STORAGE...
    A CARD READER /1442, 2501, 2520, OR 2540/ FOR PROGRAM LOADING
    AND CONTROL CARDS... A SYSLOG DEVICE /1403, 1404, OR 1443
    PRINTER OR 1052 PRINTER-KEYBOARD/ FOR LOGGING AND ERROR
    MESSAGES... A 2311 DISK STORAGE UNIT.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
            MANUAL C24-3363... OPERATING GUIDE C24-3392.
        MACHINE READABLE - ASSEMBLED DECKS MAY BE OBTAINED IN CARD
            FORM, OR ON A 7- OR 9-TRACK DTR.
    A 9-TRACK DTR WILL BE FORWARDED UNLESS 7-TRACK IS SPECIFICALLY
    REQUESTED. THE DTR WILL BE SUPPLIED BY PROGRAM INFORMATION.

360P-UT-202   S/360 BPS UTILITY PROGRAM -
TAPE COMPARE
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-202

    TAPE COMPARE COMPARES TWO FILES FROM TWO OR MORE TAPE REELS TO
    ENSURE THAT THE FILES ARE IDENTICAL. THE NUMBER OF REELS IN EACH
    FILE NEED NOT BE EQUAL. REELS CONTAINING FIXED, VARIABLE, OR
    UNDEFINED RECORD LENGTHS MAY BE COMPARED. PHYSICAL RECORDS
    WHICH DO NOT COMPARE ARE PRINTED WITH AN INDEX OF THE BYTES
    THAT DO NOT MATCH AND THE CORRESPONDING PHYSICAL RECORD NUMBER.
    A USER ROUTINE MAY BE SUPPLIED FOR PROCESSING RECORDS THAT ARE
    NOT IDENTICAL. WHEN POSSIBLE, TWO INPUT AREAS ARE ASSIGNED TO
    EACH TAPE TO ALLOW OVERLAP OF PROCESSING WITH PHYSICAL I/O IF
    CHANNEL ASSIGNMENTS PERMIT. THE COMPARE OPERATION MAY BE
    TERMINATED AT ANY TIME BY PRESSING THE 1052 REQUEST KEY OR

CONTINUED FROM PRIOR COLUMN--
    CONSOLE STOP KEY. A COMPARE OPERATION FOR A NEW FILE CAN BE
    INITIATED BY SUPPLYING THE CORRECT CONTROL CARD AND FOLLOWING
    THE RESTART PROCEDURES.

    MINIMUM SYSTEM REQUIREMENTS- 8K OF MAIN STORAGE... A CARD
    READER FOR PROGRAM LOADING AND CONTROL CARDS... APPROPRIATE
    INPUT/OUTPUT DEVICES... SYSLOG DEVICE /MAY BE 1052 PRINTER
    KEYBOARD OR A PRINTER/. THE SELECTOR CHANNEL IS NOT REQUIRED
    FOR THE TAPE COMPARE PROGRAM.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
            MANUAL, C24-5026... OPERATING GUIDE, C24-5027.
        MACHINE READABLE - THE ASSEMBLED DECK IS AVAILABLE ON ONE
            9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/

    WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER
    9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE
    FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION
    DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-203   S/360 BPS UTILITY PROGRAM -
MULTIPLE DISK TO PRINTER
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-203

    MULTIPLE DISK TO PRINTER ALLOWS FROM ONE TO THREE
    DISK-TO-PRINTER FUNCTIONS TO BE PERFORMED SIMULTANEOUSLY. EACH
    FUNCTION IS CAPABLE OF PRINTING /IN CHARACTER MODE/ FIXED
    LENGTH RECORDS WITH OR WITHOUT KEY FIELDS. THE RECORDS MAY BE
    EITHER BLOCKED OR UNBLOCKED IF KEY FIELDS ARE ABSENT. IF THEY
    ARE PRESENT, THE RECORDS MUST BE UNBLOCKED. ONE PRINTER AND
    ONE DISK UNIT MUST BE ON-LINE FOR EACH SEPARATE FUNCTION BEING
    PERFORMED. A NEW FUNCTION MAY BE STARTED AT ANY TIME WHILE OTHER
    FUNCTIONS ARE IN PROCESS. WHEN THE JOB OF ANY FUNCTION IS
    COMPLETE, A NEW JOB MAY BE INITIATED FOR THAT FUNCTION. THE
    MULTIPLE DISK TO PRINTER PROGRAM MAKES EFFICIENT USE OF CORE
    STORAGE WHEN ASSIGNING I/O AREAS. TO ALLOW FOR A MAXIMUM
    AVAILABLE I/O AREA, ACTIVE I/O AREAS ARE ASSIGNED CONTIGUOUSLY.
    WHEN POSSIBLE, TWO DISK INPUT AREAS ARE ASSIGNED FOR EACH
    FUNCTION TO ALLOW OVERLAP OF INPUT WITH PROCESSING AND OUTPUT.

    MINIMUM SYSTEM REQUIREMENTS - 16K OF MAIN STORAGE.
    - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
      OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR
      2540 CARD READ PUNCH.
    - FOR PROGRAM OPERATION- THE DISK UNIT/S/ MUST BE ATTACHED TO A
      SELECTOR CHANNEL... THE PRINTER/S/ MUST BE ATTACHED TO A
      MULTIPLEXOR CHANNEL.
    - FOR LOGGING AND ERROR MESSAGES- 1052 PRINTER-KEYBOARD.
    - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK
      STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE
      7-TRACK FEATURE/.
    *THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
    /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
            MANUAL... OPERATING GUIDE.
        MACHINE READABLE - UTILITY PROGRAM IN OBJECT FORM. AVAILABLE
            IN CARDS OR ON TAPE, EITHER 9-TRACK OR 7-TRACK DTR.
            THE 7-TRACK DTR REQUIRES THE DATA CONVERSION FEATURE.
    NOTE- WHEN ORDERING THIS PROGRAM ON TAPE, 7 OR 9-TRACK MUST BE
    INDICATED ON THE REQUEST CARD. IF IT IS NOT 9-TRACK WILL BE SENT.
    THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -
    NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-204   BPS INITIALIZE DATA CELL
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-204

    SYSTEM/360 BPS INITIALIZE DATA CELL, PREPARES FROM ONE
    TO FIVE DATA CELLS FOR USE ON ANY 2321 DATA CELL DRIVE.
    THE PROGRAM INITIALIZES THE DATA CELLS WITH A METHOD COMPATIBLE
    TO OPERATING SYSTEM/360. THE PREPARATION OF EACH OF THESE
    CELLS CONSISTS OF-
    - VTOC LABEL CHECKING.
    - HOME-ADDRESS AND TRACK-DESCRIPTOR RECORD /RO/ GENERATION.
    - SURFACE ANALYSIS AND INITIALIZATION VERIFICATION.
    - IPL, VOLUME-LABEL, AND VTOC FORMAT CREATION.
    TWO TYPES OF CONTROL INFORMATION ARE REQUIRED BY THE PROGRAM-
    JOB CONTROL-CARD INFORMATION, AND UTILITY-CONTROL INFORMATION.
    THE JOB CONTROL-CARD INFORMATION RELATES TO THE CHANNEL AND
    UNIT ASSIGNMENT AND PHYSICAL DEVICE DESCRIPTION. THE
    UTILITY-CONTROL INFORMATION, WHICH IS PROVIDED IN THE
    UTILITY MODIFIER STATEMENT AND THE LABEL CONTROL-CARD SET,
    SPECIFIES WHICH DATA CELL/S/ IS TO BE INITIALIZED, AND PROVIDES
    THE LABELING INFORMATION FOR VTOC AND VOLUME LABEL CREATION.
    VTOC LABEL CHECKING- BEFORE A CELL IS INITIALIZED, A CHECK
    IS PERFORMED TO SEE IF A VTOC IS PRESENT. IF THE CELL HAS
    BEEN PREVIOUSLY INITIALIZED AND THE VTOC IS PRESENT, ANY
    LABELS IN THE VTOC ARE CHECKED TO SEE IF THE FILES ON THE
    DATA CELL HAVE EXPIRED. IF ANY FILES HAVE NOT EXPIRED, A
    MESSAGE IS PRINTED. IF THE USER STILL WISHES TO INITIALIZE
    THE CELL AFTER RECEIVING THE MESSAGE, HE CAN BYPASS THE LABEL
    CONDITION AND CONTINUE TO PROCESS. IF THE USER DOES NOT
    WISH TO BYPASS THE CONDITION, THAT CELL MAY BE DELETED FROM
    THE JOB.
    HOME ADDRESS GENERATION- A BINARY, FIVE-BYTE HOME ADDRESS
    IS WRITTEN ON EVERY TRACK BY THE PROGRAM. THE FIVE BYTES
    WRITTEN ARE- FLAG, SUBCELL NUMBER, STRIP /FINGER/ NUMBER,
    CYLINDER /HEAD BAR/ NUMBER, AND TRACK /ELEMENT/ NUMBER.
    THE FLAG BYTE, WHICH IS PROPAGATED TO THE FLAG BYTE OF EACH
    RECORD ON THE TRACK, IS USED TO INDICATE THE CONDITION
    /DEFECTIVE OR NOT DEFECTIVE/ OF THE TRACK, AND WHETHER OR NOT
    IT HAS BEEN ASSIGNED AS AN ALTERNATE TRACK.
    TRACK DESCRIPTOR /RD/ GENERATION- A TRACK DESCRIPTOR RECORD
    OR RECORD ZERO /RO/ IS WRITTEN AS THE FIRST RECORD FOLLOWING
    THE HOME ADDRESS. IT IS DIVIDED INTO TWO PARTS- COUNT AND DATA.
    IF AN ERROR OCCURS IN THE HOME ADDRESS OR RO AREA, THE HOME
    ADDRESS AND RECORD ZERO ARE ADVANCED 800 BYTES AND ARE REWRITTEN.
    THE TRACK IS THEN FLAGGED DEFECTIVE, AND AN ALTERNATE TRACK
    IS ASSIGNED. IF AN ERROR OCCURS AT THIS TIME, THE PROGRAM
    IS TERMINATED.
    SURFACE ANALYSIS AND INITIALIZATION VERIFICATION- SURFACE
    ANALYSIS IS PERFORMED FIRST IN AN ALTERNATE TRACK AREA
    CONSISTING OF 400 TRACKS. TRACKS IN THIS AREA FOUND TO BE
    DEFECTIVE ARE FLAGGED AND CANNOT BE ASSIGNED AS ALTERNATE
    TRACKS. SURFACE ANALYSIS IS THEN PERFORMED ON ALL REMAINING
    TRACKS OF THE CELL. IF DEFECTIVE ONES ARE ENCOUNTERED,
    ALTERNATE ONES ARE ESTABLISHED IN THE ALTERNATE TRACK AREA.
    IF THERE ARE NO MORE ALTERNATE TRACKS AVAILABLE, THE CELL IS

CONTINUED FROM PRIOR PAGE--
        DELETED FROM FURTHER PROCESSING. MESSAGES ARE PRINTED ON
        SYSLOG TO NOTIFY THE USER OF DEFECTIVE TRACKS, ASSIGNED
        ALTERNATE TRACKS, AND THEIR LOCATIONS. AN INITIALIZATION
        VERIFICATION ROUTINE ENSURES THAT THE HOME ADDRESS AND TRACK
        DESCRIPTOR RECORD HAVE BEEN WRITTEN ON EACH TRACK, AND THAT
        SURFACE ANALYSIS HAS BEEN PERFORMED ON EVERY TRACK.
        IPL-FORMAT CREATION- THE PROGRAM FORMATS TWO IPL RECORDS.
        THESE ARE WRITTEN ON CYLINDER ZERO, TRACK ZERO, RECORDS
        ONE AND TWO. RECORD ONE IS WRITTEN WITH A 24-BYTE DATA FIELD
        OF BINARY ZEROS. RECORD TWO IS WRITTEN WITH A 144-BYTE DATA
        FIELD OF BINARY ZEROS.
        VOLUME-LABEL CREATION- USING A CONTROL CARD UNIQUE TO THE
        PROGRAM, A VOLUME LABEL IS CREATED IN THE STANDARD FORMAT
        /VOL1/ FOR EACH CELL PROCESSED. SEVEN ADDITIONAL USER
        VOLUME LABELS /VOL2-VOL8/ CAN BE CREATED, IF DESIRED.
        VTOC-FORMAT CREATION- THE PROGRAM PRE-FORMATS THE VOLUME TABLE
        OF CONTENTS /VTOC/, RESERVING THE FIRST TWO RECORD LOCATIONS
        IN IT FOR THE VOLUME TABLE OF CONTENTS - DATA SET CONTROL BLOCK
        /VTOC - DSCB/ LABEL, AND THE SPACE-MANAGEMENT LABEL. THE
        LOCATION ON THE CELL IN WHICH THE VTOC IS TO BE PLACED IS
        INDICATED IN A CONTROL CARD. THE STANDARD LOCATION IS ON
        CYLINDER ZERO IMMEDIATELY FOLLOWING THE VOLUME LABEL/S/, AND
        EXTENDING TO THE END OF THE CYLINDER. THE VTOC CAN, HOWEVER,
        APPEAR ON ANY CYLINDER /EXCLUDING ALTERNATE CYLINDERS/,
        BUT CANNOT EXCEED CYLINDER BOUNDARIES.

        MINIMUM SYSTEM REQUIREMENTS- 16K BYTES OF CORE STORAGE...
        A CARD READER /1442, 2501, 2520, OR 2540/ FOR PROGRAM LOADING
        AND CONTROL CARDS... SYSLOG DEVICE /1403, 1404 OR 1443 PRINTER,
        OR 1052 PRINTER-KEYBOARD/ FOR LOGGING AND ERROR MESSAGES...
        ONE 2321 DATA CELL.

        BASIC PROGRAM MATERIAL -
            DOCUMENTATION - PROGRAM MATERIAL LIST... SUPPORT
            SPECIFICATIONS-DASD UTILITY PROGRAMS C24-3363...
            OPERATING GUIDE-DASD UTILITY PROGRAMS C24-3392.
            MACHINE READABLE - THE ASSEMBLED DECK IN CARD FORM OR ON A
            7- OR 9-TRACK DISTRIBUTION TAPE REEL WHICH WILL BE
            SUPPLIED BY PROGRAM INFORMATION. THE DATA CONVERSION
            FEATURE IS REQUIRED FOR 7-TRACK OPERATION. UNLESS
            7-TRACK IS SPECIFICALLY REQUESTED THE 9-TRACK DTR
            WILL BE SENT.

360P-UT-212   ALTERNATE TRACK ASSIGNMENT
/2321/
        ORDER THROUGH LOCAL IBM BRANCH OFFICE
        SPECIFY FILE NUMBER 360P-UT-212

        THE BPS/360 ALTERNATE TRACK ASSIGNMENT /2321/ IS DESIGNED TO
        ASSIGN AN ALTERNATE TRACK TO A DEFECTIVE TRACK ON A 2321
        DATA CELL AT ANY TIME OTHER THAN WHEN INITIALIZING THE CELL.
        WHEN A DEFECTIVE TRACK IS ENCOUNTERED, THE VOLUME TABLE OF
        CONTENTS IS CHECKED TO DETERMINE THE NEXT ALTERNATE TRACK
        TO BE ASSIGNED. IF AN ALTERNATE TRACK IS NOT AVAILABLE, THE
        CONDITION IS LOGGED AND THE JOB IS TERMINATED. IF AN ALTERNATE
        TRACK IS AVAILABLE, THE RECORDS CONTAINED ON THE DEFECTIVE
        TRACK ARE TRANSFERRED TO IT. AN INDICATION IS GIVEN TO SHOW
        WHERE ERRORS OCCUR AND THE ACTION TAKEN. AN OPTION IS
        AVAILABLE ALLOWING EITHER ALL RECORDS, OR ONLY THE INVALID
        RECORDS WHICH ARE TRANSFERRED TO AN ALTERNATE TRACK, TO BE
        PRINTED ON THE ASSIGNED LOGGING DEVICE. IF AN ERROR IS FOUND
        IN THE HOME ADDRESS OR TRACK DESCRIPTOR RECORD AREAS, THIS
        OPTION IS IGNORED AND ALL RECORDS ARE PRINTED AS THEY ARE
        TRANSFERRED. SURFACE ANALYSIS IS PERFORMED ON THE TRACK IN
        ERROR AFTER ALL RECORDS HAVE BEEN TRANSFERRED TO THE ALTERNATE
        TRACK. IF THE HOME ADDRESS OR TRACK DESCRIPTOR RECORD AREAS
        ARE NOT DEFECTIVE, BUT A PERMANENT ERROR EXISTS ELSEWHERE
        ON THE TRACK, THE DEFECTIVE TRACK POINTS TO THE ALTERNATE
        TRACK, AND THE JOB IS COMPLETED. IF THE ERROR IS ONLY
        TEMPORARY, THE DATA RECORDS ARE TRANSFERRED FROM THE ALTERNATE
        TRACK BACK TO THE ORIGINALLY DEFECTIVE TRACK. IF THE HOME
        ADDRESS OR TRACK DESCRIPTOR RECORD AREAS ARE DEFECTIVE,
        THE HOME ADDRESS AND TRACK DESCRIPTOR RECORD ARE ADVANCED
        800 BYTES AND ARE REWRITTEN TO ALLOW THE TRACK TO BE FLAGGED
        DEFECTIVE. IF AN ERROR OCCURS WHILE ATTEMPTING TO ADVANCE
        THESE AREAS, THE PROGRAM IS TERMINATED. IF NO ERROR OCCURS,
        THE DEFECTIVE TRACK POINTS TO THE ALTERNATE TRACK AND THE
        JOB IS COMPLETED.
        MINIMUM SYSTEM REQUIREMENTS- 16,384 BYTES OF MAIN STORAGE...
        A CARD READER /1442, 2501, 2520 B1, OR 2540/ FOR PROGRAM
        LOADING AND CONTROL CARDS... A SYSLOG DEVICE /1403, 1404, OR
        1443 PRINTER, OR 1052 PRINTER-KEYBOARD/ FOR LOGGING AND
        ERROR MESSAGES... A 2321 DATA CELL DRIVE AND 2841 CONTROL UNIT.
        ENGINEERING CHANGE CONSIDERATIONS- 2841 CONTROL UNIT ENGINEERING
        CHANGE LEVEL 413140 OR HIGHER IS A PREREQUISITE FOR USE OF
        VERSION 1 OF THE ALTERNATE TRACK ASSIGNMENT /2321/ PROGRAM.
        ENGINEERING CHANGE 811839 AND 811842 MUST BE INSTALLED ON A
        2520 USED AS A CARD READER.

        BASIC PROGRAM MATERIAL -
            DOCUMENTATION - PROGRAM MATERIAL LIST... DASD UTILITY
            PROGRAMS SPECIFICATIONS MANUAL C24-3363... OPERATING
            GUIDE C24-3392.
            MACHINE READABLE - ASSEMBLED DECK IN CARD FORM OR ON ONE
            9- OR 7-TRACK DTR /DATA CONVERSION FEATURE REQUIRED/.
        IF TRACK REQUIREMENT IS NOT INDICATED A 9-TRACK DTR WILL
        BE SENT.   THE DTR WILL BE SUPPLIED BY THE PROGRAM
        INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-213   DIRECT ACCESS STORAGE DEVICE
INITIALIZATION PROGRAM
        ORDER THROUGH LOCAL IBM BRANCH OFFICE
        SPECIFY FILE NUMBER 360P-UT-213

        THE SYSTEM/360 DIRECT ACCESS STORAGE DEVICE INITIALIZATION
        PROGRAM, IS PROVIDED FOR USERS OF SYSTEM/360 MODEL 40 AND 50
        1410/7010 EMULATOR PROGRAMS WHO REQUIRE INITIALIZATION OF
        2302 DISK STORAGE UNITS. IT IS IDENTICAL TO THE DASDI PROGRAM
        CONTAINED IN THE SYSTEM/360 OPERATING SYSTEM INDEPENDENT
        UTILITIES /360S-UT-507/. DASDI HAS BEEN PACKAGED AS A SEPARATE
        PROGRAM FOR DISTRIBUTION TO NON-USERS OF THE SYSTEM/360
        OPERATING SYSTEM.
        THE SYSTEM/360 DASDI UTILITY PROGRAM PERFORMS TWO SEPARATE
        FUNCTIONS., IT INITIALIZES 2302 DISK STORAGE UNITS, AND ASSIGNS
        ALTERNATE TRACKS ON THE 2302. A SINGLE DASDI JOB CAN INITIALIZE
        ONE 2302 MODULE AND ASSIGN ALTERNATES FOR SPECIFIED TRACKS
        ON ONE MODULE.
        MINIMUM SYSTEM REQUIREMENTS- THIS PROGRAM MAY BE USED TO
        INITIALIZE 2302 DISK STORAGE UNITS ON ANY SYSTEM/360 MEETING
        THE MINIMUM MACHINE REQUIREMENTS OF EITHER THE SYSTEM/360
        MODEL 40 OR 50 1410/7010 EMULATOR PROGRAMS, 360C-EU-726 AND
        360C-EU-728.

CONTINUED FROM PRIOR COLUMN--

        BASIC PROGRAM MATERIAL -
            DOCUMENTATION - PROGRAM MATERIAL LIST... O/S UTILITIES
            PROGRAMS MANUAL C28-6586.
            MACHINE READABLE - OBJECT DECK IN CARD FORM OR ON A 7- OR
            9-TRACK DTR. THE DATA CONVERSION FEATURE IS REQUIRED
            FOR 7-TRACK USERS.

        IF TRACK REQUIREMENT IS NOT SPECIFIED, 9-TRACK WILL BE SUPPLIED.
        THE DTR /DISTRIBUTION TAPE REEL/ WILL BE SUPPLIED - NO TAPE
        SUBMITTAL IS REQUIRED.

360P-UT-214   OS/360 DUMP/RESTORE
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-214

        DUMP/RESTORE DUMPS THE DATA CONTENTS OF A DIRECT-ACCESS
        VOLUME ONTO A 2311 DISK STORAGE VOLUME OR A MAGNETIC TAPE
        AND RESTORES THE DATA CONTENTS TO A DIRECT-ACCESS VOLUME THAT
        RESIDES ON THE SAME TYPE DEVICE AS THE SOURCE VOLUME.
        THIS PROGRAM IS INTENDED FOR THE OS/360 USER. NON-OS/360 USERS
        SHOULD NOT MISTAKENLY ORDER THIS AS BPS UTILITIES.

        MINIMUM SYSTEM REQUIREMENTS- A 32K SYSTEM/360, A 2301 ON THE
        SYSTEM REQUIRES 64K.

        BASIC PROGRAM MATERIAL -
            DOCUMENTATION - PROGRAM MATERIAL LIST... OS/360 UTILITY
            PROGRAMS MANUAL, C28-6586.
            MACHINE READABLE - OBJECT DECK AVAILABLE ON CARDS OR 9-TRACK
            OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

        NOTE- WHEN ORDERING THIS PROGRAM ON DTR THE REQUESTOR MUST
        INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
        9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY THE PROGRAM
        INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-215   OS/360 RECOVER/REPLACE
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360P-UT-215

        RECOVER/REPLACE ATTEMPTS TO READ DATA FROM A BAD TRACK AND,
        AFTER THE OPERATOR HAS CORRECTED THE DATA, REPLACES IT ON AN
        ALTERNATE TRACK OF THE DIRECT-ACCESS DEVICE.
        THIS PROGRAM IS INTENDED FOR THE OS/360 USER. NON-OS/360
        USERS SHOULD NOT MISTAKENLY ORDER THIS AS BPS UTILITIES.

        MINIMUM SYSTEM REQUIREMENTS- A 32K SYSTEM/360.

        BASIC PROGRAM MATERIAL -
            DOCUMENTATION - PROGRAM MATERIAL LIST... OS/360 UTILITY
            PROGRAMS MANUAL, C28-6586.
            MACHINE READABLE - OBJECT DECK AVAILABLE ON CARDS OR 9-TRACK
            OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

        NOTE- WHEN ORDERING THIS PROGRAM ON DTR THE REQUESTOR MUST
        INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
        9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY THE PROGRAM
        INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360S   IBM OPERATING SYSTEM/360   *R
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    USE OS/360 ORDER FORM NO. 120-1411.

        IBM OPERATING SYSTEM/360 COMBINES IN ONE INTEGRATED PACKAGE
        ADDITIONAL FACILITIES ALONG WITH MANY FEATURES OF PREVIOUS
        OPERATING SYSTEMS.

        SOME OUTSTANDING FEATURES OF OS/360 ARE-
          - MANAGEMENT OF DIRECT ACCESS SPACE ALLOCATION, MINIMIZING
            MANUAL CONTROL PROCEDURES. SEQUENTIALLY ORGANIZED DATA
            MAY BE AUTOMATICALLY STORED ON TAPE OR DISK.
          - MULTI-PURPOSE PROGRAM LIBRARY, PROVIDING IN ONE LIBRARY
            THE SAME FUNCTIONS PREVIOUSLY PROVIDED BY SEPARATE
            RELOCATABLE AND CORE IMAGE LIBRARIES.
          - DYNAMIC LINKAGE TO RELOCATABLE PROGRAM MODULES, PROVIDING
            FLEXIBILITY IN APPLICATION PROGRAM DESIGN.
        A DESCRIPTION OF EACH COMPONENT, THE PROGRAM DOCUMENTATION,
        AND ORDERING PROCEDURE FOLLOWS. THESE SHOULD BE USED AS
        GUIDES FOR ORDERING THE PROPER ITEMS TO MEET INDIVIDUAL
        REQUIREMENTS.
        IBM OPERATING SYSTEM/360-

        THE OPERATING SYSTEM IS DESIGNED IN MODULAR FORM TO FIT
        A WIDE RANGE OF SYSTEM/360 CONFIGURATIONS AND APPLICATIONS
        FOR MODELS 30, 40, 50, 65 AND 75, BEGINNING AT 64K BYTES OF
        MAIN STORAGE. SEE SECTIONS TITLED ,,SYSTEM GENERATION,,,
        ,,STARTER SYSTEM,, AND ,,MINIMUM ENGINEERING CHANGE
        REQUIREMENTS,, FOR IMPORTANT DETAILS.
        THE CONTROL PROGRAM SUPERVISES THE EXECUTION OF PROCESSING
        PROGRAMS, CONTROLS THE LOCATION, STORAGE AND RETRIEVAL OF
        DATA, AND SCHEDULES THE USE OF SYSTEM RESOURCES FOR CONTINUOUS
        JOB PROCESSING.
        THE PROCESSING PROGRAMS INCLUDE THE ASSEMBLER, COMPILERS
        FOR FORTRAN IV AND COBOL, SORT/MERGE AND A VARIETY OF
        SERVICE PROGRAMS.

        OPERATING SYSTEM/360 REQUIRES A CONSOLE, DEVICES FOR THE
        INPUT JOB STREAM AND SYSTEM MESSAGES, AND ON-LINE DIRECT-ACCESS
        STORAGE RESIDENCE FOR THE SYSTEM PROGRAM LIBRARY AND OTHER
        SYSTEM DATA SETS. THE AMOUNT OF DIRECT ACCESS STORAGE
        NEEDED DEPENDS UPON-
          1. OS OPTIONS SELECTED /SEE STORAGE ESTIMATES MANUAL-C28-6551./
          2. SYSTEM GENERATION AND MAINTENANCE CONSIDERATIONS.
          3. CUSTOMER REQUIREMENTS FOR BOTH PROGRAM AND DATA STORAGE.
        A PORTION OF MAIN STORAGE MUST BE ALLOCATED FOR USE BY THE
        CONTROL PROGRAM., THE AMOUNT VARIES ACCORDING TO THE CONTROL
        FUNCTIONS SELECTED BY THE USER.

                        CONTROL PROGRAM

        THE VARIOUS CONTROL PROGRAM CONFIGURATIONS EACH CONSIST OF A
        COMBINATION OF A SUPERVISOR, A SCHEDULER, AND SELECTED DATA
        MANAGEMENT FUNCTIONS. ANY CONTROL PROGRAM CONFIGURATION
        SUPPORTS ALL LANGUAGE COMPILERS, ALL SERVICE PROGRAMS AND
        TESTRAN CAPABILITY.

IBM Programs

PRIMARY CONTROL PROGRAM - 360S-CI-505

THE PRIMARY CONTROL PROGRAM IS THE BASE OF ALL CONTROL
PROGRAM CONFIGURATIONS. WHEN GENERATING A SYSTEM, FUNCTIONAL
CAPABILITY MAY BE SELECTED IN A VARIETY OF COMBINATIONS
AND ADDED TO THOSE INCLUDED IN THE PRIMARY CONTROL PROGRAM
TO PRODUCE ADDITIONAL CAPABILITIES. BOTH A SUPERVISOR AND
SCHEDULER ARE INCLUDED IN THE PRIMARY CONTROL PROGRAM
/WHICH IS FREQUENTLY CALLED THE SEQUENTIAL SCHEDULING SYSTEM/.

THE SUPERVISOR IN GENERAL CONTROLS THE USE OF THE CPU, I/O,
AND MAIN STORAGE AUTOMATICALLY AND, AS REQUESTED BY A USER,
THROUGH SYSTEM MACRO-INSTRUCTIONS. THE PRIMARY SUPERVISOR
PROVIDES --
- CONTROL OF A SINGLE TASK.
- OVERLAP OF CPU OPERATIONS WITH I/O CHANNEL ACTIVITY.
- QUEUEING OF I/O REQUESTS FOR CHANNEL USE.
- SUPERVISION AND PROCESSING OF ALL TYPES OF INTERRUPTIONS.
- DYNAMIC ALLOCATION OF MAIN STORAGE FOR LOAD MODULES.
- SYNCHRONOUS OVERLAY SUPERVISOR.
- BLOCK LOADING OF RELOCATABLE PROGRAMS.
- ERROR CHECKING AND STANDARD I/O ERROR RECOVERY PROCEDURES.
- MULTIPROGRAMMING WITH A FIXED NUMBER OF TASKS /OPTION 2/.
- CHECKPOINT/RESTART SUPPORT FOR USER PROGRAMS IN PCP AND MFT.
- SYSTEM ENVIRONMENT RECORDING. THE RECORDED INFORMATION,
  I/O ERROR COUNTS STORED ON SYSTEMS RESIDENCE AND CPU OR
  CHANNEL ERROR LOG-OUT INFORMATION IN MAIN STORAGE IS
  TRANSCRIBED BY STAND-ALONE CE DIAGNOSTIC PROGRAMS OR, THIS
  FUNCTION CAN BE PERFORMED ON MODELS 40, 50 AND 65 BY ONE OF
  THE FOLLOWING COMPONENTS-
    .SERO, SER1 AND EREP FOR THE MODEL 40 - 360S-DN-527.
    .SERO, SER1 AND EREP FOR THE MODEL 50 - 360S-DN-528.
    .SERO, SER1 AND EREP FOR THE MODEL 65 - 360S-DN-529.
    .SERO, SER1 AND EREP FOR THE MODEL 75 - 360S-DN-530.

SERVICES AVAILABLE TO USER PROGRAMS THROUGH SYSTEM
MACRO-INSTRUCTIONS INCLUDE --
- LOCATING A NAMED PROGRAM.
- DYNAMICALLY LOADING AND TRANSFERRING CONTROL TO A NAMED
  PROGRAM.
- EXITS FOR SELECTED PROGRAM INTERRUPTIONS.
- SAVING REGISTERS AT THE START OF A SUBROUTINE.
- RETURNING TO THE CALLING ROUTINE OR NEXT HIGHER CONTROL
  LEVEL.
- WAITING FOR THE COMPLETION OF AN EVENT.
- WAITING FOR THE COMPLETION OF MULTIPLE EVENTS /OPTION 1/.
- POSTING THE COMPLETION OF AN EVENT.
- IDENTIFYING AN IMBEDDED SUBPROGRAM TO THE SUPERVISOR
  /OPTION 3/.
- DYNAMICALLY ALLOCATING OR RELEASING VARIABLE AMOUNTS OF
  MAIN STORAGE.
- WRITING A MESSAGE TO THE OPERATOR WITH OR WITHOUT A REPLY
  REQUESTED.
- REQUESTING THE TIME OF DAY /OPTION 6A/.
- SETTING THE TIMER TO INTERRUPT AFTER SOME TIME INTERVAL
  /OPTION 6B/.
- TESTING OR RESETTING THE TIME INTERVAL PREVIOUSLY REQUESTED
  /OPTION 6B/.

THE OPTIONS ABOVE ARE DESCRIBED IN IBM SYSTEM/360 OPERATING
SYSTEM. STORAGE ESTIMATES MANUAL C28-6551.

THE SCHEDULER IN GENERAL REGULATES THE FLOW OF JOBS THROUGH
THE COMPUTING SYSTEM, PROVIDES FOR I/O DEVICE ASSIGNMENTS,
AND SERVES AS THE INTERFACE BETWEEN USER AND SYSTEM THROUGH
THE JOB CONTROL LANGUAGE, OPERATOR COMMANDS, AND CONSOLE
MESSAGES.

THE PRIMARY CONTROL PROGRAM INCLUDES THE SEQUENTIAL SCHEDULER.
THE SEQUENTIAL SCHEDULER IS NOT RESIDENT, BUT IS BROUGHT
INTO MAIN STORAGE BETWEEN JOB STEPS. THIS SCHEDULER SUPPORTS --
- A SINGLE INPUT JOB STREAM /UNBLOCKED RECORDS ONLY/.
- SEQUENTIAL PROCESSING OF JOB STEPS.
- READING AND INTERPRETING OF CONTROL STATEMENTS USING
  ALL FEATURES OF THE JOB CONTROL LANGUAGE EXEPT THOSE THAT
  PERTAIN TO PRIORITY, SYSTEM LOG, MESSAGE CLASS, JOB STEP
  TIMING OR WRITERS.
- ASSIGNMENT OF INPUT/OUTPUT DEVICES.
- ALTERNATE CONSOLE /OPTION 7/ OR COMPOSITE CONSOLE /OPTION 8/.
- FREQUENTLY USED SETS OF JOB CONTROL STATEMENTS MAY BE STORED
  IN A PROCEDURE LIBRARY. ANY TIME THAT PROCEDURE IS TO BE
  EXECUTED. THE USER NEED ONLY SPECIFY THE PROCEDURE NAME.

GRAPHIC PROGRAMMING SERVICES - 360S-IO-523

THE IBM 2250 GRAPHIC PROGRAMMING SERVICES CONSIST OF A MEANS
FOR CREATING THE DATA USED BY IBM 2250 DISPLAY UNITS TO GENERATE
DISPLAYS, AND THE GRAPHICS ACCESS METHOD FOR USE WITH THESE
DISPLAY UNITS. THE GRAPHIC ACCESS METHOD INCLUDES READ/WRITE
LEVEL INPUT/OUTPUT MACRO-INSTRUCTIONS, FACILITIES FOR SHARING
THE GRAPHIC-DEVICE BUFFER AMONG DISPLAY UNITS, AND ROUTINES FOR
UTILIZING THE MAN-MACHINE COMMUNICATION CAPABILITY OF THE 2250.
THE MAJOR TYPES OF FACILITIES PROVIDED BY OS/360 GRAPHI
PROGRAMMING SERVICES ARE -
- MACRO-INSTRUCTIONS FOR GENERATING THE ORDERS AND DATA THAT
  CONSTITUTE A ,,PROGRAM,, FOR THE GRAPHIC DEVICE.
- COUNTERS THAT KEEP TRACK OF CERTAIN CONDITIONS DURING
  ASSEMBLY OF THE ABOVE MACRO-INSTRUCTIONS.
- PROBLEM ORIENTED ROUTINES /PORS/ WHICH, WHEN CALLED AT
  EXECUTION TIME, CONSTRUCT GRAPHIC ORDER PROGRAM SEGMENTS FOR
  PRODUCING COMMONLY USED TYPES OF IMAGES.
- DATA HANDLING FACILITIES FOR COMBINING GRAPHIC ORDER PROGRAM
  SEGMENTS INTO A UNIFIED GRAPHIC ORDER PROGRAM IN MAIN STORAGE,
  READY FOR TRANSMISSION TO THE GRAPHIC DEVICE BUFFER. THESE
  FACILITIES CAN ALSO MEASURE OR LIMIT THE SIZE OF A STRING OF
  GRAPHIC ORDERS AND DATA.
- INPUT/OUTPUT MACRO-INSTRUCTIONS FOR TRANSMISSION OF THE
  GRAPHIC ORDER PROGRAM TO THE BUFFER, FOR TRANSMISSION OF
  CONTROL COMMANDS TO THE GRAPHIC DEVICE, AND FOR TRANSMISSION
  OF DATA, ORIGINATED BY A USER AT A 2250 KEYBOARD, FROM THE
  BUFFER INTO MAIN STORAGE.
- BUFFER MANAGEMENT FACILITIES FOR ALLOCATING PORTIONS OF THE
  GRAPHIC DEVICE BUFFER AMONG THE DEVICES SHARING IT.
- ATTENTION HANDLING FACILITIES THAT HELP THE PROGRAMMER TO
  MAKE EFFICIENT USE OF THE 2250 AS AN INSTRUMENT FOR
  MAN-MACHINE COMMUNICATION.
GRAPHIC PROGRAMMING SERVICES SUPPORT THE IBM 2250 DISPLAY UNIT,
MODELS 1, 2 AND 3 AND THE IBM 2840 DISPLAY CONTROL WHICH IS
WITH MODELS 2 AND 3.

SYSTEMS ENVIRONMENT RECORDING SERO, SER1 AND EREP FOR
MODEL 40 - 360S-DN-527
MODEL 50 - 360S-DN-528
MODEL 65 - 360S-DN-529
MODEL 75 - 360S-DN-530

SERO IS AN OPTIONAL FUNCTION DESIGNED TO COLLECT, FORMAT AND
WRITE ON THE SYS1. LOG REC DATA SET THE DATA ISSUED AS A RESULT
OF A MALFUNCTION WITHIN THE CPU OR A CHANNEL. IT CONSISTS OF A
RESIDENT AND NON-RESIDENT MODULE WITH THE NON-RESIDENT MODULE
BEING LOADED INTO THE PROBLEM PROGRAM AREA WITH REGARD TO WHAT
WAS PREVIOUSLY THERE. SERO DOES NOT USE ANY OS/360 FACILITIES TO
COLLECT DATA AND TO WRITE THE ENVIRONMENT RECORD. IT HAS ITS OWN
I/O PROGRAMMING. IT TERMINATES THE SYSTEM IN WAIT STATE AT THE
END OF ITS OPERATION.

SER1, AS SERO, IS AN OPTIONAL FUNCTION DESIGNED TO COLLECT,
FORMAT AND WRITE ON THE SYS1. LOG REC DATA SET THE DATA ISSUED
AS A RESULT OF A MACHINE MALFUNCTION WITHIN THE CPU OR A CHANNEL.
HOWEVER, IT IS COMPLETELY RESIDENT AND USES OS/360 FACILITIES
SUCH AS EXCP, ABEND, WTOR AND PURGE. ALSO, IT ATTEMPTS TO
DETERMINE THE EFFECT AND EXTENT OF THE DAMAGE CAUSED BY THE
MALFUNCTION AND TO IDENTIFY THE FAILURE WITHIN A SPECIFIC TASK.
IF IT DETERMINES THE FAILURE HAS NOT DAMAGED THE SUPERVISOR AND
CAN BE RELATED TO A TASK IT TERMINATES THAT TASK USING OS/360
ABEND FACILITIES. IF THE SUPERVISOR IS FOUND DAMAGED, IT
TERMINATES THE SYSTEM WAIT STATE, AS IN SERO. IT IS RECOMMENDED
THAT EITHER SERO OR SER1 BE INCLUDED IN ALL OS/360 SYSTEMS
USED ON MODEL 75S.

EREP IS A UTILITY PROGRAM OPERATING AS A PROBLEM PROGRAM UNDER
OS/360. IT IS USED TO RETRIEVE COMPLETELY OR SELECTIVELY, EDIT
AND OUTPUT THE ENVIRONMENT RECORDS THAT HAVE BEEN STORED ON THE
SYS1. LOG REC DATA SET BY THE ENVIRONMENT RECORDING PROGRAMS
OBR, SDR, SERO AND SER1.

DATA MANAGEMENT
DATA MANAGEMENT- THE CONTROL PROGRAM FUNCTIONS PROVIDED FOR
THE MANAGEMENT OF DATA REMOTE EFFICIENCY IN THE USE OF I/O
DEVICES, AND ALLOW AN UNPRECEDENTED DEGREE OF INDEPENDENCE
FROM CONSIDERATION OF DEVICE AND DATA CHARACTERISTICS.
TO ATTAIN THESE OBJECTIVES, DATA MANAGEMENT FACILITIES HAVE
BEEN DESIGNED TO PROVIDE SYSTEMATIC AND EFFECTIVE MEANS
OF CLASSIFYING, IDENTIFYING, STORING, CATALOGING, AND
RETRIEVING ALL DATA - INCLUDING LOADABLE PROGRAMS - PROCESSED
BY THE OPERATING SYSTEM.

DATA MANAGEMENT FACILITIES CAN BE GROUPED INTO TWO MAJOR
CATEGORIES-
DATA SET CONTROL AND DATA ACCESS.

DATA SET CONTROL-

PRIMARY DATA MANAGEMENT - 360S-DM-508

THESE FUNCTIONS CONTROL ALL DATA IN THE SYSTEM AND REGULATE
THE USE OF DATA SETS. THEY INCLUDE PROVISION FOR-
- DATA SET LOCATION CONTROL, SUPPORTED BY A POWERFUL
  CATALOGING SYSTEM, ENABLING PROGRAMMERS TO RETRIEVE DATA
  AND PROGRAMS BY SYMBOLIC NAME ALONE, WITHOUT SPECIFYING
  VOLUME SERIAL NUMBER OR LOCATION ON THAT VOLUME.
- CLASSIFICATION OF DATA SETS STORED WITHIN THE CATALOGING
  SYSTEM ACCORDING TO INSTALLATION NEEDS.
- A SYSTEM OF LABELS AND LABEL CHECKING. /USE 360P-UT-057, A
  STAND ALONE PROGRAM, TO WRITE INITIAL TAPE VOLUME LABELS./
- SUCCESSIVE GENERATIONS OF RELATED DATA SETS, CONTROLLED
  BY A GENERATION DATA GROUP FEATURE.
- CONTROL OF DIRECT ACCESS STORAGE SPACE ALLOCATIONS.,
  ALLOCATING SPECIFIC SPACE OR ANY AVAILABLE SPACE AS REQUESTED
  BY THE PROGRAMMER. WHEN THE ORIGINAL SPACE PROVIDED IS
  NOT ADEQUATE, AN AUTOMATIC EXTENSION OF SPACE IS PROVIDED,
  IF REQUESTED.

DATA ACCESS

THE DATA ACCESS FACILITIES PROVIDED BY THE OPERATING SYSTEM
ARE A MAJOR EXPANSION OF THE INPUT/OUTPUT CONTROL SYSTEMS /IOCS/
OF PREVIOUS OPERATING SYSTEMS. THE INPUT/OUTPUT ROUTINES
PROVIDED EFFICIENTLY SCHEDULE AND CONTROL THE TRANSFER OF
DATA BETWEEN MAIN STORAGE AND INPUT/OUTPUT DEVICES. THESE
ROUTINES ARE LOADED INTO MAIN STORAGE AT THE TIME THEY ARE
NEEDED, AND THEY ARE RELEASED FROM MAIN STORAGE WHEN NO
LONGER REQUIRED. THE PROGRAMMER CAN SELECT FROM VARIOUS
DATA ACCESS METHODS TO OBTAIN FACILITIES TAILORED TO HIS
PROCESSING REQUIREMENTS. EACH ACCESS METHOD SUPPLIES A
COMPREHENSIVE SET OF MACRO-INSTRUCTIONS THAT PERMIT THE
PROGRAMMER TO SPECIFY INPUT/OUTPUT REQUESTS WITH A MINIMUM
OF EFFORT. ACCESS METHODS PROVIDE FOR-
- DEVICE INDEPENDENCE.
- READING AND WRITING DATA RANDOMLY AND SEQUENTIALLY.
- BLOCKING AND DEBLOCKING RECORDS.
- OVERLAPPING READING/WRITING AND PROCESSING OPERATIONS.
- DETECTING ERROR CONDITIONS AND CORRECTING THEM WHEN POSSIBLE.

ACCESS METHODS

BASIC SEQUENTIAL ACCESS METHOD - BSAM /360S-DM-508/

BSAM-DATA IS SEQUENTIALLY ORGANIZED., PHYSICAL BLOCKS OF
DATA ARE STORED OR RETRIEVED. THE PROGRAM MAY CONTINUE
IMMEDIATELY FOLLOWING THE READ OR WRITE MACRO BEFORE THE
INPUT OR OUTPUT OPERATION IS COMPLETED. MACRO-INSTRUCTIONS
ARE PROVIDED TO SYNCHRONIZE I/O WITH THE PROBLEM PROGRAM.

QUEUED SEQUENTIAL ACCESS METHOD - QSAM /360S-DM-508/

QSAM-DATA IS SEQUENTIALLY ORGANIZED. LOGICAL RECORDS
ARE RETRIEVED OR STORED WHEN REQUESTED. THE ACCESS METHOD
ANTICIPATES THE NEED FOR RECORDS BASED ON THEIR SEQUENTIAL
ORDER, AND NORMALLY WILL HAVE THE DESIRED RECORD IN MAIN
STORAGE, READY FOR USE, BEFORE THE REQUEST FOR RETRIEVAL.
WHEN STORING DATA, THE PROGRAM NORMALLY WILL CONTINUE AS
IF THE RECORD HAD BEEN WRITTEN IMMEDIATELY, ALTHOUGH THE
ACCESS METHODS ROUTINES MAY BLOCK IT WITH OTHER LOGICAL
RECORDS, AND DEFER THE ACTUAL STORING UNTIL THE OUTPUT
BUFFER HAS BEEN FILLED.

INDEXED SEQUENTIAL ACCESS METHODS - ISAM /360S-IO-526/

QUEUED INDEXED SEQUENTIAL ACCESS METHOD - QISAM -
RECORDS IN DIRECT ACCESS STORAGE ARE STORED AND RETRIEVED IN A
LOGICAL SEQUENCE BASED ON SOME DATA KEY OR CONTROL FIELD OF THE
RECORDS. A MULTI-LEVEL SET OF INDEXES RELATING DATA KEYS OF
RECORDS TO PHYSICAL ADDRESS IS AUTOMATICALLY BUILT AND
MAINTAINED. QISAM IS USED TO CREATE AN INDEXED SEQUENTIAL DATA
SET, AND TO RETRIEVE AND UPDATE RECORDS SEQUENTIALLY FROM SUCH
A DATA SET. SYNCHRONIZATION OF THE PROGRAM WITH THE COMPLETION
OF INPUT/OUTPUT TRANSFER, AND RECORD BLOCKING/DEBLOCKING ARE
AUTOMATIC.
BASIC INDEXED SEQUENTIAL ACCESS METHOD - BISAM -
THIS ACCESS METHOD STORES AND RETRIEVES RECORDS IN RANDOM
SEQUENCE FROM AN INDEXED SEQUENTIAL DATA SET. SELECTIVE READING
IS PERFORMED BY USING THE READ MACRO-INSTRUCTION, AND SPECIFYING
THE KEY OF THE LOGICAL RECORD TO BE RETRIEVED. INDIVIDUAL RECORDS
CAN BE REPLACED OR NEW RECORDS ADDED RANDOMLY. A SYNCHRONOUS
OVERLAP OF INPUT/OUTPUT AND COMPUTATION MAY BE ACCOMPLISHED
USING BISAM.

BASIC PARTITIONED ACCESS METHOD - BPAM /360S-DM-508/

BPAM- THIS METHOD IS DESIGNED FOR EFFICIENT STORAGE AND
RETRIEVAL OF DISCRETE SEQUENCES OF DATA /MEMBERS/ BELONGING
TO THE SAME DATA SET ON A DIRECT-ACCESS DEVICE. EACH MEMBER
HAS A SIMPLE NAME. THE DATA SET INCLUDES A DIRECTORY THAT
RELATES THE MEMBER NAME WITH THE ADDRESS WHERE THE SEQUENCE
BEGINS. MEMBERS MAY BE ADDED TO A PARTITIONED DATA SET AS
LONG AS SPACE IS AVAILABLE.

BASIC DIRECT ACCESS METHOD - BDAM /360S-DM-509/

BDAM-RECORDS WITHIN A DATA SET ARE ORGANIZED ON DIRECT-ACCESS
VOLUMES IN ANY MANNER CHOSEN BY THE PROGRAMMER. STORAGE OR
RETRIEVAL OF A RECORD IS BY ACTUAL ADDRESS OR BY RELATIVE
ADDRESS WITHIN THE DATA SET. THIS ADDRESS CAN BE THAT OF
THE DESIRED RECORD OR A STARTING POINT WITHIN THE DATA SET,
WHERE A SEARCH FOR THE RECORD, BASED ON A DATA KEY FURNISHED
BY THE PROGRAMMER, BEGINS. ADDRESSES ARE ALSO USED BY BDAM
AS STARTING POINTS FOR SEARCHING FOR AVAILABLE SPACE FOR
NEW RECORDS. SEARCHING FOR AN EXISTING RECORD OR AVAILABLE
SPACE IS LIMITED TO ONE TRACK. BDAM EXTENSIONS PROVIDE FOR
MULTIVOLUME DATA SETS, DYNAMIC BUFFERING, EXTENDED SEARCH AND
THE CHECK MACRO.

BASIC TELECOMMUNICATIONS ACCESS METHOD - BTAM /360S-CQ-513/

THE BTAM FACILITIES ARE DESIGNED TO PROVIDE THE BASIC TOOLS
REQUIRED TO WRITE A TELECOMMUNICATIONS PROGRAM. THESE INCLUDE
MACRO FACILITIES FOR CREATING TERMINAL LISTS AND PERFORMING THE
FOLLOWING OPERATIONS -
 - POLLING TERMINALS
 - RECEIVING MESSAGES
 - ADDRESSING TERMINALS
 - TRANSMITTING MESSAGES
 - CHANGING THE STATUS OF TERMINAL LISTS
 - DYNAMIC BUFFERING
 - COMMUNICATION SERVICEABILITY FACILITIES
 - CODE TRANSLATION
   $QUEUED TELECOMMUNICATIONS ACCESS METHOD - QTAM /360S-CQ-519/

QTAM SUPPORTS A VARIETY OF APPLICATIONS SUCH AS MESSAGE
SWITCHING, HIGH-VOLUME INQUIRY AND TRANSACTION PROCESSING. THE
FACILITIES INCLUDE A COMPREHENSIVE SET OF MESSAGE CONTROL AND
EDITING ROUTINES THAT RELIEVE THE PROGRAMMER ASSIGNED THE
SPECIALIZED PROGRAMMING OTHERWISE REQUIRED FOR SUCH AN
APPLICATION. THESE ROUTINES CAN BE ASSEMBLED INTO AN INTEGRAL
MESSAGE CONTROL PROGRAM WHICH IS DESIGNED TO MEET THE EXACT
REQUIREMENTS OF AN INSTALLATION.

QTAM SUPPORTS - 1031, 1032, 1033, 1035, 1052 TERMINAL CONSOLE,
1054, 1055, 1056, 1057, 1058, 1062, 2740, REMOTELY CONNECTED
2260 DISPLAY, AT+T 83B3 SELECTIVE CALLING STATION, WESTERN UNION
PLAN 115A OUTSTATION, AT+T MODEL 330R 35 TYPEWRITER DIAL SERVICE.

LANGUAGE COMPILERS

LANGUAGE COMPILERS AND THE ASSEMBLER COMPILE SYMBOLIC
SOURCE PROGRAMS /SOURCE MODULES/ INTO OBJECT PROGRAMS /OBJECT
MODULES/. ASSEMBLER E, COBOL E AND FORTRAN IV /E LEVEL SUBSET/
ALLOW FOR UNBLOCKED RECORDS ONLY /ON SYSTEM INPUT AND OBJECT
MODULE OUTPUT/.

ASSEMBLER E - 360S-AS-036

THE ASSEMBLER PERMITS THE SOLUTION OF PROBLEMS TO BE
EXPRESSED IN CONVENIENT STATEMENTS CORRESPONDING TO THE
SYSTEM/360 MACHINE LANGUAGE. THE MINIMUM MAIN STORAGE
REQUIREMENT IS 18K BYTES, BUT THE ASSEMBLER TAKES ADVANTAGE OF
ADDITIONAL MAIN STORAGE BY EXPANDING THE SIZE OF CERTAIN TABLES
CONSTRUCTED DURING THE ASSEMBLY PROCESS.

THE ASSEMBLER PROVIDES-
 A. MACRO-INSTRUCTIONS -- THE MACRO-INSTRUCTIONS CAPABILITY
    PROVIDED BY THE ASSEMBLER IS A POWERFUL PROGRAMMING TOOL.
    IT IS FLEXIBLE AND EASY TO USE, AND PERMITS NEW LANGUAGE
    CAPABILITIES TO BE DEFINED AS NEW OR EXPANDED APPLICATIONS
    ARE DEVELOPED.
 B. TESTRAN MACRO-INSTRUCTIONS -- THE ASSEMBLER ALLOWS THE
    COMPLETE SET OF TESTRAN MACRO-INSTRUCTIONS.
 C. CONDITIONAL ASSEMBLY STATEMENTS -- CONDITIONAL ASSEMBLY
    STATEMENTS CAN BE USED WITHIN A MACRO DEFINITION OR IN A
    SOURCE PROGRAM TO ALTER THE SEQUENCE IN WHICH STATEMENTS
    ARE PROCESSED, OR TO SPECIFY SELECTIVE ASSEMBLY OF
    INSTRUCTIONS.
 D. DEVTYPE -- ALLOWS THE ASSEMBLER PROGRAMMER TO REQUEST
    INFORMATION /VIA PROGRAMMING/ RELATING TO THE CHARACTERISTICS
    OF I/O DEVICES IN USE, ALLOWING A PROGRAMMED SELECTION OF
    BLOCKING AND OTHER FACTORS THAT WILL OPTIMIZE PERFORMANCE.
SYSTEM REQUIREMENTS - THE ASSEMBLER USES THE STANDARD
INSTRUCTION SET. OBJECT PROGRAMS MAY USE ANY INSTRUCTION
SET. IN ADDITION TO THE STANDARD REQUIREMENTS FOR A DASD
SYSTEM RESIDENCE, THE ASSEMBLER REQUIRES SPACE IN AUXILIARY
STORAGE FOR THE FOLLOWING DATA SETS-
 - SYSTEM INPUT.
 - THREE INTERMEDIATE /WORK STORAGE/.
 - MACRO-INSTRUCTION LIBRARY /THIS REQUIREMENT MAY BE
   SATISFIED BY DASD SYSTEM RESIDENCE OR PRIVATE LIBRARY. THE
   PRIVATE LIBRARY MAY CONTAIN ASSEMBLER LANGUAGE STATEMENTS
   TO BE CALLED BY THE COPY ASSEMBLER INSTRUCTION AND/OR
   THE USERS PRIVATE MACRO DEFINITIONS/.
 - PRINT OUTPUT.
 - EITHER OBJECT MODULE OR PUNCH OUTPUT /SELECTABLE THROUGH
   THE JOB CONTROL LANGUAGE/.

ALGOL F - 360S-AL-531

ALGOL F, AN ALGEBRAIC LANGUAGE COMPILER, ENCOMPASSES THE ECMA
SUBSET OF ALGOL AS WELL AS THE IFIP SUBSET. THE RECURSIVE USE OF
PROCEDURES ABILITY IS PROVIDED BEYOND THE ECMA SUBSET.
SINCE THERE ARE NO PLAN TO IMPROVE OR ADD ADDITIONAL CAPABILITIES
TO THE ALGOL PROCESSOR IT IS RECOMMENDED THAT PL/I OR FORTRAN BE
USED IN ITS PLACE WHERE POSSIBLE.

ALGOL F LIBRARY - 360S-LM-532

WHEN PROCESSING THE SOURCE PROGRAM, THE COMPILER DETECTS AND
SPECIFIES ANY ROUTINES THAT NEED TO BE COMBINED WITH THE
GENERATED OBJECT MODULE BEFORE IT CAN BE EXECUTED. THESE ROUTINES
ARE CONTAINED IN THE OS/360 ALGOL F LIBRARY - A PARTITIONED
DATA SET WITH THE EXTERNAL NAME SYS1.ALGLIB. THE ROUTINES ARE IN
LOAD MODULE FORM AND THE LINKAGE EDITOR COMBINES THEM WITH THE
OBJECT MODULE TO PRODUCE AN EXECUTABLE LOAD MODULE. THERE ARE
THREE TYPES OF ROUTINES - FIXED STORAGE AREA, MATHEMATICAL AND
INPUT/OUTPUT ROUTINES. ADDITIONALLY, AN ERROR ROUTINE, STORED ON
THE OS/360 LINK LIBRARY IS CALLED AT EXECUTION TIME IF AN
ERROR OCCURS.

ASSEMBLER F - 360S-AS-037

THE ASSEMBLER F, PERMITS PROGRAMS TO BE EXPRESSED IN CONVENIENT
STATEMENTS CORRESPONDING TO THE SYSTEM/360 MACHINE LANGUAGE.
THE MINIMUM MAIN STORAGE REQUIREMENT IS 44K BYTES, BUT THE
ASSEMBLER TAKES ADVANTAGE OF ADDITIONAL MAIN STORAGE BY
EXPANDING THE SIZE OF CERTAIN TABLES CONSTRUCTED DURING THE
ASSEMBLY PROCESS. THE ASSEMBLER PROVIDES-
 - MACRO INSTRUCTIONS- THE MACRO INSTRUCTIONS USED BY ASSEMBLER F
   ARE THE SAME AS THOSE FOR ASSEMBLER E.
 - PSEUDO REGISTERS- MULTIPLE COMMON AREAS MAY BE SHARED BY
   SEPARATELY ASSEMBLED SUBROUTINES THAT ARE PROCESSED TOGETHER
   BY THE LINKAGE EDITOR. SPACE FOR EACH UNIQUELY NAMED
   COMMON AREA IS ASSIGNED DYNAMICALLY AT PROGRAM EXECUTION TIME.
 - DUAL OUTPUT- BOTH OBJECT MODULE AND PUNCH OUTPUT DURING THE
   SAME ASSEMBLY IS SUPPORTED.
 - BLOCKED INPUTS- SYSIN AND SYS1.MACLIB MAY BE BLOCKED TO
   SIGNIFICANTLY IMPROVE PERFORMANCE.
 - PUNCH ERROR RECOVERY- ASSEMBLER F PROVIDES PUNCH ERROR
   RECOVERY WHEN 3 BUFFERS ARE ASSIGNED TO SYSPUNCH.
 - DEVTYPE -- ALLOWS THE ASSEMBLER PROGRAMMER TO REQUEST
   INFORMATION /VIA PROGRAMMING/ RELATING TO THE CHARACTERISTICS
   OF I/O DEVICES IN USE, ALLOWING A PROGRAMMED SELECTION OF
   BLOCKING AND OTHER FACTORS THAT WILL OPTIMIZE PERFORMANCE.

COBOL E - 360S-CO-503

OPERATING SYSTEM/360 COBOL PROVIDES IMPORTANT NEW FEATURES
THAT REDUCE THE COST OF PROGRAMMING AND EXTEND THE USE OF
THE LANGUAGE TO NEW AREAS OF APPLICATION. THE MINIMUM
MAIN STORAGE REQUIREMENT IS 17K BYTES, BUT THE COMPILER
WILL TAKE ADVANTAGE OF ADDITIONAL AVAILABLE MAIN STORAGE
BY EXPANDING THE SIZE OF INPUT/OUTPUT BUFFER AREAS AND TABLES
CONSTRUCTED DURING THE COMPILATION PROCESS.

LANGUAGE FEATURES- AMONG THE NEW FEATURES FURNISHED BY BOTH
COBOL COMPILERS ARE --
 - FLOATING POINT FACILITY.
 - DEBUGGING SOURCE STATEMENTS.
 - DEBUGGING PACKETS THAT MAY BE COMPILED TOGETHER WITH THE
   SOURCE PROGRAM AND EXECUTED AT OBJECT TIME WITHOUT ALTERATIONS
   TO THE ORIGINAL SOURCE PROGRAM.
 - COPY AND INCLUDE FROM A USERS SOURCE PROGRAM LIBRARY.
 - SUBPROGRAM FACILITY.
SYSTEM REQUIREMENTS - THE COBOL COMPILER AND OBJECT PROGRAMS
USE THE STANDARD INSTRUCTION SET AND THE DECIMAL ARITHMETIC
OPTION. THE FLOATING POINT ARITHMETIC OPTION IS ALSO REQUIRED
IF FLOATING POINT LITERALS, DATA ITEMS, OR NON-INTEGER
EXPONENTS ARE USED.
IN ADDITION TO THE STANDARD OS/360 REQUIREMENT FOR DASD
SYSTEM RESIDENCE, THE COMPILER REQUIRES SPACE IN AUXILIARY
STORAGE FOR DATA SETS. THE COBOL E REQUIREMENT IS FOR --
 - SYSTEM INPUT.
 - THREE INTERMEDIATES OF THE SAME TYPE. /WORK STORAGE/.
 - ONE INTERMEDIATE FOR SOURCE PROGRAM LIBRARY FACILITY
   /SEE NOTE./
 - PRINT OUTPUT.
 - EITHER OBJECT MODULE OR PUNCH OUTPUT /SEE NOTE./
 - COBOL SOURCE COPY LIBRARY /DASD/ /SEE NOTE./
NOTE- THESE SYSTEM REQUIREMENTS ARE SELECTABLE THROUGH THE
JOB CONTROL LANGUAGE.

COBOL E LIBRARY - 360S-LM-504

THE COBOL LIBRARY CONSISTS OF SUBROUTINES CALLED BY THE
COMPILER TO PERFORM CONVERSIONS, COMPLEX ARITHMETIC OPERATIONS
AND CERTAIN I/O FUNCTIONS FOR THE COBOL VERBS ACCEPT AND
DISPLAY.

NOTE- THE INITIAL VERSION OF THE COBOL E COMPILER CONTAINS
RESTRICTIONS THAT MAY AFFECT SOME CUSTOMERS. THE RESTRICTION
DETAILS ARE STATED IN A LIST DISTRIBUTED WITH EACH SYSTEM.

