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RSVP

PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
A	9/09/80		Original Issue -- Mark 10.0 Release
B	3/06/81		Changes for MARK 10.0 Release 1-2 Added punctuation mark. 1-4 Updated "ENTRY OF ADAPTER FOR TWA MODE" section to describe the changing of adapter parameters at the start of the RSVP program. 1-7 Updated "ENRTY OF ADAPTER FOR TWS MODE" section to describe the changing of adapter parameters at the start of the RSVP program. 1-23 Changed title of section from "THE PARSING AND ACTION OF PARAMS" to "THE PARSING OF PARAMS". Split "THE PARSING OF PARAMS" into two sections with "ACTION AFTER REQUESTING PARAMETER CHANGE" as a subsection of this section. Updated "Case 1" of the "ACTION AFTER REQUESTING PARAMETER CHANGE" section.

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GENERAL

RSVP (Remote System-Link Verification Program) is a corporate-wide specification for writing BDLC confidence programs. The RSVP SDS specifies operator commands and test protocols for all systems that implement BNA/BDLC. There are a few areas in RSVP that are system dependent; e.g., hardware identification. This document describes the system dependencies for the B1900. Refer to RSVP SDS (2228 2065) for a full description of RSVP.

B1900 RSVP is a B1900 program designed to exercise the various operations associated with the BDLC hardware and ensure confidence in the communication between two remote systems equipped with the BDLC hardware. Both normal and error detection conditions are verified to operate according to B1900 BDLC specifications. Frames are built according to BDLC protocol and are transmitted to the remote system. The frames are of varying length and character content. The process consists of transmitting the frames and then waiting for verification from the remote system. This ensures confidence that the two systems can send and receive properly. In the event of an error the program is designed to give evidence as to the faulty system and the cause when possible. Two copies of the RSVP may be executed in the same system to effect back to back testing.

There are two modes of communication possible:

1) TWO_WAY_SIMULTANEOUS (TWS) dedicated full duplex

2) TWO_WAY_ALTERNATE (TWA) over switched half_duplex lines which may consist of MANUAL DIAL or an AUTOMATIC CALLING UNIT.

RELATED DOCUMENTATION

Name	Number
RSVP-REMOTE SYSTEM-LINK VERIFICATION PROGRAM	SDS 2228 2065

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OPERATING INSTRUCTIONS FOR RSVP

The program is executed by:

?EX RSVP

The following message appears after the start up of the program:

**** REMOTE SYSTEM VERIFICATION PROGRAM, REVISION G ****

(G will change to the current revision as the program is updated)

A separate disk file called RSVP/TEACH must also be resident in order to use the TEACH command. If the file is not present then the operator is notified by:

FILE RSVP/TEACH NOT FOUND

This does not prevent execution of RSVP, but merely means the the TEACH data for RSVP are unavailable for use.

Two program switches have significance to RSVP; Switch 1 and Switch 8. If program switch 1 is set, a very detailed trace of the RSVP software is recorded in a backup file called DEBUG.FILE. This is not a tool provided for use by the operator, but is for the purpose of helping to debug the RSVP program.

The other switch , Switch 8, causes the reading and printing of the BDLC adapter's RAM whenever an exception bit is recorded. Again this is not a tool to be used under normal testing circumstances. The file called PRINT.FILE is used for the recording of the data read.

After the identification of the program follows a message or messages indicating the location of any data comm controls. An example showing the existence of two data comm controls is:

*** SLC ON PORT 7 CHANNEL 13 ***

*** MLC ON PORT 1 ***

The operator is then advised to enter the location of the BDLC adapter by:

ENTER ADAPTER ADDRESS _ FORMAT IS PORT:CHANNEL:ADAPTER
IF YOU WANT TO GO TO EOJ, ENTER STOP

If the control device is a Single Line Control then the Port must be 7, the Channel number may be any number from 0 to 14. The Adapter number is always 0.

If the control device is a Multi Line Control then the Port may be any number from 0 to 6. The Channel number will always be 0 and the Adapter number may be any number from 0 to 15.

If for any reason the adapter is in use, the operator will be notified of its unavailability. The operator will also be notified if there are any errors when entering the information. The types of errors and how they are handled are discussed in the error section.

The next two sections discuss how to enter the adapter(s) for the desired mode and the results without errors. Following these sections is a section concerning the various errors and the messages that will be displayed accordingly.

ENTRY OF ADAPTER FOR TWA MODE

If the mode is TWA the operator is required to enter only one adapter. The entered port, channel and adapter are then displayed and the operator is prompted for confirmation.

Example:
```
PORT     :01
CHANNEL  :00
ADAPTER  :02
IF THESE VALUES ARE CORRECT, ENTER 'YES'
IF NOT, ENTER 'NO' AND YOU MAY REENTER THEM.
```

If 'YES' is entered the message appearing on the screen indicates the mode of the BDLC adapter.

Example:
```
01:00:02 IS A TWA SWITCHED ADAPTER.
```

As soon as the adapter type has been identified, the parameter values are written to the adapter. The next series of messages to appear on the ODT concern the current parameter values. The operator is first notified of these values by:

```
THE PARAMETERS READ FROM THE ADAPTER ARE:

00 axxxxa
01 axxxxa
02 axxxxa
03 axxxxa
04 axxxxa
05 axxxxa
06 axxxxa
07 axxxxa
08 axxxxa
09 axxxxa
10 axxxxa
```

The operator is then asked for further action by:

```
ANY CHANGES? ENTER YES OR NO
```

If the operator elects no changes, then a NO entered causes the program to continue. A YES causes another message indicating how to proceed. The messages and what actions to take are described in Case 1 of the section on ACTION AFTER REQUESTING PARAMETER CHANGE.

The next orompt for the TWA switched mode indicates that the program is in a state of waiting for either a switched connection or input by the operator.

WAITING FOR SWITCHED CONNECTION OR ODT INPUT

At this point the operator may wait for the switched connection from the remote system (auto answer) or cause the connection:

1) If the choice is to wait for the switched connection then at the time the connection is made, a message will appear indicating that a READ op has been put up and ODT input is acceptable.

READ OP PENDING OR WAITING FOR ODT INPUT

2) If the choice is to establish the switched connection then if the system is manual dial, the operator must complete the dialing. If the unit has an ACU then the operator must enter the CALL command and the number to be called. The CALL command is further described in the RSVP specification, S.O.S. 2228 2065.

Example: CALL 964-9754; (dashes are optional)

After the call has completed the program enters a waiting state and the message appearing on the screen is:

READ OP PENDING OR WAITING FOR ODT INPUT

ENTRY OF ADAPTERS FOR TWS MODE

The following description is for the TWS mode:

The operator must enter two adapter locations; one for read and one for write. Either one may be entered first. Upon the entry of the first one the message appears displaying the entry and asking for confirmation.

Example:
```
PORT    :01
CHANNEL :00
ADAPTER :02
IF THESE VALUES ARE CORRECT, ENTER 'YES'
IF NOT, ENTER 'NO' AND YOU MAY REENTER THEM.
```

Upon confirmation a message appears indicating the adapter location, the mode of the adapter and whether it is Read or Write. The operator is advised that a second adapter location is needed.

Example:
```
01:00:02 IS A BDLC TWS LEASED WRITE ADAPTER
BDLC TWS READ ADAPTER IS REQUIRED.
ENTER ADAPTER ADDRESS_FORMAT IS PORT:CHANNEL:ADAPTER
IF YOU WANT TO GO TO EOJ, ENTER STOP
```

The operator must enter the second adapter location. After the second entry, the entry is displayed as before and confirmation asked for.

Example:
```
PORT    :01