COBOL F - 360S-CB-524

COBOL F OFFERS, IN ADDITION TO THE FEATURES OF COBOL E,
THE FOLLOWING IMPORTANT FEATURES -
 - DIRECT ACCESS STATEMENTS
 - INVERTED PRINT EDIT
 - SORT VERB
 - REPORT WRITER FEATURE
 - EXTENDED SOURCE PROGRAM LIBRARY FACILITY
 - STERLING CONVERSION
 - CORRESPONDING OPTION
NOTES ON COBOL F -
 - MODEL 65 REQUIRES EC LEVEL 705226 WHEN USED FOR COBOL F
   COMPILATIONS.
 - COMPILATION SPEED IS PARTLY DEPENDENT UPON THE AMOUNT OF MAIN
   STORAGE ALLOTED TO THE COMPILER. COMPILATION TIME MAY BE
   REDUCED BY ALLOTING MORE MAIN STORAGE TO THE COMPILER FOR
   LARGER PROGRAMS FOR WHICH THE COMPILER MUST ,,SPILL,,
   INTERNAL WORK TABLES ON EXTERNAL DEVICES.
 - THE MINIMUM MAIN STORAGE REQUIREMENT OF COBOL F IS 80K. THE
   MINIMUM CPU SIZE REQUIRED FOR COBOL F IS STILL 128K
   BYTES /MODEL G/.

IBM Programs

COBOL F LIBRARY - 360S-LM-525

THE COBOL F LIBRARY CONTAINS SUBROUTINES WHICH FALL INTO THE
THE FOLLOWING FIVE MAJOR CATAGORIES -
- CONVERSION ROUTINES
- ARITHMETIC VERB ROUTINES
- INPUT/OUTPUT VERB ROUTINES
- SORT FEATURE INTERFACE ROUTINES
- OTHER VERB ROUTINES

FORTRAN IV E LEVEL SUBSET - 360S-FO-092

THE E LEVEL SUBSET SUPPORTS THE PROPOSED ASA BASIC FORTRAN
LANGUAGE. THE E LEVEL SUBSET PROVIDES LANGUAGE EXTENSIONS BEYOND
ASA BASIC FORTRAN, INCLUDING -
- DOUBLE-PRECISION ARITHMETIC.
- MIXED-MODE ARITHMETIC.
- ABILITY TO REPLACE THE H FORMAT SPECIFICATION BY ENCLOSING
  APOSTROPHES.
- THE T-SPECIFICATION, PERMITTING PRINTED OUTPUT TO BEGIN AT
  ANY PRINT POSITION.
- ARRAYS OF UP TO THREE DIMENSIONS.
- P-SCALE FACTORS IN FORMAT STATEMENTS.

THE FORTRAN COMPILER PROVIDES-
- OPTIMIZED BALANCE BETWEEN COMPILER PERFORMANCE AND OBJECT
  PROGRAM EFFICIENCY IN BOTH MAIN STORAGE USE AND PERFORMANCE.
- SUPPORT OF THE SEQUENTIAL ACCESS METHOD /BSAM/.
- SUPPORT OF THE DIRECT ACCESS METHOD /BDAM-FIXED LENGTH ONLY/.
- A COMPILE TIME OPTION WHICH WILL ALLOW THE INTRODUCTION
  OF SOURCE PROGRAMS IN EITHER BCD OR EBCDIC CHARACTER CODES.
  THE OUTPUT OF THE COMPILERS--SOURCE LISTINGS AND LITERAL
  DATA IN THE OBJECT PROGRAMS--WILL UTILIZE THE ORIGINAL,
  UNTRANSLATED CHARACTER CODES. AT OBJECT TIME, LITERAL,
  A-FORMAT, AND H-FORMAT INPUT AND OUTPUT DATA WILL NOT
  BE TRANSLATED., D-, E-, F-, AND I-FORMAT INPUT DATA MAY
  BE IN EITHER BCD OR EBCDIC CODE REPRESENTATION.
- THE MINIMUM MAIN STORAGE REQUIREMENT IS 15K BYTES.
- THE MAXIMUM ARRAY SIZE IS 128K BYTES, THE MAXIMUM
  DATA STORAGE IS 192K BYTES.
SYSTEM REQUIREMENTS - THE COMPILER AND OBJECT PROGRAMS
REQUIRE THE STANDARD INSTRUCTION SET AND THE FLOATING POINT
OPTION. IN ADDITION TO THE STANDARD SYSTEM RESIDENCE
SPACE IN AUXILIARY STORAGE IS REQUIRED FOR THE FOLLOWING
DATA SETS --
- SYSTEM INPUT.
- TWO INTERMEDIATE /WORK STORAGE/.
- PRINT OUTPUT.
- PUNCH OUTPUT.
- OBJECT MODULE.

FORTRAN IV-H - 360S-FO-500

THE H COMPILER PROVIDES THE FOLLOWING EXTENSIONS TO THE
LANGUAGE BEYOND USA FORTRAN -
- IMPLICIT STATEMENT ALLOWING EXTENDED IMPLICIT CLASSIFICATION
  BY FIRST CHARACTER OF A NAME.
- AN EXTENDED TYPE STATEMENT, INCLUDING LENGTH SPECIFICATION.
- G-CONVERSION, EXTENDED TO COVER ALL NUMERIC AND LOGICAL
  DATA TYPES.
- MULTIPLE ENTRY POINTS TO SUBPROGRAMS, AND NON-STANDARD
  RETURNS FROM SUBROUTINES.
- ARRAYS OF UP TO SEVEN DIMENSIONS.
- PAUSE STATEMENT EXTENDED TO PERMIT OUTPUT OF MESSAGES.
- NAMELIST STATEMENT PERMITTING I/O AND CONVERSION WITHOUT
  EXPLICIT I/O LIST AND FORMAT STATEMENT.
- EXTENDED SUBSCRIPTS.
- HEXADECIMAL CONSTANTS AND FORMAT CODE.
THE H COMPILER OFFERS THE USER THE ABILITY TO PRODUCE HIGHLY
EFFICIENT CODE.

FORTRAN IV-G - 360S-FO-520

THE G COMPILER PROVIDES THE FOLLOWING EXTENSIONS BEYOND
USA FORTRAN, IN ADDITION TO THOSE LISTED UNDER H -
- DEBUGGING FEATURES.
- SUPPORT OF BDAM

FORTRAN IV LIBRARY - 360S-LM-501

THIS LIBRARY CONTAINS THE RELOCATABLE SUBPROGRAMS AND
SERVES FORTRAN IV E, G AND H.

SERVICE PROGRAMS

SERVICE PROGRAMS PROVIDE FUNCTIONS RANGING FROM STANDARD
UTILITY SERVICES TO PROGRAM MODULE LINKING AND EDITING, AND
AN EXTREMELY FLEXIBLE SORT/MERGE.

PL/IF - 360S-NL-511

THE PL/IF COMPILER PROVIDES MANY NEW AND SIGNIFICANT FACILITIES
IN A SINGLE HIGH LEVEL LANGUAGE, FEATURES PROVIDED ARE-
- RECORD I/O... ALLOWS COLLECTIONS OF I/O DATA TO BE PROCESSED
  AS RECORDS. ALLOWS THE EFFICIENT TRANSMISSION OF DATA IN
  INTERNAL FORMAT WITHOUT CONVERSION.
- COMPILE TIME FACILITIES... ALLOWS THE CONDITIONAL MODIFICATION
  OF PL/I SOURCE PROGRAMS AT COMPILATION. MODIFICATIONS CAN BE
  SELECTED FROM A PREVIOUSLY PREPARED AND STORED LIBRARY.
- DATA INITIALIZATION... ARRAYS /TABLES/ OF DATA IN STATIC
  STORAGE CAN BE INITIALIZED USING THE INITIAL ATTRIBUTE.
  ARRAYS OF DYNAMIC LABEL VARIABLES MAY BE INITIALIZED BY USING
  THE ELEMENTS AS STATEMENT LABELS.
- PRINTED OUTPUT CONTROL... ALLOWS FOR THE USE OF PAGESIZE AND
  LINESIZE OPTIONS. THESE OPTIONS PERMIT IMPROVED CONTROL BY
  THE PROGRAMMER IN THE FORMAT OF PRINTED OUTPUT PRODUCED IN
  THE STREAM I/O.
- RECURSION... THE PREFERRED AND STANDARD MATHEMATICAL
  RECURSION IS PROVIDED.
- OPERATORS... USERS MAY SPECIFY THE OPERATORS ,,NOT GREATER
  THAN,, AND ,,NOT LESS THAN,, REPRESENTED BY THEIR STANDARD
  SYMBOLS IN THE 60 CHARACTER SET, AND BY NG AND NL IN THE
  48 CHARACTER SET.
- PAPER TAPE SUPPORT... CAN BE USED FOR PL/I SOURCE PROGRAM
  INPUT, AND CONSECUTIVE DATA SET INPUT TO THE PL/I OBJECT
  PROGRAM.
ADDITIONAL FEATURES PROVIDED ARE-
- IMPROVED PRINT FILE FORMATTING...
  1. NON-SPLITTING OF NUMERIC DATA ACROSS LINE BOUNDARIES.
  2. IMPLEMENTATION DEFINED TABBING FUR ALL DATA ITEMS IN
     LIST/DATA DIRECTED OUTPUT.
- OBJECT TIME ERROR HANDLING...
  1. SOURCE PROGRAM STATEMENT NUMBERS ARE PROVIDED WITH OBJECT

     EXECUTION GENERATED ERROR MESSAGES AS AN OPTION.
  2. SNAP OUTPUT CAN BE COMBINED WITH SYSTEM ACTION FOR ON
     STATEMENTS. THUS, A TRACE OF CALLS IS AUTOMATICALLY
     PROVIDED BEFORE EXECUTING THE STANDARD SYSTEM ACTION.
  3. ADDITIONAL ONCODE VALUES ARE PROVIDED TO PINPOINT SPECIFIC
     CONVERSION ERRORS RECOGNIZED BY CONVERSION ON-CONDITION.
- COMPILER PRODUCED LISTS... DOUBLE COLUMN LISTINGS OF THE
  OBJECT PROGRAM ARE PROVIDED WHEN THE OPTION LIST IS SPECIFIED.
NOTES ON PL/IF -
- USE IN THE PL/I PROGRAM OF THE TIME BUILT-IN FUNCTION OR THE
  DELAY STATEMENT REQUIRES OPTION 6A /TIME/.
- OPTION 6A /TIME/ IS REQUIRED IF TIME OF COMPILATION IS TO BE
  PRINTED BY THE COMPILER.
- THE SPECIFICATION BY THE USER OF A REGIONAL OR INDEXED DATA
  SET ORGANIZATION, REQUIRES THE PRESENCE IN HIS GENERATED
  SYSTEM OF BDAM AND ISAM MODULES RESPECTIVELY. THE PRESENCE OF
  BSAM/ASAM IS ALWAYS REQUIRED.
- REASSEMBLY OF MODULES OF THE PL/I LIBRARY REQUIRE AN ASSEMBLY
  PROGRAM WITH PSEUDO-REGISTER SUPPORT. THE OS/360 F ASSEMBLER
  PROVIDES THIS.
- USE OF THE COMPILE TIME FEATURE WILL REQUIRE THE ADDITIONAL
  DATA SET SYSUT3, WHICH MAY BE EITHER A DASD OR MAGNETIC TAPE.

PL/IF LIBRARY - 360S-LM-512

THE PL/IF LIBRARY COMPUTATIONAL SUBROUTINES PROVIDE SUPPORT FOR
THE OPERATORS AND FUNCTIONS OF THE PL/IF LANGUAGE IN THE
FOLLOWING FOUR MAJOR CATAGORIES -
- BIT AND CHARACTER STRINGS.
- ARITHMETIC.
- MATHEMATICAL.
- ARRAYS.
THESE SUBROUTINES HAVE BEEN DESIGNED TO ALLOW THEIR USE IN A
MULTI-TASKING ENVIRONMENT.

LINKAGE EDITOR E - 360S-ED-510

THE OPERATOR SYSTEM LINKAGE EDITOR COMBINES SEPARATELY
ASSEMBLED OR COMPILED OBJECT MODULES INTO A SINGLE LOAD
MODULE THAT IS IN A FORMAT SUITABLE FOR LOADING BY THE
CONTROL PROGRAM, AND EXECUTION. IT ALSO COMBINES PREVIOUSLY
EDITED LOAD MODULES WITH EACH OTHER OR WITH OBJECT MODULES.
ALTHOUGH LINKING OR COMBINING OF PROGRAM MODULES IS ITS
PRIMARY FUNCTION, LINKAGE EDITOR ALSO-
- INCORPORATES MODULES FROM DATA SETS OTHER THAN THOSE
  IN ITS PRIMARY INPUT, EITHER AUTOMATICALLY OR UPON REQUEST.
- CONSTRUCTS AN OVERLAY PROGRAM FOR LOADING BY THE CONTROL
  PROGRAM.
- AIDS PROGRAM MODIFICATION BY REPLACING AND DELETING CONTROL
  SECTIONS AS DIRECTED BY LINKAGE EDITOR CONTROL STATEMENTS.
- DEFINES THE STORAGE REQUIREMENTS FOR THE COMMON CONTROL
  SECTIONS GENERATED BY ASSEMBLERS AND COMPILERS.
- PROVIDES PROCESSING OPTIONS AND LOGS DIAGNOSTIC ERROR
  MESSAGES.
- PROVIDES BLOCKED RECORDS ON SYSLMOD OF 3072 BYTES COMPATIBLE
  WITH LINKAGE EDITOR F /44K ONLY/.
- PROVIDES BLOCKED INPUT AND OUTPUT FROM SYSLIN, LINKLIB AND
  SYSPRINT.
- PROVIDES DOUBLE BUFFERING OF PRINCIPAL ELEMENTS.
THE MINIMUM MAIN STORAGE REQUIREMENT IS 15K BYTES. 18K AND 44K
LINKAGE EDITORS ARE ALSO PROVIDED FOR IMPROVED PERFORMANCE,
EACH EDITOR WILL TAKE ADVANTAGE OF ADDITIONAL AVAILABLE
MAIN STORAGE TO INCREASE THE SIZE OF TABLES. THE LINKAGE
EDITOR E HANDLES UNBLOCKED RECORDS ONLY.
SYSTEM REQUIREMENTS- IN ADDITION TO THE STANDARD SYSTEM
RESIDENCE, THE LINKAGE EDITOR REQUIRES SPACE IN AUXILIARY
STORAGE FOR AT LEAST THE FOLLOWING DATA SETS - SYSTEM INPUT...
ONE INTERMEDIATE - REQUIRES DASD... PRINT OUTPUT... OUTPUT
LOAD MODULE - REQUIRES DASD. THERE MAY ALSO BE ONE OR MORE
LIBRARY DATA SETS, REQUIRING DASD, AND ONE OR MORE OBJECT
MODULE DATA SETS AS ADDITIONAL INPUT.

LINKAGE EDITOR F - 360S-ED-521

THE LINKAGE EDITOR F, PROVIDES IMPROVED PERFORMANCE THROUGH
BLOCKING OF EDITED TEXT TO 3072 BYTES. INPUT MAY BE BLOCKED
OR UNBLOCKED. THE NUMBER OF ALLOWABLE SYMBOLS IS INCREASED TO
SUPPORT LARGER PROGRAMS.

NOTE- THIS RELEASE CONTAINS RESTRICTIONS TO LINKAGE EDITOR F
THAT MAY REQUIRE A SYSTEM LARGER THAN 64K TO PROCESS PROGRAMS
THAT EXCEED ITS TEXT BUFFER CAPACITY. WHERE APPROPRIATE,
LINKAGE EDITOR E CAN BE USED UNTIL THIS RESTRICTION IS REMOVED.
SEE THE RELEASE 3 OS/360 PROSE FOR DETAILS. A LIBMAINT
PARAMETER HAS BEEN ADDED TO THE SYSTEM GENERATION MACROS TO
CONTROL WHICH LINKAGE EDITOR WILL BE USED TO GENERATE THE
SYSTEM.

REPORT PROGRAM GENERATOR - 360S-RG-038

RPG IS A POWERFUL, HIGH LEVEL, PROBLEM-ORIENTED LANGUAGE,
DESIGNED TO PROVIDE USERS WITH AN EFFICIENT, EASY-TO-USE
TECHNIQUE FOR GENERATING PROGRAMS THAT CAN PERFORM THE
FOLLOWING FUNCTIONS -
- OBTAIN DATA RECORDS FROM SINGLE OR MULTIPLE INPUT DATA SETS.
- CREATE FORMATTED PRINTED REPORTS.
- LINK TO USER SUBROUTINES WRITTEN IN SYSTEM/360 ASSEMBLER
  LANGUAGE.
- PERFORM CALCULATIONS ON DATA FROM INPUT RECORDS OR PROGRAM
  CREATED CONSTANTS.
- DO TABLE LOOKUP.
- CONTROL OPERATION WITH THE USE OF INDICATORS.
- BRANCH WITHIN CALCULATIONS.
- SEQUENCE CHECK INPUT RECORDS.
- EDIT OUTPUT REPORTS.
- OPERATE ON SPLIT CONTROL FIELDS.
- PROVIDE STERLING CONVERSION.
- HANDLE SEQUENTIAL DATA SETS /QSAM/.
- CREATE NEW DATA SETS /SEQUENTIAL/.
- USE THE DIRECT ACCESS METHOD /BDAM/.
- USE THE INDEXED SEQUENTIAL ACCESS /ISAM/.
- UPDATE DATA SETS IN PLACE /BDAM AND ISAM/.
THE RPG PROGRAM- USES FUNCTIONS AVAILABLE IN OPERATING SYSTEM/360
... COMPILES DIRECTLY TO RELOCATABLE MACHINE LANGUAGE...
COMPATIBLE TO MODEL 20 TO BPS TO BOS TO TOS TO DOS... MINOR
RE-EDUCATION FROM CURRENT SYSTEMS RPG TO OPERATING SYSTEM/360
RPG... NEW SRL IS REWRITTEN, EASIER TO USE... MODIFIED
SPECIFICATION SHEETS FOR EASIER CODING.
SYSTEM REQUIREMENTS- MODEL E 30 CPU... ONE MULTIPLEXOR CHANNEL
WITH ONE 2540 CARD READ PUNCH USED FOR SYSIN, SYSPUNCH...
ONE 1403 PRINTER, MODEL 3 USED FOR SYSPRINT... ONE SELECTOR
CHANNEL WITH ONE 2311 DISK STORAGE DRIVE USED FOR SYSTEM
RESIDENCE AND INTERMEDIATE /WORK/ DATA SETS. ALTHOUGH DESIGNED
TO OPERATE AT THE 15K LEVEL, THE OS/360 RPG COMPILER WILL

CONTINUED FROM PRIOR PAGE--
UTILIZE ADDITIONAL CORE STORAGE TO EXPAND INTERNAL TABLES.
OPERATION OF OS/360 RPG ON THE MODEL 50 REQUIRES ENGINEERING
CHANGE LEVEL 256907 TO BE INSTALLED. COMBINED FILE OPERATIONS
APPLY TO THE 1442 CARD READ PUNCH ONLY. THE USER LABEL HANDLING
FEATURE IN OS/360 RPG REQUIRES THE CORRESPONDING OS/360 DATA
MANAGEMENT FEATURE, NOT YET AVAILABLE.

SORT/MERGE - 360S-SM-023

THE OPERATING SYSTEM SORT/MERGE IS DESIGNED TO SATISFY THE
SORTING AND MERGING REQUIREMENTS OF BOTH TAPE-ORIENTED AND
DASD-ORIENTED INSTALLATIONS. IT IS A GENERALIZED PROGRAM
THAT WILL USE DIFFERENT SORTING AND MERGING TECHNIQUES,
DEPENDING ON THE CONTROL INFORMATION SUPPLIED BY THE USER
AND ON THE MAIN STORAGE AND THE SECONDARY STORAGE DEVICES
AVAILABLE TO IT. THE MINIMUM MAIN STORAGE REQUIREMENT IS
17K BYTES., ADDITIONAL MAIN STORAGE WILL BE USED, WHERE
APPROPRIATE, FOR PERFORMANCE IMPROVEMENT.

SIGNIFICANT FEATURES OF THE SORT/MERGE ARE-
- SORTING OR MERGING ON AS MANY AS TWELVE CONTROL DATA FIELDS.
- COLLATING SEQUENCES AND DATA FORMAT CAN BE SPECIFIED
  SEPARATELY FOR EACH CONTROL FIELD.
- SORT CHECKPOINT/RESTART FACILITY
- DEVICE-INDEPENDENT INITIAL INPUT AND FINAL OUTPUT.
- WITH ADDITIONAL MAIN STORAGE, AS MANY AS 32 TAPE UNITS
  OR 6 ACCESS MECHANISMS ON DASDS CAN BE USED FOR INTERMEDIATE
  STORAGE, AS WELL AS MULTIPLE INPUT AND OUTPUT DEVICES.
SYSTEM REQUIREMENTS - IN ADDITION TO THE STANDARD SYSTEM
RESIDENCE, THE SORT/MERGE REQUIRES, AS A MINIMUM, DEVICES
FOR EACH OF THE FOLLOWING DATA SETS -
- SYSTEM INPUT.
- THREE INTERMEDIATE STORAGE ON THE SAME DEVICE TYPE OR
  ONE DASD.
- INITIAL INPUT AND FINAL OUTPUT /MAY BE SAME DEVICE/ OR
  THE INPUT DEVICE MAY ALSO BE USED FOR INTERMEDIATE STORAGE.
NOTE- 9-TRACK INPUT REQUIRES 9-TRACK FOR OUTPUT AND
INTERMEDIATE STORAGE /IF TAPE IS USED/.

TESTRAN - 360S-PT-516

TESTRAN STATEMENTS CAN BE GROUPED OR INTERSPERSED IN THE
SOURCE MODULE AND WILL BE IDENTIFIED BY THE ASSEMBLER. THE
ASSEMBLER WILL PRODUCE FROM THEM A SEPARATE, REPLACEABLE
CONTROL SECTION WHICH CAN BE DELETED BY THE LINKAGE EDITOR.
THESE STATEMENTS CAN ALSO BE ASSEMBLED SEPARATELY AND LINK
EDITED WITH A PROGRAM TO BE TESTED.
THE TESTRAN EDITOR PROCESSES THE DATA PLACED IN AUXILIARY
STORAGE BY TESTRAN DURING A PRECEDING TEST EXECUTION OF A
LOAD MODULE. IT EDITS AND PRINTS THE DATA IN A FORMAT INDICATED
IN THE SYMBOL TABLE PRODUCED BY THE ASSEMBLER, UNLESS AN
OVERRIDING FORMAT HAS BEEN SPECIFIED THROUGH TESTRAN
MACRO-INSTRUCTIONS. THE TIME USED TO PROCESS TEST OUTPUT
IS MINIMIZED BY-
- PREVENTING RUNAWAY TEST EXECUTION BY ALLOWING LIMITS
  TO BE PLACED ON THE QUANTITY OF TEST OUTPUT AND THE
  NUMBER OF TESTRAN MACRO-INSTRUCTIONS.
- ALLOWING SELECTIVE EDITING AND PRINTING OF TEST RESULTS
  ACCORDING TO ANY OF EIGHT PRIORITY CATEGORIES DESIGNATED
  BY THE PROGRAMMER.
- ALLOWING TEST OUTPUT EDITING AND PRINTING AT ANY CONVENIENT
  TIME AFTER TEST EXECUTION.
THE MINIMUM MAIN STORAGE REQUIRED FOR THE EDITOR IS 18K BYTES.
SYSTEM REQUIREMENTS- SPACE IS REQUIRED IN AUXILIARY STORAGE
FOR THE FOLLOWING DATA SETS -- SYSTEM INPUT... PRINT OUTPUT...
TEST RESULTS FROM INTERPRETER... ONE INTERMEDIATE - REQUIRES
DASD.

OPERATING SYSTEM/360 UTILITIES - 360S-UT-506

THE OPERATING SYSTEM/360 UTILITIES OPERATE WITH THE CONTROL
PROGRAM AND PROVIDE THE FOLLOWING FEATURES-
- MOVING AND COPYING A DATA SET OR PART OF A DATA SET FROM
  ONE VOLUME TO ANOTHER.
- MOVING A DATA SET FROM ONE LOCATION TO ANOTHER ON THE
  SAME VOLUME.
- UNLOADING A DATA SET ONTO A REMOVABLE VOLUME AND LOADING
  IT AT A LATER TIME TO A DEVICE OF THE SAME TYPE AS THE
  ORIGINAL.
- THE COPY, MOVE, UNLOAD AND LOAD FUNCTIONS CAN BE ACCOMPLISHED
  ON GROUPS OF DATA SETS CATALOGED UNDER COMMON HIGH LEVEL
  QUALIFIERS.
- PRINTING OR PUNCHING A DATA SET, AND PRINTING INFORMATION
  CONTAINED IN THE CATALOG OR VOLUME TABLE OF CONTENTS.
- UPDATING SOURCE LANGUAGE PROGRAMS AND THE MACRO-INSTRUCTION
  LIBRARY.
- GENERATING A DATA SET BASED UPON THE CONTENTS OF A
  SEQUENTIALLY ORGANIZED INPUT DATA SET. FIELDS WITHIN
  RECORDS MAY BE REPOSITIONED AND/OR CONVERTED AS SPECIFIED
  ACCORDING TO PROGRAMMER SPECIFICATIONS.
- BUILDING AND MODIFYING THE CATALOG DATA SET.
- ANALYZING THE CONTENTS OF THE SYSTEM LIBRARY WHEN UPDATING
  IS REQUIRED AND CREATING APPROPRIATE CONTROL STATEMENTS
  FOR SYSTEM MAINTENANCE.
- UNIVERSAL CHARACTER SET- USER SUPPLIED CHARACTER SET CODES
  ARE LOADED INTO THE 2821 CONTROL UNIT. THIS UTILITY MAY BE
  SCHEDULED AS A JOB STEP OR INVOKED BY A USER TASK AT
  EXECUTION TIME.
THE MINIMUM MAIN STORAGE REQUIREMENT IS 18K BYTES.
SYSTEM REQUIREMENTS- THE OPERATING SYSTEM UTILITIES REQUIRE
THE STANDARD SYSTEM RESIDENCE DEVICE AND SPACE ON THE
AUXILIARY STORAGE FOR THE FOLLOWING DATA SETS - SYSTEM INPUT...
INTERMEDIATE STORAGE /VARIES WITH UTILITY/... PRINT OUTPUT.

INDEPENDENT UTILITIES - 360S-UT-507

THE INDEPENDENT UTILITIES DO NOT OPERATE WITH THE CONTROL
PROGRAM, BUT THEY SUPPORT THE OPERATING SYSTEM WITH THE
FOLLOWING SERVICES-
   INITIALIZING DASDS BY WRITING HOME ADDRESSES AND RECORD
   ZERO FOR EACH TRACK, CHECKING FOR DEFECTIVE TRACKS,
   INITIALIZING TRACKS TO ZERO, AND WRITING VOLUME LABELS
   AND VOLUME TABLES OF CONTENTS. UNLOADING AND LOADING
   DATA BETWEEN DASD AND A REMOVABLE VOLUME.

SYSTEM GENERATION

THIS IS THE PROCESS OF PREPARING A SPECIALLY TAILORED
OPERATING SYSTEM TO MATCH THE MACHINE CONFIGURATION AND
OPERATING SYSTEM OPTIONS SELECTED BY THE USER. THIS PROCESS
USES THE OPERATING SYSTEM AND REQUIRES THE FOLLOWING PROGRAMS --
- CONTROL PROGRAM.
- DATA MANAGEMENT- DATA SET CONTROL, BSAM, QSAM, BPAM.
- ASSEMBLER.

CONTINUED FROM PRIOR COLUMN--
- LINKAGE EDITOR.
- UTILITIES.

PID WILL INCLUDE THE REQUIRED LIBRARIES /PARTITIONED
DATA SETS/ WHICH CONTAIN THE OPERATING SYSTEM MODULES AND
THE SYSTEM GENERATION MACRO-INSTRUCTIONS NEEDED FOR THE
SYSTEM GENERATION PROCESS WHEN THE ABOVE PROGRAMS ARE ORDERED.

SYSTEM REQUIREMENTS

SYSTEM REQUIREMENTS- THE MINIMUM MAIN STORAGE REQUIREMENT,
INCLUDING THE RESIDENT CONTROL PROGRAM NUCLEUS, IS 64K BYTES.
OPERATING SYSTEM/360 CONFIGURATIONS CAN BE GENERATED TO RUN
ON SYSTEMS WITH 32K BYTES OF MAIN STORAGE. HOWEVER, THESE
32K SYSTEMS CANNOT EXECUTE THE SYSTEM GENERATION PROCESS.
THE OPERATING SYSTEM REQUIRES A MINIMUM OF ONE DASD BUT, FOR THIS
PROCESS, TWO 2311 DISK STORAGE DRIVES ARE REQUIRED PLUS THREE
1316 DISK PACKS.

SYSTEM MAINTENANCE -- THE SAME SYSTEM REQUIREMENTS ARE
REQUIRED FOR MAINTENANCE AS FOR GENERATION SINCE SOME
CHANGES MAY REQUIRE A NEW SYSTEM GENERATION.

THIS AMOUNT OF DISK STORAGE WILL PERMIT THE GENERATION OF
A SYSTEM WHICH INCLUDES --
- PRIMARY CONTROL PROGRAM.
- DATA MANAGEMENT- DATA SET CONTROL, BSAM, QSAM, BPAM, BDAM.
- ASSEMBLER E AND MACRO LIBRARY.
- FORTRAN IV /E-LEVEL SUBSET/.
- FORTRAN LIBRARY.
- COBOL E.
- COBOL LIBRARY.
- LINKAGE EDITOR E.
- TESTRAN.
- SORT/MERGE AND LIBRARY.
- UTILITIES.
THE INCLUSION OF ADDITIONAL FACILITIES MAY REQUIRE MORE
DIRECT ACCESS STORAGE SPACE.

THE FOLLOWING LIST SHOWS THE REQUIRED SYSTEM ELEMENTS AND
THE DEVICE TYPES WHICH MAY BE USED FOR EACH FUNCTION-
- PROCESSING UNIT FUNCTION- SYSTEM/360 MODEL 30, 40, 50,
  65, OR 75 WITH MAIN STORAGE OF 64K BYTES OR MORE
  /F OR LARGER/.
- SYSTEM CONSOLE FUNCTION- 1052/2150. THE REQUIRED CONSOLE
  IS A 1052 WHICH MAY, BUT NEED NOT, BE CONNECTED VIA A 2150.
- CARD INPUT UNIT FUNCTION- 2540, 1442-N1, OR MAGNETIC
  TAPE /SEE NOTE 1/.
- PUNCHED OUTPUT UNIT FUNCTION- 2540, 1442-N1 /A SINGLE 1442
  CANNOT BE BOTH INPUT AND OUTPUT/, OR MAGNETIC TAPE /SEE
  NOTE 1/.
- PRINTED OUTPUT FUNCTION- 1403, 1404 /CONTINUOUS FORM
  ONLY/, 1443, OR MAGNETIC TAPE /SEE NOTE 1/.
- GENERATING SYSTEM RESIDENCE- 2311
- GENERATED SYSTEM RESIDENCE- 2311 /DIFFERENT UNIT FROM
  GENERATING SYSTEM RESIDENCE/.
- 2 INTERMEDIATE /WORK/ DATA SETS /DIRECT ACCESS REQUIRED/-
  2311 /SEE NOTE 2/.
- 2 INTERMEDIATE /WORK/ DATA SETS /SEQUENTIAL/- 2311 OR
  MAGNETIC TAPE /SEE NOTE 1/.

NOTES-
1. MAGNETIC TAPE UNIT MAY BE 2400 - 9-TRACK, OR 2400 - 7-TRACK
   WITH DATA CONVERSION FEATURE /NO. 3228 OR NO. 3236/.
   MULTIPLE FUNCTIONS NOT PERMITTED ON A SINGLE TAPE DRIVE.
2. THESE INTERMEDIATE /WORK/ DATA SETS NORMALLY WILL BE
   PLACED ON THE SAME 2311 AS THE GENERATING SYSTEM RESIDENCE.

STARTER SYSTEM

STARTER SYSTEM FOR 2311 RESIDENCE - 360S-CI-514
STARTER SYSTEM FOR 2314 RESIDENCE - 360S-CI-534

TO ASSIST USERS PERFORMING THEIR INITIAL SYSTEM GENERATION,
A STANDARDIZED ,,STARTER,, OPERATING SYSTEM IS AVAILABLE
WITH INITIAL DISTRIBUTIONS OF PROGRAM MATERIALS FROM PID.
THE STARTER SYSTEM HAS THE BASIC ELEMENTS NECESSARY FOR
SYSTEM GENERATION, IN A FORM THAT WILL BE DIRECTLY USABLE BY
A MAJORITY OF USERS. THE STARTER SYSTEM FUNCTIONS WITH
A VARIETY OF DIFFERENT I/O UNITS AT ,,STANDARD,, ADDRESSES.
USERS MAY USE THE STARTER SYSTEM TO PERFORM SYSTEM GENERATION
IF THERE ARE APPROPRIATE MATCHING UNITS AND ADDRESSES IN THEIR
OWN CONFIGURATION.
THE STARTER SYSTEM OPERATES ON A SYSTEM/360 HAVING 64K
OR LARGER STORAGE. USERS WHOSE CONFIGURATIONS DO NOT
MATCH CLOSELY ENOUGH TO PERMIT SYSTEM GENERATION SHOULD
PLAN TO DO THEIR INITIAL SYSTEM GENERATION ON SOME SYSTEM
HAVING OS/360 ALREADY INSTALLED.
USERS SHOULD BE ENCOURAGED TO MATCH UNIT ADDRESS WITH
THOSE OF THE STARTER SYSTEM TO THE GREATEST DEGREE PRACTICAL.
UNIT ADDRESSES ARE ESTABLISHED AS PART OF THE NORMAL.
PHYSICAL PLANNING AND CABLE ORDER PROCESS. THEREFORE,
PHYSICAL INSTALLATION PLANS SHOULD BE REVIEWED WHERE
APPROPRIATE.

STARTER SYSTEM CONFIGURATION -- THE FOLLOWING ARE THE
PERMISSIBLE DEVICE ADDRESSES SUPPORTED BY THE STARTER SYSTEM,
THE SYSTEM FUNCTIONS FOR WHICH THEY MAY BE USED, AND THE
ADDRESS ASSIGNED TO EACH UNIT.

			CHOOSE FROM THE FOLLOWING		
MIN			DEVICE ADDRESS		
REQ FUNCTION		DEVICE			
			MPX	SEL	SEL	SEL
			CHANNEL	CHAN 1	CHAN 2	CHAN 3
1 SYSTEM CONSOLE	1052	009,01F		209,21F 309	
	2150/1052	009,01F		209,21F 309	
2 STORAGE UNITS- RES, DATA SETS	2311		190-193 290-293		
	1442 R/P#	00A		20A	
1 SYSTEM INPUT	2540 READER	00C		20C	
	2400 7TR-DC		180,181 280,281		
	2400 9-TRK		182-184 282-284		
	2540 PUNCH	00D		20D	
1 PUNCH OUTPUT	1442 R/P#	00A		20A	
	2400 7TR-DC		180,181 280,281		
	2400 9-TRK		182-184 282,284		

IBM Programs

CONTINUED FROM PRIOR PAGE--

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*    *                 *1443     *00B    *      *20B    *     *
* 1 *PRINT OUTPUT  *1403     *00E    *      *20E    *     *
*    *                 *2400 7TR-DC*    *180,181*280,281*   *
*    *                 *2400 9-TRK *    *182-184*282-284*   *
***************************************************************
*    *INTERMEDIATE *2311     *      *190-193*290-293*   *
*2##*DATA SETS     *2301     *      *1C0    *2C0    *     *
*    *                 *2400 9-TRK *    *182-184*282-284*   *
***************************************************************
*    *INTERMEDIATE *2311     *      *190-193*290-293*   *
*2##*DATA SETS     *2301     *      *1C0    *2C0    *     *
*    *                 *2303     *      *197    *297    *     *
***************************************************************
*1##*INT. DATA SETS*2314     *      *130-133*230-233*   *
***************************************************************
```

A SINGLE 1442 MAY SERVE AS EITHER SYSTEM INPUT OR PUNCH
OUTPUT, BUT NOT BOTH SIMULTANEOUSLY.
THE SAME DIRECT ACCESS STORAGE DEVICES MAY SERVE FOR SYSTEM
RESIDENCE AND SEQUENTIAL AND PARTIONED DATA SETS IF
SUFFICIENT SPACE IS AVAILABLE.

INPUT/OUTPUT DEVICE SUPPORT

THE FOLLOWING DEVICES ARE SUPPORTED BY THE PRIMARY CONTROL
PROGRAM AND BY DATA MANAGEMENT FOR THE INDICATED SYSTEM
FUNCTIONS.

- 1052 PRINTER-KEYBOARD-MAY BE USED AS A SYSTEM CONSOLE.
  /SEE NOTE/.

- 1403 PRINTER MODELS 2, 3, 7, N1 - MAY BE USED AS A
  SYSTEM CONSOLE... FOR PRINTED SYSTEM OUTPUT... FOR
  BSAM AND QSAM.

- 1404 PRINTER MODEL 2 WITH CONTINUOUS FORMS- USED FOR THE
  SAME SYSTEM FUNCTIONS AS THE 1403 ABOVE.

- 1442 CARD READ PUNCH MODEL N1- MAY BE USED AS A SYSTEM
  CONSOLE. /SEE NOTE/... FOR BSAM AND QSAM. THE 1442
  CANNOT BE USED FOR BOTH SYSTEM INPUT AND PROBLEM
  OUTPUT SIMULTANEOUSLY, BUT MAY BE USED AS INPUT TO
  THE JOB STREAM.

- 1442 CARD PUNCH MODEL N2- MAY BE USED AS A SYSTEM CONSOLE
  /SEE NOTE/... FOR BSAM AND QSAM. MAY BE USED FOR
  SYSTEM OUTPUT.

- 1443 PRINTER MODEL N1- MAY BE USED FOR THE SAME SYSTEM
  FUNCTIONS AS THE 1403 ABOVE.

- 2301 DISK STORAGE DRIVE /MODELS 65 AND 75 ONLY/- MAY BE
  USED FOR SYSTEM RESIDENCE... BSAM, QSAM, BPAM AND BDAM.
  THE MAXIMUM LENGTH TEXT RECORD WRITER BY LINKAGE
  EDITOR F ON THE SYSLMOD DATA SET IS 3072 BYTES.

- 2311 DISK STORAGE DRIVE- MAY BE USED FOR SYSTEM RESIDENCE...

- 2314 DIRECT ACCESS STORAGE FACILITY- MAY BE USED FOR
  SYSTEM RESIDENCE.
  BSAM, QSAM, BPAM AND BDAM.

- 2401 MAGNETIC TAPE UNIT MODELS 1, 2 AND 3- MAY BE USED FOR
  INPUT TO JOB STREAM... TO PREPARE FOR PRINTED SYSTEM
  OUTPUT... BSAM AND QSAM.

- 2402 MAGNETIC TAPE UNIT MODELS 1, 2 AND 3- MAY BE USED
  FOR THE SAME SYSTEM FUNCTIONS AS THE 2401 ABOVE.

- 2403 MAGNETIC TAPE UNIT AND CONTROL MODELS 1, 2 AND 3- MAY
  BE USED FOR THE SAME SYSTEM FUNCTIONS AS THE 2401 ABOVE.

- 2404 MAGNETIC TAPE UNIT AND CONTROLS MODELS 1, 2 AND 3-
  MAY BE USED FOR THE SAME SYSTEM FUNCTIONS AS THE
  2401 ABOVE.

- 2501 CARD READER- MAY BE USED AS A SYSTEM CONSOLE /SEE NOTE/.
  .. FOR BSAM AND QSAM. MAY BE USED AS INPUT TO THE JOB
  STREAM.

- 2520 CARD READ PUNCH- MAY BE USED AS A SYSTEM CONSOLE
  /SEE NOTE/... FOR BSAM AND QSAM. SUPPORTED FOR READ OR
  PUNCH, BUT NOT BOTH SIMULTANEOUSLY. FOR USE WITH
  SYSOUT /OPTION 12 ONLY/, NOT FOR SYSTEMS MESSAGES.

- 2540 CARD READ PUNCH- MAY BE USED AS INPUT TO THE JOB
  STREAM... AS A SYSTEM CONSOLE... AND FOR BSAM AND QSAM.

- 2671 PAPER TAPE READER- MAY BE USED FOR BSAM AND QSAM.

- 2870 MULTIPLEXER CHANNEL AND SUBSELECTOR CHANNELS- ENABLES
  THE SIMULTANEOUS USE OF UP TO 4 SELECTOR SUBCHANNELS
  AND THE MULTIPLEXER CHANNEL. 2870 DOES NOT SUPPORT-
  BURST DEVICES ON THE MULTIPLEXER CHANNEL... CROSS
  CHANNEL DEVICES WITHIN THE 2870 OR BETWEEN THE 2870 AND
  ANOTHER CHANNEL... BYTE DEVICES WITH BURST MODE OPTIONS
  ARE SUPPORTED IN BYTE MODE ON THE MULTIPLEXER CHANNEL.

NOTE- A CONSOLE MUST CONSIST OF A PRINTER-KEYBOARD, OR A
CARD READER AND LINE PRINTER COMBINATION TO SIMULATE THE
ACTIONS OF A PRINTER-KEYBOARD.
BECAUSE OPERATING SYSTEM/360 REQUIRES DIRECT OPERATOR
COMMUNICATION A PRINTER-KEYBOARD, OR THE CARD READER AND
LINE PRINTER COMBINATION MUST BE AVAILABLE.

THE FOLLOWING SYSTEM, CONTROL UNIT AND I/O DEVICE FEATURES
ARE SUPPORTED BY THE OPERATING SYSTEM. OTHER FEATURES, NOT
LISTED, HAVE NO SPECIFIC PROGRAMMING SUPPORT., THEIR EXISTENCE
IS IGNORED BY THE CONTROL PROGRAM. ATTEMPTS TO USE UNSUPPORTED
FEATURES MAY CAUSE UNPREDICTABLE RESULTS. THIS LIST DOES
NOT INCLUDE THOSE BASIC FEATURES WHICH ARE REQUIRED TO CONNECT
A SUPPORTED DEVICE.
CPU FEATURES-
- DECIMAL ARITHMETIC /NO. 3237/. USED BY SOME COMPILERS.
- FLOATING POINT ARITHMETIC /NO. 4427/. USED BY SOME COMPILERS.
- INTERVAL TIMER /NO. 4760/. USED WITH OPTION 6.
- SELECTOR CHANNELS /NUMBERS 6960, 6961, 6980, 6981, 6982/.
- 2841 TWO-CHANNEL SWITCH /FEATURE CODE 8100/ ON A SINGLE CPU.
I/O FEATURES-
- 1442 CARD READ PUNCH MODEL N1. CARD IMAGE /NO. 1531/.
  FOR PROBLEM PROGRAM USE ONLY.
- 1443 PRINTER MODEL N1. 24 ADDITIONAL PRINT POSITIONS
  /NO. 5558/.
- 2401, 2402 MAGNETIC TAPE UNIT MODELS 1, 2, 3.

CONTINUED FROM PRIOR COLUMN--
- 2403, 2404 MAGNETIC TAPE UNIT AND CONTROL MODELS 1, 2, 3 AND
- 2803, 2804 TAPE CONTROL MODEL 1. SIMULTANEOUS
  READ-WHILE-WRITE /NO. 7160, NO. 7161/. DATA CONVERSION
  /NO. 3228, NO. 3236/. REQUIRED FOR ALL 7-TRACK TAPES THAT
  RECORD BINARY DATA SUCH AS VARIABLE LENGTH /FORMAT V/ RECORDS
  AND ABNORMAL END DUMPS. THE INCLUSION OF 7-TRACK TAPES
  WITHOUT THIS FEATURE IS NOT RECOMMENDED.
- 7-TRACK COMPATIBILITY /NO. 7125, NO. 7126/. 16 DRIVE
  ADDRESSING /NO. 7185/.
- 2816 SWITCHING UNIT MODEL 1. ALL FEATURES FOR ADDITIONAL
  SWITCHING /NUMBERS 1050, 1051, 1052, 1055, 2285, 2286,
  4455, 6392, 6393/.
- 2821 CONTROL UNIT MODEL 1, 4, 5. COLUMN BINARY /NO. 1990/.
  FOR PROBLEM PROGRAM USE ONLY.

THE NUMBER OF TAPES OR DISK PACKS NECESSARY TO OBTAIN THE
PROGRAM MATERIAL MAY BE SUPPLIED OR ORDERED FROM YOUR IBM
REPRESENTATIVE. THE TAPES SHOULD BE 2400 FEET IN LENGTH.

BASIC PROGRAM MATERIAL - THE FOLLOWING PUBLICATIONS APPROPRIATE
TO THE COMPONENT ORDERED WILL BE SHIPPED WITH EACH INITIAL
ORDER.

TITLE -- IBM OPERATING SYSTEM/360	FORM NUMBER
COBOL /E/ PROGRAMMERS GUIDE	C24-5029
ASSEMBLER /F/ PROGRAMMERS GUIDE	C26-3756
GRAPHIC PROGRAMMING SERVICES FOR 2250	
DISPLAY UNIT	C27-6909
GRAPHIC PROGRAMMING SERVICES FOR 2260	
DISPLAY STATION /LOCAL/	C27-6912
MAINTENANCE	C27-6918
COBOL /F/ PROGRAMMERS GUIDE	C28-6380
LINKAGE EDITOR	C28-6538
JOB CONTROL LANGUAGE	C28-6539
OPERATORS GUIDE	C28-6540
SORT/MERGE	C28-6543
SYSTEM PROGRAMMERS GUIDE	C28-6550
STORAGE ESTIMATES	C28-6551
SYSTEM GENERATION	C28-6554
CHECKPOINT AND RESTART	C28-6556
UTILITY PROGRAMS	C28-6586
PL/IF SUBROUTINE LIBRARY	C28-6590
PL/IF PROGRAMMERS GUIDE	C28-6594
ASSEMBLER /E/ PROGRAMMERS GUIDE	C28-6595
FORTRAN IV /E/ LIBRARY SUBPROGRAMS	C28-6596
FORTRAN IV, LEVEL H PROGRAMMERS GUIDE	C28-6602
FORTRAN IV /E/ PROGRAMMERS GUIDE	C28-6603
STARTER GUIDE	C28-6630
CONTROL PROGRAM MESSAGES AND COMPLETION CODES	C28-6631
FORTRAN IV LEVEL G PROGRAMMERS GUIDE	C28-6639
SUPERVISOR AND DATA MANAGEMENT SERVICES	C28-6646
SUPERVISOR AND DATA MGT. MACRO INSTRUCTIONS	C28-6647
TESTRAN	C28-6648
QTAM MESSAGE CONTROL PROGRAM	C30-2002
QTAM MESSAGE PROCESSING PROGRAM	C30-2003
BASIC TELECOMMUNICATIONS ACCESS METHOD	C30-2004
ALGOL F PROGRAMMERS GUIDE	C33-4000

THE FOLLOWING ITEMS WILL ALSO BE SHIPPED BY PID WHEN
THE RELATED COMPONENT IS ORDERED - PROGRAM MATERIAL LIST...
OS/360 PROSE.

WHEN ORDERING OS/360 FOR USE ON 2311 DISK DRIVES THE
REQUESTOR MUST FOLLOW THE PROCEDURE DESCRIBED BELOW -
ALL ORDERS MUST STATE THE NUMBER OF 2311 DRIVES AVAILABLE FOR
SYSTEM GENERATION. FOR EXAMPLE- ,,4 DRIVES TO BE USED FOR
SYSGEN,,. ANY USER HAVING MORE THAN 2 DRIVES AVAILABLE FOR
SYSGEN MAY OBTAIN ALL OS/360 COMPONENTS ON THREE 1316 DISK PACKS
OR THREE REELS OF MAGNETIC TAPE.
ALL ORDERS THAT STATE ,,2 DRIVES TO BE USED FOR SYSGEN,, WILL
BE FILLED WITH A CUSTOMIZED PACKAGE, A DESCRIPTION OF WHICH
FOLLOWS- A USER WITH 2 DRIVES AVAILABLE FOR SYSTEM GENERATION
MUST ORDER THE INDIVIDUAL COMPONENTS HE REQUIRES. THESE
COMPONENTS SHOULD BE SELECTED WITH THE FOLLOWING BASIC
CONSIDERATIONS IN MIND -
- A MINIMUM WORKABLE SET OF COMPONENTS IS INCLUDED THAT WILL
  MEET THE USERS NEEDS.
- ENOUGH UNALLOCATED WORK SPACE REMAINS ON EACH OF THE
  DISTRIBUTED DISK PACKS /OR REELS OF TAPE/ FOR THE
  SYSTEM GENERATION PROCESS. TABLE 1 CONTAINS THE COMPONENT
  SIZES AND MUST BE USED WHEN PREPARING THE ACTUAL ORDER.
TO SPEED UP ORDER FILLING AND PREVENT UNNECESSARY DELAYS,
PID MAY DECIDE TO SEND EXTRA COMPONENTS, IN ADDITION TO THOSE
LISTED ON THE ORDER FORM, IN WHICH CASE THERE WILL BE AT LEAST
500 TRACKS OF UNALLOCATED SPACE AVAILABLE.

WHEN ORDERING OS/360 FOR USE ON A 2314 DISK ACCESS STORAGE
FACILITY THE REQUESTOR WILL RECEIVE THE ENTIRE OS/360 PACKAGE
ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
REEL OF MAGNETIC TAPE. HOWEVER, IF THE 2314 USER DOES NOT HAVE
TAPE CAPACITY BUT DOES HAVE TWO OR MORE 2311 DISK DRIVES HE MUST
FOLLOW THE PROCEDURES DESCRIBED ABOVE FOR THE 2311 USER.

WORK SPACE CONSIDERATIONS - THE SYSTEM GENERATION
PROCESS REQUIRES FIVE DIFFERENT INTERMEDIATE /WORK/ DATA SETS.
THESE DATA SETS ARE DESCRIBED IN TABLE 2. THE ACTUAL SIZES
REQUIRED DEPEND ON SPECIFIC SYSTEM GENERATION PARAMETERS. SPACE
ALLOCATION IS UNDER CONTROL OF THE USER AS PART OF THE SYSTEM
GENERATION PROCESS. ,,BASIC,, SPACE SHOWN IN THE TABLE HAS BEEN
USED TO PERFORM GENERATIONS OF OS/360 CONFIGURATIONS. GENERATION
OF LARGER CONFIGURATIONS MAKES USE OF THE SECONDARY ALLOCATION
CAPABILITY OF THE SYSTEM. THERE IS NO FORMULA TO PREDICT WORK
SPACE USE DURING SYSTEM GENERATION, OTHER THAN EXPERIENCE.

LISTED BELOW ARE ALL AVAILABLE OS/360 COMPONENTS AND
THEIR SIZES.

```
                        TABLE 1
                   COMPONENT SIZES
                   ---------------
           *************************************
           *DIST. VOL. LIB. SPACE /2311 TRKS/*
           *************************************
           *          DLIB01        * DLIB02# *
           *************************************
           * S *  *  *  *  *  *  *  *  *  *  * *
           * T *  *  *  *  *  *  *  *  *  *  * *
           * A *  *S *S *  *S *  *  *  *  * *S *
           * R *S *Y *Y *S *Y *  S *  S *S *Y *
           * T *Y *S *S *Y *S *  Y *  Y *Y *S *
           * E *S *1 *1 *S *1 * S * S * S *1 *
           * R *1 *  *  *1 *  1 * 1 * 1 *  * *
           *    *  *F *S *  *P *  *  *  *  *S *
           * S *C *O *O *P *R *  M *  G * M *A *
```

```
CONTINUED FROM PRIOR PAGE--
                                * Y *O *R *R *L *O * O * E * A *M *
                                * S *B *T *T *1 *C * O * N * C *P *
                                * T *L *L *L *L *L * L * L * L *L *
********************************* E *I *I *I *I *I * I * I * I *I *
*COMPONENT NAME  *360S- *NOTES* M *B *B *B *B *B * B * B * B *B *
******************************************************************
*STARTER SYSTEM  *CI-514*  7 *651* * * * * * *   *   *   * * *
******************************************************************
*PRIMARY CONTROL *CI-505* 1,8 * * * * * * * 3*109*788*102*13*
******************************************************************
*PRIMARY DATA MGT*DM-508*  1 * * * * * * * * 58*   *118* *
******************************************************************
*BDAM           *DM-509*  5 * * * * * * * * 8*   * 3* *
******************************************************************
*ISAM           *IO-526*  6 * * * * * * * * 46*   * 4* *
******************************************************************
*BTAM           *CQ-513*    * * * * * * * * 6*   * 43* *
******************************************************************
*QTAM           *CQ-519*    * * * * * * * * 19*   * 44* *
******************************************************************
*GRAPHIC PROG SER*IO-523*   * * * * * * * * 17*   *120*23*
******************************************************************
*ASSEMBLER E     *AS-036*  1 * * * * * * * 4* 43*   * *10*
******************************************************************
*ASSEMBLER F     *AS-037* 4,6 * * * * * * * 4* 38*   * *10*
******************************************************************
*TESTRAN + EDITOR*PT-516*    * * * * * * * 5* 25*   * 52* *
******************************************************************
*SORT/MERGE      *SM-023*    * * * *10* * 2* 78*   * 3*23*
******************************************************************
*LINKAGE EDITOR E*ED-510* 1,3 * * * * * * 3* 30*   * * *
******************************************************************
*LINKAGE EDITOR F*ED-521*  4 * * * * * * * 3* 23*   * * *
******************************************************************
*OS/360 UTILITIES*UT-506*  1 * * * * * * * 2* 79*   *12*
******************************************************************
*IND. UTILITIES  *UT-507*  1 * * * * * * * * *   *49*
******************************************************************
*COBOL E         *CO-503* 5,6 * * * * * * 3* 99*   *29*
******************************************************************
*COBOL E LIBRARY *LM-504*  3 * *10* * * * * *   * * *
******************************************************************
*COBOL F         *CB-524*  5 * * * * * 3* 80*   * 5*
******************************************************************
*COBOL F LIBRARY *LM-525*  3 * * * * * * * 9*   * *
******************************************************************
*FORTRAN IV E    *FO-092*  5 * * * * * * 4* 30*   * 8*
******************************************************************
*FORTRAN IV G    *FO-520*  5 * * * * * * 4* 24*   * 7*
******************************************************************
*FORTRAN IV H    *FO-500*    * * * * * * 4*206*   * 7*
******************************************************************
*FORTRAN IV LIB. *LM-501*  3 * * * 1* * * 28*   * *
******************************************************************
*PL/IF           *NL-511*    * * * * * * 4*240*   * 6*
******************************************************************
*PL/I LIBRARY    *LM-512*  3 * * * * *52* 26*   * *
******************************************************************
*RPG             *RG-038*    * * * * * * 3* 52*   * 5*
******************************************************************
*SERO,SER1 MOD 40*DN-527*  2 * * * * * * * 12*   * *
******************************************************************
*SERO,SER1 MOD 50*DN-528*  2 * * * * * * * 13*   * *
******************************************************************
*SERO,SER1 MOD 65*DN-529*  2 * * * * * * * 14*   * *
******************************************************************
*SERO,SER1 MOD 75*DN-530*  2 * * * * * * * 12*   * *
******************************************************************
*ALGOL F         *AL-531*    * * * * * * 4* 30*   * 4*
******************************************************************
*ALGOL F LIBRARY *LM-532*  3 * * * * * * * 17*   * *
******************************************************************
a DLIBO1 IF SPACE IS AVAILABLE AND IF THE STARTER SYSTEM OR THE
  PRIMARY CONTROL PROGRAM OR BOTH ARE NOT ORDERED.
NOTES -
1. MINIMUM COMPONENT FOR A SYSTEM ABLE TO PERFORM SYSTEM
   GENERATION. SEE ALSO NOTE 4 WHERE APPROPRIATE.
2. HIGHLY RECOMMENDED AS PART OF A MINIMUM SYSTEM.
3. USED BY AND REQUIRED WITH THE PRECEDING COMPONENT/S/ IN
   THE CHART.
4. ALTERNATIVE COMPONENT TO THE PRECEDING COMPONENT IN THE
   CHART. EITHER OR BOTH MAY BE SELECTED.
5. BDAM IS REQUIRED BY THE DIRECT ACCESS STATEMENTS OF COBOL,
   FORTRAN AND PL/I.
6. ISAM IS REQUIRED BY COBOL E AND PL/I OBJECT PROGRAMS USING THE
   INDEXED ORGANIZATION.
7. REQUIRED WITH INITIAL ORDER - SUBSEQUENT ORDERS MAY BE
   PROCESSED BY THE USERS OWN SYSTEM.
8. REQUIRED WITH ORDERS FOR PROCESSORS, SINCE THE SYS1. GENLIB
   CONTAINS THE RELATED SYSTEM GENERATION MACRO INSTRUCTIONS.
```

TABLE 2
WORK SPACE FOR SYSTEM GENERATION

```
           ********************************************
           *           TWO-DRIVE SYSGEN          *
**********************************************************
*DATA SET*NORMAL LOCATION*BASIC SPACE-TRACK*REGARDING ALLOCATION*
**********************************************************
* SYSUT1 *   DLIBO2    * 240 PRIMARY   *MAY BE MAGNETIC TAPE*
*        *             *  10 SECONDARY *                    *
**********************************************************
* SYSUT2 *   DLIBO2    * 240 PRIMARY   *MAY BE MAGNETIC TAPE*
*        *             *  10 SECONDARY *                    *
**********************************************************
* SYSUT3 *   DLIBO1a   * 250 PRIMARY   *   MUST BE DASD     *
*        *             *  10 SECONDARY *                    *
**********************************************************
* OBJPDS *   DLIBO1    *  40 PRIMARY   *   MUST BE DASD     *
*        *             *   2 SECONDARY *                    *
*        *             *   8 DIRECTORY *                    *
**********************************************************
* FOR    *   DLIBO1a   * 160           * SELF-ALLOCATED BY  *
*IEHMOVE *             *               *THE UTILITY PROGRAM *
*UTILITY *             *               * ON THE SAME VOLUME *
*        *             *               *          SYSUT3    *
**********************************************************
a MAY BE PLACED ON DLIBO2 IF SPACE IS AVAILABLE. A POSSIBLE
  VARIATION TO THE SYSGEN PROCESS PLACES SYSUT1 AND SYSUT2
  ON TAPE, SYSUT3 ON DLIBO2. IN THIS CASE, THE USERS
  ,,NEW SYSTEM,, PACK MUST ALSO HAVE A SYSUT3 DATA SET, AND THE
  USER MUST MODIFY THE SYSGEN STAGE II JOB STREAM SLIGHTLY.
```

CONTINUED FROM PRIOR COLUMN--

TO ORDER THE COMPONENTS THE NEW PROGRAM ORDER FORM ,,IBM
PROGRAM ORDER FOR IBM SYSTEM/360 OPERATING SYSTEMS,, FORM NUMBER,
120-1411 MUST BE USED.
EACH COMPONENT FOR WHICH PROGRAM DOCUMENTATION AND MAINTENANCE
MATERIAL IS REQUIRED MUST APPEAR ON THE ORDER FORM.

WHEN ORDERING OS/360 ON TAPE, EITHER 9-TRACK OR 7-TRACK MUST
BE SPECIFIED ON THE ORDER FORM. IF NOT SPECIFIED 9-TRACK WILL
BE FORWARDED. ALL TAPES WILL BE COPIED AT 800 CPI.
THE NUMBER OF TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM
REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET
IN LENGTH.

A-360T

360T-AS-001   S/360 MODEL 20 BASIC
ASSEMBLER LANGUAGE
     ORDER THROUGH LOCAL IBM BRANCH OFFICE
     SPECIFY FILE NUMBER 360T-AS-001

     THE BASIC ASSEMBLER IS A SYMBOLIC SYSTEM DESIGNED TO
     SIMPLIFY THE PREPARATION OF PROGRAMS. IT TRANSLATES SOURCE
     PROGRAMS WRITTEN IN THE MODEL 20 BASIC ASSEMBLER SYMBOLIC
     LANGUAGE INTO SYSTEM/360 MODEL 20 OBJECT PROGRAMS.
     SIGNIFICANT LIMITATIONS- THE IBM SYSTEM/360 MODEL 20
     BASIC ASSEMBLER LANGUAGE IS NOT FULLY COMPATIBLE WITH THE
     BASIC ASSEMBLER LANGUAGE FOR THE SYSTEM/360. OBJECT DECKS
     PRODUCED BY THE SYSTEM/360 MODEL 20 BASIC ASSEMBLER NORMALLY
     WILL NOT RUN ON A LARGER SYSTEM/360.

     MINIMUM MACHINE REQUIREMENTS-
     FOR PROGRAM GENERATION- A 2020 PROCESSING UNIT, MODEL B, AND
     ONE OF THE FOLLOWING INPUT/OUTPUT CONFIGURATIONS /A/ A 2560 MFCM
     OR /B/ A 2520 CARD READ PUNCH, OR /C/ A 2501 CARD READER
     WITH A 2520 CARD PUNCH OR 1442 MODEL 5 CARD PUNCH, AND
     /D/ /OPTIONALLY/ A 2203 OR 1403 PRINTER.
     FOR PROGRAM EXECUTION- THE INPUT/OUTPUT CONFIGURATION DEPENDS
     UPON PROCESSING REQUIREMENTS. IN ADDITION TO A 2020 PROCESSING
     UNIT, AT LEAST ONE READ UNIT SUCH AS A 2560 MFCM OR 2520
     CARD READ PUNCH OR 2501 CARD READER MUST BE AVAILABLE.
     NOTE- THE PROGRAM WILL RUN INDEPENDENTLY ON THE EC LEVEL OF
     MODEL 20 MACHINES PRESENTLY IN THE FIELD.

     BASIC PROGRAM MATERIAL -
          DOCUMENTATION - PROGRAM MATERIAL LIST... BASIC ASSEMBLER
               LANGUAGE MANUAL C26-3602... OPERATING PROCEDURES
               MANUAL C26-3802.
          MACHINE READABLE - PROGRAM DECK AND SAMPLE DECK

360T-CQ-003   INPUT OUTPUT CONTROL SYSTEM
FOR THE COMMUNICATIONS ADAPTER FOR MODEL 20
     ORDER THROUGH LOCAL IBM BRANCH OFFICE
     SPECIFY FILE NUMBER 360T-CQ-003

     CIOCS RELIEVES THE USER OF MUCH OF THE PROGRAMMING REQUIRED
     FOR EFFICIENT UTILIZATION OF THE SYSTEM/360 MODEL 20
     COMMUNICATIONS ADAPTER. THE COMMUNICATIONS IOCS PROVIDES
     ROUTINES THAT PERFORM THE FOLLOWING FUNCTIONS-
     - TRANSMISSION OF DATA /BCD-CHARACTERS/ BETWEEN A MODEL 20
       CPU WITH COMMUNICATIONS ADAPTER AND ONE OF THE FOLLOWING
       REMOTE TERMINALS-
       . 1009 DATA TRANSMISSION UNIT /FOR COMMUNICATION WITH
         IBM 1400 SERIES COMPUTERS/.
       . 1013 CARD TRANSMISSION TERMINAL.
       . 2701 DATA TRANSMISSION UNIT /FOR COMMUNICATION WITH
         IBM SYSTEM/360 MODEL 30, 40, 50, 65, OR 75/.
       . 7701 OR 7702 MAGNETIC TAPE TRANSMISSION TERMINAL.
       . 7710 OR 7711 DATA COMMUNICATION UNIT.
       . 2020 PROCESSING UNIT WITH COMMUNICATIONS ADAPTER.
       . 1130 COMPUTER SYSTEM EQUIPPED WITH THE SYNCHRONOUS
         COMMUNICATIONS ADAPTER.
     - ERROR DETECTION AND RESTART PROCEDURES.
     CIOCS PROVIDES THE USER WITH MACRO-INSTRUCTIONS TO AVOID
     THE CODING OF COMPLETE ROUTINES FOR DATA TRANSMISSION.
     DTTSR STATEMENTS DEFINE THE TYPE OF TRANSMISSION, THE FUNCTION,
     DATA FORMAT AND OTHER SPECIAL REQUIREMENTS. THE MACRO
     INSTRUCTIONS INSERTED IN THE SOURCE 'PROGRAM WILL BE PROCESSED
     BY THE BASIC ASSEMBLER. THE DEFINITION STATEMENTS /DTTSR/
     ARE INPUT TO A GENERATOR PROGRAM. FROM THE INFORMATION IN
     THESE STATEMENTS THE NECESSARY CODING IN SYMBOLIC LANGUAGE
     FOR THE DIFFERENT ROUTINES SERVICING THE COMMUNICATIONS
     ADAPTER AND THE OVERALL MONITORING CIOCS ROUTINE ARE DEVELOPED.
     THE CIOCS IS NORMALLY USED IN CONJUNCTION WITH THE
     MODEL 20 IOCS FOR PUNCHED CARD EQUIPMENT. THE USER MAY
     ASSEMBLE HIS SYMBOLIC IOCS/CIOCS PROGRAM AND HIS SOURCE
     PROGRAM EITHER SEPARATELY OR JOINTLY.
     MINIMUM MACHINE REQUIREMENTS- FOR GENERATION AND ASSEMBLY
     OF CIOCS ROUTINES- A 2020 PROCESSING UNIT, MODEL B...
     ONE CARD READER... ONE CARD PUNCH. IN ADDITION, THE PRINTER
     ATTACHED TO THE SYSTEM MUST BE USED, IF PRINTING OF A LISTING
     OF THE GENERATED ROUTINES AND/OR DIAGNOSTIC MESSAGES IS
     DESIRED. FOR EXECUTION OF OBJECT PROGRAMS- A 2020 PROCESSING
     UNIT, MODEL B2, WITH ONE CARD READER, THE COMMUNICATIONS
     ADAPTER AND A REMOTE TERMINAL CONNECTED THROUGH DATA SETS
     APPROPRIATE TO DESIRED SPEED OF OPERATION, IS MINIMUM.
     TO EXECUTE MANY USER PROGRAMS A MODEL C2 /8,192 BYTES/ WILL BE
     NECESSARY. CORE REQUIREMENTS FOR THE EXECUTION OF A SPECIFIC
     PROGRAM MAY BE ESTIMATED BY USING BOTH SRL/S C26-3603-1 /IOCS/
     AND C26-3606-1 /CIOCS/. THE USE OF ANY ADDITIONAL INPUT/OUTPUT
     DEVICES IS DICTATED BY THE REQUIREMENTS OF THE MAIN PROGRAM.
     PROPER EXECUTION OF OBJECT PROGRAMS FOR TRANSMISSION IN BCD-MODE
     REQUIRES EC 12100 ON THE PROCESSING UNIT.

     BASIC PROGRAM MATERIAL -
          DOCUMENTATION - PROGRAM MATERIAL LIST... CIOCS
               MANUAL C26-3606... OPERATING PROCEDURES MANUAL C24-9004.
          MACHINE READABLE - PROGRAM DECK /GENERATOR AND LIBRARY/...
               TWO SAMPLE DECKS /ONE FOR TRANSMIT AND ONE FOR RECEIVE
               OPERATIONS/.

360T-IO-002   S/360 MODEL 20 INPUT/OUTPUT
CONTROL SYSTEM
     ORDER THROUGH LOCAL IBM BRANCH OFFICE
     SPECIFY FILE NUMBER 360T-IO-002

IBM Programs

CONTINUED FROM PRIOR PAGE--

SYSTEM/360 MODEL 20 INPUT/OUTPUT CONTROL SYSTEM RELIEVES THE
USER OF MUCH OF THE PROGRAMMING REQUIRED FOR UTILIZATION OF
THE SYSTEM/360 MODEL 20 INPUT/OUTPUT UNITS.
THE PROGRAM PROVIDES ROUTINES THAT PERFORM THESE FUNCTIONS-
INPUT/OUTPUT FUNCTIONS AND SCHEDULING TO OPTIMIZE CPU OVERLAP
ABILITY... ERROR DETECTION AND RESTART PROCEDURES... CPU
INTERRUPT HANDLING.
IOCS PROVIDES THE USER WITH MACRO-INSTRUCTIONS TO AVOID THE
CODING OF COMPLETE INPUT/OUTPUT ROUTINES INCLUDING DATA AND ERROR
CHECKING. DTFSR STATEMENTS /DEFINITION STATEMENTS/ DEFINE THE
DEVICE, THE FUNCTION, DATA FORMAT AND OTHER SPECIAL REQUIREMENTS.
THE MACRO-INSTRUCTIONS INSERTED IN THE SOURCE PROGRAM WILL BE
PROCESSED BY THE BASIC ASSEMBLER. THE DEFINITION STATEMENTS
ARE INPUT TO A GENERATOR PROGRAM. FROM THE INFORMATION IN THESE
STATEMENTS THE NECESSARY CODING IN SYMBOLIC LANGUAGE FOR THE
DIFFERENT ROUTINES SERVICING THE I/O DEVICES AND THE OVERALL
CONTROLLING OF IOCS ROUTINE ARE DEVELOPED. THIS SYMBOLIC
OUTPUT OF THE GENERATOR IS ASSEMBLED IN CONJUNCTION WITH THE
MAIN SOURCE PROGRAM OR SEPARATELY. THE I/O AREAS AS WELL AS THE
EXIT-ROUTINES REFERRED TO BY THE DEFINITION STATEMENTS MUST BE
DEFINED IN THE SOURCE PROGRAM.

MINIMUM SYSTEM REQUIREMENTS-
FOR PROGRAM GENERATION -- THE REQUIREMENTS ARE THE SAME AS THOSE
FOR THE BASIC ASSEMBLER. NOTE- IN A SYSTEM THAT HAS ONLY A
2520 CARD READ PUNCH AS CARD UNIT, ONLY PROGRAM ROUTINES
REFERRING TO THIS UNIT AND TO A PRINTER MAY BE GENERATED.
FOR OBJECT PROGRAM EXECUTION -- THE INPUT/OUTPUT CONFIGURATION
DEPENDS UPON PROCESSING REQUIREMENTS. IN ADDITION TO A
4K SYSTEM/360 MODEL 20, AT LEAST ONE READING DEVICE SUCH AS A
2560 MFCM OR 2520 CARD READ PUNCH OR 2501 CARD READER MUST BE
AVAILABLE.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... IOCS FOR PUNCHED-
        CARD EQUIPMENT MANUAL... OPERATING PROCEDURES.
    MACHINE READABLE - PROGRAM DECK... SAMPLE DECK.

**360T-IO-029   S/360 MODEL 20 INPUT/OUTPUT
CONTROL SYSTEM FOR THE IBM 1419 MAGNETIC CHARACTER READER**
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360T-IO-029

    SYSTEM/360 MODEL 20 IOCS FOR THE 1419 MAGNETIC CHARACTER
    READER RELIEVES THE USER OF MUCH OF THE PROGRAMMING REQUIRED
    FOR THE EFFICIENT UTILIZATION OF THE S/360 MODEL 20
    1419 MAGNETIC CHARACTER READER /MICR/. THE PROGRAM OPTIMIZES
    THROUGHPUT BY PROVIDING THE BEST BALANCE BETWEEN THE SPEED OF
    THE 1419 MICR AND A PRINTER. THE 1419 IOCS PROVIDES ROUTINES
    THAT PERFORM THE FOLLOWING FUNCTIONS-
    - ENGAGING AND DISENGAGING THE 1419 MICR READER.
    - READING OF MICR DOCUMENTS.
    - SORTING ON FIELDS LOCATED IN THE FIRST 5.8 INCHES OF
      THE DOCUMENT.
    - MAINTENANCE OF THE REVOLVING BUFFER.
    - PRESENTING DATA FOR USER PROCESSING.
    - SERVICING OF INTERRUPTS.
    - TESTING OF FIELD VALIDITY INDICATORS AND I/O ERROR CHECKING.
    - CONTROL AND OPTIMIZATION OF PRINT OPERATIONS.
    - CONTROL OF THE SELECTIVE TAPE LISTING FEATURE /OPTIONAL/.
    - CONTROL OF PROGRAMMABLE POCKET LIGHTS /OPTIONAL/.
    - CONTROL OF THE BATCH NUMBERING FEATURE /OPTIONAL/.
    - LINKAGE TO MODEL 20 IOCS FOR PUNCHED CARD EQUIPMENT AND TO
      MODEL 20 IOCS FOR THE COMMUNICATIONS ADAPTER /OPTIONAL/.

    THE USER HAS TO PROVIDE A ROUTINE FOR POCKET SELECTION, WHICH IS
    ENTERED BY THE 1419 IOCS UNDER INTERRUPT CONTROL. THE CODING
    OF COMPLETE ROUTINES FOR THE 1419 MAGNETIC CHARACTER READER
    /MICR/ AND A PRINTER IS NOT NECESSARY SINCE THE 1419 IOCS
    PROVIDES THE USER WITH MACRO INSTRUCTIONS. DTFPD STATEMENTS
    DEFINE THE TYPE OF OPERATION, THE FUNCTIONS, DATA FORMAT
    AND OTHER SPECIAL REQUIREMENTS. THE MACRO INSTRUCTIONS
    INSERTED INTO THE SOURCE PROGRAM WILL BE PROCESSED BY
    THE BASIC ASSEMBLER. THE DEFINITION STATEMENTS /DTFPD/
    ARE INPUT TO A GENERATOR PROGRAM. FROM THE INFORMATION
    IN THESE STATEMENTS THE NECESSARY CODING IN SYMBOLIC LANGUAGE
    FOR THE DIFFERENT ROUTINES SERVICING THE 1419 MICR, THE PRINTER
    AND THE OVERALL MONITORING 1419 IOCS ROUTINE ARE DEVELOPED.
    THE USER MAY ASSEMBLE HIS SYMBOLIC 1419 IOCS, CARD IOCS,
    COMMUNICATION IOCS PROGRAMS AND HIS SOURCE PROGRAM EITHER
    SEPARATELY OR JOINTLY. IF THE 1419 IOCS IS USED IN CONNECTION
    WITH CARD AND/OR COMMUNICATION IOCS, THERE WILL BE NO
    TIME-SHARING BETWEEN THE 1419 IOCS AND THE OTHER IOCS ROUTINES.

    PERFORMANCE IS DESCRIBED IN SRL ,,SYSTEM/360 MODEL 20
    INPUT/OUTPUT CONTROL SYSTEM FOR THE 1419 MAGNETIC CHARACTER
    READER,, /C26-3607/. IF THE 1419 IOCS IS USED TOGETHER WITH
    THE CARD OR COMMUNICATION IOCS, CARD IOCS /360T-IO-002/
    MUST BE AT LEAST VERSION 1 MODIFICATION LEVEL 3, AND
    COMMUNICATION IOCS /360T-CQ-003/ AT LEAST VERSION 1 MODIFICATION
    LEVEL 1. THE PROGRAM IS NOT UPWARDLY COMPATIBLE WITH SYSTEM/360
    MODEL 30 AND HIGHER MODELS. THE DURATION OF USERS POCKET
    SELECTION ROUTINE MUST NOT EXCEED THE LIMITS DESCRIBED IN
    THE SRL, 1419 MAGNETIC CHARACTER READER /C26-3607/. USE OF
    INSTRUCTIONS EXCEEDING A DURATION OF 2.7 MILLISECONDS
    REQUIRES DISENGAGING OF THE 1419 MICR.

    MINIMUM MACHINE REQUIREMENTS-
    FOR GENERATION AND ASSEMBLY OF THE 1419 IOCS ROUTINES-
    A 2020 PROCESSING UNIT, MODEL B, ONE CARD READING DEVICE
    /2501 MODEL A1 OR A2, 2520 MODEL A1, 2560/, ONE CARD
    PUNCHING DEVICE /2520 MODEL A1, A2, OR A3, 1442 MODEL 5,
    2560/. IN ADDITION, THE PRINTER /1403 MODEL 2 OR N1
    WITH OR WITHOUT THE ,,UNIVERSAL CHARACTER SET,, FEATURE,
    OR 1403 MODEL 7, OR 2203 MODEL A1/ ATTACHED TO THE SYSTEM
    MUST BE USED, IF PRINTING OF A LISTING OF THE GENERATED
    ROUTINES AND/OR DIAGNOSTIC MESSAGES IS DESIRED.
    FOR EXECUTION OF OBJECT PROGRAMS-
    A 2020 PROCESSING UNIT, MODEL C2*, WITH SERIAL I/O CHANNEL
    /SIOC/, ONE CARD READING DEVICE /2501 MODEL A1 OR A2,
    2520 MODEL A1, 2560/, THE 1419 MICR, AND A PRINTER
    /1403 MODEL 2 OR N1 WITH OR WITHOUT THE ,,UNIVERSAL
    CHARACTER SET,, FEATURE, OR 1403 MODEL 7, OR 2203 MODEL A1/.
    *THE 2020 PROCESSING UNIT MODEL B2 /4096 BYTES/, MAY BE
    SUFFICIENT FOR EXECUTION OF A LIMITED NUMBER OF 1419
    IOCS FUNCTIONS. FOR EXECUTION OF THE MAJORITY OF PROGRAMS
    CONTAINING 1419 IOCS ROUTINES A MODEL C2 /8192 BYTES/
    IS REQUIRED. THE USE OF ANY ADDITIONAL INPUT/OUTPUT
    DEVICES IS DICTATED BY THE REQUIREMENTS OF THE MAIN PROGRAM.
    THE PROGRAM REQUIRES AN ENGINEERING CHANGE LEVEL OF 127384 FOR
    THE 1419. IN ADDITION TO THE ANNOUNCED CONFIGURATION THE
    1419 IOCS SUPPORTS THE USE OF -- A 2203 MODEL A1 PRINTER WITH

CONTINUED FROM PRIOR COLUMN--
    13, 39, 52 AND 63 CHARACTER SET TYPE BARS... THE 1419 MICR
    FEATURE ,,PROGRAMMABLE POCKET LIGHTS,,.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT...
            1419 IOCS MANUAL, C26-3607... OPERATING PROCEDURES,
            C24-9008.
        MACHINE READABLE - PROGRAM DECK /GENERATOR AND LIBRARY/ AND
            ONE SAMPLE DECK.

**360T-LM-015   STERLING CURRENCY PROCESSING
ROUTINES**
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360T-LM-015

    THE STERLING CURRENCY PROCESSING ROUTINES PROVIDE IBM SYSTEM/360
    MODEL 20 USERS WITH A CONVENIENT MEANS OF PROCESSING STERLING
    CURRENCY. BOTH ARITHMETIC AND EDITING FUNCTIONS ARE PROVIDED.
    /BSI OR IBM CODES AS WELL AS A MIXTURE OF BOTH CAN BE HANDLED./
    THESE ROUTINES ARE INCLUDED IN THE USERS PROGRAM BY MEANS OF
    SPECIAL LINKING SEQUENCES. THE STERLING ROUTINES ARE ASSEMBLED
    WITH THE USERS SOURCE PROGRAM.
    NOTE- THE ROUTINES ARE USED ONLY WITH ASSEMBLER PROGRAMS.
    RPG AND PCU PROGRAM LIST SUMMARY PUNCH PROCESSOR DECKS CONTAIN
    STERLING ROUTINES.
    THERE ARE NO ADDITIONAL MACHINE REQUIREMENTS FOR THE USE OF THESE
    ROUTINES, BEYOND REQUIREMENTS FOR BAL- 360T-AS-001.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... STERLING CURRENCY
            PROCESSING ROUTINES MANUAL.
        MACHINE READABLE - SYMBOLIC SUBROUTINE DECKS.

**360T-RG-010   S/360 MODEL 20 REPORT
PROGRAM GENERATOR**
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360T-RG-010

    RPG IS THE PRIMARY PROGRAMMING LANGUAGE FOR MODEL 20. RPG
    PERFORMS CARD FILE MAINTENANCE, CALCULATIONS AND INPUT/OUTPUT
    OPERATIONS. A FEW OF ITS OUTSTANDING FEATURES ARE- MULTIPLE
    INPUT/OUTPUT FILES, TABLE LOO-UP, GOTO /BRANCHING/, USER
    CONTROLLED INDICATORS /SETON, SETOF/ AND REPORT HEADINGS. TO
    USE THIS PROGRAM THE USER FURNISHES A SET OF SPECIFICATIONS
    DESCRIBING THE INPUT DATA, CALCULATIONS AND THE DESIRED OUTPUT.
    THE LANGUAGE IS PROBLEM ORIENTED RATHER THAN MACHINE ORIENTED.
    THE REPORT PROGRAM GENERATOR IS OF THE COMPILE-AND-GO TYPE. AN
    OPTION IS AVAILABLE THAT ALLOWS PUNCHING OF THE OBJECT
    PROGRAM INTO CARDS FOR FUTURE USE.

    MINIMUM SYSTEM REQUIREMENTS-
    FOR PROGRAM GENERATION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF THE
    FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- A 2560 MFCM OR A
    2520 CARD READ PUNCH OR A 2501 CARD READER... OPTIONALLY, A
    2203 OR 1403 PRINTER /48 CHARACTER SET/.
    FOR OBJECT PROGRAM EXECUTION -- A 4K SYSTEM/360 MODEL 20 AND
    ONE OF THE FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- A
    2560 MFCM... A 2520 CARD READ PUNCH... A 2501 CARD READER... IF
    PUNCHING IS SPECIFIED A 2520 OR A 1442 MODEL 5 CARD PUNCH...
    IF PRINTING IS SPECIFIED A 2203 OR 1403 PRINTER.

    BASIC PROGRAM MATERIAL -
        DOCUMENTATION - PROGRAM MATERIAL LIST... RPG FOR PUNCHED CARD
            EQUIPMENT MANUAL... OPERATING PROCEDURES.
        MACHINE READABLE - PROGRAM DECK... SAMPLE DECK.

**360T-ST-109   MODEL 20 SORT-TIME
ESTIMATING PROGRAM FOR DISK-SORT APPLICATIONS**
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360T-ST-109

    A SORT-TIME ESTIMATING PROGRAM, PERMITS THE USER TO CALCULATE
    TIME ESTIMATES FOR SORT OPERATIONS THAT WILL BE PERFORMED WITH AN
    IBM SYSTEM/360 MODEL 20 DISK PROGRAMMING SYSTEM SORT/MERGE
    PROGRAM. THE SORT-TIME ESTIMATING PROGRAM RUNS ON A MODEL 20
    CARD SYSTEM. THE INPUT TO THE PROGRAM CONSISTS OF THOSE CONTROL
    STATEMENTS THAT ARE REQUIRED BY THE DPS JOB CONTROL AND
    DPS SORT/MERGE PROGRAM FOR THE ACTUAL SORT APPLICATION. THE
    USER SPECIFIES THE MINIMUM NUMBER OF RECORDS FOR WHICH AN
    ESTIMATE IS DESIRED ALONG WITH AN INCREMENTAL VALUE. TIME
    ESTIMATES WILL THEN BE PRINTED FOR TEN FILE SIZES STARTING WITH
    THE MINIMUM SIZE AND ADDING THE INCREMENT NINE TIMES. THE
    MAXIMUM FILE SIZE WILL ALSO BE PRINTED.

    FEATURES- FOR CALCULATION OF THE TIME ESTIMATES, THE PROGRAM
    CONSIDERS SUCH FACTORS AS FILE SIZE, BLOCK LENGTH, RECORD LENGTH,
    OPTIONS OF THE DPS SORT/MERGE PROGRAM THAT ARE TO BE UTILIZED,
    AND THE SORTING TECHNIQUE TO BE EMPLOYED. THE PROGRAM CAUSES THE
    PRINTING OF DIAGNOSTIC MESSAGES IF ANY SPECIFICATION ERRORS
    FOR THE TIME ESTIMATE ARE ENCOUNTERED. THE ESTIMATES FOR
    THE ACTUAL TIME REQUIRED FOR THE SORT APPLICATION ARE ACCURATE
    WITHIN PLUS/MINUS 15 PER CENT OR ONE MINUTE, WHICHEVER IS
    GREATER. THE TIME REQUIRED TO PERFORM ONE SORT-TIME ESTIMATE IS
    DETERMINED BY THE SPECIFIED FILE SIZE. THE TIME REQUIREMENTS
    VARY BETWEEN 0.5 AND 5 MINUTES.

    MINIMUM SYSTEM REQUIREMENTS- A 2020 PROCESSING UNIT
    MODEL C1 OR C2, A CARD READING DEVICE /2501 MODEL A1 OR A2,
    2520 MODEL A1, OR 2560 MODEL A1/, A PRINTER /1403 MODEL 2, 7, OR
    N1, OR 2203 MODEL A1/.

    BASIC PROGRAM MATERIAL
        DOCUMENTATION - PROGRAM MATERIAL LIST... APPLICATION
            MANUAL, C33-6002... SORT/MERGE MANUAL, C26-3806.
        MACHINE READABLE - OBJECT PROGRAM DECKS.

**360T-UT-100   S/360 MODEL 20 PUNCHED CARD
UTILITY PROGRAMS I /GANGPUNCH-REPRODUCE, LIST-SUMMARY PUNCH/**
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360T-UT-100

    THE PROGRAMS AND REPRESENTATIVE FUNCTIONS THEY PERFORM ARE --
    GANGPUNCH-REPRODUCE -- REPRODUCING - SELECTIVE-STRAIGHT...
    GANGPUNCHING - INTERSPERSED-OFFSET, MAJOR-MINOR,
    COUNT-CONTROLLED... CARD PRINTING... CONSECUTIVE NUMBERING.
    LIST-SUMMARY PUNCH -- LISTING AND/OR TABULATION OF CARD FILES...
    TOTAL ACCUMULATION... HEADING AND OVERFLOW IDENTIFICATION...
    SUMMARY CARD PREPARATION. THESE UTILITY PROGRAMS ARE OF THE
    GENERATE-AND-GO TYPE. FOR LIST-SUMMARY PUNCH AND
    GANGPUNCH-REPRODUCE THE OPTION IS AVAILABLE TO PUNCH OUT THE

IBM Programs

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CONTINUED FROM PRIOR PAGE--
OBJECT PROGRAM.

MINIMUM SYSTEM REQUIREMENTS-
FOR PROGRAM GENERATION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF
THE FOLLOWING INPUT/OUTPUT CONFIGURATIONS --
GANGPUNCH-REPRODUCE -- A 2560 MFCM OR A 2520 CARD READ PUNCH
OR A 2501 CARD READER WITH A 2520 CARD PUNCH OR A 1442 CARD PUNCH
MODEL 5... OPTIONALLY A 2203 OR 1403 PRINTER. LIST-SUMMARY
PUNCH -- A 2560 MFCM OR A 2520 CARD READ PUNCH OR A 2501
CARD READER WITH A 2520 CARD PUNCH OR A 1442 MODEL 5 CARD
PUNCH... OPTIONALLY A 2203 OR 1403 PRINTER.
FOR PROGRAM EXECUTION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF THE
FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- GANGPUNCH-REPRODUCE --
A 2560 MFCM OR A 2520 CARD READ PUNCH OR A 2501 CARD READER
WITH A 2520 CARD PUNCH OR 1442 MODEL 5 CARD PUNCH... OPTIONALLY
A 2203 OR 1403 PRINTER. LIST-SUMMARY PUNCH -- A 2560 MFCM OR A
2520 CARD READ PUNCH OR A 2501 CARD READER WITH A 2520 CARD
PUNCH OR 1442 MODEL 5 CARD PUNCH, IF PUNCHING IS SPECIFIED... A
2203 OR 1403 PRINTER.
NOTE- PRINTERS CLASSIFIED ,,OPTIONAL,, ARE USED TO DISPLAY
PROGRAM DOCUMENTATION, DIAGNOSTIC MESSAGES AND ERROR
IDENTIFICATION. A PRINTER IS, THEREFORE, NOT REQUIRED IF THESE
FACILITIES ARE NOT DESIRED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... PUNCHED CARD UTILITY
PROGRAMS MANUAL... OPERATING PROCEDURES.
MACHINE READABLE - PROGRAM DECKS... SAMPLE DECKS.

360T-UT-101   S/360 MODEL 20 PUNCHED CARD
UTILITY PROGRAMS II /COLLATE, MERGE-SORT/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-101

THE PROGRAMS AND REPRESENTATIVE FUNCTIONS THEY PERFORM ARE --
COLLATE -- MATCHING... MERGING WITH OR WITHOUT SELECTION...
CONSECUTIVE NUMBER CHECKING... INSERTION... SEQUENCE CHECKING...
SELECTION... HASH TOTALS.
MERGE-SORT -- NUMERIC OR ALPHAMERIC CONTROL FIELD SORTING
SEQUENCING OF UP TO FIVE FIELDS. THESE UTILITY PROGRAMS ARE OF
THE GENERATE-AND-GO TYPE.

MINIMUM SYSTEM REQUIREMENTS-
FOR PROGRAM GENERATION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF
THE FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- COLLATE -- A
2560 MFCM AND OPTIONALLY A 2203 OR 1403 PRINTER. MERGE-SORT -- A
2560 MFCM AND OPTIONALLY A 2203 OR 1403 PRINTER.
FOR PROGRAM EXECUTION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF THE
FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- COLLATE -- A 2560 MFCM
AND OPTIONALLY A 2203 OR 1403 PRINTER. MERGE-SORT -- A 2560 MFCM
AND OPTIONALLY A 2203 OR 1403 PRINTER.
NOTE- PRINTERS CLASSIFIED ,,OPTIONAL,, ARE USED TO DISPLAY
PROGRAM DOCUMENTATION, DIAGNOSTIC MESSAGES AND ERROR
IDENTIFICATION. A PRINTER IS, THEREFORE, NOT REQUIRED IF THESE
FACILITIES ARE NOT DESIRED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... PUNCHED CARD UTILITY
PROGRAMS MANUAL... OPERATING PROCEDURES.
MACHINE READABLE - PROGRAM DECKS... SAMPLE DECKS.

360T-UT-102   S/360 MODEL 20 BASIC UTILITY
PROGRAMS /EXCEPT TRACE/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-102

THE MODEL 20 BASIC UTILITY PROGRAMS NOW AVAILABLE, ARE A SET
OF STANDARDIZED UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING
OR TESTING OF A USERS OBJECT PROGRAM. THEY ARE- CLEAR STORAGE...
ABSOLUTE PROGRAM LOADER... RELOCATABLE PROGRAM LOADER... PRINT
STORAGE... PUNCH STORAGE. FUNCTIONS -- /1/ TO CLEAR THE CORE
STORAGE., TO LOAD ASSEMBLED PROGRAMS... /2/ ABSOLUTE OR...
/3/ RELOCATABLE... /4/ TO PRODUCE LISTING OF THE CONTENTS OF CORE
STORAGE... /5/ TO PUNCH THE CONTENTS OF CORE STORAGE INTO
CARDS... AND /6/ TO TEST OBJECT PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS- A 4K SYSTEM/360 MODEL 20
WITH A READ UNIT - 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER - 2203 OR 1403.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.
THE NUMBER OF TAPES NECESSARY TO OBTAIN THE PROGRAM MATERIAL
MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE
TAPES SHOULD BE 2400 FEET IN LENGTH.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES.
MACHINE READABLE - PROGRAM DECKS.

360T-UT-103   S/360 MODEL 20 BASIC TRACE
/4K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-103

THE MODEL 20 BASIC UTILITY PROGRAMS ARE A SET OF STANDARDIZED
UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING OR TESTING OF A
USERS OBJECT PROGRAM. THE ARE- CLEAR STORAGE...ABSOLUTE PROGRAM
LOADER... RELOCATABLE PROGRAM LOADER... PRINT STORAGE... PUNCH
STORAGE... BASIC TRACE.
FUNCTIONS -- /1/ TO CLEAR THE CORE STORAGE., TO LOAD ASSEMBLED
PROGRAMS... /2/ ABSOLUTE OR... /3/ RELOCATABLE... /4/ TO PRODUCE
LISTING OF THE CONTENTS OF CORE STORAGE... /5/ TO PUNCH THE
CONTENTS OF CORE STORAGE INTO CARDS... AND /6/ TO TEST OBJECT
PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS- A 4K SYSTEM/360 MODEL 20 WITH
A READ UNIT - 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER - 2203 OR 1403.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES.
MACHINE READABLE - PROGRAM DECKS.   SAMPLE DECK

360T-UT-104   S/360 MODEL 20 BASIC TRACE
/8K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-104

CONTINUED FROM PRIOR COLUMN--

THE MODEL 20 BASIC UTILITY PROGRAMS ARE A SET OF STANDARDIZED
UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING OR TESTING OF A
USERS OBJECT PROGRAM. THE ARE- CLEAR STORAGE...ABSOLUTE PROGRAM
LOADER... RELOCATABLE PROGRAM LOADER... PRINT STORAGE... PUNCH
STORAGE... BASIC TRACE.
FUNCTIONS -- /1/ TO CLEAR THE CORE STORAGE., TO LOAD ASSEMBLED
PROGRAMS... /2/ ABSOLUTE OR... /3/ RELOCATABLE... /4/ TO PRODUCE
LISTING OF THE CONTENTS OF CORE STORAGE... /5/ TO PUNCH THE
CONTENTS OF CORE STORAGE INTO CARDS... AND /6/ TO TEST OBJECT
PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS- A 4K SYSTEM/360 MODEL 20 WITH
A READ UNIT - 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER - 2203 OR 1403.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES.
MACHINE READABLE - PROGRAM DECKS... SAMPLE DECK.

360T-UT-105   S/360 MODEL 20 BASIC TRACE
/16K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-105

THE MODEL 20 BASIC UTILITY PROGRAMS ARE A SET OF STANDARDIZED
UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING OR TESTING OF A
USERS OBJECT PROGRAM. THE ARE- CLEAR STORAGE...ABSOLUTE PROGRAM
LOADER... RELOCATABLE PROGRAM LOADER... PRINT STORAGE... PUNCH
STORAGE... BASIC TRACE.
FUNCTIONS -- /1/ TO CLEAR THE CORE STORAGE., TO LOAD ASSEMBLED
PROGRAMS... /2/ ABSOLUTE OR... /3/ RELOCATABLE... /4/ TO PRODUCE
LISTING OF THE CONTENTS OF CORE STORAGE... /5/ TO PUNCH THE
CONTENTS OF CORE STORAGE INTO CARDS... AND /6/ TO TEST OBJECT
PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS- A 4K SYSTEM/360 MODEL 20 WITH
A READ UNIT - 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER - 2203 OR 1403.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES.
MACHINE READABLE - PROGRAM DECKS... SAMPLE DECK.

360T-UT-107   S/360 MODEL 20 BASIC TRACE
/12K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-107

THE MODEL 20 BASIC UTILITY PROGRAMS ARE A SET OF STANDARDIZED
UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING OR TESTING
OF A USERS OBJECT PROGRAM. THEY ARE- CLEAR STORAGE...
ABSOLUTE PROGRAM LOADER... RELOCATABLE PROGRAM LOADER...
PRINT STORAGE... PUNCH STORAGE... BASIC TRACE.
FUNCTIONS -- /1/ TO CLEAR THE CORE STORAGE., TO LOAD ASSEMBLED
PROGRAMS... /2/ ABSOLUTE OR... /3/ RELOCATABLE... /4/ TO
PRODUCE LISTING OF THE CONTENTS OF CORE STORAGE... /5/ TO PUNCH
THE CONTENTS OF CORE STORAGE INTO CARDS... AND /6/ TO TEST
OBJECT PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS- A 4K SYSTEM/360 MODEL 20 WITH
A READ UNIT - 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER - 2203 OR 1403.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES, C26-3604.
MACHINE READABLE - OBJECT AND SAMPLE DECKS IN CARD FORM.

360T-UT-108   UNIVERSAL CHARACTER SET
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-108

SYSTEM/360 MODEL 20 UNIVERSAL CHARACTER SET PROVIDES FOR
LOADING THE 240-BYTE UCS BUFFER WITH ANY 8-BIT CODES THAT
ARE TO CORRESPOND TO THE 240 GRAPHIC POSITIONS ON THE PRINTER
CHAIN/TRAIN. THE USER FURNISHES THE UTILITY PROGRAM WITH
SPECIFICATION CARDS, FOUR OF WHICH CONTAIN THE 240 CHARACTERS
TO BE LOADED INTO THE UCS BUFFER.

FEATURES- THE UCS UTILITY PROGRAM IS A STAND-ALONE PROGRAM.
IT SUPPORTS THE FOLDING AND DUALING CAPABILITY. AFTER THE
BUFFER HAS BEEN LOADED, A SET OF LINES REPRESENTING THE
CHAIN/TRAIN IMAGE IS PRINTED. THIS ALLOWS VISUAL VERIFICATION
THAT THE CHAIN OR TRAIN GRAPHICS, AND THEIR POSITIONS, MATCH
THE DESIRED CHARACTER CODES. TO LOAD AND EXECUTE THE PROGRAM
TAKES LESS THAN ONE MINUTE.

MINIMUM SYSTEM AND EC LEVEL REQUIREMENTS- A PROCESSING
UNIT 2020 MODEL B2 /EC LEVEL AT LEAST 12100/, WITH UNIVERSAL
CHARACTER SET... ADAPTER... A CARD READER /2501 MODEL A1 OR A2,
2520 MODEL A1 OR 2560 MODEL A1/... A PRINTER 1403 MODEL 2
OR N1 WITH UNIVERSAL CHARACTER SET FEATURE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... UNIVERSAL
CHARACTER SET MANUAL, C26-3812.
MACHINE READABLE - OBJECT DECK IN CARD FORM.

A-360U

360U-AS-130   BASIC ASSEMBLER /TAPE/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-AS-130

THIS PROGRAM IS A MODIFICATION OF THE BASIC ASSEMBLER,
CARD VERSION. IT PROVIDES SUPPORT FOR MODEL 20 CUSTOMERS
WITH MINIMUM TAPE CONFIGURATIONS. THE LANGUAGE IS IDENTICAL
TO THAT OF THE CARD VERSION, I.E., SOURCE CARDS ARE IN
SHORT CODING FORMAT. PUNCHES IN COLUMNS 1-24 ARE IGNORED.
THE OPERATING CHARACTERISTICS DIFFER, IN THAT THE PROGRAM
USES TAPE AS INTERMEDIATE STORAGE BETWEEN PASSES. THE PROGRAM
IS LOADED FROM CARDS., SOURCE DECK INPUT IS FROM CARDS AND
OBJECT DECK OUTPUT IS ON CARDS. THIS PROGRAM IS A STAND

IBM Programs

CONTINUED FROM PRIOR PAGE--
ALONE SYSTEM. IT DOES NOT OPERATE UNDER THE TPS CONTROL
AND SERVICE PROGRAMS BELOW. THE ASSEMBLY OF A PROGRAM
CONSISTING OF 600 CARDS /FITTING INTO 4K STORAGE/, WITH
165 SYMBOLS, REQUIRES ABOUT SEVEN MINUTES.

MINIMUM SYSTEM REQUIREMENTS- A 2020 CENTRAL PROCESSING
UNIT MODEL C2 OR BC2, A CARD READER/2501 MODEL A1 OR A2, 2520
MODEL A1, OR 2560 MODEL A1/, CARD PUNCH UNIT /2520 MODEL A1-A3,
2560 MODEL A1, OR 1442 MODEL 5/ A 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4 WITH TWO 9-TRACK READ/WRITE HEADS OR -- IF ONE
OR TWO HEADS ARE 7-TRACK -- THE DATA CONVERSION FEATURE,
AND A PRINTER /1403 MODEL 2, 7, OR N1, OR 2203 MODEL A1/,
WHICH IS REQUIRED IF IT IS DESIRED TO PRINT DIAGNOSTIC MESSAGES
AND PROGRAM LISTINGS.
PACKAGE NUMBER 1 REQUIREMENTS-
AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION
ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND
ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION
OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... BASIC ASSEMBLER LANGUAGE MANUAL, C26-3602...
        OPERATING PROCEDURES, C24-9011.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE
        REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1.
        /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE
        LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR
IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE MATERIAL
INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-AS-149   TPS ASSEMBLER PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-AS-149

THE MODEL 20 TPS ASSEMBLER PROVIDES A POWERFUL LANGUAGE
FOR MACHINE-ORIENTED PROGRAMMING. IT HAS FACILITIES TO
WRITE USER MACRO DEFINITIONS FOR REPETITIVE ROUTINES AND
PROVISIONS TO USE THE I/O AND BASIC MONITOR MACROS SUPPLIED
BY IBM. SOURCE PROGRAMS WRITTEN IN EITHER MODEL 20 ASSEMBLER OR
MODEL 20 BASIC ASSEMBLER LANGUAGE AND PUNCHED INTO CARDS
ARE PROCESSED BY THE ASSEMBLER PROGRAM TO PRODUCE MACHINE
LANGUAGE PROGRAMS. OUTPUT IS PUNCHED INTO CARDS OR WRITTEN
ON TAPE IN RELOCATABLE OR ABSOLUTE FORMAT.

FEATURES- THE LANGUAGE IS A MAJOR EXTENSION OF THE MODEL 20
BASIC ASSEMBLER LANGUAGE. IT PERMITS SYMBOLS OF UP TO
8 CHARACTERS, LITERALS, CONTROL SECTION DEFINITION, AND
VARIOUS AUXILIARY FUNCTIONS. A MACRO LANGUAGE IS PROVIDED TO
WRITE MACRO DEFINITIONS FOR GENERATION OF MULTIPLE MACHINE
OR ASSEMBLER INSTRUCTIONS. USER-DEFINED MACRO INSTRUCTIONS,
AS WELL AS IBM-SUPPLIED MACRO INSTRUCTIONS, ARE RETRIEVED
FROM THE MACRO LIBRARY SECTION OF THE SYSTEM TAPE DURING THE
GENERATION PHASE. THE ASSEMBLER PROGRAM IS TAPE RESIDENT,
I.E., IT MUST BE PART OF THE PROGRAM LIBRARY SECTION OF THE
SYSTEM TAPE WHEN USED. CONTROL CARDS ARE USED TO SUPPLY
NECESSARY INFORMATION FOR ASSEMBLER OPTIONS. THE OUTPUT
TEXT IS IN EITHER ABSOLUTE OR RELOCATABLE FORMAT. DIAGNOSTICS
ARE PERFORMED ON ALL SOURCE STATEMENTS. AN OPTIONAL LISTING
IDENTIFIES CODING ERRORS BY MEANS OF ERROR MESSAGES.

PERFORMANCE DATA- SEE SRL PUBLICATION IBM SYSTEM/360 MODEL 20,
TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS-
FOR PROGRAM GENERATION -- A 2020 CENTRAL PROCESSING UNIT
MODEL C2 OR BC2... ONE 2415 MAGNETIC TAPE UNIT MODEL 2 OR 5...
ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR
2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1, OR
2203 MODEL A1/... ONE CARD PUNCH /2520 MODEL A1-A3,
2560 MODEL A1, OR 1442 MODEL 5/ IF PUNCHING IS SPECIFIED.
THREE TAPE DRIVES ARE USED, A FOURTH IS OPTIONAL AND PROVIDES
THE ABILITY TO PROCESS LITERALS OR TO PUT THE OBJECT PROGRAM
ON TAPE. ONE TAPE DRIVE MUST HAVE A 9-TRACK READ/WRITE HEAD.
IF THE OTHERS ARE 7-TRACK, THE DATA CONVERSION FEATURE IS
REQUIRED.
FOR PROGRAM EXECUTION -- REQUIREMENTS DEPEND ON USERS PROGRAM.
THE ASSEMBLER LANGUAGE SUPPORTS ALL AVAILABLE MACHINE FEATURES
AND ALL CARD AND TAPE I/O DEVICES.
PACKAGE NUMBER 3 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES.
/USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/.
THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE
BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE
INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A
CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR
MACROS BY REPLACEMENT OF CARDS.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... ASSEMBLER LANGUAGE MANUAL, C24-9002...
        OPERATING PROCEDURES, C24-9009... PERFORMANCE
        ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
        PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS
        PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A
SYSTEM GENERATION RUN.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-CL-136   TPS INITIAL PROGRAM LOADER
FOR CARD-RESIDENT SYSTEM.
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-CL-136

CONTINUED FROM PRIOR COLUMN--

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE
FOLLOWING ADVANTAGES-
- REDUCED CARD HANDLING.
- AUTOMATIC JOB-TO-JOB TRANSITION.
- SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
- ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
- EASE OF OPERATION.
- TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS
PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR A CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 1 REQUIREMENTS-
AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION
ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND
ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF
THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
        OPERATING PROCEDURES, C24-9000...
        PERFORMANCE ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE
        REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1.
        /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE
        LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR
IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM
MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-CL-137   TPS BASIC MONITOR PROGRAM OF
CARD-RESIDENT SYSTEM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-CL-137

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE
FOLLOWING ADVANTAGES-
- REDUCED CARD HANDLING.
- AUTOMATIC JOB-TO-JOB TRANSITION.
- SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
- ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
- EASE OF OPERATION.
- TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS
PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR A CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 1 REQUIREMENTS-
AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION
ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND
ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF
THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
        OPERATING PROCEDURES, C24-9000...
        PERFORMANCE ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE
        REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1.
        /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE
        LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR
IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM
MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-CL-138   TPS JOB CONTROL PROGRAM OF
CARD-RESIDENT SYSTEM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-CL-138

CONTINUED FROM PRIOR PAGE--

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE
FOLLOWING ADVANTAGES-
 - REDUCED CARD HANDLING.
 - AUTOMATIC JOB-TO-JOB TRANSITION.
 - SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
 - ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
 - EASE OF OPERATION.
 - TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS
PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR A CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 1 REQUIREMENTS-
AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION
ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND
ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF
THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
     DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
          USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
          OPERATING PROCEDURES, C24-9000...
          PERFORMANCE ESTIMATES, C24-9010.
     MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
          BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE
          REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
          TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1.
          /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE
          LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR
IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM
MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-CL-139   TPS INITIAL PROGRAM LOADER
FOR TAPE-RESIDENT SYSTEM
     ORDER THROUGH LOCAL IBM BRANCH OFFICE
     SPECIFY FILE NUMBER 360U-CL-139

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE
FOLLOWING ADVANTAGES-
 - REDUCED CARD HANDLING.
 - AUTOMATIC JOB-TO-JOB TRANSITION.
 - SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
 - ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
 - EASE OF OPERATION.
 - TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
ADDITIONAL REQUIREMENTS-
FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR
THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM
TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A
9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK,
THE DATA CONVERSION FEATURE IS REQUIRED.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS
ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A
CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 2 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH
THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS
CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD
INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE
CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF
ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
     DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
          USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
          OPERATING PROCEDURES, C24-9000...
          PERFORMANCE ESTIMATES, C24-9010.
     MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
          BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
          TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
          PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
          APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

CONTINUED FROM PRIOR COLUMN--

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-CL-140   TPS BASIC MONITOR PROGRAM OF
TAPE-RESIDENT SYSTEM
     ORDER THROUGH LOCAL IBM BRANCH OFFICE
     SPECIFY FILE NUMBER 360U-CL-140

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE
FOLLOWING ADVANTAGES-
 - REDUCED CARD HANDLING.
 - AUTOMATIC JOB-TO-JOB TRANSITION.
 - SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
 - ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
 - EASE OF OPERATION.
 - TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
ADDITIONAL REQUIREMENTS-
FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR
THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM
TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A
9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK,
THE DATA CONVERSION FEATURE IS REQUIRED.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS
ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A
CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 2 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH
THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS
CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD
INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE
CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF
ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
     DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
          USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
          OPERATING PROCEDURES, C24-9000...
          PERFORMANCE ESTIMATES, C24-9010.
     MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
          BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
          TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
          PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
          APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-CL-141   TPS JOB CONTROL PROGRAM OF
TAPE-RESIDENT SYSTEM
     ORDER THROUGH LOCAL IBM BRANCH OFFICE
     SPECIFY FILE NUMBER 360U-CL-141

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE
FOLLOWING ADVANTAGES-
 - REDUCED CARD HANDLING.
 - AUTOMATIC JOB-TO-JOB TRANSITION.
 - SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
 - ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
 - EASE OF OPERATION.
 - TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
ADDITIONAL REQUIREMENTS-
FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR
THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM
TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A
9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK,
THE DATA CONVERSION FEATURE IS REQUIRED.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS
ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A
CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 2 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH
THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS
CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD
INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE
CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF
ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

IBM Programs

CONTINUED FROM PRIOR PAGE--

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
OPERATING PROCEDURES, C24-9000...
PERFORMANCE ESTIMATES, C24-9010.
MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-IO-151   TPS INPUT/OUTPUT AND BASIC
MONITOR MACRO DEFINITIONS
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-IO-151

THE INPUT/OUTPUT MACROS RELIEVE THE USER OF PROGRAMMING
THE FUNCTIONS REQUIRED TO SERVICE MACHINE INTERRUPTS, OVERLAP
PROCESSING, AND INPUT/OUTPUT OPERATIONS FOR CARD, PRINTER, AND
MAGNETIC TAPE DEVICES. THE BASIC MONITOR MACROS ALLOW THE
PROGRAMMER TO REQUEST SERVICES OF THE BASIC MONITOR. THIS
PROGRAM CONSISTS OF A SET OF MACRO DEFINITIONS TO BE INCLUDED
IN THE MACRO LIBRARY OF THE SYSTEM TAPE. FROM THESE DEFINITIONS
THE ASSEMBLER GENERATES SPECIALIZED ROUTINES AND/OR LINKAGES
TO BE INCLUDED IN THE PROBLEM PROGRAMS. THESE ROUTINES CAN
BE USED ONLY IN CONNECTION WITH THE BASIC MONITOR.

FEATURES- IN ADDITION TO THE FEATURES PROVIDED BY THE IOCS
FOR PUNCHED CARD EQUIPMENT, THE I/O MACROS HANDLE-
- OPENING AND CLOSING OF TAPE FILES.
- WRITING, READING, AND TRANSFERRING OF BLOCKED OR UNBLOCKED
  RECORDS OF FIXED OR VARIABLE LENGTH.
- BLOCKING OR DEBLOCKING OF RECORDS.
- CHECKING AND CREATION OF STANDARD TAPE LABELS /AN EXIT IS
  PROVIDED FOR CHECKING AND CREATION OF ADDITIONAL USER
  STANDARD TAPE LABELS/.
- READ BACKWARDS.
- TAPE I/O ERROR CHECKING AND RECOVERY PROCEDURES.
THE BASIC MONITOR MACROS ALLOW ACCESS TO THE COMMUNICATION
REGION, LOADING OF PROGRAM PHASES, AND JOB-TO-JOB TRANSITION.

PERFORMANCE DATA- SEE SRL PUBLICATION IBM SYSTEM/360 MODEL 20,
TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM REQUIREMENT FOR
ASSEMBLY OF PROGRAMS CONTAINING I/O AND BASIC MONITOR MACRO
INSTRUCTIONS IS THE CONFIGURATION REQUIRED BY THE TPS
ASSEMBLER PROGRAM. THE MINIMUM CONFIGURATION FOR EXECUTION OF
SUCH PROGRAMS DEPENDS ON PROCESSING REQUIREMENTS.
PACKAGE NUMBER 3 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES.
/USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/.
THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE
BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE
INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A
CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR
MACROS BY REPLACEMENT OF CARDS.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
USERS... INPUT/OUTPUT CONTROL SYSTEM MANUAL, C24-9003...
CONTROL AND SERVICE PROGRAM MANUAL, C24-9000...
OPERATING PROCEDURES, C24-9009... PERFORMANCE
ESTIMATES, C24-9010.
MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS
PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A
SYSTEM GENERATION RUN.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-RG-148   TPS REPORT PROGRAM GENERATOR
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-RG-148

THE TPS RPG FACILITATES THE PREPARATION OF PROGRAMS TO
WRITE REPORTS, PUNCH CARDS, PERFORM FILE MAINTENANCE OPERATIONS,
READ AND WRITE TAPE RECORDS, AND UPDATE EXISTING TAPE FILES
INVOLVING CARD AND MAGNETIC TAPE INPUT/OUTPUT. THE USER
FURNISHES THE GENERATOR WITH SPECIFICATION CARDS DESCRIBING
THE INPUT, NECESSARY CALCULATIONS, DESIRED OUTPUT, FILE
DESCRIPTION, AND EXTENSION.

FEATURES- THE TPS RPG IS TAPE-RESIDENT AND HAS COMPILE-AND-GO
CAPABILITY, WITH THE OPTION OF HAVING THE MACHINE-LANGUAGE
PROGRAM PUNCHED INTO CARDS OR WRITTEN ON TAPE. IF 8K BYTES OF
CORE STORAGE ARE AVAILABLE FOR PROGRAM GENERATION ONLY, THE
TPS RPG CAN PROCESS A TOTAL OF 17 FILES /INPUT, OUTPUT,
COMBINED, AND TABLE FILES/ AND TABLES IN ANY COMBINATION.
IF THE CORE CAPACITY IS 12K BYTES, OR MORE, THE NUMBER OF
FILES AND TABLES IS NOT LIMITED BY PROGRAM GENERATION.
IN ALL CASES, HOWEVER, THE MAXIMUM NUMBER OF FILES THAT CAN
BE MATCHED WITH EACH OTHER IS THREE. THE TAPE RECORDS CAN
BE FIXED OR VARIABLE, BLOCKED OR UNBLOCKED. TAPE LABEL
CHECKING AND CREATION CONFORM TO IBM SYSTEM/360 STANDARDS.
NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED
TO ALLOW THE PROCESSING OF USER LABELS.

PERFORMANCE DATA- SEE SRL PUBLICATION IBM SYSTEM/360 MODEL 20,
TAPE PROGRAMMING SUPPORT, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS-
FOR PROGRAM GENERATION -- A 2020 CENTRAL PROCESSING UNIT
MODEL C2 OR BC2... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4 WITH
ONE 9-TRACK MAGNETIC READ/WRITE HEAD. IF THE SECOND HEAD IS
7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED...
ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR
2560 MODEL A1/... ONE PRINTER /2203 MODEL A1, OR 1403 MODEL 2, 7,
OR N1/, IF PRINTING OF DIAGNOSTIC MESSAGES IS SPECIFIED...

CONTINUED FROM PRIOR COLUMN--
ONE CARD PUNCH /2520 MODEL A1-A3, 2560 MODEL A1, OR 1442 MODEL 5/
IF PUNCHING IS SPECIFIED.
FOR PROGRAM EXECUTION -- A 2020 CENTRAL PROCESSING UNIT MODEL C2
OR BC2 AND I/O DEVICES AS SPECIFIED BY THE USER.
PACKAGE NUMBER 2 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH THIS
CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS CONFIGURATION
ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD INPUT.
CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE CREATION
OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF ALL
PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
USERS... RPG MANUAL, C24-9001... OPERATING
PROCEDURES, C24-9009... PERFORMANCE ESTIMATES, C24-9010.
MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
TAPE PROGRAMMING SYSTEM /TPS/ INCLUDED IN
TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-SL-142   TPS LOAD SYSTEM TAPE PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-SL-142

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF
THE LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM...
LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS
/I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE
PROGRAM, AND DIRECTORY SERVICE PROGRAM/.
THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-
- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF
  IBM AND/OR USER WRITTEN PROGRAMS.
- COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE, E.G.,
  FROM A 7-TRACK TO A 9-TRACK TAPE.
- LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED
  PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM
  AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED
  WITHOUT NEW ASSEMBLY.
- CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM
  AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM LIBRARY
  OF THE SYSTEM TAPE.
- MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR
  USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE
  SYSTEM TAPE.
- DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE
  CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE SYSTEM
  TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
ADDITIONAL REQUIREMENTS-
FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR
THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM
TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A
9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK,
THE DATA CONVERSION FEATURE IS REQUIRED.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS
PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR A CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 2 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH
THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS
CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD
INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE
CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES
OF ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
OPERATING PROCEDURES, C24-9000...
PERFORMANCE ESTIMATES, C24-9010.
MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-SL-143   TPS COPY SYSTEM TAPE PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-SL-143

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF
THE LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM...
LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS
/I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE
PROGRAM, AND DIRECTORY SERVICE PROGRAM/.
THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-
- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF

IBM Programs

CONTINUED FROM PRIOR PAGE--
        IBM AND/OR USER WRITTEN PROGRAMS.
- COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE, E.G.,
  FROM A 7-TRACK TO A 9-TRACK TAPE.
- LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED
  PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM
  AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED
  WITHOUT NEW ASSEMBLY.
- CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM
  AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM LIBRARY
  OF THE SYSTEM TAPE.
- MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR
  USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE
  SYSTEM TAPE.
- DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE
  CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE SYSTEM
  TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
ADDITIONAL REQUIREMENTS-
FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR
THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM
TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A
9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK,
THE DATA CONVERSION FEATURE IS REQUIRED.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS
PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR A CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 2 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH
THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS
CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD
INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE
CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES
OF ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
        OPERATING PROCEDURES, C24-9000...
        PERFORMANCE ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
        PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
        APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-SL-144   TPS DIRECTORY SERVICE
PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-SL-144

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF
THE LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM...
LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS
/I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE
PROGRAM, AND DIRECTORY SERVICE PROGRAM/.
THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-
- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF
  IBM AND/OR USER WRITTEN PROGRAMS.
- COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE, E.G.,
  FROM A 7-TRACK TO A 9-TRACK TAPE.
- LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED
  PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM
  AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED
  WITHOUT NEW ASSEMBLY.
- CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM
  AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM LIBRARY
  OF THE SYSTEM TAPE.
- MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR
  USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE
  SYSTEM TAPE.
- DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE
  CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE SYSTEM
  TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
ADDITIONAL REQUIREMENTS-
FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR
THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM
TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A
9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK,
THE DATA CONVERSION FEATURE IS REQUIRED.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS
PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR A CARD-RESIDENT SYSTEM.

CONTINUED FROM PRIOR COLUMN--
    PACKAGE NUMBER 2 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH
THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS
CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD
INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE
CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES
OF ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
        OPERATING PROCEDURES, C24-9000...
        PERFORMANCE ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
        PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
        APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-SL-145   TPS CORE-IMAGE MAINTENANCE
PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-SL-145

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF THE
LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM...
LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS
/I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE
PROGRAM, AND DIRECTORY SERVICE PROGRAM/.
THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-
- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF IBM
  AND/OR USER WRITTEN PROGRAMS.
- COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE,
  E.G., FROM A 7-TRACK TO A 9-TRACK TAPE.
- LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED
  PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM
  AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED
  WITHOUT NEW ASSEMBLY.
- CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM
  AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM
  LIBRARY OF THE SYSTEM TAPE.
- MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR
  USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE
  SYSTEM TAPE.   *
- DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE
  CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE
  SYSTEM TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
ADDITIONAL REQUIREMENTS-
FOR THE FOLLOWING SERVICE PROGRAMS, CORE IMAGE MAINTENANCE,
MACRO MAINTENANCE, AND LINKAGE EDITOR- ONE 2415 MAGNETIC TAPE
UNIT MODEL 2, 3, 5, OR 6... WITH THREE 9-TRACK READ/WRITE
HEADS. IF THE DATA CONVERSION FEATURE IS INSTALLED, ONLY
ONE 9-TRACK HEAD IS REQUIRED.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS
ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR
A CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 3 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES.
/USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/.
THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE
BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE
INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A
CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR
MACROS BY REPLACEMENT OF CARDS.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
        OPERATING PROCEDURES, C24-9000...
        PERFORMANCE ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
        PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS
        PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A
SYSTEM GENERATION RUN.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-SL-146   TPS MACRO MAINTENANCE
PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-SL-146

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF THE
LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM...
LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS
/I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE
PROGRAM, AND DIRECTORY SERVICE PROGRAM/.
THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-
- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF IBM
  AND/OR USER WRITTEN PROGRAMS.

IBM Programs

CONTINUED FROM PRIOR PAGE--
- COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE,
  E.G., FROM A 7-TRACK TO A 9-TRACK TAPE.
- LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED
  PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM
  AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED
  WITHOUT NEW ASSEMBLY.
- CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM
  AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM
  LIBRARY OF THE SYSTEM TAPE.
- MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR
  USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE
  SYSTEM TAPE.
- DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE
  CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE
  SYSTEM TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS-
BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.
ADDITIONAL REQUIREMENTS-
FOR THE FOLLOWING SERVICE PROGRAMS, CORE IMAGE MAINTENANCE,
MACRO MAINTENANCE, AND LINKAGE EDITOR- ONE 2415 MAGNETIC TAPE
UNIT MODEL 2, 3, 5, OR 6... WITH THREE 9-TRACK READ/WRITE
HEADS. IF THE DATA CONVERSION FEATURE IS INSTALLED, ONLY
ONE 9-TRACK HEAD IS REQUIRED.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS
ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR
A CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 3 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES.
/USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/.
THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE
BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE
INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A
CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR
MACROS BY REPLACEMENT OF CARDS.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
      USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
      OPERATING PROCEDURES, C24-9000...
      PERFORMANCE ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
      BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
      TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
      PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS
      PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A
SYSTEM GENERATION RUN.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-SL-147   TPS LINKAGE EDITOR PROGRAM
   ORDER THROUGH LOCAL IBM BRANCH OFFICE
   SPECIFY FILE NUMBER 360U-SL-147

   THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
   TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
   AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF THE
   LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM...
   LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS
   /I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE
   PROGRAM, AND DIRECTORY SERVICE PROGRAM/.
   THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-
   - LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF IBM
     AND/OR USER WRITTEN PROGRAMS.
   - COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE,
     E.G., FROM A 7-TRACK TO A 9-TRACK TAPE.
   - LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED
     PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM
     AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED
     WITHOUT NEW ASSEMBLY.
   - CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM
     AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM
     LIBRARY OF THE SYSTEM TAPE.
   - MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR
     USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE
     SYSTEM TAPE.
   - DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE
     CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE
     SYSTEM TAPE.

   PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
   MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
   /C24-9010/.

   MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
   FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
   ARE AS FOLLOWS-
   BASIC REQUIREMENTS-
   A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
   /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
   ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
   PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
   DISPLAYING CONTENTS OF DIRECTORIES, ETC.
   ADDITIONAL REQUIREMENTS-
   FOR THE FOLLOWING SERVICE PROGRAMS, CORE IMAGE MAINTENANCE,
   MACRO MAINTENANCE, AND LINKAGE EDITOR- ONE 2415 MAGNETIC TAPE
   UNIT MODEL 2, 3, 5, OR 6... WITH THREE 9-TRACK READ/WRITE
   HEADS. IF THE DATA CONVERSION FEATURE IS INSTALLED, ONLY
   ONE 9-TRACK HEAD IS REQUIRED.
   FOR THE LINKAGE EDITOR PROGRAM- ONE CARD PUNCH /2520 MODEL A1-A3,
   2560 MODEL A1, OR 1442 MODEL 5/ IF OUTPUT IS ON CARDS.
   EXECUTION OF USERS PROBLEM PROGRAMS-
   1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
   THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS
   ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR
   A CARD-RESIDENT SYSTEM.

CONTINUED FROM PRIOR COLUMN--
   PACKAGE NUMBER 3 REQUIREMENTS-
   AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES.
   /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/.
   THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE
   BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE
   INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A
   CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR
   MACROS BY REPLACEMENT OF CARDS.

   BASIC PROGRAM MATERIAL -
       DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
         USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
         OPERATING PROCEDURES, C24-9000...
         PERFORMANCE ESTIMATES, C24-9010.
       MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
         BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
         TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
         PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS
         PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

   NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
   PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A
   SYSTEM GENERATION RUN.
   DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

   THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-SM-150   TPS SORT/MERGE PROGRAM
   ORDER THROUGH LOCAL IBM BRANCH OFFICE
   SPECIFY FILE NUMBER 360U-SM-150

   THE SORT/MERGE PROGRAM ALLOWS THE MODEL 20 TAPE USER TO
   SORT TAPE FILES INTO ASCENDING AND/OR DESCENDING SEQUENCE
   AND TO MERGE PRE-SEQUENCED TAPE FILES. FOR OBJECT PROGRAM
   EXECUTION, THE OPERATOR SUPPLIES THE REQUIRED CONTROL INFORMATION
   IN FORM OF CONTROL CARDS.

   FEATURES- THE TPS SORT/MERGE PROGRAM SORTS BINARY DATA
   /INCLUDING ALPHAMERIC CHARACTERS/, FIXED-POINT INTEGERS,
   PACKED OR UNPACKED DECIMAL NUMBERS CONTAINED IN BLOCKED OR
   UNBLOCKED RECORDS OF FIXED OR VARIABLE LENGTH IN AN
   ASCENDING AND/OR DESCENDING ORDER. IT ALSO MERGES PRE-SEQUENCED
   FILES /2-5 FILES/. OPERATIONS ARE PERFORMED ACCORDING TO
   CONTROL DATA CONTAINED IN UP TO 12 FIELDS OF EACH RECORD,
   WITH A MAXIMUM LENGTH OF 256 BYTES FOR ALL CONTROL FIELDS.
   WHEN MERGING, THE SEQUENCE OF ALL FILES IS CHECKED. THE
   PROGRAM PROVIDES FOR EXITS TO USER-WRITTEN ROUTINES AS WELL
   AS FOR CHECKPOINTS AND RESTART. TAPE INPUT AND/OR OUTPUT
   FILES CAN BE CONTAINED IN MORE THAN ONE REEL, OR SELECTED
   FROM OR WRITTEN ON A REEL CONTAINING MORE THAN ONE FILE.
   TAPE LABEL CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360
   STANDARDS AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS
   PROVIDED TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS
   FROM THE USER. THE PROGRAM RUNS UNDER SUPERVISION OF THE
   CONTROL PROGRAMS FOR EITHER THE CARD OR THE TAPE-RESIDENT
   SYSTEM.

   PERFORMANCE DATA- SEE SRL PUBLICATION IBM SYSTEM/360
   MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
   /C24-9010/.

   MINIMUM SYSTEM REQUIREMENTS- A 2020 CENTRAL PROCESSING UNIT
   MODEL C2 OR BC2... A 2501 MODEL A1 OR A2 CARD READER, 2520 MODEL
   A1 CARD READ PUNCH OR 2560 MODEL A1MFCM... A 1403 MODEL 2, 7 OR
   N1 OR 2203 MODEL A1 PRINTER FOR PRINTING OF ERROR AND
   DIAGNOSTIC MESSAGES... ONE 2415 MODEL 2 OR 5 MAGNETIC TAPE UNIT.
   AT LEAST THREE TAPE DRIVES ARE REQUIRED FOR THE PROGRAM ITSELF.
   A FOURTH TAPE DRIVE IS REQUIRED, IF THE PROGRAM IS RUN FROM
   THE SYSTEM TAPE.
   PACKAGE NUMBER 3 REQUIREMENTS-
   AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES.
   /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/.
   THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE
   BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE
   INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A
   CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR
   MACROS BY REPLACEMENT OF CARDS.

   RESTRICTIONS ON TAPE DRIVE CONFIGURATIONS-
   WITH 9-TRACK INPUT TAPES AND/OR 7-TRACK INPUT TAPES, THAT
   WERE CREATED WITH THE DATA CONVERSION FEATURE TURNED ON,
   OUTPUT TAPES MUST BE 9-TRACK TAPES AND/OR 7-TRACK TAPES WITH
   THE DATA CONVERSION FEATURE TURNED ON. FOR SORTING, 9-TRACK
   WORK TAPES MUST BE USED. WITH 7-TRACK INPUT TAPES, THAT
   WERE CREATED WITH THE DATA CONVERSION FEATURE TURNED OFF,
   OUTPUT TAPES CAN BE EITHER 9-TRACK OR 7-TRACK TAPES.
   FOR SORTING, WORK TAPES MAY BE EITHER 9-TRACK OR 7-TRACK.
   ALL 7-TRACK TAPES USED IN A GIVEN SORT OR MERGE OPERATION
   MUST HAVE THE SAME CHARACTERISTICS. FOR EXAMPLE, IF THE
   TRANSLATE CAPABILITY OF THE COMPATIBILITY SPECIAL FEATURE
   IS USED WHEN 7-TRACK INPUT TAPES ARE CREATED, IT MUST BE
   USED WITH ALL 7-TRACK WORK OR OUTPUT TAPES. FILES OF
   VARIABLE-LENGTH RECORDS TO BE SORTED OR MERGED MUST BE
   CREATED ON 9-TRACK TAPES OR ON 7-TRACK TAPES WITH THE
   DATA CONVERSION SPECIAL FEATURE TURNED ON. THEREFORE,
   PER THE ABOVE, 9-TRACK WORK TAPES MUST BE USED WHEN SORTING
   VARIABLE-LENGTH RECORDS. CHECKPOINT RECORDS WILL BE WRITTEN
   ONLY ON 9-TRACK WORK TAPES OR 7-TRACK WORK TAPES WITH THE
   DATA CONVERSION FEATURE.

   BASIC PROGRAM MATERIAL -
       DOCUMENTATION - SORT/MERGE PROGRAM MANUAL, C26-3804...
         OPERATING PROCEDURES, C24-9009... PERFORMANCE
         ESTIMATES, C24-9010.
       MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
         BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
         TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
         PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS
         PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

   NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
   PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A
   SYSTEM GENERATION RUN.
   DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

   THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-UT-131   TPS TAPE-TO-TAPE UTILITY
PROGRAM
   ORDER THROUGH LOCAL IBM BRANCH OFFICE
   SPECIFY FILE NUMBER 360U-UT-131

IBM Programs

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BY PROVIDING GENERALIZED ROUTINES, THE TAPE UTILITY PROGRAMS
REDUCE THE NEED FOR REPETITIVE PROGRAMMING OF CERTAIN OPERATIONS
THAT ARE PERFORMED FREQUENTLY. THE PROGRAMS ASSIST THE
USER IN THE DAY-TO-DAY OPERATION OF HIS INSTALLATION BY
PROVIDING FOR THE TRANSFER OF DATA FROM ONE MEDIUM TO ANOTHER.
A UTILITY MODIFIER CARD, PROVIDED FOR THE INPUT AND OUTPUT
FILE, ALLOWS THE USER TO SPECIFY THE BLOCKING FACTOR,
RECORD LENGTH, CONTROL FIELDS, ETC. A FIELD SELECTION CARD
FURNISHES INFORMATION TO THE PROGRAM FOR TRANSFERRING FIELDS
FROM AN INPUT RECORD TO THE SAME OR A DIFFERENT RELATIVE
POSITION OF THE OUTPUT RECORD AND FOR SIMULTANEOUSLY
CONVERTING THE DATA TO A DIFFERENT FORMAT. HEADER CARDS
CAN BE USED TO PROVIDE TITLES FOR THE PAGES OF PRINTED OUTPUT.

FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM,
THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT
MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS-
COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT.
PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF
THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED
LISTING OF THE INFORMATION IN CORE STORAGE /LIST/.
TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN
ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING
MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND
SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL
CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS,
AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED
TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE
USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE
UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS
FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT
MODEL B2 OR BC2... A CARD READING DEVICE /2501 MODEL A1 OR A2,
2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE
TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2...
ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR
2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4
WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE
UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND
DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY
PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER.
PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND
TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO
USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE
TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL
PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... UTILITY PROGRAMS MANUAL, C26-3808...
        CARD RESIDENT OPERATING PROCEDURES, C26-3809...
        OPERATING PROCEDURES, C24-9009... PERFORMANCE
        ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE
        REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1.
        /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE
        LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR
IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM
MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-UT-132   TPS TAPE-TO-CARD UTILITY
PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-UT-132

BY PROVIDING GENERALIZED ROUTINES, THE TAPE UTILITY PROGRAMS
REDUCE THE NEED FOR REPETITIVE PROGRAMMING OF CERTAIN OPERATIONS
THAT ARE PERFORMED FREQUENTLY. THE PROGRAMS ASSIST THE
USER IN THE DAY-TO-DAY OPERATION OF HIS INSTALLATION BY
PROVIDING FOR THE TRANSFER OF DATA FROM ONE MEDIUM TO ANOTHER.
A UTILITY MODIFIER CARD, PROVIDED FOR THE INPUT AND OUTPUT
FILE, ALLOWS THE USER TO SPECIFY THE BLOCKING FACTOR,
RECORD LENGTH, CONTROL FIELDS, ETC. A FIELD SELECTION CARD
FURNISHES INFORMATION TO THE PROGRAM FOR TRANSFERRING FIELDS
FROM AN INPUT RECORD TO THE SAME OR A DIFFERENT RELATIVE
POSITION OF THE OUTPUT RECORD AND FOR SIMULTANEOUSLY
CONVERTING THE DATA TO A DIFFERENT FORMAT. HEADER CARDS
CAN BE USED TO PROVIDE TITLES FOR THE PAGES OF PRINTED OUTPUT.

FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM,
THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT
MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS-
COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT.
PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF
THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED
LISTING OF THE INFORMATION IN CORE STORAGE /LIST/.
TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN
ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING
MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND
SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL
CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS,
AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED
TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE
USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE
UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS
FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT
MODEL B2 OR BC2... A CARD READING DEVICE /2501 MODEL A1 OR A2,
2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE
TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2...

CONTINUED FROM PRIOR COLUMN--
ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR
2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4
WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE
UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND
DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY
PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER.
FOR THE TAPE-TO-CARD UTILITY PROGRAM- ONE CARD PUNCH
/2520 MODEL A1-A3, 2560 MODEL A1, OR 1442 MODEL 5/.
PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND
TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO
USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE
TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL
PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... UTILITY PROGRAMS MANUAL, C26-3808...
        CARD RESIDENT OPERATING PROCEDURES, C26-3809...
        OPERATING PROCEDURES, C24-9009... PERFORMANCE
        ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE
        REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1.
        /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE
        LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR
IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM
MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-UT-133   TPS CARD-TO-TAPE UTILITY
PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-UT-133

BY PROVIDING GENERALIZED ROUTINES, THE TAPE UTILITY PROGRAMS
REDUCE THE NEED FOR REPETITIVE PROGRAMMING OF CERTAIN OPERATIONS
THAT ARE PERFORMED FREQUENTLY. THE PROGRAMS ASSIST THE
USER IN THE DAY-TO-DAY OPERATION OF HIS INSTALLATION BY
PROVIDING FOR THE TRANSFER OF DATA FROM ONE MEDIUM TO ANOTHER.
A UTILITY MODIFIER CARD, PROVIDED FOR THE INPUT AND OUTPUT
FILE, ALLOWS THE USER TO SPECIFY THE BLOCKING FACTOR,
RECORD LENGTH, CONTROL FIELDS, ETC. A FIELD SELECTION CARD
FURNISHES INFORMATION TO THE PROGRAM FOR TRANSFERRING FIELDS
FROM AN INPUT RECORD TO THE SAME OR A DIFFERENT RELATIVE
POSITION OF THE OUTPUT RECORD AND FOR SIMULTANEOUSLY
CONVERTING THE DATA TO A DIFFERENT FORMAT. HEADER CARDS
CAN BE USED TO PROVIDE TITLES FOR THE PAGES OF PRINTED OUTPUT.

FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM,
THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT
MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS-
COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT.
PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF
THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED
LISTING OF THE INFORMATION IN CORE STORAGE /LIST/.
TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN
ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING
MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND
SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL
CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS,
AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED
TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE
USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE
UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS
FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT
MODEL B2 OR BC2... A CARD READING DEVICE /2501 MODEL A1 OR A2,
2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE
TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2...
ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR
2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4
WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE
UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND
DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY
PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER.
PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND
TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO
USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE
TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL
PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... UTILITY PROGRAMS MANUAL, C26-3808...
        CARD RESIDENT OPERATING PROCEDURES, C26-3809...
        OPERATING PROCEDURES, C24-9009... PERFORMANCE
        ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE
        REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1.
        /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE
        LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR
IS REQUIRED. IF NOT SPECIFIED 9 TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM
MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-UT-134   TPS TAPE-TO-PRINTER UTILITY
PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-UT-134

IBM Programs

BY PROVIDING GENERALIZED ROUTINES, THE TAPE UTILITY PROGRAMS
REDUCE THE NEED FOR REPETITIVE PROGRAMMING OF CERTAIN OPERATIONS
THAT ARE PERFORMED FREQUENTLY. THE PROGRAMS ASSIST THE
USER IN THE DAY-TO-DAY OPERATION OF HIS INSTALLATION BY
PROVIDING FOR THE TRANSFER OF DATA FROM ONE MEDIUM TO ANOTHER.
A UTILITY MODIFIER CARD, PROVIDED FOR THE INPUT AND OUTPUT
FILE, ALLOWS THE USER TO SPECIFY THE BLOCKING FACTOR,
RECORD LENGTH, CONTROL FIELDS, ETC. A FIELD SELECTION CARD
FURNISHES INFORMATION TO THE PROGRAM FOR TRANSFERRING FIELDS
FROM AN INPUT RECORD TO THE SAME OR A DIFFERENT RELATIVE
POSITION OF THE OUTPUT RECORD AND FOR SIMULTANEOUSLY
CONVERTING THE DATA TO A DIFFERENT FORMAT. HEADER CARDS
CAN BE USED TO PROVIDE TITLES FOR THE PAGES OF PRINTED OUTPUT.

FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM,
THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT
MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS-
COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT.
PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF
THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED
LISTING OF THE INFORMATION IN CORE STORAGE /LIST/.
TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN
ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING
MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND
SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL
CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS,
AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED
TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE
USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE
UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS
FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT
MODEL B2 OR BC2... A CARD READING DEVICE /2501 MODEL A1 OR A2,
2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE
TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2...
ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR
2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4
WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE
UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND
DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY
PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER.
PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND
TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO
USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE
TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL
PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... UTILITY PROGRAMS MANUAL, C26-3808...
        CARD RESIDENT OPERATING PROCEDURES, C26-3809...
        OPERATING PROCEDURES, C24-9009... PERFORMANCE
        ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE
        REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1.
        /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE
        LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR
IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM
MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS
FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT
MODEL B2 OR BC2... A CARD READING DEVICE /2501 MODEL A1 OR A2,
2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE
TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2...
ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR
2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4
WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE
UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND
DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY
PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER.
PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND
TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO
USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE
TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL
PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
    DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
        USERS... UTILITY PROGRAMS MANUAL, C26-3808...
        CARD RESIDENT OPERATING PROCEDURES, C26-3809...
        OPERATING PROCEDURES, C24-9009... PERFORMANCE
        ESTIMATES, C24-9010.
    MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
        BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE
        REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
        TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1.
        /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE
        LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR
IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM
MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-UT-135   TPS INITIALIZE TAPE UTILITY
PROGRAM
    ORDER THROUGH LOCAL IBM BRANCH OFFICE
    SPECIFY FILE NUMBER 360U-UT-135

BY PROVIDING GENERALIZED ROUTINES, THE TAPE UTILITY PROGRAMS
REDUCE THE NEED FOR REPETITIVE PROGRAMMING OF CERTAIN OPERATIONS
THAT ARE PERFORMED FREQUENTLY. THE PROGRAMS ASSIST THE
USER IN THE DAY-TO-DAY OPERATION OF HIS INSTALLATION BY
PROVIDING FOR THE TRANSFER OF DATA FROM ONE MEDIUM TO ANOTHER.
A UTILITY MODIFIER CARD, PROVIDED FOR THE INPUT AND OUTPUT
FILE, ALLOWS THE USER TO SPECIFY THE BLOCKING FACTOR,
RECORD LENGTH, CONTROL FIELDS, ETC. A FIELD SELECTION CARD
FURNISHES INFORMATION TO THE PROGRAM FOR TRANSFERRING FIELDS
FROM AN INPUT RECORD TO THE SAME OR A DIFFERENT RELATIVE
POSITION OF THE OUTPUT RECORD AND FOR SIMULTANEOUSLY
CONVERTING THE DATA TO A DIFFERENT FORMAT. HEADER CARDS
CAN BE USED TO PROVIDE TITLES FOR THE PAGES OF PRINTED OUTPUT.

FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM,
THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT
MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS-
COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT.
PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF
THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED
LISTING OF THE INFORMATION IN CORE STORAGE /LIST/.
THE INITIALIZE UTILITY PROGRAM CAN BE USED TO WRITE VOLUME
LABELS ON TAPE REELS.
TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN
ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING
MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND
SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL
CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS,
AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED
TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE
USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE
UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

Contributed Programs

360D-00.1.001　MULTIUTILITY PROGRAM
INPUT/OUTPUT PERIFERAL SUPPORT TO 7090/94
　　AVAILABLE 3RD QUARTER 1967.
　　SPECIFY FILE NUMBER 360D-00.1.001

AUTHOR...M.W. RICCIARDELLI

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　　　BUFFALO, N.Y. 14240

　　　TITLE...MULTI INPUT TIME SHARING SYSTEM /MITS/
　　　　　***S　BL　　MITS　11.0　12.0　　　　　***

　　　THE MULTI-UTILITY PACKAGE IS DESIGNED TO SUPPORT THE
　　　INPUT/OUTPUT NEEDS OF A 7090/94 WITH RESPECT TO,
　　　/1/　TAPE TO PRINT　/T TO P/.
　　　/2/　TAPE TO CARD　/T TO C/.
　　　/3/　CARD TO CARD　/C TO C/.
　　　/4/　CARD TO PRINT　/C TO P/.
　　　/5/　CARD TO TAPE　/C TO T/.
　　　THE ABOVE OPTIONS 1, 2, AND 5 ARE RE-ENTERABLE SO AS TO
　　　FACILITATE MULTIPLE PRINTERS AND CARD READ/PUNCH DEVICES.
　　　THE PROGRAM WILL DO ANY THREE FUNCTIONS SIMULTANEOUSLY AND
　　　KEEP THE UNIT RECORD EQUIPMENT MOVING AT FULL SPEED.
　　　DISTRIBUTION TAPE CONTAINS 3 FILES IN 9 TRACK MODE.
　　　1. 2335 RECORDS OF SOURCE CARDS. 80 BYTE RECORDS.
　　　2. 3221 RECORDS OF LISTING. 132 BYTE RECORDS.
　　　3. 133 RECORDS OF OBJECT DECK. 80 BYTE RECORDS.

　　　THE BASIC MACHINE READABLE MATERIAL CAN BE ORDERED ON EITHER
　　　9- OR 7-TRACK TAPE. IF 7-TRACK IS REQUESTED THE DATA
　　　CONVERSION FEATURE IS REQUIRED. EITHER 9- OR 7-TRACK TAPE
　　　MUST BE INDICATED ON THE PROGRAM REQUEST CARD. IF NOT
　　　SPECIFIED, 9-TRACK TAPE WILL BE FORWARDED. THE ONE REEL OF
　　　TAPE NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY BE SUPPLIED
　　　OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE SHOULD
　　　BE 2400 FEET IN LENGTH.

360D-00.1.002　SIMULTANEOUS CARD-TO-TAPE
PUNCH TAPE-TO-PRINT
　　AVAILABLE 3RD QUARTER 1967.
　　SPECIFY FILE NUMBER 360D-00.1.002

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　　　TITLE...S/360 PERIPHERAL PROGRAM
　　　　　***N　　　　　00.3　06.0　　　　　***

　　　THIS PROGRAM WILL PERFORM SIMULTANEOUSLY CARD-TO-TAPE,
　　　TAPE-TO-PUNCH, AND TAPE-TO-PRINT ON A 32K MODEL 30 WITH FOUR
　　　1403-3 PRINTERS, FIVE 2400 TAPE DRIVES AND ONE 2540 CARD-READ
　　　PUNCH, MAINTAINING NEAR MAXIMUM SPEED ON ALL UNITS. THE
　　　PROGRAM IS WRITTEN SO THAT I/O DEVICES MAY BE ADDED OR
　　　REMOVED WITH VERY LITTLE PROGRAMMING CHANGE. IN ADDITION TO THE
　　　PRIMARY FUNCTIONS MENTIONED, TAPES MAY BE ENDED AND RESTARTED
　　　AT SPECIFIED LOCATIONS, STATISTICAL INFORMATION IS PRODUCED,
　　　AND CONTROL CARDS OR INFORMATION ENTERED THROUGH THE 1052
　　　DETERMINE THE METHOD OF PROCESSING. THE PROGRAM IS WRITTEN
　　　IN 360 ALP. THE BPS SUPERVISOR IS USED, HOWEVER, PATCHES
　　　HAVE BEEN MADE SO THAT WHEN ONE DEVICE GOES OUT OF READY
　　　OTHER OPERATING DEVICES MAY CONTINUE.

　　　THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK
　　　OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF
　　　MAGNETIC TAPE. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR
　　　IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE
　　　2400 FEET IN LENGTH.

360D-00.1.003　MULTIPLE UTILITY CHANGE
CREATE DISK TAPE LABEL IDENTIFICATION
　　AVAILABLE 3RD QUARTER 1967.
　　SPECIFY FILE NUMBER 360D-00.1.003

AUTHORS..MR. M.J. FRANCO　J.B. BLOMQUIST

DIRECT INQUIRIES TO..
　　　MR. M.J. FRANCO,IBM CORP.,360/PROG. CTR.,BLDG. 985,
　　　POUGHKEEPSIE, N.Y.

　　　TITLE...CLIP/360 CHANGE OR CREATE LABEL IDENTIFICATION PROGRAM
　　　　　FOR DISK AND TAPE
　　　　　***N　　　　01.4　00.3　00.4　　　***

　　　CLIP IS A STAND-ALONE, SELF-LOADING CARD PROGRAM WRITTEN IN
　　　SYSTEM/360 ASSEMBLER LANGUAGE, CAPABLE OF DOING SINGLE OR
　　　MULTIPLE JOBS INCLUDING ANY ONE OR ALL OF THE FOLLOWING
　　　FUNCTIONS-
　　　1-CHANGE THE VOLUME SERIAL NUMBER OF A PREVIOUSLY INITIALIZED
　　　　1316 DISK PACK.
　　　2-CHANGE THE NAME IDENTIFICATION OF A PREVIOUSLY INITIALIZED
　　　　1316 DISK PACK.
　　　3-CHANGE THE SECURITY OF A PREVIOUSLY INITIALIZED 1316 DISK
　　　　PACK.
　　　4-CREATE A VOLUME LABEL ON TAPE/S/ MOUNTED ON IBM SERIES
　　　　2400 TAPE DRIVE/S/.
　　　CLIP ELIMINATES THE RERUNNING OF A DASDI /DIRECT ACCESS
　　　STORAGE DEVICE INITIALIZATION/ PROGRAM TO CHANGE THE VOLUME
　　　IDENTIFICATION OF A DISK PACK. THE USE OF CLIP CAN SAVE AS MUCH
　　　AS FIVE /5/ MINUTES OF MACHINE TIME NEEDED TO RUN THE COMPLETE
　　　DASDI PROGRAM. CLIP WILL ONLY CHANGE THE VOLUME
　　　IDENTIFICATION RECORD /CYLINDER 0, TRACK 0, RECORD 3/ OF A DISK
　　　PACK. VALID DATA ON THE DISK PACK IS NOT DESTROYED, AS IT WOULD
　　　BE, IF THE DASDI PROGRAM WERE USED. ADDITIONAL CONVENIENCE
　　　IS AFFORDED IN THE PROGRAMS ABILITY TO CREATE VOLUME LABELS
　　　ON TAPE. INPUT /DEVICE AND LABEL IDENTIFICATION INFORMATION/
　　　**TO CLIP IS ACCEPTED VIA PUNCHED CARDS, OR VIA THE CONSOLE
　　　TYPEWRITER.** CLIP HAS BEEN TESTED ON SYSTEM/360 MODELS 30, 40,
　　　50, AND 65. THE MACHINE CONFIGURATION REQUIRED TO LOAD AND
　　　EXECUTE CLIP IS- 16K BYTES OF CORE STORAGE... 1 CARD READER
　　　/2540 OR 1442/... 1 CONSOLE TYPEWRITER... 1 2311 DISK DRIVE...
　　　1 TAPE DRIVE /2400 SERIES MODEL 1, 2, OR 3/.

　　　TO OBTAIN THE OPTIONAL PROGRAM MATERIAL ONE REEL OF MAGNETIC
　　　TAPE IS REQUIRED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED
　　　ON THE ORDER CARD. THE TAPE NECESSARY TO OBTAIN THE OPTIONAL
　　　PROGRAM MATERIAL MAY BE SUPPLIED OR ORDERED FROM YOUR IBM
　　　REPRESENTATIVE. THE TAPE SHOULD BE 2400 FEET IN LENGTH.

360D-00.1.004　CONCURRENT PERIPHERAL
UTILITY FUNCTIONS OS/360 MFT PARTITION
　　AVAILABLE 3RD QUARTER 1967.
　　SPECIFY FILE NUMBER 360D-00.1.004

AUTHOR...MR. W.C. GOODLETT

DIRECT INQUIRIES TO..
　　　MR. JOHN FLINT,IBM CORP.,112 E. POST RD.,WHITE PLAINS, N.Y.

　　　TITLE...CPO - OS/360 MFT CONCURRENT PERIPHERAL OPERATIONS
　　　　　***N　　　　00.3　00.4　06.0　　　***

　　　THE CPO PROGRAM PROVIDES FOR CONCURRENT EXECUTION OF UP
　　　TO 36 PERIPHERAL UTILITY FUNCTIONS WITHIN A SINGLE, CONTINUOUSLY
　　　RUNNING PARTITION OF AN OS/360 MFT SYSTEM. ASYNCHRONOUS
　　　INITIATION OF UTILITY FUNCTIONS IS UNDER CONSOLE-OPERATOR
　　　CONTROL. BLOCKING AND DEBLOCKING OF RECORDS BETWEEN UNIT
　　　RECORD AND MAGNETIC TAPE OR DASD UNITS IS SUPPORTED. USE OF
　　　COMMAND CHAINING IN SCHEDULING I/O DEVICES ALLOWS MAXIMUM
　　　THRUPUT WITH A MINIMUM IMPACT ON OTHER PARTITIONS. FACILITIES
　　　FOR INCORPORATING USER MODIFICATIONS ARE PROVIDED. CPO CAN
　　　BE RUN UNDER ANY OS/360 MFT CONFIGURATION WITH I/O DEVICES
　　　AVAILABLE FOR ASSIGNMENT TO THE CPO FUNCTIONS. A 20K
　　　PARTITION IS REQUIRED FOR EFFECTIVE OPERATION. CPO IS WRITTEN
　　　IN OS/360 ASSEMBLER LANGUAGE.

　　　THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 2400
　　　FOOT REEL OF MAGNETIC TAPE. THIS TAPE MAY BE ORDERED FROM
　　　YOUR IBM REPRESENTATIVE OR SUPPLIED.

360D-00.1.005　TAPE DISK DATA CELL DUMP
PRINT HEXIDECIMAL EBCDIC
　　AVAILABLE 3RD QUARTER 1967.
　　SPECIFY FILE NUMBER 360D-00.1.005

AUTHOR...C.W. KASTNER

DIRECT INQUIRIES TO..
　　　C.W. KASTNER,IBM CORP.,1011 SAN JACINTO,AUSTIN, TEXAS 78701

　　　TITLE...DOS TAPE, DISK, DATA CELL DUMP
　　　　　N　　　　04.1　00.3　00.4　00.5

　　　THIS IS A GENERALIZED DUMP UTILITY IN THAT IT WILL DUMP
　　　ANY TAPE /7 OR 9 TRACK, LABELED OR UNLABELED, ETC./ AND WILL
　　　DUMP ANY 2311 OR 2321 TRACK /I.E., VOL NUMBER, VTOC,
　　　ALTERNATE TRACK, ETC./. IT OPERATES UNDER 16K DOS AND REQUIRES
　　　32K CORE. FOR ALL FILES, THE USER CAN PRINT IN EITHER
　　　VERTICAL HEX AND EBDIC, HORIZONTAL HEX AND EBDIC, HEX ONLY,
　　　OR EBDIC ONLY, AND CAN PRINT THE FIRST N LINES OF EACH
　　　LOGICAL TAPE RECORD OR EACH DASD BLOCK. FOR TAPE FILES,
　　　THE USER CAN CONTROL REWINDING, DEBLOCK RECORDS, PRINT
　　　MULTIPLE FILES, SKIP DOWN N TAPE BLOCKS BEFORE BEGINNING
　　　DUMPING, PRINT THE FIRST N RECORDS OF A FILE, THEN SKIP TO NEXT
　　　EOF MARK, BACKSPACE AND DUMP THE LAST 5 TAPE BLOCKS, FORWARD
　　　SPACE OR BACKSPACE TAPE BY CONSOLE CONTROL, AND HAS THE
　　　OPTION OF PRINTING REPORT TAPES UNDER SINGLE SPACE OR FIRST
　　　CHARACTER CARRIAGE CONTROL. WRITTEN IN ASSEMBLY LANGUAGE
　　　AND REQUIRES 32K MEMORY.

　　　THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
　　　OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
　　　REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
　　　9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
　　　NO TAPE SUBMITTAL IS REQUIRED.

360D-00.1.006　DOS/TOS CARD-TO-CARD
CARD-TO-PRINT CARD-TO-TAPE TAPE-TO-CARD TAPE-TO-PRINT TAPE-TO-TAPE
　　AVAILABLE 3RD QUARTER 1967.
　　SPECIFY FILE NUMBER 360D-00.1.006

AUTHOR...MR. D. HANKERSON

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　　　MR. D. HANKERSON,IBM CORP.,3424 N. CENTRAL,
　　　PHOENIX, ARIZ. 85012

　　　TITLE...DOS/TOS DEBE UTILITY PROGRAM
　　　　　***N　　　　00.3　00.4　06.0　　　***

　　　DOS/TOS - DEBE UTILITY PROGRAM IS AN ADAPTATION OF ,,DEBE
　　　UTILITY PROGRAMS,, TO THE DISK AND TAPE OPERATING SYSTEMS.
　　　DOS/TOS - DEBE UTILITY PROGRAM PERFORMS THE FOLLOWING
　　　FUNCTIONS IN CONJUNCTION WITH THE DISK OR TAPE OPERATING
　　　SYSTEM- CARD TO CARD, CARD TO PRINTER, CARD TO TAPE,
　　　TAPE TO CARD /80 CHARACTER, FIXED LENGTH, BLOCKED OR UNBLOCKED
　　　RECORDS/, TAPE TO PRINT /BCD OR HEXIDECIMAL/, TAPE TO TAPE,
　　　AND FOUR TAPE CONTROL FUNCTIONS. SELECTION OF THE DESIRED
　　　UTILITY FUNCTION IS ACCOMPLISHED FROM THE 1050 CONSOLE
　　　TYPEWRITER OR FROM OPTION CONTROL CARDS IN THE INPUT JOB
　　　STREAM. THE PROGRAMS ARE INTERRUPTABLE AND AN EXTERNAL
　　　INTERRUPT CAUSES THE PROGRAM TO REQUEST THE NEXT PROGRAM ID.
　　　MACHINE REQUIREMENTS ARE THOSE NECESSARY TO RUN DOS/TOS.

　　　THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
　　　ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
　　　REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
　　　9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
　　　NO TAPE SUBMITTAL IS REQUIRED.

360D-00.1.009　BPS CARD TAPE PRINTER
UTILITIES
　　AVAILABLE 3RD QUARTER 1967.
　　SPECIFY FILE NUMBER 360D-00.1.009

AUTHOR...MR. L.G. DEFRANCE

Contributed Programs

CONTINUED FROM PRIOR PAGE--

DIRECT INQUIRIES TO..
MR. L.G. DEFRANCE,IBM CORP.,100 S. WACKER DR.,CHICAGO, ILL. 66606

TITLE...DEBE - UTILITIES PROGRAMS
****N   00.3 06.0 08.4 08.5***

THE SYSTEM/360 DEBE UTILITIES IS A COLLECTION OF CARD, TAPE,
AND PRINTER UTILITIES WRITTEN AS A SINGLE MODULE IN IBM BPS
ASSEMBLER LANGUAGE /8K TAPE/. UP TO 10,000 BYTE RECORD
LENGTHS ARE ACCEPTED BY THE TAPE UTILITIES EXCEPTING THE CARD
TO TAPE AND TAPE TO CARD WHICH ARE LIMITED TO 80 BYTE RECORDS.
TAPE TO TAPE, TAPE TO PRINTER, /HEXIDECIMAL OR BCD/,
CARD TO CARD, CARD TO PRINTER, WRITE TAPEMARK, AND FOUR TAPE
POSITIONING ROUTINES ARE THE REMAINING FUNCTIONS. MINIMUM
MACHINE REQUIREMENTS ARE- 16K STORAGE, DECIMAL ARITHMETIC,
AND 2540 CARD READER PUNCH, 2400 TAPE DRIVES, 1403 PRINTER
AS REQUIRED FOR ASSEMBLY OR THE SELECTED DEBE FUNCTION.
THE 1050 CONSOLE TYPEWRITER IS REQUIRED FOR SELECTING THE
DEBE FUNCTION, ASSIGNING TAPE DRIVE ADDRESSES, AND SELECTING
THE MODE FOR 7 TRACK TAPE DRIVE OPERATIONS.

360D-00.2.001   BPS BOS FORTRAN FLOWCHART
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.2.001

AUTHOR...G.E. GAUTNEY, JR.

DIRECT INQUIRIES TO..
G.E. GAUTNEY, JR.,CORNING GLASS WORKS,CORNING, N.Y.

TITLE...BPS BOS FORTRAN FLOWCHART PROGRAM
***S CGW   FLOW 02.0 04.0   ***

THE BPS/BOS FORTRAN FLOWCHART PROGRAM IS INTENDED PRIMARILY
AS A DEBUGGING OR DOCUMENTATION AID. IT ACCEPTS AS INPUT
BPS OR BOS FORTRAN SOURCE PROGRAMS AND PREPARES AUTOMATICALLY
A BLOCK DIAGRAM FLOW CHART OF THE INPUT PROGRAM. PROGRAM
SOURCE LANGUAGE IS BPS FORTRAN BUT CAN ALSO BE USED AS A
BOS FORTRAN PROGRAM SINCE NO STATEMENTS UNIQUE TO EITHER
VERSION OF 360 FORTRAN ARE USED. STORAGE USED 10,000 BYTES.
MINIMUM MACHINE REQUIREMENTS FOR BPS/BOS FORTRAN ARE ADEQUATE.

THE MACHINE READABLE MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
DISTRIBUTION TAPE REEL /DTR/. IF TRACK REQUIREMENT IS NOT
SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL
IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-00.2.002   DOS FLOWCHARTER
CROSS-REFERENCE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.2.002

AUTHOR...MR. D.L. FISHER

DIRECT INQUIRIES TO..
MR. D.L. FISHER,IBM CORP.,BLDG. 051,MONTEREY + COTTLE RDS.,
SAN JOSE, CALIF.

TITLE...SYSTEMS FLOW CHARTER FOR DOS
****N   06.8 06.6   ***

THE PROGRAM IS A S/360 - DOS SYSTEMS FLOW CHARTER, WRITTEN
IN ASSEMBLY LANGUAGE. THE MACHINE MUST HAVE 32K OR MORE OF
CORE, 1 - 2311 DISK FILE, 1443 OR 1403 PRINTER, 1442 OR
2540 CARD READER. THE PROGRAM WILL DRAW SYSTEMS FLOW CHARTS,
CREATE A ,,SYSTEMS TABLE AND PROGRAM-FILE CROSS-REFERENCE,,.
THE SYMBOLS DRAWN ARE TAPE, RANDOM FILE, CARD, DOCUMENT,
GRAPHIC DISPLAY, TERMINAL, KEYBOARD, PAPER TAPE, COMMENTS,
CLERICAL OPERATION, ADDING MACHINE TRANSMITTAL TAPE, MULTIPLE
/2 OR 3/ CARD SYMBOL, OFF PAGE CONNECTOR, OFF LINE STORAGE
AND SEQUENCE OF FILE. THE PROGRAM WILL USE THE SAME
TRANSACTION FORMAT AS THE ,,SYSTEMS FLOWCHARTS FOR THE
IBM 1401,, PID NUMBER 1401-02.0.039.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR
7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC
TAPE. THIS TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE
OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.
IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
FORWARDED.

360D-00.2.003   FLOWCHARTING DOCUMENTATION
OS/360
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.2.003

AUTHORS..F.D. LEWIS   M.F. STEWART   R.O. DRAKE
J.F. SANDER

DIRECT INQUIRIES TO..
F.D. LEWIS,IBM CORP.,NEIGHBORHOOD RD.,KINGSTON, N.Y.

TITLE...AUTOMATIC DOCUMENTATION AND FLOWCHARTING PROGRAM
****N   06.8 06.6   ***

A PROGRAM WHICH OPERATES UNDER CONTROL OF OS/360 WHICH
PRODUCES TEXT AND FLOWCHARTS FROM CARD INPUT. THE FLOWCHART
LANGUAGE IS A SYMBOLIC LANGUAGE. WHEN A CONNECTION IS DESIRED
FROM ONE SYMBOL TO ANOTHER THE SYMBOL GOING TO IS REFERRED
TO BY A SYMBOLIC NAME AND THE PROGRAM GENERATES A LINE, IF
POSSIBLE, OR A CONNECTOR WITH THE PROPER COORDINATE AND
PAGE NUMBER INSERTED. THE USER HAS THE OPTION OF SELECTING
HIS OWN CHARACTER SET FOR THE PRINTING OF SYMBOLS, LINES AND
ARROWHEADS. REQUIRES 64K STORAGE AND 2 TAPES OR DISK.
SOURCE LANGUAGE IS OS/360 ASSEMBLER. THE SYNTAX OF THE
LANGUAGE IS COMPATIBLE WITH A 1401 VERSION OF THE PROGRAM
AVAILABLE FROM PID UNDER CATALOG NUMBER 1401-02.0.024.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-00.3.001   OS/360 SIMULTANEOUS
CARD-TO-TAPE TAPE-TO-PRINT TAPE-TO-CARD
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.3.001

AUTHORS..W.M. JACKSON   J.P. SPRINGER

DIRECT INQUIRIES TO..
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WASHINGTON, D.C. 20036

TITLE...MODIFICATION OF S/360 BPS MULTIPLE UTILITY FOR OFF-LINE
SUPPORT TO OS/360
****N   00.1 06.0   ***

,,THIS PROGRAM MODIFICATION TO THE S/360 BPS MULTIPLE UTILITY
/8K/, 360P-UT-055, ALLOWS SIMULTANEOUS CARD-TO-TAPE,
TAPE-TO-PRINTER, AND/OR TAPE-TO-CARD OPERATIONS TO SUPPORT
OS/360 FORMAT REQUIREMENTS IN A STACKED-JOB ENVIRONMENT.
A PRINTER WITH THE UNIVERSAL CHARACTER SET FEATURE MAY BE USED.
THIS ASSEMBLY LANGUAGE PROGRAM IS USED ON A PERIPHERAL
COMPUTER IN PREPARING INPUT STREAM TAPES FOR THE MAIN COMPUTER
AND PERFORMING THE PRINTING AND PUNCHING FROM THE OS/360
OUTPUT WRITER TAPES. THE MODIFIED PROGRAM, PERMANENTLY
RESIDING IN CORE, IS STARTED AND RESTARTED AS REQUIRED
THROUGH CONSOLE TYPEWRITER ENTRIES. IT HANDLES THE
VARIABLE-LENGTH, MULTI-DATA-SET OUTPUT TAPES, SKIPPING TAPE
MARKS AND LABELS, DEBLOCKING ABEND RECORDS, AND DISREGARDING
INVALID CHARACTERS. OPERATOR ENTRIES AND TYPEWRITER MESSAGES
ARE MINIMIZED FOR EASE OF OPERATION AND SPEED.,,
THE MACHINE READABLE MATERIAL IS AVAILABLE ON ONE FULL,
2400 FOOT, REEL OF MAGNETIC TAPE.

360D-00.3.002   CREATE IDENTIFY COPY MASTER
TAPE STATISTICS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.3.002

AUTHOR...MRS. J. CARTER

DIRECT INQUIRIES TO..
MRS. J. CARTER,IBM CORP.,40 SAW MILL RIVER RD.,
HAWTHORNE, N.Y.

TITLE...MASTER CREATION PROGRAM
****N   13.1 01.6   ***

THIS BPS PROGRAM CREATES A ,,MASTER,, TAPE CONTAINING
IDENTIFICATION AND TAPE STATISTICS FOR SUBMISSION TO AND
USE BY THE PROGRAM INFORMATION DEPARTMENT. IT IS A TAPE
COPIER WHICH TERMINATES INPUT ON ANY OF SEVERAL OPTIONS,
AND KEEPS STATISTICS AS TO RECORD, TAPE MARK AND CHARACTER
COUNTS, AND MAXIMUM RECORD SIZE. UPON COMPLETION OF THE
COPY, IT GENERATES A SPECIAL TRAILER CONTAINING THESE COUNTS
PLUS ANY SPECIFIED IDENTIFICATION OF UP TO 15 NON-BLANK
CHARACTERS. THIS INCREASES TAPE SECURITY BY MAKING THE
IDENTIFICATION AND STATISTICS A PERMANENT PART OF THE
CONTENTS IN THE TRAILER REQUIRED BY PID. THIS INFORMATION
IS VERIFIED IN COPIES MADE FOR DISTRIBUTION. THE PROGRAM
ALSO RECOGNIZES THE TRAILER THUS GENERATED AS A TERMINATOR.
MINIMUM CONFIGURATION- MOD 30, 16K, 1 SELECTOR CHANNEL,
1052 CONSOLE TYPEWRITER, CARD READER AND 1403 PRINTER, AND
TWO 2400 TAPE UNITS.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK DTR.
THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-00.3.003   DOS/TOS INITIALIZE TAPE
WRITE-VOLUME-LABELS WRITE-HEADER-LABELS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.3.003

AUTHOR...MR. D. HANKERSON

DIRECT INQUIRIES TO..
MR. D. HANKERSON,IBM CORP.,3424 N. CENTRAL,
PHOENIX, ARIZ. 85012

TITLE...DOS/TOS INITIALIZE TAPE PROGRAM
****N   04.3 01.1 03.4   ***

DOS/TOS - INITIALIZE TAPE PROGRAM OPERATES IN CONJUNCTION
WITH THE DISK OPERATING SYSTEM OR THE TAPE OPERATING SYSTEM.
ITS PURPOSE IS TO INITIALIZE TAPES WITH STANDARD S/360 VOLUME
AND HEADER LABELS. ONE VOLUME AND HEADER LABEL IS WRITTEN
FOR EACH CONTROL CARD. THE PROGRAM CYCLES THROUGH THE AVAILABLE
TAPE DRIVES INITIALIZING TAPES, UNTIL ALL THE CONTROL CARDS
HAVE BEEN READ. THE ADVANTAGE OF HAVING AN INITIALIZE TAPE
PROGRAM THAT RUNS UNDER DOS/TOS IS THAT TAPES CAN BE
INITIALIZED AS PART OF THE JOB STEP. THIS IS PARTICULARLY
USEFUL WHEN TESTING NEW S/360 APPLICATION PROGRAMS.

360D-00.3.004   CREATE BLOCKED UNBLOCKED
FIXED-LENGTH VARIABLE-LENGTH TAPE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.3.004

AUTHOR...MR. R. VONWASMUTH

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LOS ANGELES, CALIF. 90005

TITLE...TAPE FILE CREATION PROGRAM
****N   01.6 07.1 06.0   ***

THIS PROGRAM PRODUCES S/360 TAPE FILES WITH BLOCKED OR
UNBLOCKED VARIABLE OR FIXED LENGTH RECORDS FROM CARD INPUT.
THE BPS UTILITY AND THE AUTOTEST CARD-TO-TAPE PROGRAMS ARE
VERY LIMITED WHEN OUTPUT RECORDS ARE OTHER THAN FIXED LENGTH
OR HAVE VARYING FORMATS. THIS PROGRAM WILL WRITE PACKED,
UNPACKED OR BINARY DATA ON THE TAPE ACCORDING TO FIELD
CONTROL CHARACTERS PUNCHED IN DATA CARDS. THERE IS NO NEED
FOR THE USER TO DETERMINE THE BLOCK COUNT AND/OR RECORD COUNT
FOR VARIABLE LENGTH RECORDS. AS IN AUTOTEST. NOR ARE THE
BLOCKS LIMITED TO 400 CHARACTERS. EASE OF USE AND FLEXIBILITY
OF OUTPUT ARE THE MAIN CRITERIA FOR USING THIS PROGRAM IN

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CONTINUED FROM PRIOR PAGE--
    PREFERENCE TO THE CURRENT UTILITIES MENTIONED. WRITTEN IN
    S/360 ASSEMBLER LANGUAGE, THE PROGRAM REQUIRES LESS THAN
    16K OF CORE /INCLUDING SUPERVISOR AND JOB CONTROL/ AND ONE
    2400 SERIES TAPE DRIVE.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
    ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
    REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
    9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
    NO TAPE SUBMITTAL IS REQUIRED.

**360D-00.3.007   DOS SORT USER EXIT ROUTINES
TO PROCESS 1401 TAPE LABELS**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-00.3.007

AUTHOR...MR. G.W. LAWSON

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    MR. G.W. LAWSON,IBM CORP.,3777 LONG BEACH BLVD.,
    LONG BEACH, CALIF. 90807

    TITLE...DOS SORT USER EXIT ROUTINES TO PROCESS 1401 TAPE LABELS
        ***N   12.0 06.1   ***

    DOS SORT USER EXIT ROUTINES WHICH READ AND CHECK AND/OR
    GENERATE AND WRITE STANDARD 80-CHARACTER 1401 TAPE LABELS.
    THE ROUTINES ARE WRITTEN IN DOS ASSEMBLER LANGUAGE FOR A
    SYSTEM/360 DISK AND TAPE SYSTEM. THESE ROUTINES CAN BE OF
    GREAT VALUE TO A USER WHO IS EMULATING 1401 PROGRAMS BUT
    WANTS TO TAKE ADVANTAGE OF THE GREATER SPEEDS OF THE SYSTEM/360
    DOS SORT.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
    REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
    9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
    NO TAPE SUBMITTAL IS REQUIRED.

**360D-00.3.008   PROGRAM TO COPY OR VERIFY
UNDERFINED TAPE RECORDS**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-00.3.008

AUTHOR...MR. T.V. PASKO

DIRECT INQUIRIES TO..
    MR. T.V. PASKO,IBM CORP.,1120 CONNECTICUT AVE., N.W.,
    WASHINGTON, D.C.

    TITLE...CUTOVR-COPY UNDEFINED 7 AND 9 TRACK TAPE RECORDS OR
        VERIFY RESULTS.
        ***N   02.0 06.5   ***

    THIS PROGRAM, WRITTEN IN IBM SYSTEM/360 BASIC ASSEMBLER
    LANGUAGE, WAS DESIGNED TO ACCOMPLISH FOUR FUNCTIONS CONCERNING
    7 AND 9 TRACK UNDEFINED TAPE RECORDS NOT EXCEEDING 4K
    BYTES/CHARACTERS-
    - COPY 7 TRACK TAPE, PUNCHING AND PRINTING 7 TRACK ERROR
      RECORDS.
    - VERIFY THE 7 TRACK COPY, EXCLUDING ERROR RECORDS DETECTED
      IN THE COPY PHASE.
    - COPY 9 TRACK TAPE, MERGING NEW AND/OR CORRECTED ERROR
      RECORDS, WHILE PUNCHING AND PRINTING 9 TRACK ERROR RECORDS.
    - VERIFY THE 9 TRACK COPY, INCLUDING MERGED RECORDS AND
      EXCLUDING ERROR RECORDS DETECTED IN THE COPY PHASE.
    ALTHOUGH PRIMARILY INTENDED FOR USE AT INSTALLATIONS UNDERGOING
    7 TO 9 TRACK TAPE CONVERSION, ITS TWO 9 TRACK PHASES CAN BE
    USED AT INSTALLATIONS USING 9 TRACK TAPE EXCLUSIVELY.
    MACHINE REQUIREMENTS ARE A 16K/360 WITH STANDARD INSTRUCTION SET,
    DECIMAL ARITHMETIC.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
    DISTRIBUTION TAPE REEL /DTR/.
    THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK
    DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE
    PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE
    PROVIDED BY THE LIBRARY.

**360D-00.3.009   SYMBOLIC PROGRAMS
STORE-ON-TAPE LIST PUNCH DELETE UPDATE**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-00.3.009

AUTHOR...MR. W.S. PENSIERO

DIRECT INQUIRIES TO..
    MR. W.S. PENSIERO,IBM CORP.,HOTEL ASTOR,1515 BROADWAY,
    NEW YORK CITY, N.Y.

    TITLE...SLIP - SOURCE LIBRARY INQUIRY PROGRAM
        ***N   00.1 06.8 03.0   ***

    THE PRIMARY FUNCTION OF SLIP IS TO STORE ON TAPE, IN A
    BLOCKED FORMAT, SYMBOLIC CARDS FOR 360 PROGRAMS. OTHER
    FUNCTIONS ARE THE ABILITY TO LIST, PUNCH, LIST AND PUNCH,
    DELETE, OR UPDATE SYMBOLIC PROGRAMS. THERE IS ALSO A COPY
    FEATURE FOR THE ENTIRE TAPE. THE UPDATE FEATURE CAN BE
    USED FOR AN ENTIRE SYMBOLIC PROGRAM, THE INPUT COMING FROM
    EITHER TAPE OR CARD. THE UPDATE FEATURE CAN ALSO BE USED
    TO CHANGE INDIVIDUAL STATEMENTS IN AN EXISTING PROGRAM THAT
    IS CATALOGED ON THE SLIP TAPE. THE PROGRAM SLIP -
    SOURCE LIBRARY INQUIRY PROGRAM, INTERFACES TO AN ASSEMBLED
    8K BOS SUPERVISOR AND JOB CONTROL. THERE IS ALSO AN
    OPERATORS MESSAGE PROGRAM WHICH CAN BE EXECUTED TO GIVE
    OPERATING INSTRUCTIONS. THE SLIP PROGRAM TAPE WILL EXECUTE
    ON AN 8K 360'30 OR LARGER SYSTEM.

    NOTE- ONE REEL OF MAGNETIC TAPE IS REQUIRED TO OBTAIN THE
    BASIC PROGRAM MATERIAL. THIS TAPE MAY BE SUPPLIED OR ORDERED
    FROM YOUR IBM REPRESENTATIVE. THE TAPE MUST BE 2400 FEET
    IN LENGTH.

360D-00.4.001   DISK TABLE-OF-CONTENTS LIST
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-00.4.001

AUTHOR...MR. H.R. TUCK

DIRECT INQUIRIES TO..
    MR. H.R. TUCK,IBM CORP.,370 W. FIRST ST.,DAYTON, OHIO

    TITLE...LISTER FOR VOLUME TABLE OF CONTENTS
        ***N   06.8   ***

    VTOC LISTS ON SYSLST THE VOLUME TABLE OF CONTENTS OF A
    DISK PACK FOR A 2311 DISK DRIVE. VTOC STANDARD OR VTOC FOR
    SYSTEMS RESIDENCE ON CYLINDER 199 TRACKS 0-9 IS ACCEPTABLE.
    ALL NON-ZERO LABELS ARE DISPLAYED WITH DATES AND EXTENTS
    CONVERTED TO DECIMAL. PROGRAM RUNS UNDER 8K BOS DISK SYSTEM.
    CONFIGURATION- MINIMUM 8K BOS DISK. WRITTEN IN 360 ASSEMBLY
    LANGUAGE.

**360D-00.4.002   BOS LOAD DATA-FIELDS-TO-DISK
CHANGE-DISK-FILES**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-00.4.002

AUTHOR...R.B. BENNETT

DIRECT INQUIRIES TO..
    R.B. BENNETT,IBM CORP.,1000 JAMES ST.,SYRACUSE, N.Y. 13203

    TITLE...UTILITY FOR SELECTIVE CHANGES TO 2311 RECORDS FROM CARDS
        UNDER S/360 BOS
        ***N   01.1 01.6 06.2   ***

    THE PURPOSE OF THIS PROGRAM IS TO SELECTIVELY LOAD DATA
    FIELDS FROM CARDS TO 2311 DISK RECORDS ON A RANDOM UPDATE BASIS.
    UNDER THE S/360 BASIC OPERATING SYSTEM, THE CURRENT CARD-TO-DISK
    UTILITY, IS A DISK RECORD CREATE PROGRAM. THEREFORE, ANY
    PREVIOUS DATA ON DISK IS DESTROYED BY THE OPERATION /PROCESSING
    CONSECUTIVELY/. ALTHOUGH THE RECORD THUS CREATED MAY BE ANY
    SIZE, THE USER MAY LOAD ONLY THE 80 CHARACTERS OF ONE CARD
    /SUBSEQUENT PASSES AGAINST THE SAME FILE MAY CREATE ENTIRELY
    NEW FILES/. THE PROGRAM AS SUBMITTED PERMITS CHANGING
    EXISTING FILES WITHOUT DESTROYING UNAFFECTED FIELDS,
    ALLOWING ALSO THE BUILDING OF ANY SIZE RECORD /LIMIT OF ONE
    TRACK/ FROM CARDS, VIA MULTIPLE PASSES WHEN NECESSARY.
    THE FIELD SELECT CARD IS COMPATIBLE WITH THE IBM UTILITIES.
    THE PROGRAM WORKS UNDER 8K BOS, BUT SHOULD BE EASILY ADAPTABLE
    TO MORE GENERAL USE. PACKING IS POSSIBLE. CHANGES TO THE
    KEY FIELDS MAY BE MADE.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
    DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
    WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
    A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
    THE DTR WILL BE PROVIDED BY THE LIBRARY.

**360D-00.4.004   7040/90/94
EMULATOR-TO-DISK UTILITY**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-00.4.004

AUTHORS..R. GROTZ   L. CARNEY   G.E. BROWN

DIRECT INQUIRIES TO..
    R. GROTZ,DOUGLAS AIRCRAFT CO., INC.,LONG BEACH, CALIF.

    TITLE...EMULATOR-TO-DISK
        S NA   EMTO 01.5 00.5 05.5 11.1

    THE PURPOSE OF THIS PROGRAM IS TO PLACE AN INITIALIZED
    7090/94 EMULATOR OR THE 7040 EMULATOR ONTO A 2311 DISK PACK
    IN SUCH A MANNER AS TO ALLOW INITIAL PROGRAM LOADING /IPL/ING/
    OF THE EMULATOR FROM THE DISK PACK, AND IN A FORMAT WHICH IS
    COMPATIBLE WITH OS/360/S USAGE OF DIRECT-ACCESS DEVICES.
    S/360 MODEL 165 WITH A 1052 CONSOLE, ONE 2311 DISK DRIVE,
    ONE TAPE UNIT AND ONE CARD READER IS REQUIRED. ONCE THE
    INITIALIZED EMULATOR HAS BEEN LOADED INTO CORE FROM ITS
    ORIGINAL RESIDENT VOLUME, THIS PROGRAM PLACES THE NECESSARY
    IPL TEXT ON CYLINDER 0, TRACK 0, AND THEN COPIES THE EMULATOR
    ONTO THE DASDIED TARGET PACK IN TRACK IMAGES WHICH CONSIST
    OF TWO RECORDS. RECORD ONE CONSISTS OF THE CHANNEL PROGRAM
    REQUIRED TO READ THE EMULATOR TEXT /CONTAINED IN RECORD TWO/,
    INTO ITS RESPECTIVE AREA OF CORE, TO INITIATE A SEEK AND
    SEARCH FOR THE NEXT TRACK, AND TO TRANSFER CHANNEL CONTROL
    TO RECORD ONE OF THE NEXT TRACK. THE SELF-LOADING CHANNEL
    PROGRAM LOOP IS TERMINATED BY TURNING OFF COMMAND CHAINING
    IN THE CHANNEL COMMAND WORD WHICH READS THE RECORD CONTAINING
    THE LAST SEGMENT OF THE EMULATOR INTO CORE, AT WHICH TIME
    THE PRESET IPL PSW TRANSFERS CONTROL TO THE EMULATOR
    IPL ROUTINE. THIS PROGRAM IS INTENDED FOR USE AS A STAND-ALONE
    UTILITY DECK FOR THOSE INSTALLATIONS HAVING A 7090/94 OR A
    7040 EMULATOR.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
    ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
    REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
    9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
    NO TAPE SUBMITTAL IS REQUIRED.

**360D-00.4.007   MODEL 44 DISK STORE
RETRIEVE DATA LOAD EXECUTE**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-00.4.007

AUTHOR...MR. D.A. DUFFIELD

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    ROCHESTER, N.Y. 14604

    TITLE...MODEL 44 DISK SUPPORT PACKAGE
        ***N   01.1 06.7   ***

Contributed Programs

CONTINUED FROM PRIOR PAGE--

THE FOLLOWING IS A DESCRIPTION OF THE SYSTEM/360 MODEL 44
DISK SUPPORT PACKAGE WHICH, WHEN USED IN CONJUNCTION WITH
BPS FORTRAN, WILL PROVIDE THE USER WITH A CONVENIENT MEANS
FOR PROGRAM AND DATA STORAGE ON THE INTEGRATED DISK STORAGE
DRIVE.

THREE FORTRAN-CALLABLE SUBROUTINES ARE USED FOR THE STORAGE
AND RETRIEVAL OF DATA- DEFINE FOR FILE DEFINITION., WDISK FOR THE
WRITING OF DATA., AND RDISK FOR THE READING OF DATA.
DEFINE WILL SPECIFY THE NUMBER OF RECORDS AND THE LENGTH
/IN 32-BIT WORDS/ OF EACH RECORD. RDISK AND WDISK WILL
SPECIFY THE RECORD NUMBER TO BE ACCESSED AND AN AREA INTO
/OR OUT OF/ WHICH THE DATA SHOULD BE READ /OR WRITTEN/.
CURRENTLY ONLY ONE FILE MAY RESIDE ON A PACK SO FILE NUMBER
NEED NOT BE SPECIFIED IN THE SUBROUTINE CALLS.

A FOURTH FORTRAN-CALLABLE SUBROUTINE, LINK, ALLOWS THE USER
TO LOAD AND EXECUTE A PROGRAM PREVIOUSLY STORED ON THE
DISK PACK. LARGE PROGRAMS MAY NOW BE SUBDIVIDED AND THE
SEGMENTS STORED ON THE DISK. THE TIME DELAY BETWEEN THE
ISSUE OF A CALL LINK AND THE BEGINNING OF EXECUTION OF THE
PROGRAM LINKED TO, IS IN THE ORDER OF ONE SECOND. TWENTY-TWO
PROGRAMS MAY BE STORED PER PACK FOR A SYSTEM WITH 64K BYTES
OF CORE STORAGE. THE USER WILL SPECIFY THE PROGRAM TO BE
LOADED IN A LINK SUBROUTINE CALL OF THE PROGRAM TO BE OVERLAID.

BACKING UP THE LINK SUBPROGRAM ARE THREE UTILITIES FOR
PROGRAM STORAGE AND MAINTENANCE. STORE WILL TAKE THE OBJECT
CODE FROM CORE STORAGE AND PLACE IT IN THE FIRST AVAILABLE
SLOT ON A 2315 DISK PACK. THE PROGRAM NAME /TAKEN FROM
THE/EFC CARD/, IDENTIFICATION NUMBER AND SIZE ARE PLACED IN
A DICTIONARY ON TRACK NO. 0. DELETE WILL REMOVE A PROGRAM
FROM THE PACK AND MAKE THAT SLOT AVAILABLE FOR STORAGE OF
ANOTHER PROGRAM. DMPTBL WILL PRINT OUT ON DEVICE NO. 3 THE
CURRENT CONTENTS OF A DISK PACK. INITAL WILL INITIALIZE A
DISK PACK FOR PROGRAM STORAGE MAKING THAT PACK UN-DEFINE-ABLE
SO THAT PROGRAMS WILL NOT INADVERTENTLY BE OVERWRITTEN WITH DATA.

WDADR WILL WRITE ADDRESSES ON A DISK PACK. THE ADDRESSES
ARE USED BY BOTH THE PROGRAM AND DATA STORAGE ROUTINES FOR
CHECKING SEEK OPERATIONS. CURRENTLY A DISK PACK CANNOT BE
USED FOR BOTH PROGRAM STORAGE AND DATA STORAGE. THEREFORE,
PROGRAMS STORED ON A DISK SHOULD NOT EXPECT TO USE THAT
SAME PACK FOR TEMPORARY DATA STORAGE. HOWEVER, IF THE SYSTEM
HAS THE SECOND DRIVE, A SLIGHT MODIFICATION TO THE ROUTINES
WILL ALLOW ONE DRIVE TO BE USED FOR DATA STORAGE AND THE
OTHER FOR PROGRAM STORAGE.

THIS PROGRAM WAS WRITTEN TO WORK IN CONJUNCTION WITH THE
MODEL 44 BPS FORTRAN SYSTEM ON MAGNETIC TAPE. IF IT IS
DESIRED TO USE THE BPS FORTRAN TYPE III PACKAGE, WHICH USES
THE DISK FOR THE SYSTEM, THE USER MUST HAVE THE SECOND DRIVE
AVAILABLE AND CHANGE THE DISK ADDRESSES IN THE ASSEMBLER
ROUTINES FROM X/0C0/ TO X/0C1/.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

**360D-00.5.001   INITIALIZE SINGLE DATA CELL
STRIP**
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-00.5.001

    AUTHOR...H.H. TOWELL

    DIRECT INQUIRIES TO..
            H.H. TOWELL,IBM CORP.,570 BROAD ST.,NEWARK, N.J. 07102

        TITLE...INITIALIZE DATA CELL STRIP
              ***N   00.4 04.3 06.7   ***

        THIS IS A STAND-ALONE PROGRAM WHICH WRITES HOME ADDRESSES AND
        TRACK DESCRIPTOR RECORDS ON ONE OR MORE DATA CELL STRIPS.
        IT ALSO CHECKS THE DATA PORTION OF EACH TRACK BY WRITING
        AND READING A 2000 BYTE RECORD OF HEXI-DECIMAL ,,FF.,, THE
        MINIMUM CONFIGURATION FOR THIS PROGRAM IS A SYSTEM/360 MODEL 30
        WITH 8K OF STORAGE, 1 CARD READER, 1 PRINTER, 1 TYPEWRITER,
        AND 1 DATA CELL DRIVE. THE PROGRAM WAS WRITTEN IN ASSEMBLER
        LANGUAGE AND ASSEMBLED USING 8K BOS. IT WILL ENABLE THE USER TO
        INITIALIZE A SINGLE DATA CELL STRIP INSTEAD OF INITIALIZING
        AND ENTIRE CELL.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
        ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
        DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK
        WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE
        SUBMITTAL IS REQUIRED.

**360D-00.6.003   2250 DRAFTING SCHEMATIC
GENERATE MANIPULATE SHAPES**
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-06.6.003

    AUTHOR...DONALD HOLLO

    DIRECT INQUIRIES TO..
            DONALD HOLLO,IBM CORP.,112 E. POST RD.,WHITE PLAINS, N.Y.

        TITLE...IBM 2250 EXPERIMENTAL DRAFTING AND SCHEMATIC PACKAGE
              ***N   00.6 06.6   ***

        THE IBM 2250 EXPERIMENTAL DRAFTING AND SCHEMATIC PACKAGE
        PROVIDES THE USER WITH THE CAPABILITY OF DRAWING POINTS, LINES,
        CIRCLES, DIMENSION LINES, AND OTHER ELEMENTS NORMALLY REQUIRED
        FOR DRAFTING APPLICATIONS. IN ADDITION, SCHEMATIC CAPABILITY
        EXISTS BY ALLOWING PRESTORED SHAPES TO BE GENERATED AND
        MANIPULATED WITHIN THE SYSTEM. THE PROGRAM IS WRITTEN UNDER
        BASIC PROGRAMMING SUPPORT FORTRAN IV, LEVEL D, TAPE 16K.
        THE SYSTEM REQUIRES A SINGLE, DEDICATED IBM 2250 DISPLAY UNIT,
        MODEL 1 WITH BUFFER STORAGE, CHARACTER GENERATOR, ABSOLUTE
        VECTOR FEATURE, LIGHT PEN, AND FUNCTION KEYBOARD. THE PROGRAM
        USES ROUTINES DEVELOPED IN THE GRAPHIC FORTRAN SYSTEM
        /LIBRARY NUMBER 360D-3.4.004/ AND THEREFORE MUST BE USED
        IN OPERATING THIS PROGRAM. THIS PROGRAM IS DESIGNED SUCH
        THAT MODIFICATIONS MAY BE MADE TO SUIT THE REQUIREMENTS
        OF THE USER.

CONTINUED FROM PRIOR COLUMN--

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR
        7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION
        TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A
        9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
        A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
        THE DTR WILL BE PROVIDED BY THE LIBRARY.

**360D-00.6.004   OS/360 ASSEMBLER LANGUAGE
MACROS 2250 DISPLAY**
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-00.6.004

    AUTHORS..J.T. WOOD   J.L. THOMAS

    DIRECT INQUIRIES TO..
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            WASHINGTON, D.C. 20036

        TITLE...ALPHANUMERIC DISPLAY PACKAGE FOR THE IBM 2250
              ***N   04.2 00.6 03.7   ***

        ALPHAPAC CONSISTS OF A SERIES OF RE-ENTRANT SUB-ROUTINES
        WHICH PROVIDE MACRO LEVEL SUPPORT TO AN IBM 2250 DISPLAY UNIT
        EQUIPPED WITH ALPHANUMERIC KEYBOARD, LIGHT PEN, AND A
        4,096 BYTE BUFFER, ATTACHED TO AN IBM 360. THIS PACKAGE,
        WHICH WAS WRITTEN IN OS ASSEMBLER LANGUAGE, USES THE GRAPHIC
        SUPPORT PROVIDED WITH OPERATING SYSTEM 360. USING THIS
        PACKAGE, A PERSON CAN WRITE AND DEBUG PROGRAMS WHICH USE THE
        2250, AND NOT BE CONCERNED ABOUT THE GRAPHIC ORDERS, BUFFER
        MANAGEMENT, POLLING TECHNIQUES, ATTENTION HANDLING, RASTER
        UNITS, X AND Y COORDINATES, AND OTHER DETAILS OF THE
        2250 DISPLAY UNIT.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
        OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
        DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
        WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF MEDIA IS
        NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE
        SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

**360D-00.6.005   BPS CONTROL INTERRUPTS
2250 DISPLAY**
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-00.6.005

    AUTHORS..J.R. CHAMBLISS   G.W. DECEMBER

    DIRECT INQUIRIES TO..
            J.R. CHAMBLISS,IBM CORP.,3800 LINDELL BLVD.,ST. LOUIS, MO. 68108

        TITLE...MODIFICATION OF S/360 8K BPS FOR 2250 DISPLAY UNIT
                CONTROL
              ***N   08.7 00.6 01.4   ***

        THIS IS A MODIFICATION OF THE 8K BPS SUPERVISOR TO ALLOW THE
        USER TO CONTROL AND HANDLE INTERRUPTS FROM A 2250 DISPLAY
        UNIT. IT IS LESS THAN 100 BYTES OF CORE AND DOES NOT AFFECT ANY
        OTHER FACILITY OF THE SUPERVISOR. IT HANDLES INTERRUPTS BY
        SETTING CORE BITS TO REPRESENT THE TYPE OF INTERRUPT. THE USER
        MUST TEST THE MANUAL DATA OR SENSE BYTES HIMSELF. ALL
        INPUT/OUTPUT OPERATIONS CAN BE PERFORMED USING 8K BPS PHYSICAL
        IOCS MACROS. INCLUDED ARE TWO SAMPLE PROGRAMS. ONE HAS THE
        SYSTEM ACT AS EDITOR AND SCOREKEEPER FOR A SIMPLE TIC-TAC-TOE
        GAME. THE OTHER IS A FUNCTIONAL DEMONSTRATION SHOWING ALL
        CONSOLE FUNCTIONS. THE INTERRUPT HANDLING AND ANALIZING
        ROUTINES ARE INCLUDED IN THE PROGRAM FOR ALL FUNCTIONS. THE
        FUNCTIONS ARE DISPLAYED ON THE SCREEN AND THE 1403 PRINTER. THE
        MACHINE REQUIREMENTS ARE ON AN 8K SYSTEM/360 WITH DECIMAL
        ARITHMETIC 2 SELECTOR CHANNELS, A 2540, 1403, AND 2250 MODEL 1.
        THE 2250 HAS 4K BUFFER STORAGE, ABSOLUTE VECTORS, CHARACTER
        GENERATOR, ALPHAMERIC KEYBOARD, FUNCTION KEYBOARD AND LIGHT
        PEN. THE PACKAGE IS EASILY MODIFIED FOR FEWER CHANNELS.

**360D-01.4.003   ACCOUNTING /ROUTINE/ /FOR/
360 OPERATING /SYSTEM/**
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-01.4.003

    AUTHOR...MR. D. JACOBS

    DIRECT INQUIRIES TO..
            MR. D. JACOBS,THE BOEING CO.,VERTOL DIV.,100 WOODLAND AVE.,
            PLANT 3-01,MAIL STOP P30-47,RIDLEY PARK, PA.

        TITLE...OPERATING SYSTEM ACCOUNTING
              S VDB   ACT   01.4 05.1 06.3 29.1

        THIS PROGRAM WAS WRITTEN TO-
        1. DETERMINE TASK TIME OF EACH STEP OF JOB.
        2. DETERMINE WAIT/OVERHEAD TIME OF JOB.
        3. INFORM OPERATOR OF TAPE ASSIGNMENTS BY DD NAME.
        4. DETERMINE STARTING ADDRESS OF PROBLEM PROGRAM RB.
        5. DETERMINE MAXIMUM TAPES AND DISKS USED IN JOB.
        6. PRINT ACCOUNTING INFORMATION OF JOB ON SYSOUT AND SYSTEM
           RESIDENCE PACK.
        7. PUNCH ACCOUNTING RECORDS FROM DISK.
        STEP INITIATOR HAS BEEN MODIFIED SO THAT IT ACCOMPLISHES
        /3/, /4/, AND /5/ ABOVE. IT ALSO ISSUES A TIMER MACRO PRIOR
        TO ISSUING THE ,,XCTL,, TO THE PROBLEM PROGRAM. STEP
        TERMINATION ACCOMPLISHES /1/ AND /2/ ABOVE. JOB TERMINATION
        ACCOMPLISHES /7/ ABOVE. MONITOR OR OPERATING SYSTEM REQUIRED-
        OS/360

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
        ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
        9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
        NO TAPE SUBMITTAL IS REQUIRED.

**360D-01.5.002   1620 COMPATIBILITY TAPE TO
DISK RESTORE**
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-01.5.002

    AUTHOR...MR. D.M. KNIGHT

Contributed Programs

CONTINUED FROM PRIOR PAGE--

DIRECT INQUIRIES TO..
MR. D.M. KNIGHT,NORDEN DIV.,UNITED AIRCRAFT CORP.,
NORWALK, CONN.

TITLE...360/1620 TAPE TO COMPATIBILITY DISK RESTORE
***S UAN   00.4 12.0 00.3   ***

RESTORES COMPATIBILITY DISKS FROM BACK-UP TAPES GENERATED BY
,,360/1620 COMPATIBILITY DISK TO TAPE DUMP,, /01.5.003/.
THE DECKS SUPPLIED ARE STAND ALONE UTILITIES AND OPERATE
INDEPENDENTLY OF ALL OTHER SOFTWARE. DISKS MAY NOT CONTAIN
BAD TRACKS /ALSO TRUE FOR COMPATIBILITY PROGRAM/ UNLESS THEY
ARE NOT IN THE COMPATIBILITY AREA. 32K BYTES OF STORAGE,
ONE 9-TRACK TAPE DRIVE AND ONE 2311 DISK DRIVE ARE REQUIRED.
SOURCE LANGUAGE IS B.P.S. ASSEMBLER WITH ALL MACROS EXPANDED.
RUNNING TIME IS ABOUT TEN MINUTES PER DISK.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE
SUBMITTAL IS REQUIRED.

360D-01.5.003   1620 COMPATIBILITY DISK TO
TAPE DUMP
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-01.5.003

AUTHOR...MR. D.M. KNIGHT

DIRECT INQUIRIES TO..
MR. D.M. KNIGHT,NORDEN DIV.,UNITED AIRCRAFT CORP.,
NORWALK, CONN.

TITLE...360/1620 COMPATIBILITY DISK TO TAPE DUMP
***S UAN   00.3 12.0 00.4   ***

DUMPS 360/1620 COMPATIBILITY DISKS TO 9 TRACK TAPES FOR
DATA AND PROGRAM BACKUP. THE DECK SUPPLIED IS A STAND ALONE
UTILITY AND REQUIRES NO OTHER SOFTWARE. DISK MAY NOT CONTAIN
BAD TRACKS /ALSO HOLDS TRUE FOR COMPATIBILITY/ UNLESS THEY
ARE NOT IN COMPATIBILITY AREA. PROGRAM REQUIRES A 32K SYSTEM
WITH A 2311 DISK DRIVE AND A 9-TRACK TAPE DRIVE. SOURCE
LANGUAGE IS B.P.S. ASSEMBLER WITH ALL MACROS EXPANDED.
RUNNING TIME IS ABOUT 10 MINUTES PER DISK.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE
SUBMITTAL IS REQUIRED.

360D-01.6.002   CREATE MAINTAIN INDEXED
SEQUENTIAL DATA SETS OS/360
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-01.6.002

AUTHOR...WILLIAM N. AMES

DIRECT INQUIRIES TO..
WILLIAM N. AMES,IBM CORP.,200 E. CAMPERDOWN WAY,
GREENVILLE, S.C. 29601

TITLE...OS/360 GENERALIZED ISAM UTILITY PROGRAM
***N   06.5 06.8   ***

THIS GENERALIZED UTILITY PROGRAM WILL ASSIST THE OS/360
USER IN REORGANIZING AND MAINTAINING INDEXED SEQUENTIAL
DATA SETS. THE PROGRAM PERFORMS ANY OF FOUR FUNCTIONS-
- PROVIDES A FORMATTED LISTING OF RECORDS WITHIN AN INDEXED
  SEQUENTIAL DATA SET.
- CREATES A SEQUENTIAL DATA SET USING AN INDEXED SEQUENTIAL
  DATA SET AS INPUT.
- CREATES AN INDEXED SEQUENTIAL DATA SET USING A SEQUENTIAL
  DATA SET AS INPUT.
- PROVIDES INFORMATION REGARDING THE DISTRIBUTION OF
  LOGICAL RECORDS AMONG PRIME DATA AND OVERFLOW AREAS.
THE JOB CONTROL AND UTILITY CONTROL CARD REQUIREMENTS FOR
THIS PROGRAM ARE CONSISTENT WITH THOSE OF STANDARD OS/360
UTILITIES.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-01.6.003   INSPECT UPDATE PRINT
DATA-SET OS/360
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-01.6.003

AUTHORS..D.M. LUDLOW   C.N. STILL

DIRECT INQUIRIES TO..
D.M. LUDLOW,IBM CORP.,BLDG. 706,DEPT. 029,POUGHKEEPSIE, N.Y.

TITLE...SUPERZAP
***N   00.5 06.7   ***

SUPERZAP IS A PROGRAMMING AID DESIGNED TO INSPECT, UPDATE, AND
PRINT THE CONTENTS OF DATA SETS WHICH RESIDE ON DIRECT ACCESS
DEVICES. IT OPERATES UNDER THE IBM SYSTEM/360 OPERATING
SYSTEM AND UTILIZES THE DATA MANAGEMENT AND SYSTEMS FACILITIES
IN REFERRING TO AND ALTERING THE CONTENTS OF THE DATA SET.
DATA REFERENCES CAN BE MADE EITHER DIRECTLY BY POSITION
WITHIN A SPECIFIC DATA RECORD OR INDIRECTLY BY USING AN
ASSEMBLY LISTING. THE MAIN UTILITY OF SUPERZAP IS ITS ABILITY
TO AUTOMATICALLY LOCATE LINK EDITED LOAD MODULES---IMPLEMENT
THE CONTROL FUNCTIONS OF VERIFY, REP, DUMP, AND DUMPT.
ANY MODIFICATIONS OF LOAD MODULES REQUIRE THE PROGRAM TO
ACCESS THE DATA SET DIRECTORY AND SET ON THE LOCALLY MODIFIED
BIT IN THE MEMBER SSI BYTE. SUPERZAP CAN RUN WITHIN A
32K OS/360 SYSTEM ENVIRONMENT WHERE THE DATA SET RECORDS
TO BE ACCESSED ARE NO GREATER THAN 3K BYTES.

CONTINUED FROM PRIOR COLUMN--

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-01.6.004   UTILITY TO EXTRACT COUNTS
FROM IS LABELS,REQUIRES NO ASSEMBLY SHOWS USER STATUS OF FILE SPACE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-01.6.004

AUTHOR...B.H. DILLEY

DIRECT INQUIRIES TO..
B.H. DILLEY,THE HOBART MANUFACTURING CO.,
711 PENNSYLVANIA AVE.,TROY, OHIO 45373

TITLE...ISCTS - S/360 DOS PROGRAM TO EXTRACT INDEX SEQUENTIAL
         COUNTS FROM FORMAT 2 LABEL
***C 4826   00.0 13.0   ***

THE ISFMS /INDEX SEQUENTIAL FILE MANAGEMENT SYSTEM/ MAINTAINS
THE FOLLOWING COUNTS IN THE FORMAT 2 LABEL-
- RANDOM REFERENCES TO NON FIRST OVERFLOW RECORDS.
- NUMBER OF RECORDS IN PRIME DATA AREA.
- NUMBER OF RECORDS IN OVERFLOW AREA.
- NUMBER OF INDEPENDENT OVERFLOW TRACKS REMAINING.
- NUMBER OF CYLINDER OVERFLOW AREAS FULL.
THIS PROGRAM WILL RETRIEVE THE FORMAT 2 LABELS FROM A
2311 ISFM FILE AND PRINT THE COUNTS ON THE 1052 TYPEWRITER.
THESE COUNTS ARE VERY USEFUL IN DETERMINING WHEN TO REORGANIZE
THE FILE, HOW MUCH SPACE TO ALLOCATE TO PRIME AREA AND OVERFLOW
AREA ETC.
MACHINE CONFIGURATION- 360 MODEL 30, 16K OR GREATER.
1052 TYPEWRITER. SOURCE LANGUAGE- 16K DOS/TOS ASSEMBLER
LANGUAGE /BAL/. TWO USER WRITTEN MACROS WERE USED. THESE
ARE INCLUDED IF USER CHOOSES TO REASSEMBLE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-01.7.001   RPG PROGRAM TO CALCULATE
MODULUS-II SELF-CHECK DIGIT
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-01.7.001

AUTHOR...THOMAS E. OBRIEN

DIRECT INQUIRIES TO..
THOMAS E. OBRIEN,IBM CORP.,1830 6TH AVE.,MOLINE, ILL. 61265

TITLE...COMPUTING MODULUS II SYSTEM/360-20
***N   06.0   ***

THIS PROGRAM IS WRITTEN IN RPG TO CALCULATE THE SELF-CHECKING
DIGIT MODULUS 11. THIS PROGRAM IS OF VALUE TO ANYONE SETTING
UP A NUMBERING FILE FOR THE MODULUS 11, AS IN ONE PASS
IT WILL CALCULATE THE SELF-CHECKING DIGIT, PUNCH AND PRINT
IT BACK IN THE CARD, SELECT OUT CARDS CONTAINING NUMBERS
ON WHICH THE SELF-CHECKING DIGIT CANT BE CALCULATED AND
CONCURRENTLY PRINTING A MASTER LIST WHICH ALSO IDENTIFIED
THE UNCALCULATED INPUT. THE PROGRAM WAS WRITTEN FOR A
CARD-ORIENTED S/360-20 INCLUDING A 2020 CPU, 2203 PRINTER
AND A 2560 MFCM WITH THE INTERPRETING DEVICE. STORAGE
REQUIREMENTS ARE 4K.

360D-02.0.001   DIAGNOSTIC TRACE FOR 360
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-02.0.001

AUTHOR...MR. J.L. HALL

DIRECT INQUIRIES TO..
MR. J.L. HALL,MESTA MACHINE CO.,P.O. BOX 1466,
PITTSBURGH, PA. 15230

TITLE...DIAGNOSTIC ROUTINE
***C 3292   04.2   ***

A DIAGNOSTIC ROUTINE TO TRACK DOWN POSSIBLE ERRORS OR TO
CHECK LOGIC FLOW IN FORTRAN PROGRAMS. BECAUSE OF THE MANNER
IN WHICH THE TRACK ROUTINE WORKS, A LIMIT HAD TO BE SET AS
TO THE MAXIMUM NUMBER OF STATEMENTS THAT COULD BE LISTED.
THIS IS SET AT 1200 LINES /20 PAGES/. WHEN THIS IS EXCEEDED,
THE PROGRAM CONTINUES EXECUTION BUT NO MORE TRACK OUTPUT
IS GIVEN. IT IS SUGGESTED THAT CONTROL NEVER BE TRANSFERED
TO A ,,CALL TRACK,, INSTRUCTION. REASONS FOR THIS ARE THAT
AN ERRONEOUS VALUE WILL BE GIVEN FOR THE VALUE STORED, AND
ALSO, IF THE PROGRAM IS TO BE EXECUTED ON A MACHINE WITHOUT
TRACK, THE CARDS COULD BE REMOVED WITHOUT REQUIRING NEW
STATEMENT NUMBERS TO BE GIVEN.
STORAGE USED BY PROGRAM- 4377 BYTES.
EQUIPMENT REQUIRED BY PROGRAM- MINIMUM MACHINE REQUIREMENTS FOR
DOS FORTRAN ARE ADEQUATE.
PROGRAMMING TYPE- FORTRAN IV ASSEMBLY LANGUAGE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-02.5.001   DIAGNOSTICS STATUS RECORDER
FILL PRINT MODEL 30
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-02.5.001

AUTHOR...GEORGE SLOVENSKY

Contributed Programs

CONTINUED FROM PRIOR PAGE--

DIRECT INQUIRIES TO..
    GEORGE SLOVENSKY,IBM CORP.,NEIGHBORHOOD RD.,KINGSTON, N.Y.

    TITLE...SYNAMIC STATUS RECORDER SYSTEM EDIT AND PRINT MODEL 30
        ***N   03.6   ***

    THIS IS A TWO-PHASE PROGRAM FOR DYNAMICALLY RECORDING
PERTINENT SYSTEM ENVIRONMENT INFORMATION UPON THE OCCURRENCE
OF A HARDWARE MALFUNCTION. THE FIRST PHASE /DSR/ IS UNIQUE IN
THAT IT IS DESIGNED TO BE AN INTEGRAL PART OF A CONTROL PROGRAM
AND DOES NOT REQUIRE MANUAL INTERVENTION TO INITIATE. TO
FACILITATE INCLUSION INTO A CONTROL PROGRAM, THIS PHASE
IS AVAILABLE IN SYSTEM/360 BASIC ASSEMBLER LANGUAGE SOURCE
CARDS. THIS SOURCE DECK, WHICH CONSISTS OF 95 CARDS,
REQUIRES 92 BYTES OF CORE STORAGE, AND CAN BE ASSEMBLED
WITH THE BASIC ASSEMBLER PROGRAM UTILIZING THE TAPE OPTION
/AT LEAST ONE 9 TRACK TAPE DRIVE MUST BE AVAILABLE FOR
ASSEMBLY/. PHASE II /SEP/ IS A STAND ALONE PROGRAM THAT
PERFORMS THE EDITING AND PRINTING OF THE RECORDS CONSTRUCTED
IN PHASE I. SEP IS AVAILABLE IN OBJECT DECK FORM AND CONSISTS OF
144 CARDS. THE SEP PHASE FOR THE MODEL 30 CAN BE EXECUTED ON
MINIMUM CORE STORAGE SYSTEMS THAT INCLUDE A
1442 OR 2540 CARD READER, 1403, 1404 OR 1443 PRINTER, AND AN
OUTPUT STORAGE DEVICE /9 TRACK TAPE DRIVE, 2302, 2311, 7320 OR
2321/.

**360D-02.5.002   DIAGNOSTICS STATUS RECORDER
EDIT PRINT MODEL 40**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-02.5.002

AUTHOR...GEORGE SLOVENSKY

DIRECT INQUIRIES TO..
    GEORGE SLOVENSKY,IBM CORP.,NEIGHBORHOOD RD.,KINGSTON, N.Y.

    TITLE...DYNAMIC STATUS RECORDER SYSTEM EDIT AND PRINT MODEL 40
        ***N   03.6   ***

    THIS IS A TWO-PHASE PROGRAM FOR DYNAMICALLY RECORDING PERTINENT
SYSTEM ENVIRONMENT INFORMATION UPON THE OCCURRENCE OF A
HARDWARE MALFUNCTION. THE FIRST PHASE /DSR/ IS UNIQUE IN THAT
IT IS DESIGNED TO BE AN INTEGRAL PART OF A CONTROL PROGRAM
AND DOES NOT REQUIRE MANUAL INTERVENTION TO INITIATE. TO
FACILITATE INCLUSION INTO A CONTROL PROGRAM, THIS PHASE IS
AVAILABLE IN SYSTEM/360 BASIC ASSEMBLER LANGUAGE SOURCE
CARDS. THIS SOURCE DECK, CONSISTING OF 80 CARDS, REQUIRES
76 BYTES OF CORE STORAGE, AND CAN BE ASSEMBLED WITH THE BASIC
ASSEMBLER PROGRAM UTILIZING THE TAPE OPTION /AT LEAST ONE
9 TRACK TAPE DRIVE MUST BE AVAILABLE FOR ASSEMBLY/. PHASE II
/SEP/ IS A STAND ALONE PROGRAM THAT PERFORMS THE EDITING
AND PRINTING OF THE RECORDS CONSTRUCTED IN PHASE I.
SEP IS AVAILABLE IN OBJECT DECK FORM AND CONSISTS OF 201
CARDS. THE SEP PHASE FOR THE MODEL 40 CAN BE
EXECUTED ON MINIMUM CORE STORAGE SYSTEMS THAT INCLUDE A
1442 OR 2540 CARD READER, 1403, 1404 OR 1443 PRINTER AND
AN OUTPUT STORAGE DEVICE /9 TRACK TAPE DRIVE, 2302, 2311, 7320
OR 2321/.

**360D-02.5.003   DIAGNOSTICS STATUS RECORDER
EDIT PRINT MODEL 50**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-02.5.003

AUTHOR...GEORGE SLOVENSKY

DIRECT INQUIRIES TO..
    GEORGE SLOVENSKY,IBM CORP.,NEIGHBORHOOD RD.,KINGSTON, N.Y.

    TITLE...DYNAMIC STATUS RECORDER SYSTEM EDIT AND PRINT MODEL 50
        ***N   03.6   ***

    THIS IS A TWO-PHASE PROGRAM FOR DYNAMICALLY RECORDING PERTINENT
SYSTEM ENVIRONMENT INFORMATION UPON THE OCCURRENCE OF A HARDWARE
MALFUNCTION AND PRINTING THE CONTENTS UPON REQUEST. THE FIRST
PHASE /DSR/ IS UNIQUE IN THAT IT IS DESIGNED TO BE AN INTEGRAL
PART OF A CONTROL PROGRAM AND DOES NOT REQUIRE MANUAL
INTERRUPTION TO INITIATE. TO FACILITATE INCLUSION INTO A
CONTROL PROGRAM, THIS PHASE IS AVAILABLE IN SYSTEM/360
BASIC ASSEMBLER LANGUAGE SOURCE CARDS. THIS SOURCE
DECK, CONSISTING OF 82 CARDS, REQUIRES 72 BYTES OF PERMANENT
CORE STORAGE, AND CAN BE ASSEMBLED WITH THE BASIC ASSEMBLER
PROGRAM UTILIZING THE TAPE OPTION /AT LEAST ONE 9 TRACK TAPE
DRIVE MUST BE AVAILABLE FOR ASSEMBLY/. PHASE II /SEP/ IS
A STAND ALONE PROGRAM THAT PERFORMS THE EDITING AND PRINTING
OF THE RECORDS CONSTRUCTED IN PHASE I. THE SEP PHASE FOR THE
MODEL 50 CAN BE EXECUTED ON MINIMUM CORE STORAGE SYSTEMS THAT
INCLUDE A 1442 OR 2540 CARD READER, 1403, 1404 OR 1443 PRINTER,
AND AN OUTPUT STORAGE DEVICE /9 TRACK TAPE DRIVE, 2302, 2311,
7320 OR 2321/.

**360D-03.2.004   LIMITED ENTRY DECISION
TABLES TRANSLATOR, RULE-SORT AND CROSS-LINK OPTIMIZE OUTPUT PL/I**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.2.004

AUTHOR...K.J. COULTER

DIRECT INQUIRIES TO..
    K.J. COULTER,BELL TELEPHONE CO. OF CANADA,620 BELMONT, R1310
    MONTREAL, QUEBEC, CANADA

    TITLE...PET - PRE-PROCESSOR OF ENCODED TABLES
        ***G   12.2 03.6   ***

    PET IS A DECISION TABLE TRANSLATOR. THE SOURCE LANGUAGE
IS A COMBINATION OF PL/I AND PET VERBS. THROUGH RULE
SORTING AND THE CROSS-LINKING OF DUPLICATE ACTION STRINGS,
EFFICIENT STRUCTURING OF THE INPUT TABLES LOGIC PRODUCES
OPTIMIZED OUTPUT PROGRAM CODE. A COMPLETE ERROR CHECK PLUS
A TABLE UPDATE FACILITY PERMITS DEBUGGING AT THE LOGIC LEVEL.
SEVEN PHASES OF PET PASS AGAINST TABLE HELD IN INTERNAL
ARRAY. PET CAN HANDLE UP TO 30 RULES AND 50 CONDITIONS AND/OR
ACTIONS PER TABLE, PLUS INITIALIZATION AND COMMENT CARDS.
ONLY LIMITED ENTRY TABLES HAVING NO ,,ELSE,, RULES NOR
,,NUMBERED,, ACTIONS ARE TRANSLATABLE BY PET. LOGICAL TABLES
MAY BE GROUPED AND CROSSREFERENCED TO CREATE PROCEDURES.

CONTINUED FROM PRIOR COLUMN--
    67K PARTITION SYSTEM IS REQUIRED. PET CAN BE EXECUTED ON ANY
IBM/360 CONFIGURATION WHICH CAN HANDLE THE PL/1 COMPILER, WITH A
MINIMUM OF 128K STORAGE. PET IS WRITTEN IN PL/1 /LEVEL ,,F,,/
AND HAS BEEN SPLIT INTO 5 SEGMENTS TO SAVE CORE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL
IS REQUIRED.

**360D-03.4.001   BOS INPUT/OUTPUT CONTROL
1412/1419 READER/SORTERS**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.4.001

AUTHOR...W.M. HALLINAN

DIRECT INQUIRIES TO..
    W.M. HALLINAN,IBM CORP.,100 S. WACKER DR.,CHICAGO, ILL.

    TITLE...INPUT/OUTPUT CONTROL PROGRAM FOR 1412/1419
        READER/SORTERS ON THE S/360 UNDER 8K BOS
        ***N   06.3 06.1   ***

    THIS PROGRAM IS DESIGNED TO RUN UNDER THE 8K DISK BASIC
OPERATING SYSTEM. THE FACILITIES OF BOS CAN BE UTILIZED
IN PROGRAMS WHICH USE READER SORTERS. DURING OPERATION OF
READER SORTER PROGRAMS, THIS CONTROL PROGRAM IS APPENDED TO
THE BOS SUPERVISOR. IT REQUIRES APPROXIMATELY 2,300
POSITIONS OF MEMORY IN ADDITION TO THE BOS SUPERVISOR CORE
REQUIREMENTS. SOURCE LANGUAGE IS 360 ASSEMBLER LANGUAGE.
THE READER SORTER CONTROL PROGRAM IS A MODIFICATION TO
VERSION 1 OF THE BPS IOCP PROGRAM FOR 1412/1419--PROGRAM
NUMBER 360P-IO-058.
THE MINIMUM SYSTEM CONFIGURATION IS A 16K 360 WITH EXTERNAL
INTERRUPT FEATURE, A CARD READER, AT LEAST 1 2311, A CONSOLE
PRINTER AND EITHER AN IBM 1412 OR 1419 READER SORTER.
THE SPECIFICATIONS FOR USING THE PROGRAM ARE ESSENTIALLY
AS OUTLINED IN IBM SYSTEM/360 BASIC PROGRAMMING SUPPORT
SPECIFICATIONS INPUT/OUTPUT 1412/1419 FORM NUMBER C24-3398.
FOR I/O OPERATIONS OTHER THAN THE 1412/1419 SEE THE BOS
MANUALS. THE ONLY CHANGES IN THE I/O OPERATIONS FOR 1412/1419
FROM THE BPS IOCP ARE REGISTER ASSIGNMENTS AND SUPERVISOR
CALL CODES WHICH HAVE BEEN ALTERED TO AVOID CONFLICT WITH BOS.

**360D-03.4.002   2250 GENERATION
TRANSFORMATION IMAGE DEFINITION ARRAYS SUBROUTINES**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.4.002

AUTHORS..R.G. LOOMIS   W.H. DODRILL   D. TANNER

DIRECT INQUIRIES TO..
    F. ZEDERBAUM,IBM CORP.,590 MADISON AVE.,NEW YORK, N.Y. 10022

    TITLE...FORTRAN CONSOLE PROGRAMMING SYSTEM ICPS
        ***N   00.6 06.6 08.7   ***

    THE PROGRAM PROVIDES A SET OF SUBROUTINES FOR THE GENERATION
OF IMAGE DEFINITION ARRAYS AND THEIR TRANSFORMATION INTO
DISPLAY STRINGS IN THE BUFFER OF THE IBM 2250, WITH SELECTIVE
CONTROL OVER THE IMAGE PROCESSING PROVIDED BY THE LOGIC OF
THE FORTRAN PROGRAM. THE GENERALITY OF THESE SUBROUTINES
TOGETHER WITH THE VERSATILITY OF THE FORTRAN LANGUAGE PROVIDES
GREAT FLEXIBILITY IN THE DESIGN OF PROGRAMS FOR IMAGE
MANIPULATION AT THE CONSOLE ACCORDING TO THE REQUIREMENTS
OF THE PARTICULAR PROBLEM. THE CPS SYSTEM TAPE EMBODIES
ALL THE FEATURES OF FORTRAN IV BPS, LEVEL D, TAPE 16K, AND
SUPPORTS A SINGLE 2250 MODEL 1 DISPLAY CONSOLE WHICH MUST
BE EQUIPPED WITH 4K OR 8K BUFFER, THE CHARACTER GENERATOR,
AND THE ABSOLUTE VECTOR FEATURE.
THE SYSTEM WILL RUN ON ANY SYSTEM/360 MODEL 30 OR HIGHER,
HAVING 64K OR MORE, EQUIPPED WITH 1052 TERMINAL, CARD
READER-PUNCH, EITHER 2540 OR 1442, 1403 PRINTER AND FOUR
TAPE UNITS. OPTIONAL FEATURES SUPPORTED ARE THE LIGHT PEN,
THE FUNCTION KEYS AND THE INDICATOR LIGHTS.

THE BASIC MACHINE READABLE MATERIAL IS A 9-TRACK SYSTEMS
TAPE. ONE 2400 FOOT MAGNETIC TAPE IS REQUIRED.
THE OPTIONAL MATERIAL CONSISTS OF-
1. A 9-TRACK REFERENCE TAPE.
2. A 7-TRACK AUTOCHART TAPE.
THE TAPES REQUIRED TO OBTAIN THE BASIC AND OPTIONAL MATERIAL MAY
BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPES
PROVIDED MUST BE 2400 FEET IN LENGTH.

**360D-03.4.007   OBJECT/TIME/FORMATING
/SUBROUTINE FOR FORTRAN IV-E 360/OS**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.4.007

AUTHOR...MR. E.M. HAMILTON

DIRECT INQUIRIES TO..
    MR. E.M. HAMILTON,COMPUTER CENTER,GEORGE WASHINGTON UNIV.,
    2013 G ST., N.W.,WASHINGTON, D.C. 20006

    TITLE...SUBROUTINE OBJFMT
        ***S GWU   03.8 07.6 06.5   ***

    THIS ASSEMBLY LANGUAGE SUBROUTINE WILL REPLACE ANY SPECIFIED
COMPILED FORMAT STATEMENT IN THE CALLING PROGRAM WITH A
FORMAT STATEMENT READ AT EXECUTION TIME. IT WILL COMPILE
ANY VALID FORTRAN IV-E SPECIFICATIONS AND IS INDEPENDENT OF
ANY DATA SET REFERENCE NUMBER DEFINITION. THE SUBROUTINE,
WRITTEN FOR 360 O/S, IS INDEPENDENT OF ANY PARTICULAR RELEASE,
AND USES APPROXIMATELY 2,300 BYTES OF CORE AND IS SERIALLY
REUSABLE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED.
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

Contributed Programs

**360D-03.4.010   OBJECT/TIME/FORMATING
/SUBROUTINE FOR FORTRAN IV-E 360/DOS**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.4.010

AUTHOR...MR. E.M. HAMILTON

DIRECT INQUIRIES TO..
        MR. E.M. HAMILTON,COMPUTER CENTER,GEORGE WASHINGTON UNIV.,
        2013 G ST., N.W.,WASHINGTON, D.C. 20006

    TITLE...SUBROUTINE OBJFMT
            ***S GWU   07.6 06.5 03.8   ***

    THIS ASSEMBLY LANGUAGE SUBROUTINE WILL REPLACE ANY SPECIFIED
    COMPILED FORMAT STATEMENT IN THE CALLING PROGRAM WITH A
    FORMAT STATEMENT READ AT EXECUTION TIME. IT WILL COMPILE
    ANY VALID FORTRAN IV-E SPECIFICATIONS AND IS INDEPENDENT OF
    ANY DATA SET REFERENCE NUMBER DEFINITION. THE SUBROUTINE IS
    WRITTEN FOR 360 DOS/TOS, IS INDEPENDENT OF ANY PARTICULAR
    RELEASE AND USES APPROXIMATELY 2,300 BYTES OF CORE AND IS
    SERIALLY REUSABLE.

**360D-03.4.013   DOS COBOL DISK INDEX
SEQUENTIAL MACROS LOAD ADD RETRIEVE UPDATE**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.4.013

AUTHOR...DIANN C. HANSEN

DIRECT INQUIRIES TO..
        DIANN C. HANSEN,IBM CORP.,340 MARKET ST.,SAN FRANCISCO, CALIF

    TITLE...DOBOL - DISK INDEX SEQUENTIAL MACROS -- 16K DOS COBOL
            ***N   00.4 06.0   ***

    THIS PROGRAM IS A MAJOR MODIFICATION TO 16K DOS COBOL
    DIRECT ACCESS MACROS. IT WILL COVER ONLY THE INDEX SEQUENTIAL
    ACCESS METHOD AND WILL GIVE TO A COBOL USER THE ABILITY TO
    USE IS FILES EFFECTIVELY. THERE ARE EIGHT ASSEMBLY LANGUAGE
    MACROS WHICH WILL RESIDE IN THE SOURCE LIBRARY. THE MACROS
    WILL LOAD, ADD, RETRIEVE AND UPDATE SEQUENTIAL, RANDOM AND
    RANDOM-SEQUENTIAL FILES., RETRIEVE AND UPDATE AND ALLOW ADD
    TO SEQUENTIAL, RANDOM AND RANDOM-SEQUENTIAL FILES. THE MACROS
    ALSO ALLOW FOR A MASTER INDEX, MULTIPLE EXTENTS AND CYLINDER
    OVERFLOW TRACKS AND OVERLAP OF PROCESSING WITH RANDOM READ
    AND WRITE MACROS. ALSO, REORGANIZATION STATISTICS WILL BE
    AVAILABLE AT THE TIME THE FILE IS CLOSED.
    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR
    7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION
    TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A
    9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A
    9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
    THE DTR WILL BE PROVIDED BY THE LIBRARY.

**360D-03.4.014   BOS MACROS INDEXED
SEQUENTIAL FILE MANAGEMENT SYSTEM VARIABLE LENGTH UNBLOCKED RECORDS**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.4.014

AUTHOR...HOWARD KATZ

DIRECT INQUIRIES TO..
        HOWARD KATZ,IBM CORP.,1031 NORTH BRAND BLVD.,
        GLENDALE, CALIF. 91202

    TITLE...BOS - INDEXED SEQUENTIAL FILE MANAGEMENT SYSTEM-
            SUPPORT FOR VARIABLE LENGTH UNBLOCKED RECORDS
            ***N   03.0 03.7   ***

    IBM TYPE I SUPPORT FOR BOS, AT PRESENT, DOES NOT INCLUDE
    THE HANDLING OF VARIABLE LENGTH RECORDS UNDER ISFMS.
    THEREFORE, IT IS THE INTENT OF THESE MACROS TO PROVIDE AN
    IBM S/360 USER THE CAPABILITY TO PROCESS VARIABLE LENGTH
    UNBLOCKED RECORDS BY USING MACRO STATEMENTS IN THE SAME
    MANNER AS HE WOULD PROCESS A STANDARD FIXED RECORD LENGTH
    FILE. CARE WAS TAKEN TO MAKE ALL MODIFICATIONS COMPATIBLE
    WITH THE STANDARD ISFMS AND BOS 8K DISK. PROGRAMMING LANGUAGES
    USED ARE BOS 8K DISK MACRO LANGUAGE AND ASSEMBLER LANGUAGE.
    MACHINE REQUIREMENTS ARE AT LEAST A S/360 MODEL 30 WITH AT
    LEAST 8K AND 1-2311.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
    DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
    WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
    A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
    THE DTR WILL BE PROVIDED BY THE LIBRARY.

**360D-03.4.015   SUBROUTINE TO ALLOW FORTRAN
PROGRAMMER TO USE OBJECT-TIME FORMATTING IN INPUT-OUTPUT STATEMENTS**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.4.015

AUTHORS..F.D. JAGGAR   G.H. DEVEREAUX   A.R. HAUSER

DIRECT INQUIRIES TO..
        F.D. JAGGAR,IBM CORP.,3610 14TH ST.,RIVERSIDE, CALIF. 92502

    TITLE...OS/360 FORTRAN E OBJECT TIME FORMAT SUBROUTINE
            ***N   12.0   ***

    THIS SUBROUTINE ALLOWS AN E LEVEL FORTRAN PROGRAMMER TO USE
    OBJECT TIME FORMATTING IN INPUT/OUTPUT STATEMENTS. IT WAS
    WRITTEN AS AN AID TO CONVERSION OF PROGRAMS FROM 7094 FORTRAN IV
    TO FORTRAN E. THE SUBROUTINE MAY, WITH MODIFICATION, BE USED
    WITH BPS FORTRAN.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
    DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
    WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
    A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
    THE DTR WILL BE PROVIDED BY THE LIBRARY.

**360D-03.6.001   FORTRAN CROSS REFERENCE
LISTING /OF/ NAMES, KEYWORDS /AND/ CONSTANTS.**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.6.001

AUTHOR...R.H. KARPINSKI

DIRECT INQUIRIES TO..
        MR. J.B. YEATON,110 M.R.-4,UNIVERSITY OF CALIFORNIA,
        MEDICAL CNTR.,SAN FRANCISCO, CALIF. 94122

    TITLE...FORTRAN CROSS REFERENCE
            ***S UCS XREF 00.0 03.2   ***

    FORTXREF IS A STANDARD PL/1 PROGRAM USING SYSIN FOR THE INPUT
    DATA AND SYSPRINT FOR THE OUTPUT. THE DATA CONSISTS OF ONE OR
    MORE FORTRAN PROGRAMS. EACH OCCURRENCE OF A FORTRAN END CARD
    WILL CAUSE THE CROSS-REFERENCING TABLE TO BE OUTPUT AND
    REINITIALIZED. THIS WILL ALSO HAPPEN ON END OF DATA IF THE LAST
    CARD IS NOT AN END CARD. EACH INPUT CARD WILL BE OUTPUT WITH
    A FORTRAN LINE NUMBER IF APPROPRIATE. THE CROSS-REFERENCE
    TABLE GIVES /IN 360 COLLATING SEQUENCE/ EACH KEYWORD,
    VARIABLE NAME, STATEMENT NUMBER, AND CONSTANT WITH A LIST OF
    EACH USE BY LINE NUMBER. INACCURACIES- IF ,,FORMAT,, IS
    USED AS AN ARRAY NAME, THE REST OF THE STATEMENT MAY NOT BE
    CROSS REFERENCED. LIMITS- 1000 ITEMS MAY BE REFERENCED
    APPROXIMATELY 6000 TIMES.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
    ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
    REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
    9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
    NO TAPE SUMBITTAL IS REQUIRED.

**360D-03.6.002   MODEL 20 RPG PRELIST EDIT
CARD TAPE DISK DOCUMENTATION**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.6.002

AUTHOR...S.T. FLEMING, JR.

DIRECT INQUIRIES TO..
        S.T. FLEMING, JR.,IBM CORP.,2125 BISCAYNE BLVD.,
        MIAMI, FLA. 33137

    TITLE...REPORT PROGRAM GENERATOR PRELIST FOR MODEL 20 CARD,
            TAPE AND DISK
            ***N   04.3 06.8   ***

    THE RPG PRELISTER IS A PROGRAM WRITTEN TO PROVIDE A TOOL
    FOR EDITING RPG PROGRAMS FOR CLERICAL ERRORS. RPG PROGRAMS
    WRITTEN FOR MODEL 20 CARD, TAPE AND DISK CAN BE TESTED.
    THE PRELISTER IS WRITTEN IN MODEL 20 ASSEMBLER LANGUAGE
    AND REQUIRES AN 8K MODEL 20 EQUIPPED WITH A CARD READER AND
    A PRINTER WITH 120 PRINT POSITIONS. IT PROVIDES A LISTING
    OF FILE DESCRIPTION, FILE EXTENSION, INPUT, CALCULATION,
    OUTPUT AND COMMENTS CARDS UNDER APPROPRIATE HEADINGS AND
    TESTS FOR CLERICAL ERRORS IN EACH CARD. THIS LISTING IS
    ALSO DESIGNED TO SERVE AS THE PROGRAM DOCUMENTATION.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
    ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
    REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
    9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
    NO TAPE SUBMITTAL IS REQUIRED.

**360D-03.7.001   DOS COBOL STACKER SELECT
MACRO**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.7.001

AUTHOR...R. FRATARCANGELO

DIRECT INQUIRIES TO..
        R. FRATARCANGELO,IBM CORP.,1427 GENESEE ST.,UTICA, N. Y.

    TITLE...COBOL STACKER SELECT MACRO
            ***N   06.0   ***

    THE PURPOSE OF THIS ASSEMBLER LANGUAGE MACRO IS TO ALLOW THE
    COBOL USER TO SELECT INPUT DATA CARDS. TWO SEPERATE CALLS ARE
    REQUIRED TO CAUSE STACKER SELECTION. THE FIRST CALL INITIATES
    THE CARD READ. THE SECOND CALL DETERMINES WHICH POCKET THE CARD
    WILL BE SELECTED INTO AND MUST BE ISSUED ANY TIME PRIOR TO THE
    NEXT READ. THE CARD DOES NOT PHYSICALLY GET SELECTED INTO THE
    POCKET UNTIL THE NEXT CARD FEED CYCLE. THIS MEANS THAT THE
    PROGRAMMER HAS UNLIMITED TIME TO DETERMINE INTO WHICH POCKET
    THE CARD IS TO BE SELECTED. THIS MACRO OPERATES UNDER DOS AND
    IS DESIGNED ALONG THE SAME LINES AS THE DASO COBOL MACROS.

**360D-03.7.002   BPS/BOS MACROS ASSEMBLY
LANGUAGE CONTROL BASE REGISTERS DECIMAL OPERATIONS**
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.7.002

AUTHOR...MARKHAM J. MATSON

DIRECT INQUIRIES TO..
        MARKHAM J. MATSON,2000 S.W. FIRST AVE.,PORTLAND, ORE. 97201

    TITLE...MACROS FOR PACKED DECIMAL OPERATIONS AND BASE REGISTER
            CONTROL
            ***N   03.1 06.0   ***

    THIS SET OF MACROS IS DESIGNED TO SIMPLIFY CODING IN ASSEMBLY
    LANGUAGE, OPERATING UNDER A SYSTEM/360 WITH DECIMAL INSTRUCTION
    SET OPERATING UNDER 8K BPS OR 8K BOS. THE INITIALIZATION AND
    SEQUENCE MACRO CONTROL BASE REGISTER ASSIGNMENT AND MAINTENANCE.
    THE ARITHMETIC MACROS, ADD, SUB, MULT AND DIVD PROVIDE
    PACKED-DECIMAL ALIGNMENT. THE EDIT MACRO GENERATES A MASK AND
    PERFORMS THE EDIT. THE PACK AND UNPACK MACRO CHECK FOR VALID
    SIGN AND GENERATE ONE IF A BLANK FIELD IS PACKED. THE OPERATOR
    COMMUNICATION MACROS PROVIDE VARIABLE LENGTH MESSAGE AND
    RESPONSES.
    THE PROGRAM AND MACRO STANDARDS SHOW A SUGGESTED STANDARD THAT
    MAY BE MODIFIED BY CHANGING THE INIT, GOTO, SUBRX AND LINKX
    MACROS. THE USER NEED ONLY CATALOG THOSE MACROS THAT WILL BE OF

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CONTINUED FROM PRIOR PAGE--
        USE TO HIM.
        THE SAMPLE PROGRAM SHOWS THE MACROS IN USE AND THE GENERATED
        CODE. THE PRIMARY PURPOSE OF THE SAMPLE PROGRAM IS TO
        FAMILIARIZE THE USER WITH GENERATED CODE.

360D-03.7.003   MACROS,/BAL LNG,BOS SYS/,
MOVE, TABLE BLD/RETRVE SWITCH MANIPULATION BASIC ARITH,DECISION MAKING
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-03.7.003

    AUTHOR...MR. B.H. DILLEY

    DIRECT INQUIRIES TO..
            MR. B.H. DILLEY,711 PENNSYLVANIA AVE.,TROY, OHIO

        TITLE...8K BASIC OPERATING SYSTEM MACROS
                C   4826   01.8   03.7   06.4   06.0

        THE 8K BOS MACROS ARE DESIGNED TO FACILITATE PROGRAMMING
        THROUGH GENERATION OF PRE-TESTED CODING. INTRICATE CODING
        TECHNIQUES SUCH AS BASE REGISTER SETTINGS AND TABLE LOOK-UP
        ARE REDUCED TO LOGICAL OPERATIONS ON THE PART OF THE PROGRAMMER
        AND/OR SYSTEMS ANALYSTS. THEREBY MORE TIME CAN BE DEVOTED
        TO PROBLEM SOLVING AND LESS TIME TO INTRICATE COMPUTER
        PROGRAMMING. PACKED DECIMAL MACROS ARE DIVIDE, MULTIPLY,
        SHIFT, ZERO, ADD, SUBTRACT, PACK, UNPACK, AND EDIT. PACKED
        OR ZONE MACROS INCLUDE COMPARE, RANGE, IFNUMERIC, BLANK
        AND MOVE. OPERATOR COMMUNICATIUN MACROS INCLUDE TYPE AND
        REPLY. SWITCH HANDLING MACROS INCLUDE MACROS /7 OF THEM/
        TO DEFINE, MANIPULATE AND INTERROGATE PROGRAM SWITCHES.
        OTHER MACROS INCLUDE A POWERFUL TABLE LOOK-UP AND A MACRO
        TO DEFINE, LOAD AND COMMUNICATE BASE REGISTER SETTINGS TO THE
        ASSEMBLER.
        MACHINE REQUIREMENTS- DESIGNED TO BE CATALOGUED INTO THE
        S/360 8K BOS DISK COMPILER, AND THEREFORE WILL FUNCTION ON
        ANY S/360 THE 8K BOS DISK COMPILER WILL FUNCTION ON.
        PACKED DECIMAL FEATURE REQUIRED FOR MOST OF THE MACROS.

        TO OBTAIN THE MACHINE READABLE PORTION OF THE PROGRAM ONE
        FULL 2400 FOOT, REEL OF MAGNETIC TAPE IS REQUIRED.

360D-03.7.004   DOS/TOS ASSEMBLER LANGUAGE
BOS/BPS MSG MACRO FACILITY
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-03.7.004

    AUTHOR...E.L. ABT

    DIRECT INQUIRIES TO..
            E.L. ABT,IBM CORP.,520 BOYLSTON ST.,BOSTON, MASS.   02116

        TITLE...BOS/BPS MSG MACRO FOR DOS/TOS IBM SYSTEM/360 ASSEMBLER
                LANGUAGE
                ***N   08.7   ***

        THIS SET OF THREE MACROS PRUVIDES DOS/TOS ASSEMBLER LANGUAGE
        PROGRAMS THE MSG MACRO FACILITY OF BOS/BPS. THE FORMAT AND
        OPERATION OF THE MSG MACRO REMAINS THE SAME AS UNDER BOS/BPS.
        TWO ADDITIONAL MACROS ARE PROVIDED. MSGX GENERATES A CLOSED
        SUBROUTINE TO DO THE TYPING AND RESPONSE HANDLING. TYPE
        GENERATES A DTFCN FOR THE CONSOLE PRINTER AND IS USED BY MSGX.
        THE SAME CONSOLE FACILITIES MAY BE USED BY THE PROBLEM
        PROGRAM AS WELL. THESE MACROS ARE WRITTEN IN DOS/TOS MACRU
        LANGUAGE.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
        OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
        DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
        WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
        A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
        THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-03.7.005   DOS/TOS MACROS
INIALIZE-FIELDS MOVE-DATA COMPUTE-SUMS COMPARE-FIELDS
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-03.7.005

    AUTHOR...P.J. HAMILTON

    DIRECT INQUIRIES TO..
            P.J. HAMILTON,IBM CORP.,DEPT. 867,GARDEN STATE PKWY.,
            EXIT 136,CRANFORD, N.J.

        TITLE...DATA MANIPULATION MACROS FOR THE SYSTEM/360 DOS/TOS
                ASSEMBLER
                ***N   06.6   ***

        THESE MACRO INSTRUCTIONS ALLOW THE SYSTEM/360 DOS/TOS
        ASSEMBLY LANGUAGE PROGRAMMER TO MOVE DATA, COMPUTE SUMS,
        COMPARE FIELDS, AND INITIALIZE AREAS WITHOUT HAVING TO WRITE
        THE MACHINE INSTRUCTIONS FOR FORMAT CONVERSION, WORD BOUNDARY
        ALIGNMENT, OR LENGTH ADJUSTMENT. THEY ARE WRITTEN TO
        MANIPULATE FIELDS AND LITERALS OF TYPE A,B,C,F,H,P,V,X,Y, AND Z.
        THEY ARE DESIGNED WITH THE GREATEST CONSIDERATION GIVEN
        TO OBJECT PROGRAM EFFICIENCY.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
        ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
        9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
        NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.006   DOS ASSEMBLER LANGUAGE
MACRO CHANNEL COMMAND WORD
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-03.7.006

    AUTHOR...MR. S. AUERBOCK

    DIRECT INQUIRIES TO..
            MR. S. AUERBOCK,IBM CORP.,330 MADISON AVE.,
            NEW YORK CITY, N.Y.   10017

CONTINUED FROM PRIOR COLUMN--

        TITLE...CHANNEL COMMAND WORD MACROS
                ***N   ***

        THIS ASSEMBLER LANGUAGE MACRO INSTRUCTION WILL AID THE
        CHANNEL PROGRAMMER. THE MACRO INCLUDES THE FOLLOWING FEATURES-
        - MNEMONIC CHANNEL COMMANDS FOR MORE COMMON I/O DEVICES.
          THE USER CAN EXPAND OR MODIFY THE TABLE TO INCLUDE HIS
          OWN DEVICES.
        - MNEMONICS FOR THE FLAG BITS. FLAGS NOT SPECIFIED ARE
          GENERATED AS ZERO BITS., HENCE THE ENTIRE FLAG ENTRY IS
          OPTIONAL.
        - IMPLICIT COUNT FIELD. IF THIS OPTIONAL ENTRY IS OMITTED,
          A COUNT EQUAL TO THE LENGTH OF THE I/O AREA IS GENERATED.
        THE MACRO WILL BE ESPECIALLY VALUABLE TO USERS INSTALLING A
        1418/1428 OR 1287. INSTALLATIONS USING NON-STANDARD LABELS
        WILL ALSO FIND THE MACRO USEFUL. MACRO WAS WRITTEN AND
        TESTED USING THE S/360 D.O.S. ASSEMBLER LANGUAGE.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
        ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
        9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
        NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.007   BPS/BOS ASSEMBLER LANGUAGE
MACROS GENERATE CLEAR PACK TRANSFER CROSS-FOOT SUMMARIZE
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-03.7.007

    AUTHOR...MR. E.L. ABT

    DIRECT INQUIRIES TO..
            MR. E.L. ABT,IBM CORP.,FIELD SYSTEMS CTR.,520 BOYLSTON ST.,
            BOSTON, MASS.

        TITLE...USEFUL BPS/BOS MACROS FOR IBM SYSTEM/360 ASSEMBLER
                LANGUAGE
                ***N   ***

        THIS SET OF MACROS PROVIDES HIGHER-LEVEL CODING FOR MANY
        COMMON DATA PROCESSING PROGRAMMING NEEDS. ONE GROUP PROVIDES
        ROUTINES TO GENERATE, CLEAR, PACK, TOTAL TRANSFER, CROSS FOOT,
        AND SUMMARIZE DECIMAL FIELDS. THE UPSI AND TEST MACROS
        CONVERT THE UPSI BYTE TO CHARACTER SWITCHES AND TEST FOR
        ON/OFF CONDITIONS. THE BALRX MACROS GENERATES BASE REGISTER
        LOADING AND USING STATEMENTS. THE CLEAR MACRO WILL CLEAR
        ANY SIZE AREA TO ANY CHARACTER. THE MOVE MACRO WILL MOVE
        ANY SIZE AREA TO ANOTHER AREA. THE TYPE AND TYPEX MACROS
        GENERATE A STANDARD TYPE ROUTINE. THIS IS USED BY OTHER
        MACROS FOR TYPING FILE NAMES DURING OPEN, PROGRAM CHECK
        IDENTIFICATION, I/O ERROR HANDLING, ETC. ADDITIONAL MACROS
        PROVIDE TABLE LOOK-UP, DATE HANDLING, PAGE NUMBERING,
        REGISTER SAVING, ZONE STRIPPING, ZERO SUPPRESSION, AND
        ZERO FILLING. THE MACROS ARE WRITTEN IN 8K BPS/BOS MACRO
        LANGUAGE. THEY ARE BEING REWRITTEN FOR DOS/TOS.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
        OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
        9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
        NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.008   16K GENERAL /PURPOSE/
MACROS
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-03.7.008

    AUTHOR...BOBBY H. DILLEY

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            BOBBY H. DILLEY,ASSISTANT MANAGER OF EDP SYSTEMS,
            THE HOBART MANUFACTURING CO.,711 PENNSYLVANIA AVE.,
            TROY, OHIO   45373

        TITLE...16K GENERAL PURPOSE MACROS
                ***C   4826   06.4   06.0   ***

        THE 16K GENERAL PURPOSE MACROS ARE DESIGNED TO ASSIST THE
        PROGRAMMER USING BASIC ASSEMBLER LANGUAGE. THE MACROS
        FACILITIATE PROGRAMMING THROUGH GENERATION OF PRE-TESTED
        CODING. INTRICATE CODING TECHNIQUES SUCH AS BASE REGISTER
        SETTINGS ARE REDUCED TO LOGICAL OPERATIONS ON THE PART OF THE
        PROGRAMMER. DECIMAL ARITHMETIC MACROS CONSIST OF ADD, SUBTRACT,
        MULTIPLY, DIVIDE, AND SHIFT. OPERATOR COMMUNICATION MACROS
        INCLUDE TYPE AND REPLY USING A 1052. DATA CONVERSION MACROS
        ARE CALJL TO TWO JULIAN DATES. OTHER GENERAL PURPOSE MACROS
        ARE BLANK, COMPARE, RANGE, EDIT, TABLE LOOK-UP, MOVE, PACK,
        UNPACK, ZEROP /ZERO PACKED FIELDS/ BASE REGISTER SETTING AND
        COMMUNICATION, AND SWITCH DEFINITION AND TESTING /SWON, SWOFF,
        IFON, IFOFF, SETON, SETOF, SETSB, IFONB, FTTR, FTNOP/.
        THE IFNUM MACRO IS USED TO VALIDATE NUMERIC FIELDS. THERE ARE
        31 MACROS IN THIS PACKAGE. THESE MACROS ARE DESIGNED TO BE
        CATALOGUED INTO THE 16K DOS/TOS COMPILER AND THEREFORE WILL
        FUNCTION ON ANY S/360 THE 16K DOS/TOS COMPILER WILL FUNCTION ON.
        THE PACKED DECIMAL FEATURE IS REQUIRED FOR MOST OF THE MACROS.
        SOURCE LANGUAGE IS 16K DOS/TOS MACRO LANGUAGE.

        THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR
        7-TRACK REEL OF MAGNETIC TAPE. THE TAPE MAY BE ORDERED FROM
        YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE MUST BE 2400 FEET
        IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK
        WILL BE FORWARDED.

360D-03.7.009   PROGRAMMING /AIDS/ INDEX
SEQUENTIAL TESTING MACROS
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-03.7.009

    AUTHOR...B.H. DILLEY

    DIRECT INQUIRIES TO..
            B.H. DILLEY,HOBART MANUFACTURING CORP.,TROY, OHIO

Contributed Programs

CONTINUED FROM PRIOR PAGE--

TITLE...INDEX SEQUENTIAL FILENAMEC STATUS TESTING MACROS
***C 4826   02.0   ***

THE IFER AND IFERL MACROS WERE DESIGNED TO AID THE PROGRAMMER
IN TESTING THE STATUS BYTE /FILENAMEC/ OF INDEX SEQUENTIAL
FILES. THE PROGRAMMER IS ALLOWED TO REQUEST TESTING OF THE
STATUS OF A GET, PUT, READ, WRITE OR SETL REQUEST AGAINST
AN INDEX SEQUENTIAL FILE IN SYMBOLIC TERMS WHICH ARE MEANINGFUL
TO HIM. PROGRAM CONTROL IS PASSED TO THE ROUTINE DIRECTED
BY THE PROGRAMMER FOR FURTHER DETAIL ACTION. CONDITIONS
TESTED FOR INCLUDE DISKERROR, WRONG LENGTH ERROR, SEQUENTIAL
END OF FILE, NO HIT ON RANDOM RETRIEVAL, ILLEGAL FILE LIMITS,
DUPLICATE RECORD, OVERFLOW AREA FULL, OVERFLOW RECORD
INDICATION, PRIME AREA FULL, CYLINDER INDEX FULL, MASTER
INDEX FULL, AND SEQUENCE ERRORS. SOURCE LANGUAGE IS
16K DOS/TOS MACRO LANGUAGE /BAL/. ONE USER WRITTEN MACRO
/IFONB/ MACRO IS CALLED AS AN INNER MACRO. THE SOURCE FOR
IT IS INCLUDED. A 16K MODEL 30 WITH A 1052 TYPEWRITER AND
ONE OR MORE 2311 DISK DRIVES IS REQUIRED.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.010   DOS/TOS ASSEMBLER LANGUAGE
MACROS CONSOLE COMMUNICATIONS
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.7.010

AUTHOR...E.L. ABT

DIRECT INQUIRIES TO..
    E.L. ABT,IBM CORP.,520 BOYLSTON ST.,BOSTON, MASS. 02116

TITLE...WRITE TO OPERATOR MACROS FOR DOS/TOS ASSEMBLER LANGUAGE
***N   ***

THIS SET OF FOUR MACROS PROVIDES DOS/TOS ASSEMBLER LANGUAGE
PROGRAMS CONSOLE COMMUNICATION FACILITIES SIMILAR TO THAT
AVAILABLE IN OPERATING SYSTEM/360. THE WTO MACRO ALLOWS
THE USER TO TYPE UP TO 100 CHARACTERS ON SYSLOG, WHILE WTOR
WILL IN ADDITION ACCEPT A RESPONSE OF UP TO 100 CHARACTERS.
BOTH WTO AND WTOR LINK TO A CLOSED SUBROUTINE GENERATED BY
THE WTOX MACRO. THIS ROUTINE IN TURN LINKS TO A STANDARD
DTFCN GENERATED FROM THE TYPE MACRO. THE TYPE MACRO IS THE
SAME AS USED BY THE MSG MACRO PROGRAM /360D-03.1.003/ AND CAN
BE SHARED BY MSG MACRO PROCESSING. THE SAME CONSOLE FACILITIES
MAY BE USED BY THE PROBLEM PROGRAM. THESE MACROS ARE WRITTEN
IN DOS/TOS LANGUAGE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.011   A SYSTEM/360 MACRO FOR
/SOUNDING/ THE AUDIBLE ALARM
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.7.011

AUTHOR...R.A. MACKINNON

DIRECT INQUIRIES TO..
    MR. R.A. MACKINNON,IBM CORP.,520 BOYLSTON ST.,BOSTON, MASS.

TITLE...AUDIBLE ALARM
***N   01.0 02.0   ***

AUDIBLE ALARM IS A SYSTEM/360 MACRO DEFINITION FOR SUPPORT
OF THE CONTROL ALARM FEATURE ASSOCIATED WITH THE CONSOLE
TYPEWRITER. THIS FEATURE CAN BE ORDERED OR IS PROVIDED
ON A REGULAR BASIS FOR SYSTEM/360 EXCEPT MODEL 30 WHERE
IT IS AN RPQ. CONTROL ALARM FEATURE IS USEFUL IN THOSE
CASES WHERE UNUSUAL OPERATING CONDITIONS ARE DETECTED BY
A PROGRAM AND THE OPERATOR MUST BE SUMMONED TO THE CONSOLE
TYPEWRITER OF A SYSTEM/360 WHICH MAY BE RUNNING UNATTENDED
OVER A PERIOD OF TIME. AUDIBLE ALARM IS WRITTEN AS A
BASIC OPERATING SYSTEM MACRO USING THE EXCP, WAIT, AND CCB
MACROS OF THAT OPERATING SYSTEM. CONSEQUENTLY, THE MACRO
COULD READILY BE PLACED IN A DOS OR TOS SOURCE STATEMENT
LIBRARY. OBJECT MACHINE REQUIREMENTS BEYOND THE CONTROL
ALARM FEATURE WILL BE DICTATED BY THE PROGRAM WITHIN WHICH
AUDIBLE ALARM HAS BEEN INVOKED.

360D-03.8.001   RPG PRINT VARIABLE LENGTH
CONSOLE MESSAGES SUBROUTINE
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.8.001

AUTHOR...W.B. MAHER

DIRECT INQUIRIES TO..
    W.B. MAHER,IBM CORP.,2640 CANAL ST.,NEW ORLEANS, LA. 70119

TITLE...CONSOLE MESSAGE SUBROUTINE FOR S/360 RPG
***N   01.4   ***

THIS SUBROUTINE WILL PRINT VARIABLE LENGTH CONSOLE MESSAGES
INITIATED BY AN RPG PROGRAM ON A 1052 CONSOLE PRINTER. SINCE
THE CONSOLE IS UNSUPPORTED BY SYSTEM/360 RPG, A SUBROUTINE
SUCH AS THIS ONE WILL BE NECESSARY TO UTILIZE THE CONSOLE.
TO USE THE SUBROUTINE THE RPG PROGRAMMER STATES THE MESSAGE AND
ITS LENGTH AND EXITS IN HIS CALCULATION SPECIFICATIONS. THE
PROGRAM IS WRITTEN IN ASSEMBLY LANGUAGE AND WILL RUN UNDER
THE BASIC OPERATING SYSTEM.

360D-03.8.002   BPS FORTRAN SUBROUTINES
FORTRAN-COMMERCIAL PROGRAMMING
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.8.002

AUTHORS..MR. J.L. WISE   MR. R.B. BADEN   MR. R.K. LOUDEN

CONTINUED FROM PRIOR COLUMN--

DIRECT INQUIRIES TO..
    MR. J.L. WISE,IBM CORP.,NEW YORK FIELD SYSTEMS CENTER,
    625 MADISON AVE.,NEW YORK, N.Y.

TITLE...FORCOM-360
***N   00,1   ***

THE FORCOM-360 PACKAGE IS A MODIFICATION OF THE
1130 COMMERCIAL SUBROUTINE PACKAGE /1130-SE-025X/. IT IS A
SET OF SEVEN FORTRAN SUBROUTINES WHICH CAN BE ASSEMBLED AND
USED WITH 360 BPS FORTRAN AND OTHER IBM 360 FORTRAN COMPILERS
OF WHICH THE BPS FORTRAN LANGUAGE IS A SUBSET. IT PROVIDES
THE FORTRAN USER WITH THE ABILITY TO PERFORM THE BASIC
FUNCTIONS OF COMMERCIAL PROGRAMMING. THE FOLLOWING COMMERCIAL
CAPABILITIES ARE PROVIDED- FLOATING DOLLAR SIGN AND ASTERISK
CHECK PROTECTION, ALPHAMERIC MOVE AND COMPARE OPERATIONS,
THE ABILITY TO READ UNFORMATTED RECORDS, COMPLETE INPUT/OUTPUT
CHARACTER EDITING, WITH ZONE PUNCH MANIPULATION. THE PACKAGE
IS MODULAR IN DESIGN, AND CONSISTS OF THE FOLLOWING SUBROUTINES-
MOVE, EDIT, GET, PUT, NCOMP, NZONE, FILL.
FORCOM-360 WILL OPERATE IN ANY ENVIRONMENT ACCEPTABLE TO THE
360 FORTRAN COMPILER BEING UTILIZED. THE SUBROUTINES REQUIRE
NO INPUT OR OUTPUT DEVICES THEMSELVES. USING BPS FORTRAN,
APPROXIMATELY 13K BYTES ARE REQUIRED FOR THE COMPILER AND ALL
SUBROUTINES. 32K IS THEREFORE RECOMMENDED AS A MINIMUM SYSTEM.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-03.8.003   SUBROUTINE DETERMINE
DAY-OF-WEEK
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.8.003

AUTHOR...RICHARD L. CONNER

DIRECT INQUIRIES TO..
    RICHARD L. CONNER,IBM WORLD TRADE CORP.,201 E. 42ND ST.,
    NEW YORK CITY, N.Y.

TITLE...WEEKDAY
***N   01.4   ***

WEEKDAY IS A SUBROUTINE WHICH WILL DETERMINE THE DAY OF THE
WEEK FOR DATE IN THE GREGORIAN CALENDAR FROM AD OCTOBER 15, 1582,
TO FEBRUARY 28, 4000, INCLUSIVE. IT OPERATES ON ANY
SYSTEM/360 THAT HAS THE STANDARD AND DECIMAL FEATURE
INSTRUCTIONS. IT IS INVOKED BY THE OS/TOS/DOS CALL
STATEMENT - THUS, IT CAN BE USED BY PROGRAMS CODED IN
ASSEMBLER LANGUAGE, COBOL, PL/I OR FORTRAN. WEEKDAY OCCUPIES
FEWER THAN 200 BYTES. IT IS CODED IN ASSEMBLER LANGUAGE AS
A SERIALLY-REUSABLE SUBROUTINE.

360D-03.8.004   DOS RPG DEBUGGING   *N
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.8.004

AUTHOR...MR. G.P. SAMMONS

DIRECT INQUIRIES TO..
    MR. G. SAMMONS,IBM CORP.,2911 STATE ST.,ERIE, PA.

TITLE...RPGAID - AN RPG DEBUGGING TOOL UNDER DOS
***N   04.2 03.5   ***

THE RPGAID SUBROUTINE IS AN ASSEMBLER ROUTINE WHICH LISTS ALL
THE INDICATORS THAT ARE ON DURING THE EXECUTION OF AN RPG
PROGRAM UNDER DOS. IT IS A VALUABLE AID IN DEBUGGING COMPLEX
RPG PROGRAMS, ESPECIALLY ONES INVOLVING MATCHING RECORDS.
IT CAN ALSO PROVE USEFUL TO A PROGRAMMER WHO IS JUST BEGINNING
TO WORK WITH RPG, SINCE HE CAN CHECK WHAT HE BELIEVES TO BE
THE LOGIC FLOW OF THE PROGRAM AGAINST THE INDICATOR LISTING.
ONLY TOW CARDS HAVE TO BE PLACED IN THE CALCULATION
SPECIFICATIONS OF THE MAIN PROGRAM. THE AUTOLINK FEATURE
OF DOS ESTABLISHES THE REQUIRED LINKAGE. A MAXIMUM OF 43
INDICATORS, INCLUDING NUMERIC, LEVEL, HALT, AND THE MATCHING
RECORDS INDICATOR CAN BE DISPLAYED. WHEN THE EXIT IS PLACED
AT THE END OF THE CALCULATION SPECIFICATIONS, THE INDICATORS
SHOWN ARE THOSE ON PRIOR TO ENTERING THE OUTPUT SPECIFICATIONS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-03.8.005   SUBROUTINES TO PERFORM
FORTRAN FUNCTIONS NOT /AVAILABLE/ IN BPS OR FORTRAN E
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-03.8.005

AUTHORS..MR. J.E. CAIN   MR. R.E. MEYERS

DIRECT INQUIRIES TO..
    MR. J.E. CAIN,IBM CORP.,P.O. BOX 3467,SANTA BARBARA, CALIF.

TITLE...BINARY FUNCTIONS ADDED TO FORTRAN IV /BPS/
***N   41.0 06.6   ***

THESE SUBROUTINES PERFORM FORTRAN FUNCTIONS NOT AVAILABLE
IN 360 BPS OR E LEVEL FORTRAN. THE PACKAGE INCLUDES ,,OR,,
AND ,,AND,, FUNCTIONS AND SUBROUTINES, SHIFT RIGHT AND LEFT,
AND A RANDOM NUMBER GENERATOR WITH ITS CORRESPONDING
RANDOM NUMBER SET. THESE ROUTINES WERE WRITTEN IN BASIC
ASSEMBLER LANGUAGE, AND HAVE BEEN USED IN BOTH BPS FORTRAN
AND PRE-BETA FORTRAN E LEVEL PROGRAMS. THESE ROUTINES REQUIRE
APPROXIMATELY 1200 BYTES IN TOTAL AND CAN BE USED INDIVIDUALLY.
THE MACHINE REQUIREMENTS ARE THE SAME AS ARE NEEDED BY THE
FORTRAN BEING USED.

Contributed Programs

360D-03.8.006   OS/360 DIRECT ACCESS ACCOUNT ROUTINE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.8.006

AUTHOR...MR. R.M. PLACE

DIRECT INQUIRIES TO..
MR. R.M. PLACE,XEROX CORP.,INFORMATION SYSTEMS DIV.,
1350 JEFFERSON RD.,ROCHESTER, N.Y. 14623

TITLE...XEROX INFORMATION SYSTEM DIVISION ACCOUNT ROUTINE
S   XEC   ASMA 01.4 29.1 19.5 13.1

THE PURPOSE OF THE XEROX ACCOUNT ROUTINE IS TO PROVIDE A
FACILITY TO RECORD THE JOB TO JOB ACCOUNTING INFORMATION
ON DIRECT ACCESS UNDER CONTROL OF OPERATING SYSTEM/360.
THE XEROX ACCOUNT ROUTINE IS ENTERED AT STEP AND JOB
TERMINATION TIME VIA AN EXIT FROM THE IBM JOB SCHEDULER.
IT IS PLACED IN THE OPERATING SYSTEM WITH THE METHOD DESCRIBED
IN THE SYSTEM PROGRAMMERS GUIDE /FORM C28-6550/. THE ROUTINE
IS READ ONLY AND REENTERABLE. ITS SIZE IS 3000 BYTES PLUS
1000 BYTES OF DYNAMIC CORE. THE ACCOUNT ROUTINE UTILIZES
AN EIGHTY CHARACTER CARD IMAGE DATA SET ON A DIRECT ACCESS
DEVICE. ACCOUNTING DATA IS RECORDED AT IPL TIME, STEP
TERMINATION AND JOB TERMINATION TIME.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-03.8.007   DOS TPLAB SUBROUTINES
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.8.007

AUTHOR...MR. W.R. MAPLE

DIRECT INQUIRIES TO..
MR. W.R. MAPLE,IBM CORP.,675 W. MARKET,LIMA, OHIO

TITLE...EASING DOS TPLAB RESTRICTIONS
***N   03.4   ***

CURRENT IMPLEMENTATION OF THE DOS VERSION 2 TPLAB CARD
MAKES IT DIFFICULT TO USE. THE DIFFICULTY LIES IN THE
REQUIREMENT FOR ALL FIELDS - REEL SERIAL, ETC. - TO BE PUNCHED
PRIOR TO USE. THIS PACKAGE CONSISTS OF TWO TRANSIENT ROUTINES
INSERTED IN THE STRING OF ROUTINES USED TO OPEN FILES.
THESE ROUTINES CAUSE, IN GENERAL, ONLY THOSE FIELDS THAT ARE
PUNCHED TO BE CHECKED WHILE THE FIELDS THAT ARE BLANK WILL
BE FILLED WITH PROPER DATA BEFORE LABEL CHECKING IS PERFORMED.
RETENTION PERIOD FACILITIES ARE PROVIDED AS WELL AS AN
OPTIONAL INDICATION ON SYSLOG THAT OPENING IS OCCURING.
THE MACHINE CONFIGURATION REQUIRED IS THE SAME AS THAT FOR
DOS/360.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-04.0.003   PROGRAM TO LIST NON-RESERVED KEY ELEMENT NAMES, DATA NAMES, OR PARAGRAPH NAMES
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.0.003

AUTHOR...D.E. FOWLER

DIRECT INQUIRIES TO..
D.E. FOWLER,IBM CORP.,9045 LINCOLN BLVD.,
LOS ANGELES, CALIF. 90045

TITLE...COBOL CROSS REFERENCE PROGRAM
***N   02.0 06.7   ***

THE COBOL LANGUAGE HAS ENJOYED WIDE ACCEPTANCE AMONG IBM
CUSTOMERS AS THE CODING LANGUAGE FOR COMMERCIAL APPLICATIONS.
THE LANGUAGE PROVIDES EXCELLENT DOCUMENTATION AND IS EASY
TO WRITE. HOWEVER, COBOL DOES NOT PROVIDE, AS A NORMAL
BY-PRODUCT, DOCUMENTATION TO AID THE PROGRAMMER IN EITHER
CONVERSION EFFORTS OR DEBUGGING EFFORTS. THE COBOL CROSS
REFERENCE PROGRAM LISTS EACH NON-RESERVED KEY ELEMENT /FILE
NAME, DATA NAME, OR PARAGRAPH NAME/ AND REPORTS THE CARD IMAGE
OF EVERY STATEMENT WHICH REFERS TO THAT ELEMENT. AT A GLANCE,
A PROGRAMMER CAN SEE THE IMPACT OF A FORMAT CHANGE OR A DELETION.
THE PROGRAM FACILITATES CONVERSION BY ISOLATING ALL ACTIONS
ON KEY ELEMENTS FOR REVIEW AND REAPPRAISAL. THE PROGRAM IS
WRITTEN IN COBOL AND IS PRESENTLY OPERATIONAL ON SYSTEM/360
UNDER OPERATING SYSTEM/360.

360D-04.1.001   OS/360 CORE-DUMP BCD-HEX-OUTPUT
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.1.001

AUTHOR...R.G. BROWN

DIRECT INQUIRIES TO..
R.G. BROWN,IBM CORP.,59 MAIDEN LANE,NEW YORK, N.Y.

TITLE...OS/360 CORE DUMP MODULE
***N   08.4 08.5 04.6   ***

THIS S/360 MODULE ENABLES THE PROGRAMMER TO OBTAIN A
PRINT-OUT OF ANY OR ALL OF MAIN STORAGE ASSOCIATED WITH HIS
PROGRAM WHILE IT IS EXECUTING. THE THREE FULL-WORD INPUT
PARAMETERS TO BE SPECIFIED ARE-
1. THE ADDRESS OF THE LOCATION TO BE PRINTED.
2. THE LENGTH OF THE AREA IN BYTES.
3. THE OUTPUT FORMAT TO BE USED.
THERE ARE THREE CHOICES OF OUTPUT FORMAT-
1. BCD ONLY.
2. HEX ONLY.
3. BOTH BCD AND HEX -- THE BCD CHARACTER ON PRINT LINE 1

CONTINUED FROM PRIOR COLUMN--
WITH THE ZONE AND NUMERIC PORTION OF THE HEX CHARACTER
DIRECTLY UNDERNEATH ON LINES 2 AND 3 RESPECTIVELY.
THE MODULE IS OPTIMIZED FOR MINIMUM EXECUTION TIME. IT CAN BE
EXECUTED ON ANY S/360 WITH THE STANDARD INSTRUCTION SET AND
OCCUPIES 1,574 BYTES OF MAIN STORAGE. THE SOURCE LANGUAGE
IS ASSEMBLER AND IT RUNS UNDER THE OPERATING SYSTEM. THE
MODULE MAY BE ACCESSED IN COBOL VIA THE CALL STATEMENT OR
IN ASSEMBLER LANGUAGE VIA THE CALL OR LINK MACRO-INSTRUCTIONS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-04.1.002   1620 EMULATOR MAPPED CORE DUMP PROGRAM
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.1.002

AUTHOR...J.H. CARMAN

DIRECT INQUIRIES TO..
J.H. CARMAN,IBM CORP.,DEPT. 235,ENDICOTT, N.Y.

TITLE...1620 EMULATOR MAPPED CORE DUMP PROGRAM
***N   02.0 04.0 11.1   ***

USED WITH THE 1620 COMPATIBILITY FEATURE, THIS PROGRAM DUMPS
1620 MAPPED CORE ON THE PRINTER. A 16K 360 MODEL 30 WITH A
CARD READER, PRINTER, CONSOLE TYPEWRITER, AND THE 1620 EMULATOR
FEATURE IS THE MINIMUM CONFIGURATION REQUIRED. THE PROGRAM IS
WRITTEN IN 8K BOS.

360D-04.4.001   DEBUGGING ASSEMBLE TEST
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.4.001

AUTHOR...MR. M.F. THRASHER

DIRECT INQUIRIES TO..
MR. JOHN L. WILLIAMS,IBM CORP.,425 PARK AVE.,NEW YORK, N.Y.

TITLE...PAT/360 A PROCEDURE FOR AUTOMATIC TESTING OF SYSTEM/360
PROGRAMS
***N   ***

PAT/360 IS A MODIFICATION OF THE S/360 BPS 8K TAPE ASSEMBLY
SYSTEM TO PROVIDE ASSEMBLE-AND-TEST CAPABILITY WITHIN ONE RUN.
THE MAIN PURPOSE IS TO MAKE REMOTE TESTING PRACTICAL AND TO
IMPROVE THE PRODUCTIVITY OF TESTING. A SIGNIFICANT ADVANTAGE IS
THE ABILITY TO MAINTAIN PROGRAMS IN THEIR SOURCE LANGUAGE
THROUGHOUT DEVELOPMENT. IT IS ALSO INTENDED FOR LOCAL TESTING
WITH ON-LINE INPUT AND OUTPUT. THE DEBUGGING AIDS PROVIDED CAN
BE USED OUTSIDE OF STRICT PAT/360 USAGE. THESE ARE TAPE FILE
GENERATION, TAPE PRINT AND STORAGE PRINT ROUTINES THAT CAN BE
CALLED VIA CONTROL CARDS AS NEEDED. THE REMOTE PROCEDURE
PREPARES A TEST TAPE ON THE IBM 1401 USING THE PAT INPUT PROGRAM,
PERFORMS THE ASSEMBLY AND TEST ON THE S/360 USING THE PAT
SUPERVISOR PROGRAM AND PRODUCES THE TEST OUTPUT ON THE IBM 1401
USING THE PAT OUTPUT PROGRAM. THE PAT/360 SYSTEM HAS BEEN
PRIMARILY TESTED AT THE 16 AND 32K LEVELS WITH SOME FURTHER
TESTING AT 64 AND 128K.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK OR
ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF
THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.
THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
THE OPITIONAL SOURCE CARDS ARE AVAILABLE ON ONE 9-TRACK OR
7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC
TAPE. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM
REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE
2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360D-04.4.002   MODEL 20 BOS RPG TESTING ASSEMBLE DIAGNOSTICS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.4.002

AUTHORS..ROBERT W. HEALD   E. RAYMOND CULLOM

DIRECT INQUIRIES TO..
E. RAYMOND CULLOM,IBM CORP.,109 MADISON AVE.,ENDICOTT, N.Y.

TITLE...MODEL 20 CARD RPG TESTING WITH 8K BOS RPG
***N   02.0 04.3   ***

TWO SERIES OF S/360 PROGRAMS ARE WRITTEN IN S/360 8K BOS RPG-
ONE SERIES IS USED TO ASSEMBLE FOR DIAGNOSTICS S/360 MODEL 20
CARD RPG PROGRAMS., THE OTHER IS USED TO ASSEMBLE AND TEST
THEM. NEITHER REQUIRES ANY CHANGES IN THE MODEL 20 SOURCE
DECK, AND BOTH RUN ON S/360 USING 8K BOS RPG.
THE USER OF THESE PROGRAMS NEEDS TO PLACE ONE SET OF JOB
CONTROL STATEMENTS IN FRONT OF THE MODEL 20 CARD RPG SOURCE
DECK TO USE THE ENTIRE SERIES OF PROGRAMS. THIS MINIMIZES
THE CARD DECK PREPARATION TIME FOR THE PERSON UNFAMILIAR
WITH 8K BOS OPERATION. ONE 2311, THREE TAPE DRIVES AND A
16K SYSTEM FOR OPERATING 8K BOS RPG IS REQUIRED.
THE RECOMMENDED PROCEDURE FOR USE OF THESE TWO SERIES OF
PROGRAMS IS TO USE THE ASSEMBLE FOR DIAGNOSTICS PROGRAMS
UNTIL ALL SERIOUS DIAGNOSTIC ERRORS ARE ELIMINATED. THIS
WILL GENERALLY RESULT IN A TIME SAVING SINCE THE DIAGNOSTIC
ONLY OPERATION IS FASTER THAN THE ASSEMBLE AND TEST OPERATION.

THE BASIC MACHINE READABLE MATERIAL IS A 9-TRACK DISTRIBUTION
TAPE REEL WHICH WILL BE SUPPLIED BY THE PROGRAM INFORMATION
DEPARTMENT.

360D-04.4.003   OS/360 FORTRAN DIAGNOSTIC TESTING PROGRAM-ERRORS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.4.003

AUTHORS..W.P. GEWIN   J.G. ROGERS

Contributed Programs

CONTINUED FROM PRIOR PAGE--

DIRECT INQUIRIES TO..
W.P. GEWIN,630 ELLIS ST.,AUGUSTA, GA. 30901

TITLE...SETBTF - A DIAGNOSTIC ROUTINE FOR OS/360 FORTRAN
***N   ***

THIS SUBROUTINE IS FOR USE WITH OS/360 FORTRAN OBJECT PROGRAMS.
IT PROVIDES HELPFUL DIAGNOSTIC INFORMATION WHEN THE FORTRAN
LIBRARY ROUTINES DETECT PROGRAM ERRORS. THE PACKAGE IS
WRITTEN MAINLY IN OS/360 ASSEMBLER LANGUAGE WITH A FORTRAN
CODED ROUTINE FOR MESSAGE OUTPUTTING. THE ROUTINE PROVIDES-
- ,,IHCMMM,, ERROR CODE /WITH ENGLISH DESCRIPTION WHEN THE
  ERROR WAS DETECTED BY IBCOM OR FIOCS/.
- CURRENT DATA SET REFERENCE NUMBERS.
- BACK TRACE OF CALLS WITH ISN/S, SUBROUTINE NAMES AND
  CONTENTS OF REGISTERS.
CAN BE USED ON ANY MACHINE SUPPORTING OS/360 FORTRAN E.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-04.4.005   OS/360 2250 DISPLAY ON-LINE
DEBUGGING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.4.005

AUTHOR...MR. L. ZIMMERMAN

DIRECT INQUIRIES TO..
MR. L. ZIMMERMAN,IBM CORP.,CPO NO. 120,KINGSTON, N.Y. 12401

TITLE...GBUG - A GRAPHIC TOOL FOR ON-LINE PROGRAM DEBUGGING
***N   00.6 08.7   ***

THIS PROGRAM ALLOWS ON-LINE DEBUGGING TO BE DONE VIA AN
IBM 2250 DISPLAY UNIT. DEBUGGING OPTIONS ARE DISPLAYED ON
THE CRT AND MAY BE SELECTED FOR USE WITH THE LIGHT PEN.
OPTIONS INCLUDE /1/ DISPLAY AND ALTERATION OF SELECTED
MEMORY LOCATIONS /IN BOTH DECIMAL AND HEXADECIMAL/ AND OF
GENERAL AND FLOATING POINT REGISTERS., /2/ MEMORY DUMPS,
WITH CRT OUTPUT., /3/ ADDRESSING RELATIVE TO THE USERS
PROGRAM ORIGIN., /4/ BREAKPOINTS., /5/ AUTOMATIC INTERCEPTION
OF PROGRAM EXCEPTIONS AS THEY OCCUR, WITH APPROPRIATE
DIAGNOSTICS DISPLAYED., /6/ ABILITY TO RETURN CONTROL TO THE
USERS PROGRAM AT ANY POINT. USE OF A DISPLAY PROVIDES A
CONSIDERABLE ADVANTAGE OVER CONVENTIONAL TERMINALS IN OPERATOR
CONVENIENCE AND ESPECIALLY IN SPEED OF REQUESTS AND REPLIES.
GBUG OPERATES UNDER OS/360 OR SPS/360 CONTROL /ANY RELEASE
SUPPORTING EXPRESS GRAPHICS/ AND REQUIRES A 4K IBM 2250 WITH
CHARACTER GENERATOR, A/N KEYBOARD AND LIGHT PEN.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 2400 FOOT
REEL OF MAGNETIC TAPE. THE TAPE REQUIRED MAY BE ORDERED
FROM YOUR IBM REPRESENTATIVE OR SUPPLIED.

360D-05.1.001   REMOTE ACCESS COMPILE
EXECUTE TIME-SHARE MONITOR
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.1.001

AUTHORS..MR. T. MCDERMOTT JAN SISK

DIRECT INQUIRIES TO..
MR. FRANK YEE,IBM CORP.,112 E. POST RD.,WHITE PLAINS, N.Y.

TITLE...REMOTE ACCESS COMPUTING SYSTEM
***N   03.4 06.3   ***

RACS IS A PROGRAM TO ALLOW THE 360 MOD. 30, 40, AND 50 TO
COMPILE AND EXECUTE CONCURRENTLY, IN A TIME-SHARED, TIME-SLICED
MODE OF OPERATION, BPS FORTRAN IV AND BAP JOBS FROM UP TO
14 REMOTE 1050 AND THE ONLINE CARD READER AND PRINTER.
A 360 MOD. 30, 40, OR 50 WITH 64K CORE, ONE 2311, A 2702,
AND THE ABOVE-MENTIONED I/O IS THE MINIMUM MACHINE REQUIRED.
INPUT TO RACS IS ACCORDING TO RULES FOR PREPARING INPUT FOR
BPS FORTRAN IV AND BAP AS OUTLINED IN IBM PUBLICATION
SRL FORMS NUMBERED C28-6504 AND C28-6503, RESPECTIVELY.
THE COMPILER AND ASSEMBLER THAT IS AN INHERENT PART OF THE
SYSTEM IS AN EARLY VERSION OF AN IBM COMPILER AND ASSEMBLER
AND DOES NOT REPRESENT THE LATEST VERSION OF THOSE SYSTEMS.
BPS FORTRAN CORRECTIONS HAVE BEEN INSERTED UP TO VERSION 2
OF THAT SYSTEM. IT HAS EXTENSIVE MODIFICATIONS TO MAKE IT
DISK RESIDENT.
THIS SYSTEM IS BEING MADE AVAILABLE TO SATISFY THE NEED FOR
360 REMOTE COMPUTING AND TIME-SHARING SOFTWARE. ADDITIONALLY,
ITS USE AS A DISK-ORIENTED PROCESSOR AND SOURCE OF 1050-2702
CODING WILL MAKE IT VALUABLE TO FIELD INSTALLATIONS.

TO OBTAIN THE BASIC PROGRAM MATERIAL TWO FULL 2400 FOOT
REELS OF MAGNETIC TAPE ARE REQUIRED.
THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE
OR SUPPLIED.

360D-05.1.003   CSP BPS/BOS INTERFACE 1400
COMPATIBILITY
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.1.003

AUTHORS..J.W. HOWELL   K.J. BENTLEY   W.K. CARLSON
M.P. ORAVEC   A. MALAY

DIRECT INQUIRIES TO..
J.W. HOWELL,IBM CORP.,110 W. 21ST ST.,NORFOLK, VA. 23517

TITLE...CSP/360 /COMPATIBILITY SUPPORT PACKAGE/
***N   11.1   ***

CSP/360 /COMPATIBILITY SUPPORT PACKAGE/ IS A SET OF PROGRAMS
INTERFACING THE 1401/1440/1460 COMPATIBILITY FEATURE ON THE
MODEL 30 AND WILL FUNCTION WITH THE FRAMEWORK OF BPS-BOS
STAND ALONE. THE CSP/360 PACKAGE PROVIDES MEANS BY WHICH
1400 PROGRAMS CAN BE EXECUTED IN COMPATIBILITY MODE ON THE
MODEL 30 IN A STACKED JOB ENVIRONMENT INTERMIXING 1400 PROGRAMS
AND NORMAL 360 PROGRAMS IN THE INPUT JOB STREAM. ANOTHER

CONTINUED FROM PRIOR COLUMN--
PROVISION IS THE STANDARDIZED INTERFACE TO THE CSP SUPERVISOR
WHICH ALLOWS USER ATTACHMENT OF CUSTOM ROUTINES FOR DEVICE
SIMULATION OR SUBSTITUTION USING THE PROGRAM MODE SWITCH.
DEVICE ROUTINES FOR 1402 ARE A PART OF THE SUPERVISOR AS
PRESENTED. GENERALIZED DEVICE ROUTINES FOR MAGNETIC TAPE, AND
1405 SIMULATION ARE ALSO PROVIDED. REQUIRES SYSTEM/360
MODEL 30 WITH 1400 I/O COMPATIBILITY FEATURES, PMS AND DECIMAL
ARITHMETIC FEATURES. OTHER REQUIREMENTS ARE THOSE NEEDED TO
SATISFY BPS OR BOS.

360D-05.1.004   MULTI-PROGRAMMING
PERIPHERAL PROCESSING INPUT/OUTPUT TASKS UTILITIES SUPPORT
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.1.004

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TITLE...LINCOLN LABORATORY MULTI-PROGRAMMING SUPERVISOR /LLMPS/
S LL   MPS1 05.2 00.1 08.8 07.6

A SUPERVISOR PROGRAM HAS BEEN WRITTEN FOR THE IBM SYSTEM/360
WHICH ALLOWS THE MULTIPROGRAMMING OF SEVERAL JOBS, EACH WITH
ITS OWN INPUT-OUTPUT REQUIREMENTS. A JOB PROGRAM OPERATES IN
PROBLEM STATE, AND REALIZES ALL OF ITS INPUT/OUTPUT DEMANDS
THROUGH SUPERVISOR CALLS. I/O OPERATIONS OF ONE JOB ARE
OVERLAPPED WITH THOSE OF OTHER JOBS, AND CAN ALSO BE OVERLAPPED
WITHIN A SINGLE JOB. EACH JOB IS WRITTEN COMPLETELY
INDEPENDENT OF ALL OTHER JOBS. A JOB IS INITIATED BY A
REQUEST TYPED ON THE CONSOLE TYPEWRITER AND RUNS, WITH
FREQUENT I/O WAITS, UNTIL IT CALLS FOR ITS OWN TERMINATION,
OR IS TERMINATED BY THE OPERATOR VIA THE CONSOLE TYPEWRITER.
DURING THE OPERATION OF THE SUPERVISOR, A JOB CAN BE INITIATED,
CAN TERMINATE, AND CAN BE RE-INITIATED AS OFTEN AS DESIRED.
ALL JOBS RESIDE IN CORE TOGETHER WITH THE SUPERVISOR.
TO MINIMIZE SPACE, BUFFERS ARE ASSIGNED AT THE INITIATION
OF A JOB AND ARE RELEASED UPON TERMINATION. JOB PROGRAMS
MAY BE WRITTEN AS RE-ENTRANT, WHEREBY A SINGLE COPY OF A
JOB PROGRAM CAN BE ACTIVE FOR MORE THAN ONE TASK. RE-ENTRANT
JOBS, THUS, HAVE DIFFERENT BUFFER AREAS FOR EACH DISTINCT
INITIATION. WHEN A JOB IS STARTED, THE OPERATOR SPECIFIES
THE I/O DEVICES REQUIRED /E.G., A PARTICULAR PRINTER AND
TAPE UNIT FOR A PRINT JOB/, AND ANY INITIAL PARAMETERS DESIRED
/E.G., TAPE DENSITY SETTING, INSTRUCTIONS TO SKIP TO A
SPECIFIED LISTING, INSTRUCTIONS TO STOP AFTER A TAPE MARK,
AND SO FORTH/. THE JOB IS THEN STARTED IF THE REQUISITE I/O
DEVICES AND BUFFERS ARE AVAILABLE. THE I/O DEVICES REMAIN
ASSIGNED TO THAT JOB UNTIL IT TERMINATES. HOWEVER, AT ANY
TIME A JOB CAN ISSUE MESSAGES TO THE OPERATOR VIA THE CONSOLE
TYPEWRITER. MULTI-PROGRAMMING IS ACHIEVED BY CENTRAL HANDLING
OF I/O, AND BY THE FACT THAT THE JOBS RUN ARE, IN EVERY CASE,
I/O BOUND. THUS, WHILE A JOB IS WAITING ON I/O, OTHER JOBS
CAN MAKE USE OF THE CENTRAL PROCESSOR. WHEN AN I/O DEVICE
HAS COMPLETED ITS OPERATION, THE JOB WHICH STARTED THE I/O
OPERATION, THROUGH A SUPERVISOR CALL, IS PERMITTED TO CONTINUE.
NO STANDARD DEVICE ERROR-RECOVERY ROUTINES ARE BUILT INTO
THE SUPERVISOR, BUT A FAMILY OF SUBROUTINES IS DEVELOPING
WHICH JOBS CAN CALL UPON TO PROVIDE ERROR RECOVERY. UNIT
CHECK AND UNIT EXCEPTION INDICATIONS ARE PROVIDED TO THE JOB
AT THE TIME THE JOB EXECUTES THE SUPERVISOR CALL TO WAIT ON
A DEVICE.

THE CONVENTIONS WHICH A JOB PROGRAM MUST FOLLOW DEAL WITH
SUPERVISOR CALL CALLING SEQUENCES SINCE IT CANNOT USE
PRIVILEGED INSTRUCTIONS. A JOB CONTROLS ITS INPUT/OUTPUT
BY ISSUING A SUPERVISOR CALL TO EXECUTE A CHANNEL COMMAND.
/COMMAND CHAINING, DATA CHAINING, AND TICING ARE ALLOWED,
BUT PCI/S ARE PROHIBITED./ IF CERTAIN SUGGESTIONS ARE
FOLLOWED IN THE WRITING OF CHANNEL PROGRAMS, THE SYSTEMS
EFFICIENCY IS IMPROVED., HOWEVER, THE SUPERVISOR DOES NO
POLICING OF CHANNEL PROGRAMS. ERRORS COMMITTED IN THE
RUNNING OF A JOB CAUSE THE JOB TO BE TERMINATED WITH A JOB
DUMP. STORAGE PROTECTION IS NOT USED AND THUS ONE CANNOT GUARD
AGAINST ALL ERRORS., HENCE, ALL JOB PROGRAMS SHOULD BE DEBUGGED
BEFORE THEY ARE INCLUDED IN THE SYSTEM.
OUR LIBRARY OF JOBS INCLUDES-
1. SYSTEM JOBS - TO LIST THE JOBS IN THE SYSTEM, TO LIST THE
   ACTIVE JOBS, I.E., TASKS OR TO TERMINATE AN ACTIVE JOB.
2. TAPE MOVE JOBS - SKIPS FILES OR RECORDS EITHER FORWARD OR
   BACKWARD AS DESIRED.
3. PRESTORE JOB - PLACES BCD OR BINARY CARD IMAGES ONTO TAPE
   WITH STANDARD LOOK-AHEAD CHARACTERS.
4. PRINT JOB - READS, DEBLOCKS, AND PRINTS A BCD TAPE WITH
   FORTRAN CARRIAGE CONTROL CHARACTERS.
5. PUNCH JOB - READS, DEBLOCKS, AND PUNCHES CARD IMAGES
   FROM TAPE.
6. TAPE COPY AND COMPARE JOB - COPIES AND COMPARES A MIXED
   MODE TAPE OF ANY DENSITY.
7. TAPE DUMP JOBS - DUMPS A 7-TRACK TAPE IN BCD OR OCTAL
   FORMAT OR A 9-TRACK TAPE IN HEXIDECIMAL OR EBCDIC.

THE BASIC MACHINE READABLE MATERIAL CAN BE ORDERED ON EITHER
9- OR 7-TRACK TAPE. IF 7-TRACK IS REQUESTED THE DATA
CONVERSION FEATURE IS REQUIRED. EITHER 9- OR 7-TRACK TAPE
MUST BE INDICATED ON THE PROGRAM REQUEST CARD. IF NOT SPECIFIED,
9-TRACK TAPE WILL BE FORWARDED. THE ONE REEL OF TAPE NECESSARY
TO OBTAIN THE PROGRAM MATERIAL MAY BE SUPPLIED OR ORDERED
FROM YOUR IBM REPRESENTATIVE. THE TAPE SHOULD BE 2400 FEET
IN LENGTH.

360D-05.1.005   BOS/DOS/TOS 1400
COMPATIBILITY SUPERVISE MONITOR
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.1.005

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Contributed Programs

CONTINUED FROM PRIOR PAGE--

TITLE...COS - COMPATIBILITY OPERATING SYSTEM
    ***N   11.1   ***

COS IS A MONITOR PROGRAM OPERATING IN CONJUNCTION WITH THE
BASIC OPERATING SYSTEM, THE DISK OPERATING SYSTEM OR THE
TAPE OPERATING SYSTEM. ITS PURPOSE IS TO SUPERVISE AND
LEND SERVICES TO THE 1400 SERIES PROGRAMS RUNNING UNDER
COMPATIBILITY ON THE MODEL 30 SYSTEM/360. COS PROVIDES FOR -
- INCREASED THROUGHPUT, SINCE 1400 I/O IS PERFORMED IN S/360
  MODE AND OVERLAPPED WITH PROCESSING ACCORDING TO THE CHANNEL
  CONFIGURATION OF THE S/360.
- 100 PERCENT STACKED JOB PROCESSING. 1400 AND S/360 PROGRAMS
  CAN BE INTERMIXED IN THE JOB STREAM WITHOUT OPERATOR
  INTERVENTION.
- 2311 DISK DRIVES CAN BE ATTACHED TO THE SELECTOR CHANNELS
  AND TWO 1311/S MAY BE SIMULATED ON EACH 2311.
- COMPATIBILITY SUPPORT FOR 1405 AND 1301 DISK DRIVES AND
  1404 PRINTER.
- EXITS FOR USER MODIFICATIONS TO SUPPORT OTHER DEVICES NOT
  SUPPORTED BY HARDWARE COMPATIBILITY.
- MULTIPROGRAMMING OR SPOOLING MAY BE IMPLEMENTED WHILE
  EXECUTING A BACKGROUND 1400 PROGRAM. ALSO, THE 1400 REFERENCED
  CARD READER, CARD PUNCH AND/OR PRINTER MAY BE SIMULATED ON A
  MAGNETIC TAPE UNIT OR A 2311 DISK UNIT.
- ELIMINATION OF COMPATIBILITY INITIALIZATION DECKS /CID/.
- OPERATOR SERVICE FUNCTIONS INITIATED FROM THE CONSOLE PROVIDE
  A WIDE VARIETY OF ADDITIONAL COMPATIBILITY SUPPORT.
- THE ABILITY TO CATALOG AND FETCH 1400 PROGRAMS FROM THE
  S/360 CORE IMAGE LIBRARY.
- NO MODIFICATION NEED BE MADE TO ANY 1400 PROGRAMS.

MINIMUM SYSTEM REQUIREMENTS - 32K SYSTEM/360 MODEL 30... DECIMAL
ARITHEMTIC... BASIC 1400 COMPATIBILITY FEATURE... PROGRAMMED
MODE SWITCH... REQUIREMENTS FOR OPERATING SYSTEM USED MUST BE
SATISFIED. IT IS ALSO RECOMMENDED THAT THE I/O COMPATIBILITY
FEATURES BE INCLUDED.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK
OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION
TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A
9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-05.1.007   OS/360 DEVICES OPERATION
     AVAILABLE 3RD QUARTER 1967.
     SPECIFY FILE NUMBER 360D-05.1.007

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TITLE...HOUSTON AUTOMATIC SPOOLING PRIORITY SYSTEM
    ***N   ***

THE HOUSTON AUTOMATIC SPOOLING PRIORITY SYSTEM IS AN
AUTOMATIC SYSIN/SYSOUT/SYSPUNCH SPOOLING PACKAGE WITH THE
ABILITY TO OPERATE AN ESSENTIALLY UNLIMITED NUMBLR OF
PERIPHERAL DEVICES CONCURRENTLY IN CONJUNCTION WITH OS/360
PROCESSING UTILIZING A VARIABLE NUMBER OF 2311 AND/OR 2314
DIRECT-ACCESS MODULES FOR INTERMEDIATE STORAGE. HASP OPERATES
WITH NO MODIFICATIONS TO OS/360. ANY OPTION 2 INSTALLATION
MAY USE HASP BY SIMPLY ADDING IT TO HIS PROGRAM LIBRARY
AND ADDING ONE USER SVC ROUTINE TO OS/360. HASP MAY THEN
BE INVOKED /OPTIONALLY/ AT ANY TIME BY STANDARD PARTITION
LOADING PROCEDURES. HASP HAS BEEN DESIGNED TO OPERATE AS
INDEPENDENTLY AS POSSIBLE OF OS/360 RELEASE LEVELS AND,
EXCLUDING MAJOR DESIGN CHANGES, SHOULD ADAPT TO NEW RELEASES
OF THE OPERATING SYSTEM WITH NO MODIFICATIONS. THE PROGRAM
SOURCE IS IN OS/360 ASSEMBLY LANGUAGE, AND MINIMUM CORE
REQUIREMENTS ARE LESS THAN 27K.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK OR
ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DIR.
IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL
IS REQUIRED.

360D-05.1.008   MODEL-30 MULTIPORGRAMMING
MONITOR WHICH CONTROLS /TWO/ 1401 PROGRAMS
     AVAILABLE 3RD QUARTER 1967.
     SPECIFY FILE NUMBER 360D-05.1.008

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TITLE...MULTI-COMPATIBILITY CONTROL /MCC-II/ FOR 1401
        COMPATIBILITY ON SYSTEM/360 MODEL 30
    ***N   05.2   ***

MULTI-COMPATIBILITY CONTROL II IS A SYSTEM/360 MODEL 30
MULTIPROGRAMMING MONITOR WHICH CONTROLS THE OPERATION OF
TWO 1401 PROGRAMS. THIS VERSION OF MCC IS WRITTEN IN 8K BOS
SUPPORT AND REQUIRES 7040 BYTES OF STORAGE. MCC-II IS
DESIGNED TO CONTROL THE SIMULTANEOUS RUNNING OF AN 8 AND
16K 1401 SINGLE-PHASE PROGRAM, BUT CAN EASILY BE MODIFIED
TO ACCOMMODATE DIFFERENT SIZED PARTITIONS. THE USE OF THE
MONITOR REQUIRES THE MINIMUM OF A 16K SYSTEM/360 MODEL 30
WITH THE 1401 COMPATIBILITY FEATURE, PROGRAM MODE SWITCH,
1052 CONSOLE TYPEWRITER, AND A 2540 CARD READER. EITHER OF
THE REQUIRED I/O DEVICES CAN BE UTILIZED BY THE 1401 PROGRAMS.
THE REMAINDER OF THE CONFIGURATION IS DICTATED BY THE
REQUIREMENTS OF THE 1401 PROGRAMS.

MCC-II DOES NOT REQUIRE THE RE-ASSEMBLY OR PATCHING OF
EXISTING 1401 PROGRAMS. THE LOADING OF 1401 PROGRAMS IS
FROM THE 2540 CARD READER. THIS PROGRAM GIVES THE ILLUSION
OF TWO INDEPENDENT CENTRAL PROCESSING UNITS BY NOT HALTING
BOTH PROGRAMS UNLESS ENCOUNTERING I/O ERRORS WHICH ARE
TOTALLY HANDLED BY 1401 COMPATIBILITY. NON-STOP HALT ROUTINES
AND A S/360 I/O SCHEDULER HAVE MAXIMIZED SYSTEM THRUPUT.
OPERATIONAL CAPABILITIES INCLUDE THE LOGGING OF OPERATOR
ACTIONS SUCH AS HALTS, THE SETTING AND DISPLAYING OF I/O

CONTINUED FROM PRIOR COLUMN--
AND SENSE SWITCHES, AND THE ALLOCATION OF I/O DEVICES.
JOB ACCOUNTING ROUTINES ARE INCLUDED FOR USE WITH THE
INTERVAL TIMER. THESE AND OTHER FEATURES HAVE ENABLED SYSTEM
UTILIZATION TO NUDGE THE 195 PER CENT MARK.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-05.1.009   MODEL 40 1401 EMULATOR AND
DOS IN STACKED JOB ENVIRONMENT
     AVAILABLE 3RD QUARTER 1967.
     SPECIFY FILE NUMBER 360D-05.1.009

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TITLE...MODEL 40 1401 EMULATOR AND DOS IN STACKED JOB
        ENVIRONMENT
    ***N   01.5   ***

THIS PROGRAM IS TO GIVE THE 360 MODEL 40 USER CONVERTING FROM
1401/1460 THE ADVANTAGES OF STACKED JOB PROCESSING. MACHINE
REQUIREMENTS ARE A 64K MODEL 40 PLUS THE REQUIRED I/O FOR
DOS AND THE MODEL 40 1401 EMULATOR. TWO CYLINDERS OF THE
DOS SYSRES PACK /2311/ ARE USED. 1401 PROGRAMS MUST BE
PRECEEDED AND FOLLOWED BY STANDARD DOS JOB CONTROL CARDS.
EMULATOR OPERATION IS OTHERWISE UNALTERED EXCEPT FOR AN
,,E,, CONTROL CODE WHICH RETURNS CONTROL TO DOS AND WITH
AN EOJ MACRO. A ROLL-OUT ROLL-IN TECHNIQUE IS USED THAT
COULD BE ADAPTED TO OTHER EMULATOR AND OPERATING SYSTEM
COMBINATIONS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-05.2.001   BOS MODIFICATION MULTIPLE
FOREGROUND TASKS
     AVAILABLE 3RD QUARTER 1967.
     SPECIFY FILE NUMBER 360D-05.2.001

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TITLE...MODIFICATION TO IBM BOS/360 /8K DISK/
    ***N   03.4   06.3   ***

THESE MODIFICATIONS TO THE IBM BOS/360 /8K-DISK/ PROVIDE THE
ABILITY TO PERMIT MULTIPLE FOREGROUND TASKS TO RESIDE AND
OPERATE CONCURRENTLY WITH A BACKGROUND PROGRAM. THESE
RESIDENT TASKS CAN INCLUDE TELEPROCESSING SUPPORT,
/2701/2702/1050/2740/ FILE-TO-FILE SPOOL, AUTODIN ADAPTER
SUPPORT OR A TIMER INTERRUPT SUPPORT CONTROLLED PROGRAM.
USING THE SUPPLIED GENERAL PURPOSE FOREGROUND MACROS,
UNIQUE USER FOREGROUND PROGRAMS CAN BE WRITTEN. THE 2321
DATA CELL IS SUPPORTED BY DIRECT, SEQUENTIAL AND INDEXED
SEQUENTIAL ACCESS METHODS. MACHINE CONFIGURATION- SYSTEM/360
MODEL 30 OR LARGER. 16K MIN-CONSOLE TYPEWRITER.

THE TAPE NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY BE
SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE
SHOULD BE 2400 FEET IN LENGTH.

360D-05.2.002   OS/360 FORTRAN H INVOKE
FORTRAN COMPILER LINKAGE EDITOR LOAD MODULE
     AVAILABLE 3RD QUARTER 1967.
     SPECIFY FILE NUMBER 360D-05.2.002

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TITLE...FHMCLG/ONESTEP - A FORTRAN H PROGRAM FOR MULTIPLE
        COMPILE, LINK EDIT AND GO
    ***N   01.1   ***

THESE PROGRAMS PROVIDE INCREASED OS/360 FORTRAN H
PERFORMANCE BY AVOIDING THE USE OF THE JOB SCHEDULER
BETWEEN JOBS AND JOB STEPS. THEY ARE WRITTEN IN ASSEMBLY
LANGUAGE TO INVOKE THE FORTRAN COMPILER, THE LINKAGE EDITOR
AND THE RESULTANT LOAD MODULE. THESE PROGRAMS ARE INTENDED
FOR BOTH PRODUCTION AND DEMONSTRATION ENVIRONMENTS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-05.2.003   PROGRAM WHICH OPERATES ON
MODEL 30 TO ALLOW TWO 1401 PROGRAMS TO SHARE CPU TIME
     AVAILABLE 3RD QUARTER 1967.
     SPECIFY FILE NUMBER 360D-05.2.003

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*N

Contributed Programs

CONTINUED FROM PRIOR PAGE--

TITLE...MULTIPLE COMPATIBILITY CONTROL
***N   05.1 11.1   ***

MCC, IS A PROGRAM WHICH OPERATES ON A SYSTEM/360 MODEL 30
TO ALLOW TWO 4K 1401 PROGRAMS TO SHARE EXECUTION TIME IN THE
CPU. THIS IS ACCOMPLISHED BY PLACING INVALID /J/ OP CODES
IN THE 1401 PROGRAMS WHERE AN INTERLOCKING UNIT RECORD
OPERATION WOULD TAKE PLACE. THE INVALID OP CODE CAUSES A
SWITCH FROM ONE PROGRAM TO THE OTHER. THIS ALLOWS THE OTHER
PROGRAM TO EXECUTE DURING THE NORMAL MECHANICAL TRANSFER TIME
OF THE FIRST PROGRAM WHICH WOULD INTERLOCK THE FIRST PROGRAM
DURING I/O BOUND EXECUTIONS. AN ADVANTAGE IS GAINED WHEN THE
PROGRAMS BEING EXECUTED ARE UNIT-RECORD I/O BOUND WHEN
OPERATING UNDER COMPATIBILITY ON THE 360/30. MINIMUM MACHINE
REQUIREMENTS- S/360 MODEL 30, 16K, 1401 COMPATIBILITY, ONE
2400 SERIES TAPE DRIVE, PMS /PROGRAM MODE SWITCH/ FEATURE,
ONE 2540, ONE 1403, 1052 CONSOLE.

360D-05.2.004   S/360 PROGRAM TO MONITOR
1401 PROGRAMS RUN IN COMPATIBILITY MODE
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-05.2.004

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TITLE...EXTRA LARGE COMPATIBILITY INITIALIZATION DECK EL-CID
N   05.2 00.0 01.0 11.1

EL CID, IS A S/360 PROGRAM USED TO MONITOR 1401 PROGRAMS RUN IN
COMPATIBILITY MODE. THE PROGRAM HAS 4 MAIN FEATURES.
FIRST, IT ENABLES 1401 PROGRAMS TO BE RUN IN STACKED-JOB,
NON-STOP ENVIRONMENT. THIS SHOULD HELP CUSTOMERS IN MAKING
THE TRANSITION BETWEEN THE SINGLE JOB ATMOSPHERE OF THE 1400
SERIES AND THE OPERATING SYSTEM ENVIRONMENT OF THE S/360.
SECOND, THE PROCESSING OF JOB CONTROL CARDS TO SET SENSE
SWITCHES AND MAKE TAPE DRIVE ASSIGNMENTS VIRTUALLY ELIMINATES
THE NEED FOR TIME CONSUMING DIALING AND BUTTON PUSHING
NORMALLY REQUIRED WITH THE CID DECK. THIRD, COMPLETE
DOCUMENTATION OF OPERATIONS IS AVAILABLE VIA THE IBM 1052
PRINTER AND KEYBOARD. ALL JOB CONTROL CARDS ARE LOGGED
AS WELL AS ANY SPECIAL COMMENTS TO THE OPERATOR, SUCH AS
INSTRUCTIONS TO INSERT SPECIAL FORMS IN THE PRINTER. AT 1401
HALTS THE I,A, AND B ADDRESSES ARE PRINTED ON THE CONSOLE
TYPEWRITER. WHEN A 1401 ERROR STOP CONDITION IS ENCOUNTERED,
THE STOP CODE NORMALLY DISPLAYED IN THE MAIN STORAGE DATA
REGISTER IS PRINTED ALONG WITH THE I,A, AND B ADDRESSES
WHERE THE ERROR OCCURRED. CONTROL IS THEN TURNED OVER TO
THE OPERATOR WHO MAY TYPE HIS RESPONSE TO THE MONITOR.
FOURTH, FREQUENTLY USED UTILITY PROGRAMS AND SUBROUTINES
HAVE BEEN MADE CORE RESIDENT AND CALLABLE VIA THE 1052 THUS
SAVING TIME IN LOADING AND MAINTENANCE., FURTHERMORE, THE
OPERATOR DOES NOT HAVE TO INTERRUPT THE NORMAL JOB STREAM
TO RUN THEM. THE PROGRAM REQUIRES 360 MOD. E30, 2540, 1403,
PROGRAMMED MODE SWITCH, 1052 AND BASIC COMPATIBILITY.
IT IS WRITTEN IN BPS-BAL.

360D-05.3.001   BPS FORTRAN FORTRAN E H
COBOL E BASIC ASSEMBLER OBJECT-TO-ASSEMBLY LANGUAGE
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-05.3.001

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TITLE...DISASSEMBLER FOR SYSTEM/360
***N   06.8 04.4   ***

THE DISASSEMBLER WILL TRANSLATE OBJECT DECKS GENERATED BY
BPS FORTRAN, FORTRAN E, FORTRAN H, COBOL E AND THE BASIC
ASSEMBLER TO ASSEMBLY LANGUAGE CODE. IT IS A STAND ALONE
SYSTEM WHICH CAN BE LOADED FROM THE CARD READER OR FROM
A TAPE DRIVE. IT CAN PRODUCE LISTINGS AND/OR A PUNCHED
DECK OF THE DISASSEMBLED CODE WITH OR WITHOUT USER SPECIFIED
SYMBOLS. THE PROGRAM WILL OPERATE ON AT LEAST A 64K S/360
MODEL 30 WITH A CARD READER /OOC/ AND PRINTER /OOE/.
FOR TAPE AND PUNCHED OUTPUT FEATURES, IT NEEDS A TAPE DRIVE
/180/ AND PUNCH /OOD/. THE PROGRAM CAN BE USED TO PRODUCE
LISTINGS FOR PROGRAMS IN WHICH THEIR LISTINGS WERE NOT
AVAILABLE, INADEQUATE, OR LOST., IT CAN BE USED TO PUNCH A
DECK FOR PURPOSES OF HAND OPTIMIZING, AND IT CAN BE USED TO
PROVIDE INSTRUCTION COUNTS FOR PURPOSES OF SYSTEMS EVALUATION.
PROVIDES AN INTERFACE FOR CORRECATIONS TO OS/360.
THERE ARE OTHER FEATURES BEING CONSIDERED FOR THE DISASSEMBLER
WHICH WILL BE IMPLEMENTED WHEN THE NEED FOR THEM ARISES.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK
OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION
TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A
9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A
9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-06.0.002   MODEL 20 SUPPRESS ZEROS
SUBROUTINE
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-06.0.002

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TITLE...IBM S/360-20 RPG/BAL ALPHANUMERIC ZERO SUPPRESS
SUBROUTINE
***N   06.8 01.4   ***

THIS S/360-20 ASSEMBLER LANGUAGE SUBROUTINE IS USED TO
SUPPRESS LEADING ZEROS IN AN ALPHANUMERIC FIELD. IT IS
DESIGNED TO BE USED IN CONJUNCTION WITH A S/360-20 RPG PROGRAM.
THE SUBROUTINE WILL OPERATE ON A FIELD OF MAXIMUM LENGTH
256 CHARACTERS. THE SAME FACILITY IS PROVIDED HERE AS IS
AVAILABLE ON IBM 1400 SYSTEMS WITH THE ,,MOVE CHARACTERS AND

CONTINUED FROM PRIOR COLUMN--
    SUPPRESS ZEROS,, INSTRUCTIONS.

360D-06.0.003   OS/360 FREE-FORM CARD-IMAGE
TEXT-PROCESSING
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-06.0.003

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DIRECT INQUIRIES TO..
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TITLE...FORMAT - A TEXT PROCESSING PROGRAM
***N   ***

FORMAT IS A TEXT-PROCESSING PROGRAM WHICH ACCEPTS
FREE-FORM CARD-IMAGE TEXT AND PRODUCES A DOCUMENT IN UPPER
AND LOWER CASE WHICH IS FORMATED ACCORDING TO USER INSTRUCTIONS.
AMONG THE OPTIONS AVAILABLE ARE- UP TO 8 COLUMNS PER PAGE,
RIGHT-JUSTIFICATION, AUTOMATIC SENTENCE CAPITALIZATION, AND
TAB-SETTINGS. COMMAND OPERANDS IN COMMAND WORDS WHICH MAY BE
FREELY INTERSPERSED THROUGHOUT THE TEXT INPUT, PROVIDE THE
CAPABILITY TO START A NEW LINE, PARAGRAPH, COLUMN, AND PAGE.,
TO TABULATE., TO UNDERLINE /AND TO STOP/., TO READ GROUPS OF
CONTROL CARDS., TO CENTER TEXT WITHIN A COLUMN-LINE
/AND TO STOP/., TO PRINT TEXT ,,AS IS,, /AND TO STOP/., TO
PRINT TEXT IN UPPER CASE /AND TO STOP/., AND TO PRINT TEXT WITH
EACH WORD CAPITALIZED /AND TO STOP/. SPECIAL OPERANDS PROVIDE
FOR CAPITALIZATION AND SPECIAL CHARACTERS. FORMAT IS WRITTEN IN
FORTRAN AND RUNS IN A 64K SYSTEM/360 UNDER O.S. /NO SPECIAL
UNITS REQUIRED/.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE
SUBMITTAL IS REQUIRED.

360D-06.1.001   A SERIES OF SUBROUTINES TO
ALLOW USER TO SORT FIXED-LENGTH 1400 TAPE RECORDS
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-06.1.001

AUTHOR...MR. R. MACKINNON

DIRECT INQUIRIES TO..
    MR. R. MACKINNON,IBM CORP.,520 BOYLSTON ST.,BOSTON, MASS.

TITLE...BOS DISK SORT/MERGE MODULES
***N   06.2 00.3 01.6   ***

THE MODULES ARE A SERIES OF SIX SOURCE LANGUAGE SUBROUTINES
WHICH SUPPORT EXITS 11, 31, AND 41 TO ALLOW THE USER TO SORT OR
MERGE FIXED-LENGTH 1400 TAPE RECORDS UNDER THE BASIC OPERATING
SYSTEM. THE ASSUMPTION IS MADE THAT INPUT TO THE PROGRAM IS ON
SEVEN-TRACK MAGNETIC TAPE WRITTEN WITH THE TRANSLATE FEATURE ON.
HEADER AND TRAILER LABELS ARE ASSUMED TO BE EIGHTY CHARACTERS IN
LENGTH. THE MODULES LOG ALL LABELS ON THE 1052 CONSOLE
TYPEWRITER ALONG WITH AN IDENTIFYING LEGEND INDICATING WHETHER
THERE IS A HEADER, END-OF-REEL, OR END-OF-FILE LABEL BEING
PROCESSED. SKELETON TRAILER LABELS ARE CREATED FOR OUTPUT
TAPES IN THE FORM 1EORB OR 1EOFB. TO CREATE OUTPUT HEADER
LABELS, THE USER CAN SELECT FROM MODULES WHICH-
 - WRITE A SKELETON 1HDRB LABEL.
 - DUPLICATES THE FIRST INPUT HEADER ONTO ALL OUTPUT TAPES.
 - CREATES A LABEL FROM A CARD READ DURING THE INITIALIZATION
   OF THE SUBROUTINE.

THE LANGUAGE OF THE MODULES IS BOS ASSEMBLER LANGUAGE, USING
THE EXCP, WAIT, AND CCB MACRO INSTRUCTIONS. FIELD-LENGTH
DESIGNATIONS IN THE MODULES ARE DONE SYMBOLICALLY TO FACILITATE
MODIFICATION AND A DISCUSSION IS INCLUDED ON THE PROCEDURES
FOR MODIFICATION REQUIRED BECAUSE OF CERTAIN DEVICES OR THE
DISK OPERATING SYSTEM. OBJECT MACHINE REQUIREMENTS ARE THOSE
SYSTEM COMPONENTS NEEDED TO EXECUTE THE BOS SORT/MERGE AS
WELL AS A 1052 CONSOLE TYPEWRITER AND AT LEAST ONE 2400-SERIES
MAGNETIC TAPE UNIT. THE MODULES ASSUME SEVEN-TRACK HEADS.
THE NUMBER OF 2311 DISK DRIVES AVAILABLE TO THE PROGRAM
HAS A DIRECT BEARING UPON THE MAXIMUM FILE SIZE COMPUTED
DURING PHASE O OF THE PROGRAM.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-06.1.003   1401 SORT-2 OR /SORT-7/   *N
CONTROL /CARDS/ TO BPS /SORT/MERGE/ /CONTROL/ /CARDS/
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-06.1.003

AUTHOR...MR. C.B. CONN

DIRECT INQUIRIES TO..
    MR. C.B. CONN,IBM CORP.,330 MADISON AVE.,
    NEW YORK, N.Y. 10017

TITLE...SORT 2 OR SORT 7 TO BPS SORT CONTROL CARD CONVERSION
UTILITY PROGRAM
***N   ***

THIS PROGRAM CONVERTS 1401 SORT 2 OR SORT 7 CONTROL CARDS
TO CONTROL CARDS USED BY THE BPS SORT/MERGE PROGRAM.
CONVERSATIONAL MODE VIA THE 1052 CONSOLE TYPEWRITER IS USED
TO DEVELOP PARAMETERS NOT AVAILABLE IN THE 1401 SORT CONTROL
CARDS. CONTROL CARDS FOR PROCESSING FIXED- OR VARIABLE-LENGTH
RECORDS, BLOCKED OR UNBLOCKED, CAN BE CREATED. FROM THREE
TO SIX TAPES MAY BE SPECIFIED BY THE USER, AND FROM ONE
TO FIVE CONTROL FIELDS WILL BE ACCEPTED. ASCENDING OR
DESCENDING FILE SEQUENCE IS SUPPORTED. THE PROGRAM IS
WRITTEN IN BPS ASSEMBLER LANGUAGE FOR TAPE SYSTEM ABOVE THE
MODEL 20.

Contributed Programs

CONTINUED FROM PRIOR PAGE--

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-06.4.001   BOS/OS BINARY TABLE SEARCH
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.4.001

AUTHOR...R.W. SANDSTEDT

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R.W. SANDSTEDT,IBM CORP.,220 CHURCH ST.,NEW YORK, N.Y. 10013

TITLE...SYSTEM/360 BINARY SEARCH
***N   06.4 07.1 04.6   ***

THIS S/360 REENTERABLE MODULE PERFORMS A BINARY SEARCH OF
ONE OR MORE TABLES IN MAIN STORAGE. THE FIXED LENGTH SEARCH
ARGUMENT MAY BE ALPHAMERIC /256 BYTES MAXIMUM/, PACKED DECIMAL
/16 BYTES MAXIMUM/, OR FIXED POINT HALF OR FULL WORD BINARY.
EACH TABLE MAY CONTAIN 9999 ENTRIES MAXIMUM IN ASCENDING
SEQUENCE. EACH ENTRY MUST BE A FIXED LENGTH OF 9999 BYTES
MAXIMUM. A TABLE ARGUMENT MUST BE LOCATED WITHIN THE FIRST
256 BYTES OF AN ENTRY. THE MODULE RETURNS A MATCHING TABLE
ENTRY OR THE NEXT HIGHER ENTRY IF NO MATCH EXISTS.
THE MODULE IS OPTIMIZED FOR MINIMUM EXECUTION TIME. IT REQUIRES
A S/360 MODEL 30 WITH STANDARD INSTRUCTION SET /PACKED DECIMAL
SEARCHES REQUIRE THE DECIMAL INSTRUCTION SET/ AND OCCUPIES
450 BYTES OF MAIN STORAGE. SOURCE LANGUAGE IS ASSEMBLER,
WHICH CAN BE ASSEMBLED AND RUN UNDER BOS OR OS. THE MODULE MAY
BE ACCESSED IN COBOL VIA THE CALL STATEMENT OR IN ASSEMBLER
LANGUAGE VIA THE CALL OR LINK MACRO-INSTRUCTIONS.
THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS
REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-06.5.001   SUBROUTINE TO CONVERT
PACKED DECIMAL TO BINARY
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.5.001

AUTHOR...MR. J. NAGELMANN

DIRECT INQUIRIES TO..
MR. J. NAGELMANN,IBM CORP.,6055 E. WASHINGTON BLVD.,
LOS ANGELES, CALIF. 90022

TITLE...CONVERT TO BINARY SUBROUTINE FOR SYSTEM/360-20
***N   07.2 08.1   ***

THIS SUBMISSION IS A SUBROUTINE THAT WILL TAKE A POSITIVE
PACKED FIELD AND CONVERT IT TO ITS BINARY EQUIVALENT.
THE SIZE OF THE PACKED FIELD IS FIVE NUMERIC DIGITS BUT THE
LARGEST INTEGER THAT CAN BE CONVERTED IN THE SUBROUTINE IS
32,767. THE NEED FOR THIS HAS ARISEN BECAUSE THE MODEL 20
DOES NOT HAVE A CONVERT TO BINARY OPERATION CODE, AND TO DO
ANY DIRECT ADDRESSING TO A TABLE LOCATION IN CORE YOU MUST
BE IN A BINARY MODE. THE SOURCE LANGUAGE IS THE BASIC
ASSEMBLER LANGUAGE FOR THE MODEL 20. THERE IS NO REQUIRED
CONFIGURATION FOR THIS SUBROUTINE TO EXECUTE AS IT IS
ONLY A PROGRAMMING TECHNIQUE. IT IS DESIGNED TO BE IMPLEMENTED
BY THE USER IN ITS SOURCE FORM AND THE OBJECT DOCUMENTATION
IS FOR TESTING PURPOSES ONLY.

360D-06.5.002   CONVERT SIGN OVERPUNCHED
NUMBERS TO NUMBER PLUS SIGN CODE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.5.002

AUTHOR...F. STEPHEN GAUSS

DIRECT INQUIRIES TO..
F. STEPHEN GAUSS,UNITED STATES NAVAL OBSERVATORY,
WASHINGTON, D.C.

TITLE...SNV650 SUBROUTINE
***S USNO   06.6 12.1 03.8   ***

CNV650 IS WRITTEN AS A FORTRAN IV SUBROUTINE SUBPROGRAM
FOR THE IBM SYSTEM 360 TO CONVERT BCD SIGNED NUMBERS
/OVERPUNCHED/ INTO A NUMERIC CHARACTER AND A SIGN CHARACTER.
THE TYPE OF ZONE OVERPUNCH IS ALSO RETURNED. SPECIAL CHARACTERS
USED AS INPUT WILL PRODUCE AN ERROR MESSAGE AND A NUMERIC
VALUE OF PLUS 0. ON THE 360/40 852 WORDS OF STORAGE ARE USED.
IT SHOULD RUN ON ANY SYSTEM 360 WITH FORTRAN IV. THE BASIC
REQUIREMENTS ARE A 32- BIT WORD LENGTH AND SYSTEM 360
INTERNAL CODING.

360D-06.5.003   A MACRO TO GENERATE THE
REQUIRED CODE FOR DECIMAL SHIFTS IN CORE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.5.003

AUTHOR...MR. R.A. BELZ

DIRECT INQUIRIES TO..
MR. R.A. BELZ,IBM CORP.,SDD,DEPT. 050,BLDG. 706,BOX 390,
POUGHKEEPSIE, N.Y. 12602

TITLE...DECIMAL SHIFT MACRO
***N   03.7 40.3   ***

THIS PROGRAM IS A MACRO FOR USE AT ASSEMBLY TIME ON THE
IBM SYSTEM/360. IT GENERATES THE REQUIRED CODE FOR DECIMAL
SHIFTS IN CORE STORAGE LOCATIONS. IT IS CODED IN ASSEMBLER /E/
LANGUAGE. THE OBJECT MACHINE MUST HAVE THE DECIMAL INSTRUCTION
SET INSTALLED.

360D-06.7.002   CREATE MAINTAIN LIBRARY OF   *N
SOURCE PROGRAMS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.7.002

AUTHOR...MR. R.E. STOAKES

DIRECT INQUIRIES TO..
MR. R.E. STOAKES,IBM CORP.,650 N. MAIN ST.,ROCKFORD, ILL.

TITLE...SPLMAINF - CREATES AND MAINTAINS A SOURCE LIBRARY OF
S/360 PROGRAMS UNDER DOS
***N   ***

THIS IS A SOURCE PROGRAM LIBRARIAN PROGRAM TO CREATE AND
MAINTAIN A LIBRARY OF SYSTEM/360 SOURCE PROGRAMS ON DISK OR
TAPE. IT IS WRITTEN IN COBOL FOR USE PRIMARILY WITH D.O.S..
IT CAN PROCESS SOURCE DECKS CODED IN RPG, FORTRAN OR COBOL.
SPECIFICALLY IT WILL-
- CREATE AN INITIAL LIBRARY.
- ADD, DELETE + REPLACE ENTIRE PROGRAMS.
- SELECT PROGRAMS FOR CARD OR TAPE OUTPUT.
- EDIT PROGRAMS BY SEQUENCE NUMBER.
- RESEQUENCE PROGRAMS.
- LIST PROGRAMS.
- LIST ALL LIBRARY PROGRAM NAMES.
- SELECT PROGRAMS FOR IMMEDIATE COMPILATION.
THIS PROGRAM ENABLES A USER TO MAINTAIN BULKY SOURCE PROGRAM
DECKS ON DISK OR TAPE. A SIMPLE METHOD IS OFFERED FOR
ALTERING SOURCE PROGRAMS. THE JOB CONTROL STREAM CAN BE
EASILY ARRANGED FOR BATCH COMPILATION OF UPDATED SOURCE
PROGRAMS. STORAGE REQUIREMENTS- 24K BYTES.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-06.7.003   CATALOGING A PROGRAM LIBRARY   *N
ON /TAPE/
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.7.003

AUTHOR...P.D. BOWMAN

DIRECT INQUIRIES TO..
P.D. BOWMAN,IBM CORP.,100 S. WACKER DR.,CHICAGO, ILL. 60606

TITLE...S/360 BOS PROGRAM LIBRARY CATALOGING TAPE UTILITY
PROGRAM
***N   00.3   ***

THIS PROGRAM MAINTAINS AN INSTALLATION PROGRAM LIBRARY ON TAPE.
THE OBJECTS DECKS ON THE TAPE ARE SEPARATED BY CONTROL CARDS
SUPPLIED BY THE MAINTENANCE PROGRAM WHICH ALLOW CATALOGING
DIRECTLY TO THE CORE IMAGE LIBRARY FROM THE TAPE. DURING
MAINTENANCE RUNS ON THE TAPE, A REPORT IS GENERATED GIVING
PROGRAM NAME, LOCATION ON THE TAPE /STARTING RECORD NUMBER
FOR PUNCHING/ AND STATUS /NEW, REPLACEMENT THIS RUN, OR MERELY
COPIED THIS RUN/. THE CATALOGING FUNCTION PROVIDES A FAST,
CLEAN APPROACH TO ADDING USER PROGRAMS TO A SYSRES CORE
IMAGE LIBRARY WHEN INSTALLING NEW RELEASES OF THE OPERATING
SYSTEM, RETURNING FROM BACKUP, OR BUILDING ADDITIONAL SYSTEM
RESIDENCE PACKS. THUS, THE PROGRAM ALLOWS OBJECT DECK
CATALOGING, MAINTENANCE AND STORAGE PROCEDURES WHICH PROVIDE
COMPACTNESS, SPEED AND DOCUMENTATION WHILE REDUCING CARD
HANDLING. BY USING DUMMY PHASE CARDS, THIS PROGRAM MAY ALSO
BE USED TO MAINTAIN A TAPE OF SOURCE DECKS OR 1400 PROGRAMS.
THE SOURCE LANGUAGE IS BAL.
MINIMUM MACHINE CONFIGURATION- SYSTEM/360 MODEL 30 OR ABOVE,
16K STORAGE, DECIMAL ARITHMETIC... A 2311 DISK DRIVE...
TWO 2400 TAPE DRIVES... A 1052 CONSOLE TYPEWRITER...
A CARD READER... A CARD PUNCH.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-08.6.001   /SUBROUTINE/ FOR TIME SERIES
PLOTTING ON A /PRINTER/
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-08.6.001

AUTHOR...R.H. KARPINSKI

DIRECT INQUIRIES TO..
J.B. YEATON,UNIVERSITY OF CALIFORNIA,MEDICAL CENTER,
110 M.R.-4,SAN FRANCISCO, CALIF. 94122

TITLE...PLOTS - A SUBROUTINE FOR TIME-SERIES PLOTTING ON A
PRINTER
***S UCS   PLTS 03.8   ***

TO USE ,,PLOTS,, TO PLOT N CURVES - CALL PLOTS /-N, RANGES/
WHERE N EQUALS NUMBER OF CURVES /THIS ARGUMENT SHOULD BE
NEGATIVE FOR THE SETUP CALL, CAUSING A NEW PLOT TO BE
STARTED/, AND RANGES EQUALS AN ARRAY OF SIZE 3N PLUS 3.,
- RANGES /1/ - TIME ZERO /TIME OF BEGINNING OF PLOT/.
- RANGES /2/ - DELTA TIME /TIME INCREMENT PER PLOT LINE/.
- RANGES /3/ - L/TIME WILL BE PRINTED EVERY L LINES, UNLESS
L IS LESS THAN ZERO/.
- RANGES /4/ - X/1/MIN. /MINIMUM VALUE TO BE PLOTTED FOR
FIRST CURVE/.
- RANGES /5/ - X/1/MAX. /MAXIMUM VALUE TO BE PLOTTED FOR
FIRST CURVE/.
- RANGES /6/ - X/1/CHAR. /CHARACTER TO BE PLOTTED TO
INDICATE FIRST CURVE/.
- RANGES /3N PLUS 1/ - X/N/ MIN.
- RANGES /3N PLUS 2/ - X/N/ MAX.
- RANGES /3N PLUS 3/ - X/N/ CHAR.

FOR EACH LINE DESIRED /I.E. CALL ,,PLOTS,, MANY TIMES ONCE
FOR EACH TIME INCREMENT/, CALL PLOTS /N/X/ WHERE N EQUALS THE
NUMBER OF CURVES AND X/I/ EQUALS THE CURRENT VALUE OF THE
ITH CURVE. ,,PLOTS,, WILL ACTUALLY PLOT A VALUE UP TO, BUT
NOT INCLUDING, MAX. /MAX-MIN/ *0.01 IN THE 101ST POSITION.

Contributed Programs

CONTINUED FROM PRIOR PAGE--
N SHOULD BE BETWEEN 1 AND 100.

360D-08.6.002   PLOTTING CALCOMP PL/I   *N
INTERFACE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-08.6.002

AUTHOR...MR. E.H. REMY

DIRECT INQUIRIES TO..
MR. T.L. JORDAN,EASTMAN KODAK CO.,BLDG. 56,KODAK PARK,
ROCHESTER, N.Y. 14650

TITLE...INTERFACE BETWEEN PL/I USER PROGRAMS AND CALCOMP
ROUTINES
***S KP   PLOT 03.8 03.0   ***

THE OS/360 PLOTTING ROUTINES PROVIDED BY CALCOMP ARE WRITTEN
IN FORTRAN AND ASSEMBLER AND ARE DESIGNED TO BE USED BY A
FORTRAN PROGRAM. THESE ROUTINES MAY BE CALLED BY A PL/I
PROGRAM BUT SUCH USE DOES NOT PERMIT SOME COMMONLY USED PL/I
FEATURES SUCH AS CHARACTER STRINGS. IT IS ALSO AN INCONVENIENCE
FOR A PL/I PROGRAMMER TO ADHERE TO FORTRAN LINKAGE CONVENTIONS
SUCH AS AVOIDING PASSING DOPE VECTORS. TO PERMIT THE PL/I
PROGRAMMER TO USE STRAIGHT-FORWARD PL/I STATEMENTS IN PLOT
PROGRAMS, THIS INTERFACE HAS BEEN WRITTEN TO INTERCEPT THE
LINKAGE BETWEEN THE USERS PROGRAM AND THE ROUTINES PROVIDED
BY CALCOMP. LINKAGE EDITOR ,,CHANGE,, CARDS ARE USED TO
PERMIT THE INTERFACE TO HAVE ENTRY POINTS WITH THE SAME NAMES
AS THE ROUTINES PROVIDED BY CALCOMP. THE JCL MAY BE MODIFIED
TO CONFORM TO AN INSTALLATIONS PROCEDURES AND NAMING CONVENTIONS.

360D-08.7.001   BPS FORTRAN 2250 DISPLAY
SUBROUTINES INITIALIZATION GENERATION SCALING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-08.7.001

AUTHOR...MR. D.A. HOLLO

DIRECT INQUIRIES TO..
MR. D.A. HOLLO,IBM CORP.,112 EAST POST RD.,WHITE PLAINS, N.Y.

TITLE...GRAPHIC FORTRAN SYSTEM FOR THE IBM 2250 DISPLAY UNIT
N   03.8 00.6 06.5 08.7

A COLLECTION OF 80 GRAPHIC SUBROUTINES TO ALLOW THE FORTRAN
PROGRAMMER TO EASILY MAKE USE OF THE IBM 2250 DISPLAY UNIT
IN AN APPLICATION PROGRAM. THE SUBROUTINES ARE USED WITH
BASIC PROGRAMMING SUPPORT /BPS/ FORTRAN IV, LEVEL D TAPE 16K.
THE SYSTEM REQUIRES A SINGLE, DEDICATED IBM 2250 MODEL 1
DISPLAY UNIT WITH BUFFER STORAGE, CHARACTER GENERATOR AND
ABSOLUTE VECTOR FEATURES. INCLUDED ARE ROUTINES FOR
INITIALIZATION, ATTENTION HANDLING FROM THE FUNCTION KEYS
AND LIGHT PEN, IMAGE GENERATION, SCALING., ROUTINES TO
GENERATE GRIDS, CIRCLES, LINE CLASS, DIMENSION LINES,
GEOMETRIC SOLUTION AND A 3-D DISPLAY SYSTEM. THE HARDWARE
DEPENDENT ROUTINES ARE WRITTEN IN BASIC ASSEMBLY LANGUAGE
AND THE HARDWARE INDEPENDENT ROUTINES ARE WRITTEN IN
FORTRAN IV LEVEL D.
MACHINE CONFIGURATION THE GFS SYSTEM TAPE EMBODIES ALL THE
FEATURES OF FORTRAN IV BPS, LEVEL D, TAPE 16K, AND SUPPORTS
A SINGLE 2250 MODEL 1 DISPLAY CONSOLE WHICH MUST BE EQUIPPED
WITH 4K OR 8K BUFFER, THE CHARACTER GENERATOR, AND THE
ABSOLUTE VECTOR FEATURE. THE SYSTEM WILL RUN ON ANY SYSTEM/360
MODEL 30 OR HIGHER, HAVING 64K OR MORE, EQUIPPED WITH
1052 TERMINAL, CARD-READER PUNCH, EITHER 2540 OR 1442,
1403 PRINTER AND FOUR TAPE UNITS. OPTIONAL FEATURES SUPPORTED
ARE THE LIGHT PEN, THE FUNCTION KEY AND THE INDICATOR LIGHTS.

BASIC MATERIAL CONSISTS OF A FORTRAN SYSTEM TAPE WITH THE
GFS SUBROUTINES IN THE SYSTEMS LIBRARY. ONE MAGNETIC TAPE
REQUIRED. OPTIONAL MATERIAL ONE TAPE FOR THE PROGRAM SOURCE
CARDS, ONE TAPE FOR THE AUTOCHART TAPE. THE TAPES REQUIRED
MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE.

360D-08.7.002   OS 2250 DISPLAY SUBROUTINES
ATTENTION HANDLING IMAGE GENERATION DATA MANAGEMENT
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-08.7.002

AUTHORS..H. WOLPE   R. ARMSTRONG   D. CHRISTIANSEN
H. GANSKE   H. HOGSET   A. LIPPERT
D. MOKSKI   S. STARR   R. WRENN

DIRECT INQUIRIES TO..
H. WOLPE,IBM CORP.,10889 WILSHIRE BLVD.,KIRKEBY CENTER,
SUITE 540,LOS ANGELES, CALIF.

TITLE...GPAK - ON-LINE GRAPHIC DATA PROCESSING SOFTWARE SYSTEM
WITH REAL-TIME 2250 MOD 1 INPUT AND DISPLAY
***N   03.8 00.6 08.7   ***

GPAK /GRAPHIC PACKAGE/ IS A SET OF SUBROUTINES WHICH
PROVIDES SUPPORT FOR THE IBM 2250 I DISPLAY CONSOLE. IT
UTILIZES OS/360 EXPRESS GRAPHICS SUPPORT. GPAK ASSISTS
THE 2250 I USER IN THE FOLLOWING AREAS- ATTENTION HANDLING,
IMAGE GENERATION /CREATION OF 2250 ORDERS/, GRAPHIC DATA
MANAGEMENT, LIGHT PEN HANDLING AND CONSOLE PROCEDURES.
GPAK ROUTINES MAY BE CALLED FROM BOTH ASSEMBLY LANGUAGE AND
FORTRAN. GPAK IS A MODULAR AND OPEN ENDED SYSTEM ALLOWING THE
APPLICATION PROGRAMMER TO SELECT FROM A SET OF GENERALIZED
TOOLS OR CREATE HIS OWN. A PROGRAM WILL BE PROVIDED THAT
SERVES AS AN INSTALLATION TEST PROGRAM. GPAK REQUIRES AT
LEAST A 64K S/360 MOD 30 WHICH CAN RUN OS/360 AND A 2250
MODEL I WITH BUFFER, CHARACTER GENERATOR AND ABSOLUTE VECTOR
FEATURES.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK
OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE
REEL /DTR/. IF TRACK REQUIREMENT NOT SPECIFIED, A 9 TRACK
DTR WILL BE PROVIDED. THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-10.1.001   FORTRAN IV PROGRAM TO
CALCULATE DISTANCES AND COMMON CARRIER LINE COSTS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-10.1.001

CONTINUED FROM PRIOR COLUMN--

AUTHORS..MR. P.M. JUNEMANN MR. D.F. HEALY

DIRECT INQUIRIES TO..
MR. P.M. JUNEMANN,IBM CORP.,6900 FANNIN ST.,HOUSTON,
TEXAS 77025

TITLE...TELEPROCESSING DISTANCE AND LINE COST CALCULATION
PROGRAM
***N   16.0 17.0 41.5   ***

THIS IS A FORTRAN IV PROGRAM THAT CAN BE RUN ON THE
IBM SYSTEM/360, 1130, 7090, AND OTHER COMPUTERS THAT HAVE A
FORTRAN IV COMPILER. THE PROGRAM CALCULATES AND TABULATES
THE DISTANCES AND THE COMMON CARRIER LINE COSTS BETWEEN
50 /OR LESS/ CITIES. THE INPUT IS THE VERTICAL AND HORIZONTAL
COORDINATES OF THE CITIES AS OBTAINED FROM THE AT+T FCC
TARIFF 255, AND LINE CHARGES FROM THE APPROPRIATE TARIFF FOR THE
LINE GRADE USED. THE OUTPUT IS A PRINTED TABLE OF THE
DISTANCES AND LINE COSTS BETWEEN EACH OF THE INPUT CITIES.
THE PROGRAM HAS THE ABILITY TO OUTPUT A DISTANCE-ONLY TABLE
AND ALSO A COMBINATION DISTANCE-LINE COST TABLE. THE PROGRAM
GREATLY ASSISTS IN THE PRELIMINARY OR MANUAL DESIGN OF A
SMALL /50 CITIES OR LESS/ COMMUNICATIONS NETWORK. THE SYSTEM
USED TO EXECUTE THE PROGRAM MUST HAVE AN ON-LINE /OR PERIPHERAL/
CARD READER AND PRINTER /120 PRINT POSITIONS OR LARGER/.
A 32K-360, OR AN 8K-1130 ARE LARGE ENOUGH TO EXECUTE THE
PROGRAM. TO ALTER THIS PROGRAM TO RUN ON A SPECIFIC MACHINE,
ONLY TWO STATEMENTS IN THE SOURCE DECK NEED TO BE CHANGED.,
TO CHANGE THE LOGICAL DESIGNATION FOR THE INPUT AND OUTPUT UNITS.

360D-10.2.001   INDEX SEQUENTIAL ANALYZER
BLOCKING-FACTOR CYLINDER-OVERFLOW FILE-SPACE-REQUIREMENTS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-10.2.001

AUTHOR...MR. W.E. MESSMANN

DIRECT INQUIRIES TO..
MR. W.E. MESSMANN,IBM CORP.,1211 SOUTH HARRISON,
FORT WAYNE, IND. 46802

TITLE...ISA360 - INDEX SEQUENTIAL ANALYZER
***N   01.6 04.3   ***

THE PURPOSE OF INDEX SEQUENTIAL ANALYZER 360 IS TO EASILY
RECOGNIZE THE IMPLICATION OF BLOCKING FACTOR AND CYLINDER
OVERFLOW IN DETERMINING FILE SPACE REQUIREMENTS FOR THE
INDEX SEQUENTIAL FILE MANAGEMENT SYSTEM. WITH A SINGLE INPUT
CARD DESCRIBING THE DEVICE, NUMBER OF RECORDS, RECORD LENGTH
AND KEY LENGTH, ISA360 PRINTS OUT THE NUMBER OF RECORDS
POSSIBLE ON A CYLINDER AND NUMBER OF CYLINDERS REQUIRED FOR
THE WHOLE FILE WITH VARIOUS COMBINATIONS OF BLOCKING FACTORS
AND CYLINDER OVERFLOW. AN ANALYSIS SUCH AS THAT PROVIDED BY
ISA360 IS A NECESSITY IN AVOIDING ARBITRARY OR POOR CHOICES
OF BLOCKING FACTOR IN PARTICULAR, AND THIS CAN PROVE ESPECIALLY
EXPENSIVE BOTH IN FILE SPACE REQUIREMENTS AND PERFORMANCE.
THE PROGRAM IS ALSO USEFUL FOR JUDGING THE EFFECT OF CHANGES
IN RECORD AND/OR KEY LENGTH. ISA360 IS ALSO USED TO HELP
DECIDE BETWEEN THE 2311, 2321, 2314 AND 2302 IN CONFIGURATING
S/360. THE STAND-ALONE OBJECT DECK RUNS ON AN 8K S/360
MODEL 30 WITH STANDARD INSTRUCTION SET, A 2540, AND A 1403.
THE ASSEMBLER LANGUAGE SOURCE DECK IS EASILY MODIFIED TO ANY
S/360 MODEL 30 OR LARGER WITH ANY CARD READER AND ANY PRINTER
UNDER ANY OPERATING SYSTEM.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK
WILL BE FORWARDED.
THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-10.2.002   DISK AND CORE REQUIREMENT
ANALYZER FOR THE S/360 BILL OF MATERIAL PROCESSOR
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-10.2.002

AUTHOR...MR. J.F. VANDEVEER

DIRECT INQUIRIES TO..
MR. J.F. VANDEVEER,IBM CORP.,22720 MICHIGAN AVE.,
DEARBORN, MICH. 48124

TITLE...DISK AND CORE REQUIREMENT ANALYZER FOR THE S/360 BILL
OF MATERIAL PROCESSOR.
***N   01.6 06.7 24.2   ***

THE DISK AND CORE REQUIREMENT ANALYZER FOR THE SYSTEM/360
BILL OF MATERIAL PROCESSOR CONSISTS OF TWO PROGRAMS WRITTEN
IN FORTRAN AND RUN ON EITHER AN IBM 1130 OR SYSTEM/360
COMPUTER. THE FIRST PROGRAM ANALYZES MASTER FILE REQUIREMENTS,
AND THE SECOND PROGRAM ANALYZES CHAIN FILE REQUIREMENTS.
THESE PROGRAMS FOLLOW CLOSELY THE ANALYSIS PRESENTED BY THE
FLOW CHARTS IN APPENDIX E OF THE SYSTEM/360 BILL OF MATERIAL
PROCESSOR PROGRAMMERS MANUAL /H20-0246/. THESE PROGRAMS
PROVIDE NO SINGLE, DEFINITE SOLUTION, BUT INSTEAD A NUMBER
OF POSSIBLE SOLUTIONS WHICH ARE PRESENTED IN TABULAR FORM.
THE USER CAN ANALYZE AND WEIGH THE ADVANTAGES OF ONE SOLUTION
OVER ANOTHER AND ARRIVE AT THE OPTIMAL SOLUTION TAILORED TO HIS
NEEDS AND HARDWARE CONFIGURATION. THESE PROGRAMS SAVE MANY
HOURS OF MANUAL CALCULATION WHICH NORMALLY WOULD NOT BE
PERFORMED TO ARRIVE AT THE OPTIMAL SOLUTION FOR A PARTICULAR
INSTALLATION.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-11.1.001   PROGRAM TO PROCESS ON
SYSTEM/360 OBJECT PROGRAMS /WRITTEN/ FOR A 8280
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-11.1.001

AUTHOR...MR. TOM TARRANT

Contributed Programs

CONTINUED FROM PRIOR PAGE--

DIRECT INQUIRIES TO..
      LINDA LEWIS,IBM CORP.,6900 FANNIN STREET,HOUSTON,TEX. 77025

TITLE...BURROUGHS B280 SIMULATOR PROGRAM
     N   07.0 08.0 12.0 02.0

THIS PROGRAM WILL PROCESS, ON A SYSTEM/360, OBJECT PROGRAMS
WRITTEN FOR A B280 ,,IMPROVED MODEL 0,, THREE TAPE SYSTEM
HAVING 4800 MEMORY POSITIONS. IT WAS WRITTEN USING THE
8K TAPE ASSEMBLER FOR A MODEL 30 AND REQUIRES 16K MEMORY, THE
COMMERCIAL INSTRUCTION SET, AND A CONSOLE TYPEWRITER. IT
SIMULATES I/O FUNCTIONS OF ONE CARD READER, PUNCH, PRINTER,
AND THREE MAGNETIC TAPE UNITS, OVERLAPPING ALL BUT TAPE READ
OPERATIONS. TAPE ADDRESS DIALING BETWEEN JOBS IS HANDLED
THROUGH ASSIGN CARDS. OPERATOR COMMUNICATION ROUTINES VIA
TYPEWRITER, ALLOWING SIMULATION OF ALL B280 CONSOLE CONTROL
OPERATIONS, INCLUDE HALT, CONTINUE, MEMORY DISPLAY, ALTER
MEMORY, INSTRUCTION BRANCHING, FLOW TRACE, PROGRAM LOAD, AND
B280 CORE DUMP. MACHINE CONFIGURATION -
S/360 MODEL 30, 16K, 2540 READER PUNCH, 1403 PRINTER AND THREE
2400 TAPE DRIVES /9 TRACK/. TO OBTAIN THE BASIC MACHINE
READABLE MATERIAL ONE 2400 FOOT REEL OF MAGNETIC TAPE IS
REQUIRED. THE MATERIAL IS IN NINE-TRACK FORMAT. THE TAPE
REQUIRED MAY BE SUPPLIED OR ORDERED FROM YOUR IBM
REPRESENTATIVE.

360D-11.1.002   PROGRAM TO PROCESS ON
SYSTEM/360 PROGRAMS /WRITTEN/ FOR THE BURROUGHS B280
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.1.002

AUTHORS..MR. TOM TARRANT   LINDA TARRANT

DIRECT INQUIRIES TO..
      LINDA TARRANT,IBM CORP.,6900 FANNIN,HOUSTON, TEXAS 77025

TITLE...BURROUGHS B280 SIMULATOR PROGRAM FOR IBM SYSTEM/360
     N   07.0 08.0 12.0 02.0

THIS PROGRAM WILL PROCESS, ON A SYSTEM/360, OBJECT PROGRAMS
WRITTEN FOR A B280 4-TAPE SYSTEM HAVING EITHER 4800 OR 9600
MEMORY POSITIONS. IT WAS WRITTEN IN ASSEMBLY LANGUAGE FOR
A MODEL 40 AND REQUIRES 32K MEMORY, DECIMAL INSTRUCTION SET,
AND A CONSOLE TYPEWRITER. IT SIMULATES I/O FUNCTIONS OF ONE
CARD READER, PUNCH, PRINTER, AND FOUR MAGNETIC TAPE UNITS.,
OVERLAPPING ALL BUT TAPE READ OPERATIONS. SUPERVISOR
ROUTINES PROVIDE OPERATOR COMMUNICATION VIA TYPEWRITER AND
ALLOW SIMULATION OF B280 CONSOLE OPERATIONS FOR HALT, CONTINUE,
MEMORY DISPLAY, ALTER MEMORY, INSTRUCTION BRANCHING,
FLOW TRACE, AND PROGRAM LOAD. TAPE ADDRESS DIALING BETWEEN
JOBS IS HANDLED THROUGH ASSIGN CARDS. DISTINCTION OF
BURROUGHS 4800 POSITION AND 9600 POSITION PROGRAMS IS
HANDLED THROUGH A SPECIAL CONTROL CARD.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK
OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION
TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A
9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-11.1.003   PROGRAM TO PROCESS OBJECT
PROGRAMS WRITTEN FOR A BURROUGHS B280
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.1.003

AUTHORS..LINDA TARRANT   TOM TARRANT

DIRECT INQUIRIES TO..
      LINDA TARRANT,IBM CORP.,6900 FANNIN,HOUSTON, TEXAS 77025

TITLE...BURROUGHS B280 SIMULATOR PROGRAM FOR IBM S/360 TO BE
      USED WITH HARDWARE ASSISTANCE PACKAGE
     ***N   04.0 02.0   ***

THIS PROGRAM WILL PROCESS, ON A SYSTEM/360, OBJECT PROGRAMS
WRITTEN FOR A B280 ,,IMPROVED MODEL 0,, FOUR TAPE SYSTEM
HAVING EITHER 4.8 OR 9.6K MEMORY POSITIONS. IT WAS WRITTEN
USING THE 8K TAPE ASSEMBLER FOR A MODEL 40, AND REQUIRES
32K MEMORY, THE COMMERCIAL INSTRUCTION SET, A CONSOLE
TYPEWRITER, AND THE HARDWARE ASSISTANCE PACKAGE. IT SIMULATES
I/O FUNCTIONS OF ONE CARD READER, PUNCH, PRINTER, AND FOUR
MAGNETIC TAPE UNITS, OVERLAPPING ALL BUT TAPE READ OPERATIONS.
TAPE ADDRESS DIALING BETWEEN JOBS IS HANDLED THROUGH ASSIGN
CARDS. THE MEMORY SIZE OF THE B280 PROGRAM IS SET BY A
SPECIAL CONTROL CARD. OPERATOR COMMUNICATION ROUTINES VIA
TYPEWRITER, ALLOWING SIMULATION OF ALL B280 CONSOLE CONTROL
OPERATIONS, INCLUDE HALT, CONTINUE, MEMORY DISPLAY,
ALTER MEMORY, INSTRUCTION BRANCHING, FLOW TRACE, PROGRAM LOAD,
AND B280 CORE DUMP.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK
OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION
TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A
9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-11.1.008   PROGRAM TO PROCESS ON A 360
OBJECT PROGRAMS WRITTEN FOR AN RCA 501
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.1.008

AUTHORS..W.G. KELLY   MR. J.J. COHEN   LYNN G. BASCH
    MR. G.F. DERUYTER MR. M.V. MORREALE

DIRECT INQUIRIES TO..
    W.G. KELLY,IBM CORP.,ERO COMMERCIAL ANALYSIS,
    425 PARK AVE., NEW YORK, N.Y.

TITLE...RCA 501 SIMULATOR PROGRAM FOR THE IBM SYSTEM/360.
     ***N   ***

CONTINUED FROM PRIOR COLUMN--

THIS PROGRAM WILL PROCESS ON A SYSTEM/360 OBJECT PROGRAMS
WRITTEN FOR AN RCA 501. THE PROGRAM WILL REQUIRE 100,000 BYTES
OF MEMORY PLUS STORAGE ROOM FOR THE RCA PROGRAM. THE SOURCE
LANGUAGE IS BASIC ASSEMBLER. THE SIMULATOR CONTAINS ALL THE
ROUTINES REQUIRED TO SIMULATE 501 INSTRUCTIONS AND RESERVES
AN AREA OF SYSTEM/360 MAIN STORAGE TO SIMULATE THE 501 HIGH
SPEED MEMORY. BY MEANS OF OS/360 DATA DEFINITION CARDS,
SYSTEM/360 INPUT/OUTPUT DEVICES ARE ASSIGNED TO PERFORM
THE CORRESPONDING FUNCTIONS OF THE 501 INPUT/OUTPUT DEVICES.
THE SIM 501 PROGRAM PACKAGE CONTAINS THE SIMULATION MONITOR
AND THE 501 INTERPRETER PROGRAMS.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR
7-TRACK REEL OF MAGNETIC TAPE. THE TAPE MAY BE ORDERED FROM
YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE MUST BE 2400 FEET
IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK
WILL BE FORWARDED.

360D-11.1.009   SIMULATE RCA-301 UNDER DOS   *N
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.1.009

AUTHOR...MR. G. DRAKE

DIRECT INQUIRIES TO..
      MR. G. DRAKE,3424 WILSHIRE BLVD.,LOS ANGELES, CALIF. 90005

TITLE...RCA 301 SIMULATOR FOR S/360
     ***N   ***

A PROGRAM TO OPERATE UNDER DOS TO SIMULATE MOST FEATURES OF
THE RCA 301 SYSTEM. A 64K SYSTEM/360 IS REQUIRED FOR 10K AND
20K 301 PUNCH, RACE FILE, PAPER TAPE READER, TAPE DRIVES,
DISK FILE AND MONITOR PRINTER WILL BE SIMULATED ON THE
APPROPRIATE SYSTEM/360 DEVICES. THE SIMULATOR IS CODED IN
DOS ASSEMBLY LANGUAGE, OPTIMIZED FOR THE SYSTEM/360 MOD 40,
AND USES DOS LIOCS AND PIOCS MACROS TO SIMULATE I/O.
RCA 301 TAPE FILES AND PAPER TAPE MUST BE FILE CONVERTED
BEFORE USE BY THE SIMULATOR.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK
OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.
IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE
SUBMITTAL IS REQUIRED.

360D-11.1.010   A 1401 PROGRAM TO RUN 1440
OBJECT PROGRAMS ON MODEL 30 IN 1401 COMPATIBILITY MODE
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.1.010

AUTHOR...V.F. YEZZI

DIRECT INQUIRIES TO..
    V.F. YEZZI,IBM CORP.,7 PENN CENTER PLAZA,PHILADELPHIA, PA. 13103

TITLE...1401 PROGRAM TO RUN 1440 PROGRAMS ON S/360 IN 1401
      COMPATIBILITY MODE
     ***N   07.6 08.8 30.0   ***

THIS IS A 1401 AUTOCODER PROGRAM THAT WILL RUN 1440 OBJECT
PROGRAMS ON THE MODEL 30 SYSTEM/360 IN 1401 COMPATIBILITY
MODE. IT IS TO BE USED PRIMARILY FOR DEMONSTRATION PURPOSES
TO RUN 1440 PROGRAMS WHERE 1440 COMPATIBILITY IS NOT AVAILABLE.
THE PROGRAM READS THE 1440 OBJECT DECK CARDS AND LOADS THEM
INTO THEIR PROPER CORE STORAGE POSITION. THEN THE PROGRAM
SCANS ALL OF CORE, LOOKING FOR 1440 READER, PRINTER AND
PUNCH I/O INSTRUCTIONS. THESE ARE CHANGED TO CONFORM TO THE
1401 I/O INSTRUCTION SET. THIS OPERATION TAKES APPROXIMATELY
10-15 SECONDS. ONCE ALL OF CORE IS TRANSLATED INTO 1401
LANGUAGE, THE 1440 PROGRAM IS THEN EXECUTED. THIS PROGRAM
HAS BEEN TESTED WITH READER, PRINTER, PUNCH, DISK, AND
TAPE I/O INSTRUCTIONS. A BASIC REQUIREMENT IS THAT ALL 1440
I/O AREAS BE MADE IDENTICAL TO THOSE IN THE 1401 SYSTEM.
MACHINE REQUIREMENTS- S/360 MODEL 30 WITH 16K BYTES AND THE
1401/1460 COMPATIBILITY FEATURE.

360D-11.3.001   1401/1460 SENSE SWITCH
PROGRAM FOR USE IN RUNNING ON SYSTEM/360 IN COMPATIBILITY MODE
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.3.001

AUTHOR...R.A. MACKINNON

DIRECT INQUIRIES TO..
    R.A. MACKINNON,IBM CORP.,520 BOYLSTON ST.,BOSTON, MASS.

TITLE...1401/1460 SENSE SWITCH PROGRAM FOR S/360 COMPATIBILITY
      MODE

THE SENSE SWITCH PROGRAM IS DESIGNED TO RUN IN 1401/1460
COMPATIBILITY MODE ON A S/360 MODEL 30 AND PROVIDE HARD-COPY
DOCUMENTATION OF SENSE SWITCH SETTINGS IN AUXILIARY STORAGE
PRIOR TO LOADING A USERS 1401/1460 OBJECT DECK. THE SENSE SWITCH
PROGRAM LOADS THE USERS PROGRAM USING A SERIES OF PROGRAM STEPS
WHICH SIMULATE THE LOAD KEY ON A 1402 CARD READER.
ASSEMBLED FOR AN 8K 1401/1460 SYSTEM, THE PROGRAM RUNS ON ANY
S/360 MODEL 30 WHICH HAS THE 1401/1460 BASIC COMPATIBILITY
FEATURE, CARD READER, AND 1052 CONSOLE TYPEWRITER. USER
REQUIREMENTS WILL DICTATE WHAT OTHER COMPONENTS ARE REQUIRED
FOR THE MACHINE.
THE PROGRAM USES THE 1052 AND EXECUTES INDEXING AND
SBR INSTRUCTIONS WHICH ARE A PART OF THE BASIC COMPATIBILITY
FEATURE EVEN THOUGH THE USERS 1400 PROGRAMS DO NOT NECESSARILY
USE THESE DEVICES OR FEATURES.
THE INTENT OF THE PROGRAM IS ONLY TO DOCUMENT SENSE SWITCH
SETTINGS AT PROGRAM LOAD TIME AND TO FACILITATE OPERATOR CHANGES
BY GIVING PRINTED EVIDENCE OF MICRO-PROGRAMMED CONSOLE
MANIPULATIONS.
THE PROGRAM IS WRITTEN IN 1401 TAPE AUTOCODER.

360D-11.3.006   NON-CONSOLE SENSE SWITCH
DISPLAY UPON PRINTER 1400 COMPATABILITY S/360 MODEL 30
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.3.006

Contributed Programs

CONTINUED FROM PRIOR PAGE--

AUTHOR...MR. J. BLACK

DIRECT INQUIRIES TO..
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    401 EAST STEWART RD.,COLUMBIA, MO. 65201

    TITLE...1401/1460 SENSE SWITCH PROGRAM FOR S/360 COMPATIBILITY
        MODE
        ***N   03.4 03.6   ***

    THE SENSE SWITCH PROGRAM IS DESIGNED TO RUN IN 1401/1460
    COMPATIBILITY MODE ON A S/360 AND PRINT SENSE SWITCH SETTINGS
    ON A 1403 PRINTER. THE INTENT OF THE PROGRAM IS ONLY TO DOCUMENT
    SENSE SWITCH SETTINGS BEFORE PROGRAM LOAD TIME AND TO FACILITATE
    OPERATOR CHANGES BY GIVING PRINTED EVIDENCE OF MICROPROGRAMMED
    CONSOLE MANIPULATIONS. MACHINE CONFIGURATION- ASSEMBLED FOR
    A 4K 1401/1460 SYSTEM, THE PROGRAM RUNS ON ANY S/360 WHICH HAS
    THE 1401/1460 BASIC COMPATIBILITY FEATURE, CARD READER, AND
    1403 PRINTER. USER REQUIREMENTS WILL DICTATE WHAT OTHER
    COMPONENTS ARE REQUIRED FOR THE MACHINE.

360D-11.3.009   MODIFICATION OF 1401
EMULATOR TO /SUPPORT/ SECTOR AND TRACK 1405 /OPERATIONS/
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.3.009

AUTHOR...W.A. MARSH

DIRECT INQUIRIES TO..
    W.A. MARSH,IBM CORP.,1130 SO. SIXTH ST.,SPRINGFIELD, ILL.

    TITLE...EMULATION OF 1405 DISK STORAGE UNDER THE 1401 EMULATOR.
        ***N   00.4 12.0   ***

    THIS IS A MODIFICATION TO VERSION III OF THE 1401 EMULATOR
    360C-EU-074. IT WILL SUPPORT SECTOR AND TRACK 1405
    OPERATIONS IN MOVE MODE ONLY. REQUIREMENTS ON S/360 MOD. 40
    FOR THIS MODIFICATION ARE IDENTICAL TO THOSE FOR THE BASIC
    EMULATOR WHICH SUPPORTS 1311 COMPATIBILITY. ONE 2311 DRIVE
    IS REQUIRED FOR EACH 25,870 1405 SECTOR. SOURCE LANGUAGE
    FOR THE MODIFICATION IS ASSEMBLER LANGUAGE.
    NOTE- 1311 OPERATIONS CANNOT BE PERFORMED WHEN THIS MODIFICATION
    IS BEING USED.

360D-11.3.010   SUBROUTINE FOR SIMULATING
THE 1419/360 FOR TESTING /PURPOSES/
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.3.010

AUTHOR...MISS J.M. BLAIR

DIRECT INQUIRIES TO..
    MISS J.M. BLAIR,IBM CORP.,SEVEN PENN CENTER,
    PHILADELPHIA, PA. 19103

    TITLE...1419 SIMULATOR FOR PROGRAMS WRITTEN UNDER 1419/360
        INPUT OUTPUT CONTROL PROGRAM
        ***N   06.1 12.0 04.3   ***

    THE 1419/360 SIMULATOR IS A SUBROUTINE WRITTEN AS A
    PREINSTALLATION AID IN ORDER TO ALLOW THE TESTING OF
    READER-SORTER PROGRAMS WHEN A 1419 IS NOT AVAILABLE ON THE
    360 SYSTEM. WRITTEN IN BASIC ASSEMBLER LANGUAGE, THE
    SIMULATOR IS ASSEMBLED WITH THE PROBLEM PROGRAM AND THROUGH
    CARD INPUT SIMULATES THE READING OF MICR DOCUMENTS UNDER
    IOCP /360P-IO-058/. THE MACHINE CONFIGURATION NECESSARY
    TO RUN UNDER THE SIMULATOR WOULD INCLUDE A 360, MODELS 30 OR 40,
    AND A CARD READER.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
    DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
    WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
    A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
    THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-11.3.011   EMULATION OF 1405 DISK
STORAGE ON MODEL 40 WITH 2311 DRIVES
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.3.011

AUTHORS..STANLEY BERNOLD   P. MACGREGOR

DIRECT INQUIRIES TO..
    STANLEY BERNOLD,IBM CORP.,1399 FRANKLIN AVE.,GARDEN CITY, N.Y

    TITLE...EMULATION OF IBM 1405 DISK STORAGE ON MOD 40 WITH
        2311 DISK DRIVES.
        ***N   00.4   ***

    THE 1410 EMULATOR PROGRAM /360C-EU-728/ FOR THE 360/40 HAS
    BEEN MODIFIED TO ALLOW EMULATION OF 1405 DISK STORAGE ON 2311
    DISK DRIVES. THE ROUTINE ANALYZES 1405 INSTRUCTIONS, CONVERTS
    1405 ADDRESSES TO 2311 CYLINDER, HEAD, AND RECORD ADDRESSES,
    SETS UP 2311 CHANNEL COMMAND WORDS, AND EXECUTES THE I/O
    COMMAND CHAIN. 2311/S ARE FORMATTED WITH 200 BYTE DATA
    FIELDS EQUIVALENT TO 200 CHARACTER 1405 SECTORS. THE APPROACH
    APPEARS VALID FOR EMULATION OF 1301 OR 1311 ON 360/40 WITH 1410
    1401 EMULATOR. THIS APPROACH REQUIRES NO USER PROGRAM
    MODIFICATION.
    MACHINE CONFIGURATION- THE PHILOSOPHY AND TECHNIQUE OF 1405
    EMULATION OUTLINED HERE WOULD, WITH SLIGHT MODIFICATION, ALSO
    BE VALID FOR EMULATION OF 1301 OR 1311 DISK DEVICES ON 360/40
    WITH 1410 OR 1401 EMULATOR.

360D-11.3.012   PROGRAM TO HANDLE 1401
STACKER SELECT DELAY RPQ ON MODEL 30
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.3.012

AUTHOR...MR. R. STANDFAST

CONTINUED FROM PRIOR COLUMN--

DIRECT INQUIRIES TO..
    MR. R. STANDFAST,IBM CORP.,555 MADISON AVE.,
    NEW YORK, N.Y. 10022

    TITLE...BIGCID FOR SYSTEM/360 MODEL 30 EMULATING 1401 W
        STACKER SELECT DELAY
        ***N   ***

    THE PROGRAM WAS WRITTEN TO HANDLE THE 1401 RPQ NO. W-92210
    STACKER SELECT DELAY ON THE 360 MODEL 30. IT REQUIRES 32K,
    BASIC COMPATIBILITY, PMS, 1402-1403, AND NO DISK COMPATIBILITY.
    TAPES MUST BE ON A SELECTOR CHANNEL. THE PROGRAM UTILIZES
    A STANDARD BPS SUPERVISOR AND COULD BE READILY MODIFIED TO BE
    INCORPORATED IN BOS 8K OR 16K FOR STACKED JOB PROCESSING -
    INTERSPERSING 360 AND 1401 JOBS. SLIGHT MODIFICATIONS ARE
    NECESSARY FOR 64K. PRINT /1403/. PUNCH AND READER /2540/
    OPERATIONS ARE HANDLED IN 360 MODE. STACKER SELECT ON CARD N
    IS BASED ON LAST STACKER SELECT COMMAND RECEIVED BEFORE
    READING CARD N PLUS 1. LAST CARD SWITCH IS SET ON BY
    READING A /* AS THE NEXT TO LAST DATA CARD. READ SPEED
    REDUCED BY PERHAPS 300 CPM DEPENDING ON AMOUNT OF PROCESSING.
    PRINT AND PUNCH SPEEDS NOT SERIOUSLY EFFECTED. COLUMN BINARY AND
    PRINT STORAGE ARE SUPPORTED. USEFUL AS A GUIDE TO PMS
    PROGRAMMING UTILIZING BPS OR BOS SUPERVISORS.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
    DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
    WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
    A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
    THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-11.3.013   1410-7010 EMULATOR
1301-EMULATED ON 2314
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.3.013

AUTHORS..J.T. SOX   R.W. ZOLKIEWICZ

DIRECT INQUIRIES TO..
    J.T. SOX,IBM CORP.,200 E. CAMPERDOWN WAY,
    GREENVILLE, S.C. 29601

    TITLE...EMULATION OF 1410-7010 1301 ON 360/40 2314
        ***N   03.4 11.1 11.2   ***

    THE 1410-7010 EMULATOR /360A-EU-728/ PROGRAM HAS BEEN MODIFIED
    TO USE A 2314 INSTEAD OF A 2302 FOR EMULATION OF A 1301.
    IMPROVED PERFORMANCE IS GAINED BY USE OF A 2314. THE MACHINE
    REQUIREMENTS ARE THE SAME FOR USING A 2302. THREE 2314 DRIVES
    ARE REQUIRED FOR EACH 1301 MODULE.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
    ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
    DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
    BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE
    SUBMITTAL IS REQUIRED.

360D-11.4.001   SIMULATOR PROGRAM
IMPLEMENTING THE NOBIS EDUCATIONAL COMPUTER DESIGN
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-11.4.001

AUTHORS..R. LORD   G. BARRATT

DIRECT INQUIRIES TO..
    G. BARRAT,CUSTOMER EDUCATION,IBM AUSTRALIA LIMITED,
    BOX 88,P.O.,ST. KILDA,MELBOURNE,VICTORIA,AUSTRALIA

    TITLE...A SIMULATOR PROGRAM IMPLEMENTING THE NOBIS EDUCATIONAL
        COMPUTER DESIGN
        ***N   30.1 12.1   ***

    THIS PROGRAM IS INTENDED AS SUPPORT FOR AN EDUCATION CENTRE
    COURSE AND ACTS AS THE MEDIUM THROUGH WHICH STUDENTS CAN
    GAIN PRACTICAL PROGRAMMING EXPERIENCE USING A SIMPLE INSTRUCTION
    SET AND PROGRAMMING AT THE MACHINE LEVEL. THE PROGRAM
    SIMULATES THE ,,NOBIS,, /NUMERICALLY ORIENTED BASIC INSTRUCTION
    SYSTEM/ COMPUTER. IT HAS BEEN WRITTEN TO RUN UNDER 8K BOS
    BUT MODIFICATION FOR OTHER SYSTEMS HAS BEEN TAKEN INTO ACCOUNT.
    A SYSTEM/360 WITH 16K, ONE 2540 AND ONE 1403 IS REQUIRED.
    THE MONITOR OCCUPIES 4640 POSITIONS OF CORE STORAGE FROM
    LOCATION 7648. CORE LOCATIONS 12K TO 16K ARE RESERVED AS THE
    CORE AREA FOR THE NOBIS PROGRAM. THE SOURCE LANGUAGE IS
    ASSEMBLER LANGUAGE.

    THE BASIC PROGRAM MATERIAL IS AVAILABLE IN CARD FORM OR ON
    ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.
    IF TRACK REQUIREMENT IS NOT INDICATED ON THE ORDER CARD
    9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
    NO TAPE SUBMITTAL IS REQUIRED.

360D-12.0.001   MODEL 20 CARD CODE VALIDITY
CHECK CONVERSION
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-12.0.001

AUTHOR...R.A. LONG

DIRECT INQUIRIES TO..
    R.A. LONG,IBM CORP.,SEVEN PENN CENTER,PHILADELPHIA, PA.

    TITLE...S/360 MODEL 20 CARD CODE VALIDITY CHECKING PROGRAM
        ***N   06.5 01.6 12.1   ***

    THE CARD CODE VALIDITY CHECKING PROGRAM IS USED TO PURGE
    CARD FILES OF ALL CARDS HAVING COLUMNS PUNCHED WITH CHARACTERS
    WHICH ARE CONSIDERED INVALID BY THE 360 MODEL 20. THIS FILE
    CONVERSION PROGRAM IS DESIGNED TO VALIDATE FILES WHICH
    WERE PREVIOUSLY USED IN A UNIT RECORD INSTALLATION AND WHICH
    ARE TO BE TRANSFERRED DIRECTLY TO USE IN A MODEL 20 INSTALLATION.
    THE PROGRAM, WRITTEN IN MODEL 20 BASIC ASSEMBLER LANGUAGE,
    UTILIZES A 4K MODEL 20 WITH A 2560 MFCM. THE INVALID CARDS
    ARE SELECTED INTO STACKER POCKET 2, WHILE ALL VALID CARDS
    FALL INTO STACKER POCKET 1.

Contributed Programs

360D-12.0.002   PROGRAM TO FAMILIARIZE
OPERATORS WITH 1401/1460 EMULATOR ON MODEL 40
      AVAILABLE 3RD QUARTER 1967.
      SPECIFY FILE NUMBER 360D-12.0.002

AUTHOR...R.A. MACKINNON

DIRECT INQUIRIES TO..
      MR. R.A. MACKINNON,IBM CORP.,520 BOYLSTON ST.,BOSTON, MASS.

      TITLE...FAMILIARIZATION PROGRAM FOR THE MODEL 40 1401/1460
            EMULATOR.
            ***N   30.2 11.0   ***

      THE PROGRAM PRESENTS A CONTROLLED ENVIRONMENT WITHIN WHICH
      CONSOLE OPERATORS, WHO WILL RUN THE MODEL 40 IN COMPATIBILITY
      MODE, CAN COMMUNICATE WITH THE 1401/1460 EMULATOR PROGRAM.
      USED IN CONJUNCTION WITH A FORMAL PRESENTATION OF EMULATOR
      CONCEPTS, CONTROL STATEMENTS, AND COMMANDS, THE
      FAMILIARIZATION PROGRAM CAN TEST AND STRENGTHEN EACH
      OPERATORS LEVEL OF KNOWLEDGE ON AN INDIVIDUAL AND PERSONAL BASIS.
      SPECIFICALLY, THE EXERCISE PRESENTS THE OPERATOR WITH THE TWO
      TYPES OF 1401 HALTS, REQUIRES BRANCHING AND TURNING ON AND OFF OF
      A SENSE SWITCH, ASKS THE USER TO ENTER A JULIAN DATE IN
      LOAD MODE, AND ASKS THE USER TO INITIALIZE THE EXERCISE EITHER
      BY BRANCHING TO A SPECIFIED LOCATION OR THROUGH AN EMULATOR
      FACILITY FOR LOADING AN OBJECT DECK FROM THE CARD READER.
      WHEREVER POSSIBLE, THE OPERATORS ACTIONS ARE VERIFIED AND
      APPROPRIATE NOTIFICATION OF CORRECT OR INCORRECT PROCEDURE IS
      GIVEN ON THE 1052. MACHINE CONFIGURATION- IBM SYSTEM/360
      MODEL 40 WITH 1401/1460 COMPATIBILITY FEATURE, 1052 PRINTER
      KEYBOARD, AND CARD READER. BPS PROGRAM 360-EU-074 MUST FIRST BE
      LOADED TO ACCOMPLISH EMULATION OF THE FAMILIARIZATION PROGRAM.
      THE PROGRAM IS WRITTEN IN 1401 TAPE AUTOCODER.

360D-12.0.003   SIFT BCD /CODES/ TO EBC AND
DIAGNOSE FORTRAN IV CONVERSION /PROBLEMS/ OS/360
      AVAILABLE 3RD QUARTER 1967.
      SPECIFY FILE NUMBER 360D-12.0.003

AUTHOR...MR. D. JACOBS

DIRECT INQUIRIES TO..
      MR. D. JACOBS,THE BOEING CO.,VERTOL DIV.,100 WOODLAND AVE.,
      PLANT 3-01,MAIL STOP P30-47,RIDLEY PARK, PA.

      TITLE...SIFT BCD CODES TO EBC AND DIAGNOSE FORTRAN IV CONVERSION
            PROBLEMS UNDER OS/360
            N VDB   SFTO 00.0 04.3 06.5 12.1

      THIS PROGRAM SIFTS BCD CODES INTO EBC AS WELL AS DIAGNOSING
      CERTAIN CONVERSION PROBLEMS WHICH A FORTRAN IV PROGRAM WILL
      HAVE UPON CONVERTING TO THE 360. THE PROBLEMS WHICH ARE
      DIAGNOSED ARE-
      - ALL FORMAT STATEMENTS CONTAINING ,,A5 FORMATS,,, OR
        GREATER FLAGGED WITH AN ,,A,,. ALL FORMAT STATEMENTS
        CONTAINING ,,0 FORMATS,, ARE FLAGGED WITH AN ,,0,,. AT
        THE END OF EACH ROUTINE /END INDICATED BY AN ,,END CARD,,/
        A REFERENCE TABLE IS PRODUCED INDICATING THE LOCATION OF
        EVERY FORMAT STATEMENT /BY ISN/ AND THE LOCATION OF THEIR
        RESPECTIVE READ-WRITE STATEMENTS /BY ISN/.
      - EVERY BINARY READ-WRITE STATEMENT IS FLAGGED WITH A ,,B,,.
      - EVERY CALL TO A SUBROUTINE WHICH IS NOT IN THE SUBROUTINE
        LIBRARY IS FLAGGED WITH A ,,C,,. THE STANDARD SUBROUTINE
        LIST IS COMPILED BY THE USER AND PUT IN A SEQUENTIAL DATA
        SET. A REFERENCE TABLE OF CALLED SUBROUTINES AND WHETHER
        OR NOT THEY ARE FLAGGED IS PRODUCED AFTER THE
        FORMAT-READ-WRITE REFERENCE TABLE. MONITOR OR OPERATING
        SYSTEM REQUIRED- OS/360.

      THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
      ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
      REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
      9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
      NO TAPE SUBMITTAL IS REQUIRED.

360D-12.0.004   SIFT BCD /CODES/ TO EBC AND
DIAGNOSE FORTRAN IV CONVERSION /PROBLEMS/ BOS/360
      AVAILABLE 3RD QUARTER 1967.
      SPECIFY FILE NUMBER 360D-12.0.004

AUTHOR...MR. D. JACOBS

DIRECT INQUIRIES TO..
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      PLANT 3-01,MAIL STOP P30-47,RIDLEY PARK, PA.

      TITLE...SIFT BCD CODES TO EBC AND DIAGNOSE FORTRAN IV CONVERSION
            PROBLEMS UNDER BOS/360.
            S VDB   SFTB 00.0 04.3 06.5 12.1

      THIS PROGRAM SIFTS BCD CODES INTO EBC AS WELL AS DIAGNOSING
      CERTAIN CONVERSION PROBLEMS WHICH A FORTRAN IV PROGRAM WILL
      HAVE UPON CONVERTING TO THE 360. THE PROBLEMS WHICH ARE
      DIAGNOSED ARE-
      - ALL FORMAT STATEMENTS CONTAINING ,,A5 FORMATS,,, OR
        GREATER FLAGGED WITH AN ,,A,,. ALL FORMAT STATEMENTS
        CONTAINING ,,0 FORMATS,, ARE FLAGGED WITH AN ,,0,,. AT
        THE END OF EACH ROUTINE /END INDICATED BY AN ,,END CARD,,/
        A REFERENCE TABLE IS PRODUCED INDICATING THE LOCATION OF
        EVERY FORMAT STATEMENT /BY ISN/ AND THE LOCATION OF THEIR
        RESPECTIVE READ-WRITE STATEMENTS /BY ISN/.
      - EVERY BINARY READ-WRITE STATEMENT IS FLAGGED WITH A ,,B,,.
      - EVERY CALL TO A SUBROUTINE WHICH IS NOT IN THE SUBROUTINE
        LIBRARY IS FLAGGED WITH A ,,C,,. THE STANDARD SUBROUTINE
        LIST IS COMPILED BY THE USER AND PUT IN A SEQUENTIAL DATA
        SET. A REFERENCE TABLE OF CALLED SUBROUTINES AND WHETHER
        OR NOT THEY ARE FLAGGED IS PRODUCED AFTER THE
        FORMAT-READ-WRITE REFERENCE TABLE.
      THE SUBROUTINE TABLE IS READ IN WRITE AFTER THE END CARD OF THE
      OBJECT MODULE. EACH NAME SHOULD APPEAR ON A CARD BEGINNING IN
      COLUMN 1. THE LAST NAME SHOULD BE ,,9END.,, CARDS ARE READ IN
      VIA SYSIPT. LISTINGS ARE PRODUCED VIA SYSLST. PUNCHED OUTPUT
      IS PRODUCED VIA SYSOPT. MONITOR OR OPERATING SYSTEM REQUIRED-
      BOS/360.

      THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
      ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
      REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
      9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
      NO TAPE SUBMITTAL IS REQUIRED.

360D-12.1.011   OS 7094 BINARY TAPE READING
AND CONVERSION SUBROUTINES
      AVAILABLE 3RD QUARTER 1967.
      SPECIFY FILE NUMBER 360D-12.1.011

AUTHORS..MR. G.M. KNAUP   MR. D.J. MARTIN

DIRECT INQUIRIES TO..
      MR. G.M. KNAUP,IBM CORP.,1120 CONNECTICUT AVE., N.W.,
      WASHINGTON, D.C. 20036

      TITLE...OS FORTRAN IV SUBROUTINES FOR READING AND CONVERTING
            BINARY TAPES GENERATED BY A 7094
            ***N   07.1 00.3 12.1   ***

      THIS PACKAGE, WRITTEN IN S/360 OS ASSEMBLY LANGUAGE, CONSISTS
      OF TWO SETS OF SUBROUTINES. THE FIRST SET FACILITATES THE
      READING OF A 7-TRACK BINARY TAPE GENERATED BY AN IBM 7094
      COMPUTER INTO A S/360 PROGRAM. SUBROUTINES ARE PROVIDED TO
      READ AND DEBLOCK TAPES WITH THE FOLLOWING FORMATS-
      - DCS - FORTRAN IV.
      - DCS - NON-FORTRAN IV.
      - 7094 NON-DCS-FORTRAN IV.
      - ANY 7-TRACK TAPE.
      THE SECOND SET FACILITATES THE CONVERSION OF 7094 GENERATED
      DATA, READ BY THE FIRST SUBROUTINE SET, FROM A 36-BIT WORD
      SIZE TO A 32-BIT WORD SIZE. ONE REEL OF MAGNETIC TAPE IS
      REQUIRED TO OBTAIN THE BASIC PROGRAM MATERIAL. THIS TAPE
      MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE.
      THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.

360D-12.1.012   PROGRAM TO EDIT UNIT RECORD
FILES AND SELECT INVALID PUNCH COMBINATIONS
      AVAILABLE 3RD QUARTER 1967.
      SPECIFY FILE NUMBER 360D-12.1.012

AUTHOR...J.F. SLOAN

DIRECT INQUIRIES TO..
      J.F. SLOAN,IBM CORP.,618 SOUTH MICHIGAN,CHICAGO, ILL.

      TITLE...EDIT UNIT RECORD FILES FOR THE MODEL 20.
            ***N   06.6 06.0   ***

      THIS PROGRAM EDITS UNIT RECORD FILES AND SELECTS THOSE
      WHICH HAVE EITHER INVALID 360 PUNCH COMBINATIONS /NOT ONE
      OF THE 256 VALID CHARACTERS/ OR VALID 360 PUNCHES, BUT PROBABLY
      NOT WANTED BY THE USER. THIS INSURES THAT THE DATA FILES
      WILL BE PROCESSED AND READ CORRECTLY BY ANY 360. PROGRAM
      IS WRITTEN FOR A 4K MODEL 20, MFCM AND A PRINTER.

360D-12.1.013   1620 COMPATIBILITY DATA DISK
GENERATION /CONVERSION OF BCD 7 TRK BACK-UP OF ORIGINAL 1620 DISK PAK/
      AVAILABLE 3RD QUARTER 1967.
      SPECIFY FILE NUMBER 360D-12.1.013

AUTHOR...MR. D.M. KNIGHT

DIRECT INQUIRIES TO..
      MR. D.M. KNIGHT,NORDEN DIV. OF UNITED AIRCRAFT CORP.,
      NORWALK, CONN.

      TITLE...360/1620 DATA DISK GENERATION FROM 1401 7 TRACK TAPE
            ***S UAN   06.5 06.6   ***

      THIS STAND-ALONE UTILITY DECK READS A 7 TRACK 1401 TAPE
      /BLOCK SIZE EQUALS 2120, RECORD LENGTH EQUALS 106/ THAT HAS
      BEEN PREPARED FROM A 1620 - 1311 DISK PACK. THE DATA IS PUT
      THROUGH A CHARACTER CONVERSION AND WRITTEN ON A 2311 DISK IN
      1620 COMPATIBILITY FORMAT. THE METHOD USED IS BYTE BY BYTE
      SCAN OF DATA, MOVING FLAGS TO FLAG BYTES AND PACKING CONDENSE
      EACH 106 DIGIT RECORD TO THE 63 BYTE RECORD USED IN 1620
      COMPATIBILITY. THE DISK MUST CONFORM TO COMPATIBILITY SPECS
      AND HAVE BEEN PREVIOUSLY FORMATTED USING THE STANDARD 1620
      COMPATIBILITY DISK FORMATTING PROGRAM. THIS PROGRAM IS
      DESIGNED FOR CONVERSION OF DATA DISKS, NOT PROGRAM DISKS.
      ONE 7 TRACK TAPE DRIVE AND ONE 2311 DISK DRIVE ARE REQUIRED.
      SOURCE LANGUAGE IS B.P.S. ASSEMBLER WITH ALL MACROS EXPANDED.
      RUNNING TIME IS ABOUT 18 MINUTES PER DISK.

      THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
      ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
      REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
      9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
      NO TAPE SUBMITTAL IS REQUIRED.

360D-12.2.001   BPS CONVERT H400-SOURCE-
EASY TO S/360 SOURCE-AL
      AVAILABLE 3RD QUARTER 1967.
      SPECIFY FILE NUMBER 360D-12.2.001

AUTHOR...LARRY A. WHITNEY

DIRECT INQUIRIES TO..
      LARRY A. WHITNEY,IBM CORP.,701 WEST BROAD ST.,
      BETHLEHEM, PA. 18016

      TITLE...H400/S360 TRANSLATOR
            ***N   ***

      THIS BPS PROGRAM WILL CONVERT H400 SOURCE EASY PROGRAMS TO
      S/360 SOURCE AL PROGRAMS. THE RECOMMENDED TRANSLATION EFFORT
      IS BROKEN INTO FOUR STEPS- /1/ CARD-TO-TAPE WITH THE H400
      SOURCE., /2/ TRANSLATION, CREATING S/360 AL SOURCE TAPE.,
      /3/ UPDATING 360 SOURCE TAPE WITH MANUAL CORRECTIONS., OR
      PUNCHING SOURCE TAPE AND INSERTING MANUAL CORRECTIONS.,
      /4/ ASSEMBLING AND TESTING TRANSLATED PROGRAM. CONFIGURATION-
      S/360, 65K MIN-256K MAX, DECIMAL FEATURE, 1052, 1 SEL CHAN.,
      1403, 2540, TIMER /OPTIONAL/ 4 TAPES MIN /AT LEAST 1 9 TRK/ -

Contributed Programs

CONTINUED FROM PRIOR PAGE--
6 TAPES MAX.

ONE MAGNETIC TAPE IS REQUIRED TO OBTAIN THE BASIC PROGRAM
MATERIAL. THIS TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE
OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.

360D-13.1.001   TALLY TWO-DIGIT NUMERIC   *N
FIELDS AND PRINT FREQUENCY DISTRIBUTION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-13.1.001

AUTHOR...MR. R.T. JOHNSON

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MR. R.T. JOHNSON,AMERICAN INSTITUTES FOR RESEARCH,
P.O. BOX 1113,PALO ALTO, CALIF.

TITLE...MODEL 20 - DOUBLE DIGIT COUNT
***N   01.0 13.0   ***

UP TO 22 TWO-DIGIT NUMERICAL FIELDS ARE TALLIED IN A SINGLE
PASS OF THE DATA, AND THE RESULTING FREQUENCY DISTRIBUTIONS
PRINTED. A SINGLE PARAMETER CARD IDENTIFIES THE CARD COLUMNS
TO BE COUNTED, AND OUTPUT INCLUDES THE CARD COLUMN NUMBER
FOR IDENTIFICATION. THE TWO-DIGIT NUMBER, FREQUENCY, PERCENT
OF TOTAL, CUMULATIVE FREQUENCY, AND CUMULATIVE PERCENT ARE
PRINTED STARTING WITH HIGHEST OBTAINED NUMBER, AND FINISHING
WITH THE LOWEST OBTAINED NUMBER. BLANKS ARE NOT INCLUDED
IN THE COUNT FOR PERCENTAGE CALCULATIONS, BUT THE FREQUENCY
OF BLANKS IS PRINTED.
MACHINE REQUIREMENTS- 8K WITH A CARD READER AND PRINTER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL
IS REQUIRED.

360D-13.1.002   TALLY 1 OR 2 THREE-DIGIT   *N
FIELDS AND PRINT FREQUENCY DISTRIBUTION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-13.1.002

AUTHOR...MR. R.T. JOHNSON

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P.O. BOX 1113,PALO ALTO, CALIF. 94302

TITLE...MODEL 20 - TRIPLE DIGIT COUNT
***N   01.0 13.0   ***

EITHER 1 OR 2 THREE-DIGIT NUMERICAL FIELDS CAN BE TALLIED IN
A SINGLE PASS OF THE DATA, AND THE RESULTING FREQUENCY
DISTRIBUTIONS PRINTED. A SINGLE PARAMETER CARD IDENTIFIES
THE CARD COLUMNS TO BE COUNTED, AND OUTPUT INCLUDES THE
CARD COLUMN NUMBER FOR IDENTIFICATION. THE THREE-DIGIT
NUMBER, FREQUENCY, PERCENT OF TOTAL, CUMULATIVE FREQUENCY,
AND CUMULATIVE PERCENT ARE PRINTED STARTING WITH THE HIGHEST
OBTAINED NUMBER, AND FINISHING WITH THE LOWEST OBTAINED
NUMBER. BLANKS ARE NOT INCLUDED IN THE COUNT FOR PERCENTAGE
CALCULATIONS, BUT THE FREQUENCY OF BLANKS IS PRINTED.
MACHINE REQUIREMENTS- 8K WITH A CARD READER AND PRINTER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL
IS REQUIRED.

360D-13.1.003   CALCULATES MEANS, STANDARD   *N
DEVIATIONS UP TO /EIGHTY/ NUMERIC FIELDS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-13.1.003

AUTHOR...MR. R.T. JOHNSON

DIRECT INQUIRIES TO..
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P.O. BOX 1113,PALO ALTO, CALIF. 94302

TITLE...MODEL 20 - MEANS AND STANDARD DEVIATIONS
***N   01.0 13.0   ***

MEANS AND STANDARD DEVIATIONS FOR UP TO EIGHTY NUMERICAL FIELDS
ARE CALCULATED IN A SINGLE PASS OF THE DATA. A PARAMETER CARD
IDENTIFIES THE COLUMN NUMBERS AND SIZE OF THE FIELDS TO BE
PROCESSED, AND THE OPTION TO ELIMINATE ANY ZERO FIELDS.
THE NUMBER OF CASES, SUM OF X, SUM OF X SQUARED, MEAN AND
STANDARD DEVIATION ARE PRINTED OUT FOR EACH. FIELDS ARE
RESTRICTED TO LESS THAN OR EQUAL TO 9 DECIMAL DIGITS, N TO 7,
SUM X TO 15, AND SUM X SQUARED TO 31 DIGITS. BLANKS ARE
CHANGED TO ZEROS.
MACHINE REQUIREMENTS- 8K WITH A CARD READER AND PRINTER.

360D-13.6.001   STEPWISE MULTIPLE REGRESSION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-13.6.001

AUTHOR...M.P. ROSENTHAL

DIRECT INQUIRIES TO..
M.P. ROSENTHAL,IBM CORP.,340 MARKET ST.,SAN FRANCISCO, CALIF.

TITLE...STEPWISE MULTIPLE REGRESSION PROGRAM
***N   06.5   ***

THIS PROGRAM PERFORMS A STEP-WISE REGRESSION ANALYSIS ON UP
TO 9999 SETS OF OBSERVATIONS ON ONE DEPENDENT VARIABLE AND UP
TO 57 EXPLANATORY VARIABLES. THE PROGRAM ALLOWS FOR NINE TYPES
OF ALGEBRAIC TRANSFORMATIONS OF ORIGINAL DATA. OUTPUT CONSISTS
OF MEANS, STANDARD DEVIATIONS, SIMPLE CORRELATION COEFFICIENTS,
AND STEP-WISE RESULTS. STEP-WISE RESULTS CONSIST OF THE
STANDARD ERROR OF ESTIMATE, THE MULTIPLE CORRELATION COEFFICIENT,
F, CONSTANT TERM, AND REGRESSION COEFFICIENTS AND THEIR STANDARD
DEVIATIONS, STUDENTS T/S, AND BETA COEFFICIENTS. OUTPUT OF

CONTINUED FROM PRIOR COLUMN--
RESIDUALS IS OPTIONAL. THE PROGRAM IS WRITTEN IN FORTRAN AND
REQUIRES 32K AND BPS FORTRAN FEATURES FOR COMPILATION AND
EXECUTION.

360D-15.1.001   MANAGEMENT DECISION GAME
FOR UNIVERSITY ADMINISTRATORS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.1.001

AUTHOR...MR. W.W. KLAPROTH

DIRECT INQUIRIES TO..
MR. W.W. KLAPROTH,IBM CORP.,1130 SO. SIXTH ST.,
SPRINGFIELD, ILL.

TITLE...UNIVERSITY ADMINISTRATORS DECISION LABORATORY
***N   15.5 30.2   ***

THE UNIVERSITY ADMINISTRATORS DECISION LABORATORY APPLIES
THE TECHNIQUES OF GAMING SIMULATION AND THE DECISION PROCESS
TO UNIVERSITY ADMINISTRATION. PARTICIPANTS ARE GROUPED IN
FROM TWO TO NINE TEAMS AND ACT AS UNIVERSITY EXECUTIVES
MAKING PERIODIC HIGH LEVEL DECISIONS FOR THEIR SCHOOLS.
THE DECISIONS INVOLVE THE ALLOCATION OF FUNDS WITHIN A
UNIVERSITY TO MEET OBJECTIVITY. A COMPUTER SIMULATES THE
ACTIVITY OF EACH UNIVERSITY AND PREPARES REPORTS SHOWING
THE RESULTS AND THE DECISIONS. THE MATH MODEL WAS PROGRAMMED
IN 360 COBOL E. A 32K PROCESSOR IS REQUIRED WITH DOS OR TOS.
USE UNDER FOS REQUIRES A 64 MACHINE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
WHETHER A 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9-TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-15.1.002   MATHEMATICAL MODEL OF A
BUSINESS ECONOMY WITH /COMPETING/ SUPERMARKETS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.1.002

AUTHOR...FRANKLIN MILLS

DIRECT INQUIRIES TO..
FRANKLIN MILLS,IBM CORP.,100 SOUTH WACKER DR.,
CHICAGO, ILL. 60606

TITLE...PURDUE SUPERMARKET MANAGEMENT GAME.
N   15.2 29.0 30.0 15.5

A MATHEMATICAL MODEL OF A BUSINESS ECONOMY HAS BEEN DESIGNED,
WITHIN WHICH TWO TO FIVE SUPERMARKETS COMPETE FOR THEIR
SHARE OF THE MARKET. THE SYSTEM/360, UNDER CONTROL OF THE
PROGRAM, THEN SIMULATES THE BUSINESS ACTIVITY DURING THE
WEEK IN ACCORDANCE WITH THE RULES OF THE MODEL AND PREPARES
A SERIES OF REPORTS SHOWING THE RESULTS OF THE WEEKS ACTIVITY.
THE PROGRAM HAS BEEN WRITTEN IN FORTRAN IV FOR OPERATION ON
A SYSTEM/360 64K MODEL 30 AND UP WITH DECIMAL ARITHMETIC AND
FLOATING POINT.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR
7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION
TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A
9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-15.1.003   INVENTORY MANAGEMENT
SIMULATOR
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.1.003

AUTHOR...R.T. LILLY

DIRECT INQUIRIES TO..
R.T. LILLY,IBM CORP.,FIELD SYSTEMS CTR.,520 BOYLSTON ST.,
BOSTON, MASS. 02116

TITLE...INVENTORY MANAGEMENT SIMULATOR
***N   25.0 30.0 15.7   ***

AN INVENTORY SIMULATION PROGRAM WHICH PROVIDES AT
EXECUTION TIME-
- FOUR MODEL OPTIONS, CONSTANT, TREND, SEASONAL AND
SEASONAL WITH TREND.
- FOUR ORDER QUANTITY OPTIONS.
- SAFETY STOCK BASED ON THE PERCENTAGE OF SERVICE DESIRED.
- OPTION OF FAST SMOOTHING.
- OPTION OF BACK-ORDERS.
- IMPLIED PARAMETERS.
CONTROL CARDS ARE NECESSARY ONLY IF ALTERING PARAMETERS
DURING EXECUTION. THE PROGRAM IS WRITTEN IN DOS COBOL.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-15.2.001   DIRECT SEARCH ZERO-ONE
INTEGER
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.2.001

AUTHORS..MR. K. SPIELBERG MR. C.E. LEMKE

DIRECT INQUIRIES TO..
MR. K. SPIELBERG,IBM CORP.,590 MADISON AVE.,NEW YORK,
NEW YORK 10022

TITLE...DIRECT SEARCH ZERO-ONE INTEGER PROGRAMMING.
***N   ***

Contributed Programs

CONTINUED FROM PRIOR PAGE--

THE PROGRAM USES A DIRECT TREE SEARCH DEVELOPED BY THE AUTHORS.
PRELIMINARY RESULTS INDICATE THAT THE METHOD USED IS CONSIDERABLY
FASTER, PERHAPS BY A FACTOR OF 2 TO 4, THAN THE ADDITIVE
ALGORITHM OF E. BALAS. A 35 VARIABLE, 28 CONSTRAINT, TEST
PROBLEM HAS BEEN SOLVED OPTIMALLY IN 4 MINUTES ON THE
IBM 360 MOD 40. THE PROGRAM SHOULD GIVE AT LEAST SUBOPTIMAL
SOLUTIONS FOR PROBLEMS OF 30 TO 80 VARIABLES AND A SIMILAR
NUMBER OF CONSTRAINTS. THE PROGRAM IS WRITTEN IN FORTRAN FOR
THE IBM 360 MOD 40 AND THE SIZE OF THE PROBLEMS IS LIMITED
BY THE RESTRICTIONS IMPOSED BY THE CURRENT VERSION OF THE
FORTRAN PROGRAM. HOWEVER, MODIFICATIONS FOR HANDLING BIGGER
PROBLEMS CAN EASILY BE MADE.

360D-15.2.002   PROGRAM TO SOLVE THE
WAREHOUSE-DISTRIBUTOR PROBLEM
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-15.2.002

AUTHOR...JOHN S. SEGAL

DIRECT INQUIRIES TO..
        JOHN S. SEGAL,IBM CORP.,POST OFFICE BOX 6517,
        MOBILE, ALA. 36606

        TITLE...TRANSPORTATION PROBLEM.
            ***N   27.4 15.5   ***

        THIS PROBLEM SOLVES THE WAREHOUSE-DISTRIBUTOR TYPE OF
        TRANSPORTATION PROBLEM USING A COLUMN MINIMA TO GENERATE AN
        INITIAL FEASIBLE SOLUTION. COLUMN OR ROW SLACK NECESSITATED
        BY INEQUALITY OF AVAILABILITY AND REQUIREMENTS IS AUTOMATICALLY
        GENERATED. PROGRAMMING LANGUAGE IS DOS FORTRAN. MACHINE
        REQUIREMENTS ARE ANY/360 WITH AT LEAST 32K CORE. ACTUAL CORE
        REQUIRED DEPENDS ON PROBLEM SIZE.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
        OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
        DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
        WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
        A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
        THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-15.2.003   LINEAR PROGRAMMING CODE FOR
SYSTEM/360 MODEL 20 CARD SYSTEM
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-15.2.003

AUTHORS..MRS. W. BIRTCH   MR. J.E. STODOLA

DIRECT INQUIRIES TO..
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        MONTREAL 2, QUEBEC, CANADA

        TITLE...LINEAR PROGRAMMING CODE FOR SYSTEM/360 MODEL 20 CARD
                SYSTEM.
            ***N   45.0   ***

        THIS PROGRAM MAXIMIZES OR MINIMIZES A LINEAR OBJECTIVE
        FUNCTION SUBJECT TO SPECIFIED CONSTRAINTS. THE SIMPLEX
        METHOD IS USED, WITH THE BASIS CARRIED AS A COLUMN VECTOR.
        AT OPTIMIZATION, THE INVERSE OF THE STARTING BASIS AND
        SIMPLEX MULTIPLIERS ARE AVAILABLE FOR OUTPUT ANALYSIS.
        OUTPUT INCLUDES THE OPTIMAL SOLUTION REPORT, CHECK REPORT,
        COST RANGE REPORT, REDUCED COST REPORT AND RHS ANALYSIS
        REPORT. INPUT CAN BE IN DECIMAL OR EXCESS FIFTY FLOATING
        POINT, PROCESSING IS IN EXCESS FIFTY WITH 7 DIGIT PRECISION
        AND OUTPUT IS IN DECIMAL FORM. PROGRAM SUBROUTINES
        REQUIRE 2,816 BYTES, AND THE FOLLOWING RESTRICTION APPLIES
        TO PROBLEM SIZE., /M PLUS N/X3 PLUS /M X N X 5/ MUST BE LESS
        THAN OR EQUAL TO MACHINE SIZE MINUS 2,816, WHERE M IS THE
        NUMBER OF CONSTRAINTS PLUS 2 AND N IS THE NUMBER OF STRUCTURAL
        VARIABLES PLUS THE NUMBER OF ,,GREATER THAN,, CONSTRAINTS
        PLUS 2. THE PROGRAM IS WRITTEN IN ASSEMBLER LANGUAGE FOR
        AN 8K, 12K OR 16K MODEL 20, WITH A 2560 MFCM AND A 2203 PRINTER.

        OPTIONAL MATERIAL- SOURCE DECK. OPTIONAL MATERIAL DESIRED
        MUST BE ITEMIZED ON THE ORDER CARD.

        THE BASIC OR OPTIONAL PROGRAM MATERIAL CAN BE OBTAINED IN
        CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION
        FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT
        INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED
        BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-15.2.005   BRANCH AND BOUND MIXED
INTEGER PROGRAM
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-15.2.005

AUTHOR...R. SHARESHIAN

DIRECT INQUIRIES TO..
        R. SHARESHIAN,IBM CORP.,NEW YORK SCIENTIFIC CENTER,
        590 MADISON AVE.,NEW YORK, N.Y. 10022

        TITLE...BRANCH AND BOUND MIXED INTEGER PROGRAMMING-BBMIP
            ***N   13.0   ***

        THE PROGRAM EMPLOYS A BRANCH AND BOUND ALGORITHM BASED
        UPON THE LAND AND DOIG METHOD TO SOLVE MEXED INTEGER
        PROGRAMMING PROBLEMS OF LIMITED SIZE. HOWEVER, THE PROGRAM
        MAY ALSO BE USED TO SOLVE PURE INTEGER PROBLEMS. THE LINEAR
        PROGRAMMING MINIMIZATION PROBLEM IS FIRST SOLVED WITHOUT
        REGARD TO INTEGRALITY CONSTRAINTS. FROM THIS POINT THE
        PROGRAM PROCEEDS AS IF TO ENUMERATE THE SET OF ALL POSSIBLE
        MIXED INTEGER SOLUTIONS BY CONSTRAINING EACH INTEGER VARIABLE
        SINGLY AND IN TURN TO AN INTEGER VALUE WITHIN ITS RANGE.
        A DUAL SIMPLEX LP ALGORITHM IS USED AS A BOUND-ESTABLISHING
        MECHANISM IMMEDIATELY AFTER EACH INTEGER VARIABLE IS
        CONSTRAINED. LARGE SUBSETS OF POSSIBLE SOLUTIONS,
        CORRESPONDING TO CONTINUATIONS OF PARTIAL SEQUENCES OF
        INTEGER-CONSTRAINED INTEGER VARIABLES, MAY BE ELIMINATED
        FROM CONSIDERATION ONCE IT HAS BEEN DEMONSTRATED THAT THEY
        MUST BE INFERIOR TO THE ,,BEST,, FEASIBLE SOLUTION OBTAINED
        TU THAT PUINT. WHEN THE TOTAL SET HAS BEEN EXHAUSTED, THE
        BEST FEASIBLE SOLUTION IS OPTIMAL. THE PROGRAM WAS WRITTEN
        IN THE FORTRAN IV LANGUAGE FOR THE IBM/360 UNDER THE BPS SYSTEM.

CONTINUED FROM PRIOR COLUMN--
        PROBLEM SIZE IS LIMITED BY THE AMOUNT OF CORE MEMORY AVAILABLE.
        THE LP ROUTINE IS SINGLE PRECISION.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
        ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
        9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
        NO TAPE SUBMITTAL IS REQUIRED.

360D-15.4.001   PROGRAM TO PERFORM STANDARD
NETWORK CALCULATIONS AND PRODUCE A DATED SCHEDULE
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-15.4.001

AUTHOR...D.G. DOUGLAS, JR.

DIRECT INQUIRIES TO..
        D.G. DOUGLAS, JR.,IBM CORP.,570 BROAD ST.,NEWARK, N.J. 07102

        TITLE...CPM PERT TIME
            ***N   23.1 10.1   ***

        THIS PROGRAM PERFORMS STANDARD NETWORK TIME CALCULATIONS
        AND PRODUCES A DATED PREDECESSOR-SUCCESSOR SCHEDULE. ON A 65K
        SYSTEM/360, THE CAPACITY IS 1100 ACTIVITIES. THE DESIGN AND
        IMPLEMENTATION IS SIMILAR TO NASA PERT TIME I., HOWEVER
        PROBABILITIES ARE NOT CALCULATED AND SORTED REPORTS ARE NOT
        PRODUCED. AN OUTPUT TAPE AND/OR CARDS ARE PRODUCED FOR
        FURTHER PROCESSING IF ADDITIONAL REPORTS ARE REQUIRED.
        REQUIRES A 65K SYSTEM/360 WITH 3 TAPE DRIVES. THE PROGRAM
        CAN BE MODIFIED TO HANDLE MORE ACTIVITIES WITH MORE CORE
        STORAGE. THE PROGRAM IS WRITTEN ENTIRELY IN BPS FORTRAN.

360D-15.4.002   DOS CRITICAL PATH
MANPOWER-LEVELING
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-15.4.002

AUTHOR...JOHN S. SEGAL

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        JOHN S. SEGAL,IBM CORP.,P.O. BOX 6517,MOBILE, ALA. 36606

        TITLE...CRITICAL PATH AND MANPOWER LEVELING SYSTEM
            ***N   13.4   ***

        THIS SYSTEM ACCEPTS CARD INPUT CONTAINING I, J, D, MANPOWER
        REQUIRED BY UP TO 10 CRAFTS, AND DESCRIPTION FOR UP TO
        2,000 JOBS, AND COMPUTES EARLY START, EARLY FINISH, LATE START,
        AND FINISH TIME FOR ALL JOBS. IN ADDITION, IF DESIRED, IT
        WILL GO THROUGH ANOTHER PASS AND COMPUTE START TIMES, WITHIN
        THE CRITICAL PATH, TO GIVE THE MOST EVEN MANPOWER USAGE
        POSSIBLE. THE PROGRAMMING LANGUAGE IS DOS FORTRAN. PROGRAM
        REQUIRES 65K/360 WITH TWO DISKS AND A PRINTER WITH 132 PRINT
        POSITIONS.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
        ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
        DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
        WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
        A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
        THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-15.5.001   MANAGEMENT DECISION-MAKING
GAME FOR SYSTEM/360
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-15.5.001

AUTHORS..T.G. KAPLITS   W.R. HALLETT   S.J. KRASNOW

DIRECT INQUIRIES TO..
        T.G. KAPLITS,IBM CORP.,2925 EUCLID AVE.,
        CLEVELAND, OHIO 44115

        TITLE...MANAGEMENT DECISION MAKING EXERCISE
            ***N   15.1 30.2   ***

        THE SYSTEM/360 MANAGEMENT GAME PROGRAM, AN EXERCISE MODELED
        AFTER THE BUSINESS STRATEGY GAME CONSTRUCTED FOR THE AMERICAN
        MANAGEMENT ASSOCIATION, PERMITS FIVE TEAMS OR COMPANIES TO
        COMPETE IN AN ECONOMIC MARKET. EACH TEAM HAS CONTROL OVER
        A NUMBER OF DECISION VARIABLES WHICH DETERMINE ITS SUCCESS
        OR FAILURE IN COMPETING WITH EACH OTHER. THE RESULTS FROM
        ONE DECISION ENABLE EACH TEAM TO MAKE FURTHER DECISIONS
        FOR THE NEXT PERIOD., EACH PERIOD IS A QUARTER OF A YEAR.
        EVERY FOURTH QUARTER, ANNUAL STATEMENTS ARE PRODUCED FOR
        EACH TEAM. THE GAME, CONSISTING OF TWO FORTRAN PROGRAMS
        AND ONE ASSEMBLER PROGRAM, PERMITS THE OPERATOR TO VARY
        PARAMETERS TO CONTROL THE ECONOMIC MARKET FOR EACH QUARTER.
        SYSTEM/360 MANAGEMENT GAME WAS DESIGNED TO RUN UNDER 16K DOS
        ON A SYSTEM WITH A MINIMUM OF 32K OF CORE, DECIMAL AND FLOATING
        POINT ARITHMETIC, TWO TAPES, A CARD READER OR TAPE, ONE-2311
        WITH ROOM FOR ONE DATA FILE, A CONSOLE TYPEWRITER AND PRINTER.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK OR
        ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE
        TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.
        THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

        OPTIONAL PROGRAM MATERIAL - LISTINGS ON ONE 9-TRACK OR 7-TRACK
        /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE.
        THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE
        OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.
        IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
        FORWARDED.
        OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360D-15.5.002   PROGRAM PROVIDES A
COMPUTERIZED MATHEMATICAL MODEL OF HOSPITAL ADMINISTRATION
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-15.5.002

AUTHOR...MR. S.B. LUCAS

Contributed Programs

CONTINUED FROM PRIOR PAGE--

DIRECT INQUIRIES TO..
        MR. S.B. LUCAS,IBM CORP.,112 E. POST RD.,
        WHITE PLAINS, N.Y. 10601

    TITLE...HOSPITAL ADMINISTRATION DECISION MAKING LABORATORY.
        ***N   15.1 30.2   ***

    THIS PROGRAM PROVIDES A COMPUTERIZED MATHEMATICAL MODEL
    AS THE BASIS OF A MANAGEMENT GAME ORIENTED TO HOSPITAL
    ADMINISTRATION. WHILE GENERAL MANAGEMENT GAMES OR DECISION
    MAKING LABORATORIES ARE APPLICABLE TO MANY INDUSTRIES,
    THE MEDICAL HOSPITAL INDUSTRY HAS SIGNIFICANT OPERATIONAL
    DIFFERENCES. THE HOSPITALS SERVICE AND NONPROFIT CHARACTERISTICS
    REQUIRE DIFFERENT DECISION CRITERIA AND SUCCESS EVALUATION
    FACTORS. WRITTEN IN FORTRAN IV, THE PROGRAM REQUIRES A
    64K MODEL SYSTEM/360 WITH THE SCIENTIFIC INSTRUCTION SET,
    AND IS OPERATIONAL UNDER THE DISK OPERATING SYSTEM.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
    REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
    9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
    NO TAPE SUBMITTAL IS REQUIRED.

360D-16.1.001   AEROSPACE VEHICLE DESIGN   *N
TRAJECTORIES, ORBITS, ROCKETS
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-16.1.001

AUTHORS..B. BOEHM   J. RIEBER

DIRECT INQUIRIES TO..
        MISS P. LEONHARDT,THE RAND CORP.,1700 MAIN ST.,
        SANTA MONICA, CALIF.

    TITLE...ROCKET - FORTRAN 4 VERSION
        ***S RS   RKT4 43.1 10.3   ***

    ROCKET IV IS A FORTRAN IV PROGRAM WHICH MATHEMATICALLY
    SIMULATES THE FLIGHT OF AEROSPACE VEHICLES BY NUMERICAL
    INTEGRATION OF THEIR EQUATIONS OF MOTION. A SPECIAL-PURPOSE
    INPUT FORM ENABLES THE USER TO SPECIFY THE CHARACTERISTICS OF
    HIS VEHICLE AND ITS FLIGHT PLAN, BOTH OF WHICH CAN VARY
    THROUGH A WIDE RANGE OF CHOICES, WITH COMPARATIVELY LITTLE
    EFFORT. THE PROGRAM REQUIRES THE USE OF A FORTRAN COMPILER,
    READS INPUT FROM TAPE 5, AND WRITES OUTPUT ON TAPE 6. IT
    OCCUPIES ABOUT 25,000 WORDS OF CORE. MONITOR OR OPERATING
    SYSTEM REQUIRED- FORTRAN 4.

    NOTES- THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE
    9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF
    MAGNETIC TAPE. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR
    IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE
    2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED
    9-TRACK WILL BE FORWARDED.

360D-16.2.001   TSOP/360 VEHICULAR TRAFFIC
CONTROL - TRAFFIC SIGNAL OPTIMAL PROGRESSION
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-16.2.001

AUTHOR...L. ARIE YARDENI

DIRECT INQUIRIES TO..
        L. ARIE YARDENI,IBM CORP.,1000 WESTCHESTER AVE.,
        WHITE PLAINS, N.Y. 10604

    TITLE...TSOP/360 VEHICULAR TRAFFIC CONTROL - TRAFFIC SIGNAL
            OPTIMAL PROGRESSION /TIME-SPACE OFFSET/
        ***N   15.2   ***

    THIS PROGRAM DESCRIBES THE BASIC CONCEPTS AND OPERATION AND
    THE INPUT AND OUTPUT FEATURES EMPLOYED IN A COMPUTER PROGRAM,
    WHICH PROVIDES THE TRAFFIC ENGINEER WITH A TOOL FOR EITHER
    THE OFF-LINE DESIGN OF TRAFFIC SIGNAL PROGRESSIONS FOR
    FIXED-TIME CONTROL, OR THE ON-LINE COMPUTATION OF CONTROL
    VARIABLES FOR REAL-TIME COMPUTER SIGNAL CONTROL. WEIGHTED
    LEAST-SQUARES FIT MODELS OR MIN-MAX DEVIATIONS ALGORITHMS CAN
    BE SELECTED TO DERIVE LINEAR UNI-SPEED THROUGH BANDS FOR
    GIVEN VOLUME REQUIREMENTS AND WITHIN GIVEN LIMITS OF SPEEDS
    AND CYCLE TIMES. ALTERNATIVE ALGORITHMS FOR OFFSET COMPUTATION
    WITH THREE-PHASE DESIGN CAPABILITY ARE ALSO INCLUDED IN THE
    PROGRAM. THE PROGRAM IS WRITTEN IN FORTRAN IID FOR IBM 1620-40K
    WITH IBM 1311 DISK MONITOR PROCESSING, IN FORTRAN IV FOR
    IBM 7040/90 IBSYS MONITOR PROCESSING, IN FORTRAN E FOR THE
    IBM SYSTEM/360 AND IN IBM 1130 FORTRAN FOR THE IBM 1130 DISK
    MONITOR SYSTEM.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
    DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
    WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
    A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
    THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-16.4.001   DESIGN AND ANALYSIS OF
ELECTRONIC CIRCUITS
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-16.4.001

AUTHOR...MR. G.R. HOGSETT

DIRECT INQUIRIES TO..
        MR. G.R. HOGSETT,IBM CORP.,9045 LINCOLN BLVD.,
        LOS ANGELES, CALIF. 90045

    TITLE...ECAP/360-E - ELECTRONIC CIRCUIT ANALYSIS PROGRAM.
        ***N   17.0 10.2   ***

    THE ECAP/360-E ELECTRONIC CIRCUIT ANALYSIS PROGRAM IS AN
    INTEGRATED SYSTEM OF PROGRAMS WHICH CAN BE USED BY THE ELECTRICAL
    ENGINEER IN THE DESIGN AND ANALYSIS OF ELECTRONIC CIRCUITS.
    THE SYSTEM OF PROGRAMS CAN PRODUCE DC, AC, AND/OR TRANSIENT
    ANALYSES OF ELECTRICAL NETWORKS FROM A DESCRIPTION OF THE
    CONNECTIONS OF THE NETWORKS /THE CIRCUIT TOPOLOGY/, A LIST
    OF THE CORRESPONDING CIRCUIT ELEMENT VALUES, A SELECTION OF
    THE TYPE OF ANALYSIS DESIRED, A DESCRIPTION OF THE CIRCUIT

CONTINUED FROM PRIOR COLUMN--
    EXCITATION, AND A LIST OF THE OUTPUT DESIRED. THE ENGINEER
    REQUIRES NEITHER A KNOWLEDGE OF THE INTERNAL CONSTRUCTION
    OF THE SYSTEM OF PROGRAMS NOR COMPUTER PROGRAMMING TECHNIQUES
    TO USE ECAP EFFECTIVELY. ECAP/360-E IS WRITTEN IN FORTRAN-IV
    /E-LEVEL SUBSET/ AND WILL OPERATE ON A MODEL 40 OR GREATER,
    SYSTEM/360 HAVING AT LEAST 131,072 BYTES OF STORAGE.
    ECAP/360-E IS A CONVERSION OF THE 1620 ECAP, CONSEQUENTLY
    THE ECAP/360 DOCUMENTATION IS INTENDED TO BE USED IN
    CONJUNCTION WITH THE 1620 ECAP USERS MANUAL FORM NO. H20-0170.
    THIS MANUAL SHOULD ALSO BE ORDERED WHEN ORDERING ECAP/360-E.
    FORM NUMBER H20-0170 IS AVAILABLE AT YOUR LOCAL
    IBM BRANCH OFFICE.

360D-16.4.002   GRAPHICAL ELECTRONIC
CIRCUIT ANALYSIS PROGRAM
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-16.4.002

AUTHORS..C.W. DAY, JR.   MR. G.R. HOGSETT MR. D. NISEWANGER
        MR. W.H. MALONE

DIRECT INQUIRIES TO..
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        LONG BEACH, CALIF. 90807

    TITLE...2250 ECAP
        N   00.6 17.0 08.6 10.2

    THIS PROGRAM IS A GRAPHICAL EXTENSION TO A 100 BRANCH,
    25 NODE, SYSTEM/360 VERSION OF ,,1620 ELECTRONIC CIRCUIT
    ANALYSIS PROGRAM,, /ECAP/ /1620-EE-02X/. IT RUNS UNDER OS 360
    WITH 2250 EXPRESS /TYPE 1/ AND GPAK /TYPE III/ SUPPORT,
    UTILIZING FORTRAN /E LEVEL/ AS THE SOURCE LANGUAGE.
    THE MINIMUM HARDWARE CONFIGURATION REQUIRED IS- 128K MODEL 40,
    ONE 2311, ONE PRINTER OR 2400 TAPE, AND A 2250 MODEL 1 WITH
    LIGHT PEN, PROGRAMMED FUNCTION KEYBOARD, ABSOLUTE VECTORS AND
    CONTROL, CHARACTER GENERATOR, ALPHANUMERIC KEYBOARD, AND AN
    8K BUFFER. AFTER MINOR MODIFICATION THE PROGRAM WOULD WORK
    WITH A 4K BUFFER ON LESS COMPLEX CIRCUITS. USING THE 2250 AS
    THE SOLE MEANS OF MAN-MACHINE COMMUNICATION, THIS PROGRAM
    ACCEPTS CIRCUIT MODELS EITHER IN SCHEMATIC FORM OR BY MEANS
    OF ECAP SOURCE STATEMENTS AND PRODUCES SELECTED PLOTS
    /OR LISTS/ OF THE ANALYSIS RESULTS. IT IS INTENDED THAT
    THIS TOOL BE USED IN AN ITERATIVE MANNER TO ACHIEVE GOOD
    CIRCUIT DESIGN EFFICIENTLY.

    THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR
    7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC
    TAPE. THIS TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE
    OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.
    IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
    FORWARDED.

360D-16.6.001   PROGRAMS FOR PROCESSING
DIGITAL SEISMIC DATA
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-16.6.001

AUTHORS..IBM INDUSTRY DEVELOPMENT PETROLEUM

DIRECT INQUIRIES TO..
        R.N. HODGSON,IBM CORP.,2601 S. MAIN ST.,HOUSTON, TEXAS

    TITLE...A SET OF SYSTEM/360 ASSEMBLER LANGUAGE PROGRAMS FOR
            PROCESSING DIGITAL SEISMIC DATA
        ***N   17.4   ***

    A SET OF PROGRAMS TO ADJUST, SUMMARIZE, AND REFINE SEISMIC
    DATA USED IN PETROLEUM EXPLORATION. EACH PROGRAM IS A
    SEPARATE STAND-ALONE PROGRAM /NOT A SUBROUTINE/, ALTHOUGH
    SOME OF THE PROGRAMS ARE DATA DEPENDENT ON OTHERS. ALL
    PROGRAMS ARE WRITTEN IN ASSEMBLER LANGUAGE AND ARE DESIGNED
    TO RUN UNDER THE IBM BASIC OPERATING SYSTEM /8K DISK/. THE
    PROGRAMS INCLUDED IN THE SET ARE-
    - DISK FORMAT FOR SEISMIC PROGRAMS.
    - DATA PREPARATION.
    - NORMAL MOVEOUT COMPUTATION.
    - DEMULTIPLEX.
    - NORMAL MOVEOUT APPLICATION.
    - STACKING.
    - AUTOCORRELATION AND THE POWER DENSITY SPECTRUM.
    - BAND PASS FILTERING.
    - POINT SORT.
    - MULTIPLEX.
    - INVERSE OPERATOR DETERMINATION /FORTRAN/.
    THE REQUIRED S/360 MACHINE CONFIGURATION IS 131K, MODEL 40 WITH
    DECIMAL AND FLOATING POINT INSTRUCTIONS, 2 SELECTOR CHANNELS,
    2-2311/S, 2-2400 TAPE UNITS. IF DATA ON SEVEN TRACK TAPES
    IS TO BE PROCESSED, THEN BOTH TAPES MUST BE SEVEN TRACK.

    THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
    OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
    DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
    WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
    A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
    THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-19.1.001   PROGRAM TO CALCULATE AND
PRINT A LOAN AMORTIZATION SCHEDULE
    AVAILABLE 3RD QUARTER 1967.
    SPECIFY FILE NUMBER 360D-19.1.001

AUTHOR...R.A. LONG

DIRECT INQUIRIES TO..
        R.A. LONG,IBM CORP.,7 PENN CENTER PLAZA,
        PHILADELPHIA, PA. 19103

    TITLE...MODEL 20 LOAN AMORTIZATION SCHEDULE PROGRAM.
        ***N   19.7   ***

    THIS PROGRAM CALCULATES AND PRINTS A LOAN AMORTIZATION
    SCHEDULE. THE INTEREST RATE, FACE AMOUNT OF LOAN, TERM OF
    LOAN, MONTHLY PAYMENT TO PRINCIPAL AND INTEREST AND PREMIUM
    RATE /E.G., SERVICE CHARGE, FHA INSURANCE RATE/, IF
    APPLICABLE, ARE OBTAINED FROM A MASTER CARD FOR EACH LOAN.
    MONTHLY FIGURES FOR PREMIUM, INTEREST, PAYMENT TO PRINCIPAL,
    TOTAL MONTHLY PAYMENT /INCLUDING PREMIUM/ AND REMAINING

Contributed Programs

CONTINUED FROM PRIOR PAGE--
        PRINCIPAL BALANCE ARE SHOWN. ANNUAL AND FINAL TOTALS OF
        PREMIUM PAID, INTEREST PAID, PRINCIPAL PAID AND TOTAL
        AMOUNT PAID ARE ALSO SHOWN. USING DIFFERENT HEADER CARDS,
        THE TITLE LINE OF THE SCHEDULE CAN BE VARIED, THUS PERMITTING
        THE MODEL 20 INSTALLATION TO SERVICE SEVERAL FINANCIAL
        INSTITUTIONS WITH THIS PROGRAM. THE PROGRAM IS WRITTEN IN
        BASIC ASSEMBLER LANGUAGE AND REQUIRES A MINIMUM CONFIGURATION
        OF A 4K MODEL 20 WITH A PRINTER AND CARD READER.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
        OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
        9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
        NO TAPE SUBMITTAL IS REQUIRED.

360D-19.1.002   PROGRAM TO DETERMINE THE
DISTRIBUTION OF RATE-OF-RETURN ON CAPITAL INVESTMENTS
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-19.1.002

AUTHOR...MR. T. REBACK

DIRECT INQUIRIES TO..
        MR. T. REBACK,8 RYDAL DR.,TRENTON, N.J. 08638

        TITLE...CAPITAL INVESTMENT RISK ANALYSIS APPLIED TO REAL ESTATE.
            ***N   19.4   ***

        THIS PROGRAM DETERMINES THE DISTRIBUTION OF THE RATE OF
        RETURN AND NET PRESENT VALUE FOR CAPITAL INVESTMENTS SUBJECT
        TO UNCERTAIN INCOMES AND EXPENSES. THE PROGRAM CALCULATES
        EARNINGS, DEPRECIATION, INTEREST, AMORTIZATION, CASH FLOW,
        RECURRING CAPITAL OUTLAYS FOR EQUIPMENT REPLACEMENT, SALVAGE
        VALUE, AND RESALE VALUE FOR THE INVESTMENT FOR UP TO A
        50 YEAR PERIOD. UNCERTAINTIES MAY BE UNIFORM, SKEWED, NORMAL
        OR NOT SUBJECT TO FLUCTUATION. BY CHANGING THE UNCERTAINTIES,
        MANAGEMENT CAN DETERMINE THE COSTS OR INCOME WHICH SHOULD BE
        TIGHTLY CONTROLLED TO MAXIMIZE THE RETURN. MANAGEMENT CAN
        MAXIMIZE ITS RETURN BY CHANGING DEPRECIATION METHODS, THE
        TERMS OF A LOAN, ETC. BEFORE THE METHODS ARE ACTUALLY
        ESTABLISHED. BY ANALYZING THE INVESTMENT UNDER UNCERTAINTY
        A TRUER MEASURE THAN ASSUMING DEFINITE CASH FLOWS MAY BE
        USED TO DETERMINE TO ECONOMIC FEASIBILITY OF THE INVESTMENT.
        THE PROGRAM WAS WRITTEN SPECIFICALLY FOR REAL ESTATE INVESTMENTS
        BUT IT CAN BE EASILY MODIFIED TO ENCOMPASS ANY CAPITAL
        INVESTMENT. THE PROGRAM IS WRITTEN IN FORTRAN IV /E/.
        THE MINIMUM MACHINE CONFIGURATION IS A 32K SYSTEM/360 CAPABLE
        OF PROCESSING FORTRAN IV /E LEVEL OR HIGHER/, A CARD READER
        AND A PRINTER.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
        OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
        9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
        NO TAPE SUBMITTAL IS REQUIRED.

360D-19.1.003   RPG LOAN MORTGAGE
AMORTIZATION SCHEDULE
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-19.1.003

AUTHOR...MR. JOE BRYAN

DIRECT INQUIRIES TO..
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        TITLE...RPG MORTGAGE AMORTIZATION SCHEDULE
            ***N   ***

        THIS RPG PROGRAM PRODUCES AN AMORTIZATION SCHEDULE FOR A
        LOAN OR MORTGAGE. THIS PROGRAM WILL BEGIN OR STOP AT A
        CERTAIN PAYMENT NUMBER IF SPECIFIED IN THE DATA CARD.
        THE PROGRAM WILL PROCESS FIXED-PRINCIPAL-PLUS-INTEREST
        PAYMENTS OR FIXED PAYMENTS. THE PAYMENTS CAN BE MONTHLY,
        BI-MONTHLY, QUARTERLY, SEMI-ANNUAL AND ANNUAL. A 16K 360
        CARD SYSTEM IS THE MINIMUM SYSTEM REQUIRED.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
        OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
        DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
        WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
        A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
        THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-19.4.001   TRANSIT DISTRIBUTION FOR   *N
INDUSTRY, BANKING
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-19.4.001

AUTHOR...MR. W.R. BOLGER

DIRECT INQUIRIES TO..
        MR. W.R. BOLGER,IBM CORP.,1011 SAN JACINTO ST.,AUSTIN, TEX.

        TITLE...INDUSTRY - BANKING, S/360 TRANSIT DISTRIBUTION
            ***N   ***

        THREE PROGRAMS FOR THE DISTRIBUTION OF TRANSIT ITEMS.
        OUTPUT CONSISTS OF BATCH PROOF LIST, CASH LETTERS, AND RECAPS,
        ALL ON THE FULL PAGE PRINTER. BATCH SLIPS AND DIVIDERS ARE
        THE ONLY CONTROL DOCUMENTS. EASY CONVERSION FROM AN ALL
        PROOF DEPARTMENT OPERATION. BALANCING AND CONTROL PROCEDURES
        ARE BASICALLY THE SAME. SORT PATTERNS ARE FLEXIBLE, AND CAN BE
        ADDED OR MODIFIED BY NON-COMPUTER PERSONNEL. THE PROGRAMS
        CAN BE ASSEMBLED ON A STANDARD 8K BOS CONFIGURATION.
        THE SOURCE LANGUAGE IS BAL UNDER 8K BOS LEVEL 8, WITH
        1419 IOCP SUPERVISOR.
        PROGRAM EXECUTION REQUIRES AT LEAST A S/360 MODEL 30 OR 40,
        16K, WITH DECIMAL FEATURE AND ONE SELECTOR CHANNEL., ONE 1419,
        WITH FIXED OR VARIABLE LENGTH PROCESS CONTROL OR ACCOUNT NO.
        FEATURE., TWO 2311/S., ONE 2540., ONE 1052., ONE 1403 /NO
        SELECTIVE TAPE LISTER REQUIRED/.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
        ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
        REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
        9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
        NO TAPE SUBMITTAL IS REQUIRED.

360D-19.7.001   SAVINGS ACCOUNTING PACKAGE
TO ASSIST USERS IN INSTALLING OF OFF-LINE PROCESSING
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-19.7.001

AUTHOR...MR. R.S. DANGELO

DIRECT INQUIRIES TO..
        MR. R.S. DANGELO,IBM CORP.,2 BROADWAY,NEW YORK, N.Y.

        TITLE...OFF-LINE PROCESSING FOR AN ON-LINE SAVINGS SYSTEM
            ***N   ***

        THIS SAVINGS ACCOUNTING PACKAGE IS DESIGNED TO ASSIST USERS
        WITH 3-DRIVE S/360 SYSTEMS WITH THE INSTALLATION OF OFF-LINE
        PROCESSING NECESSARY TO SUPPORT AN ON-LINE SAVING APPLICATION.
        THE UPDATE PROGRAM IS WRITTEN TO DO EITHER OF THE TWO MOST
        COMMON METHODS FOR INTEREST CALCULATIONS- ,,DAY OF DEPOSIT
        TO END OF PERIOD,, OR ,,NTH DAY OF THE MONTH,.. THE PROGRAMS
        ARE WRITTEN TO RUN UNDER CONTROL OF B.O.S.., ANY UTILITY
        PROGRAMS REFERRED TO IN THE ACCOMPANYING GUIDE ARE RESIDENT
        ON THE B.O.S. SYSTEMS PACK.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
        OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
        DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
        WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
        A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
        THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-19.7.002   A SET OF SIX PROGRAMS TO
PERFORM BANKS PROOF OF DEPOSIT TRANSIT FUNCTION
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-19.7.002

AUTHOR...DENNIS A. FAST

DIRECT INQUIRIES TO..
        DENNIS A. FAST,IBM CORP.,2125 BISCAYNE BLVD.,MIAMI, FLA.

        TITLE...PROOF OF DEPOSIT TRANSIT
            ***N   ***

        A SET OF SIX PROGRAMS TO PERFORM A BANKS PROOF OF DEPOSIT
        TRANSIT FUNCTION. FEATURES- INDEPENDENT CHANGEABLE SORT
        PATTERNS, TRACERS, DIVIDERS, AND DESTINATION HEADERS., FULL PAGE
        APPROACH., PROVIDES DEPOSITS., WRITES BATCH PROOF LIST.,
        AUTOMATICALLY WRITES CASH LETTERS AT END OF A PASS., ON-US
        CAPTURE, INCLUDING FLOAT AND ITEM COUNT., REMITTANCE ADVICES
        /CASH LETTER RECAPS/., CREATES AND UPDATES END POINT MASTER
        FILES., MAINTAINS END POINT ANALYSIS DATA.

        TO RUN THESE PROGRAMS REQUIRES AT LEAST A S/360 MODEL 30 OR 40,
        32K, WITH DECIMAL FEATURE AND ONE SELECTOR CHANNEL., ONE 1419,
        WITH FIXED OR VARIABLE LENGTH PROCESS CONTROL OR ACCOUNT NO.
        FEATURE, AND ROUTING AND TRANSIT FIELD DASH TRANSMISSION
        FEATURE., TWO 2311/S., ONE 2540., ONE 1052., ONE 1403 /NO
        SELECTIVE TAPE LISTER REQUIRED/. THE PROGRAMS CAN BE COMPILED
        ON A STANDARD 8K BOS CONFIGURATION. THE SOURCE LANGUAGE
        IS BAL UNDER 8K BOS LEVEL 8, WITH 1419 IOCP SUPERVISOR.

        THE BASIC PROGRAM MATERIAL IS AVAILABLE ON 9-TRACK OR 7-TRACK
        /DATA CONVERSION FEATURE REQUIRED/ DTR. IF TRACK REQUIREMENT
        IS NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE
        SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-19.7.003   DOS SINGLE, MULTI-BANK   *N
DEMAND DEPOSIT ACCOUNTING
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-19.7.003

AUTHOR...I.D. BAIRD

DIRECT INQUIRIES TO..
        I.D. BAIRD,IBM CORP.,2911 CEDAR SPRINGS RD.,
        DALLAS, TEXAS 75219

        TITLE...SYSTEM/360 DEMAND DEPOSIT ACCOUNTING UNDER DOS
            ***N   03.5   ***
        THIS PROGRAM IS A MODIFICATION OF THE TYPE II PROGRAM
        ,,SYSTEM/360 DEMAND DEPOSIT ACCOUNTING /360A-FB-15X/,,.
        THE PROGRAM IS ADAPTABLE BY COMMERCIAL BANKS TO ACCOMPLISH
        DEMAND DEPOSIT ACCOUNTING IN EITHER A SINGLE OR MULTIBANK
        ENVIRONMENT. IT IS WRITTEN IN S/360 ASSEMBLER LANGUAGE AND
        CONTAINS ALL FUNCTIONS OF THE TYPE II PROGRAM WITH THE FOLLOWING
        EXCEPTIONS-
        - ANALYSIS PROCESSING
        - 1401-1440 FILE CONVERSION
        - MICR DOCUMENT PROCESSING
        - MULTIPLE STATEMENTS FOR A SINGLE ACCOUNT.
        THE PROGRAM SHOULD BE USEFUL IN THOSE INSTALLATIONS DESIRING
        TO USE THE DEMAND DEPOSIT PACKAGE BUT WHO HAVE SPECIFIC
        REQUIREMENTS FOR USE OF DOS.
        BASIC MACHINE REQUIREMENTS- 32K MODEL 30, 3-2311 DISK DRIVE.

        THE PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR 7-TRACK
        /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE.
        THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE
        OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.
        IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
        FORWARDED.

360D-19.7.004   RPG DEMAND DEPOSIT SERVICE   *N
CHARGE CALCULATING
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-19.7.004

AUTHOR...M.J. BROWNELL

DIRECT INQUIRIES TO..
        M.J. BROWNELL,IBM CORP.,2925 EUCLID AVE.,
        CLEVELAND, OHIO 44115

Contributed Programs

CONTINUED FROM PRIOR PAGE--

TITLE...DEMAND DEPOSIT SERVICE CHARGE FOR CARD SYSTEM/360 MOD-20
***N   ***

THE DEMAND DEPOSIT SERVICE CHARGE PROGRAM IS AN RPG PROGRAM
DESIGNED TO PROVIDE AN AUTOMATED SYSTEM FOR CALCULATING A
MONTHLY CHECKING ACCOUNT SERVICE CHARGE BASED ON THE ACCOUNTS
DAILY AVERAGE BALANCE, NUMBER OF CHECKS, AND DEPOSITS OBTAINED
FROM THE ACTUAL HISTORICAL DATA CARDS USED TO WRITE THE
CUSTOMERS CHECKING ACCOUNT STATEMENT. IN CALCULATING THE
MONTHLY SERVICE CHARGE, THE DAILY AVERAGE BALANCE IS
ACCUMULATED AS ARE THE NUMBER OF DEPOSITS AND CHECKS PER
ACCOUNT. IT IS ONLY NECESSARY TO PERFORM THIS OPERATION
ONCE DURING THE STATEMENT WRITING CYCLE, RATHER THAN ON A
DAILY BASIS. THIS OPERATION MAY BE PERFORMED ONE STEP BEFORE
THE STATEMENT WRITING CYCLE, THEREBY INCLUDING ALL PERTINANT
AND INCLUSIVE SERVICE CHARGES ON THE CURRENT STATEMENT.
THIS PROGRAM GREATLY REDUCES PROCESSING TIME ON A CARD SYSTEM
IN CALCULATING CURRENT AND EXACT SERVICE CHARGES.
MACHINE CONFIGURATION- SYSTEM 360/20 8K, 2560 MPCM AND PRINTER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE
SUBMITTAL IS REQUIRED.

360D-21.1.001   FEDERAL WITHHOLDING TAX
ROUTINE
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-21.1.001

AUTHOR...D.L. KNUTSON

DIRECT INQUIRIES TO..
        D.L. KNUTSON,IBM CORP.,110 W. 21ST ST.,NORFOLK, VA. 23517

        TITLE...MODEL 20 RPG/BAL RELOCATABLE FEDERAL WITHHOLDING TAX
                ROUTINE
                ***N   03.8   ***

        THE CALCULATION OF FEDERAL WITHHOLDING TAX IS STANDARD WITH
        ALL INSTALLATIONS DOING PAYROLL. MANY INSTALLATIONS HAVE
        FOUND IT DIFFICULT TO CODE THIS ROUTINE IN RPG USING A
        REASONABLE AMOUNT OF CORE WHICH ONLY COMPOUNDS THE CORE
        LIMITATIONS ON PAYROLL PROGRAMS, WHICH, BY THEIR NATURE, ARE
        ALREADY COMPLEX. ROUTINES FOR WEEKLY, BI-WEEKLY, SEMI-MONTHLY
        AND MONTHLY PAYROLLS ARE INCLUDED WHICH WILL REDUCE CONSIDERABLY
        THE DUPLICATION OF EFFORT BY SYSTEMS ENGINEERS AND PROGRAMMERS
        OF CODING AND DEBUGGING THIS PROBLEM. THE ROUTINES WERE WRITTEN
        IN 360/20 BAL AND WILL CALCULATE WITHHOLDING TAX TO $999.99.
        THE PROGRAMMER PROVIDES GROSS, NUMBER OF EXEMPTIONS AND
        MARITAL STATUS TO THE ROUTINES AND USES THE RPG EXIT
        OPERATION. MACHINE CONFIGURATION- 360/20 NO SPECIAL FEATURES,
        PROGRAMMING SYSTEM REQUIREMENT- 360/20 RPG, SOURCE LANGUAGE-
        360/20 BAL, STORAGE REQUIREMENT- 387 BYTES PER ROUTINE.

        THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
        ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
        DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
        BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE
        SUBMITTAL IS REQUIRED.

360D-25.2.002   WHOLESALE IMPACT LIBRARY   *N
/MODIFICATIONS/
        AVAILABLE 3RD QUARTER 1967.
        SPECIFY FILE NUMBER 360D-25.2.002

AUTHOR...MR. R.S. YATES

DIRECT INQUIRIES TO..
        MR. R.S. YATES,IBM CORP.,2830 VICTORY PARKWAY,
        CINCINNATI, OHIO

        TITLE...MODIFICATION OF S/360 WHOLESALE IMPACT LIBRARY FOR USE
                WITH A 16K - 4 TAPE S/360
                ***N   15.7   ***

        THESE PROGRAMS ARE MODIFICATIONS TO TWO OF THE PROGRAMS IN
        THE SYSTEM/360 WHOLESALE IMPACT COMPUTER LIBRARY /360A-DW-05X/.
        THE IMPACT PROGRAM LIBRARY PROVIDES A USER WITH PROGRAMS THAT
        ENABLE HIM TO ESTABLISH AN INVENTORY STRATEGY WHICH MINIMIZES
        INVENTORY COSTS AT ANY PRESELECTED SERVICE LEVEL. CURRENT
        MACHINE REQUIREMENTS FOR USE OF THESE PROGRAMS ARE A MINIMUM
        OF 16K STORAGE AND AT LEAST ONE 2311 DISK DRIVE. THE MODIFIED
        PROGRAMS ARE SVA AND AP, TWO OF THE MOST FREQUENTLY USED
        PROGRAMS IN THE IMPACT LIBRARY. THE CHANGES IN THESE PROGRAMS
        WILL ALLOW A USER WITH A MINIMUM OF 16K STORAGE AND FOUR
        TAPE DRIVES TO USE THEM. WITH THESE MODIFIED PROGRAMS, THE
        TAPE-ORIENTED USER WILL BE ABLE TO BENEFIT FROM THESE APPLICATION
        PROGRAMS.

        THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 2400 FOOT
        REEL OF TAPE. THIS TAPE MAY BE ORDERED FROM YOUR IBM
        REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE
        2400 FEET IN LENGTH.

List of Program Deletions

ALPHABETIC KEY TO REASONS FOR REMOVAL.

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D. THIS PROGRAM IS OBSOLETED AND REPLACED BY ORDER NUMBER -------.
F. THIS PROGRAM HAS BEEN WITHDRAWN BY THE AUTHOR.

Previous Deletions

PREVIOUS DELETIONS

ORDER NUMBER	TITLE	REASON FOR DELETION
	360D DELETIONS	
01.4.006	COBOL STACKER SELECT MACRO	D
	ORDER NO. CHANGED TO 03.7.001	
11.1.006	UNIVAC SOLID STATE 80/90 SIMULATOR	A
11.3.002	DOUBLE DISK COMPATIBILITY	A

PROGRAM ORDER NUMBER CHANGES

    THE PROGRAM CLASSIFICATION CODES LIST HAS BEEN EXPANDED. THE NEW LIST
APPEARS IN THE INTRODUCTION TO THIS CATALOG. DUE TO THE EXPANSION THE FOLLOWING
PROGRAM ORDER NUMBERS HAVE BEEN CHANGED AND ARE EFFECTIVE WITH THE RELEASE OF
THIS CATALOG.

360D CONTRIBUTED PROGRAMS

OLD PROGRAM ORDER NUMBER		NEW PROGRAM ORDER NUMBER	OLD PROGRAM ORDER NUMBER		NEW PROGRAM ORDER NUMBER
00.0.001	–	00.1.009	03.4.009	–	00.6.003
00.0.002	–	03.8.001	03.4.011	–	03.6.001
00.0.003	–	00.5.001	03.4.012	–	03.8.002
00.4.003	–	10.2.001	03.5.001	–	19.1.003
01.0.001	–	06.4.001	03.5.002	–	06.0.002
01.0.002	–	00.3.009	03.5.003	–	03.6.002
01.0.003	–	00.4.007	04.0.001	–	04.4.005
01.3.001	–	00.6.005	05.1.006	–	03.4.014
01.4.001	–	06.5.002	06.0.001	–	12.1.012
01.4.002	–	03.7.001	06.1.002	–	00.3.007
01.4.004	–	03.8.006	06.7.001	–	04.0.003
01.5.001	–	12.1.013	09.0.001	–	01.7.001
01.6.001	–	03.7.002	10.0.001	–	06.5.003
02.0.002	–	03.2.004	11.1.004	–	11.3.010
03.0.001	–	12.1.011	11.1.005	–	11.4.001
03.0.002	–	03.8.002	11.1.007	–	15.1.003
03.0.003	–	01.6.003	11.3.003	–	11.1.010
03.0.004	–	11.3.013	11.3.004	–	05.2.003
03.1.001	–	03.7.003	11.3.005	–	05.2.004
03.1.002	–	12.0.001	11.3.007	–	05.1.008
03.1.003	–	03.7.004	11.3.008	–	05.1.009
03.1.004	–	03.8.003	12.1.001	–	11.3.011
03.1.005	–	03.7.005	12.1.002	–	12.0.002
03.1.006	–	03.7.006	12.1.003	–	04.1.002
03.1.007	–	03.7.007	12.1.004	–	00.3.008
03.1.008	–	03.7.008	12.1.005	–	03.4.015
03.1.010	–	03.7.009	12.1.006	–	11.3.012
03.1.011	–	03.7.010	12.1.007	–	10.2.002
03.2.001	–	03.4.013	12.1.008	–	12.0.003
03.2.002	–	01.6.004	12.1.009	–	12.0.004
03.2.003	–	05.2.002	13.0.001	–	10.1.001
03.3.001	–	12.2.001	13.5.001	–	03.8.005
03.4.001	–	13.6.001	19.0.001	–	19.7.001
03.4.004	–	08.7.001	19.3.001	–	21.1.001
03.4.005	–	08.7.002	19.5.001	–	19.7.002
03.4.006	–	15.4.002	24.2.001	–	03.7.011
03.4.008	–	00.6.004	29.5.001	–	06.0.003

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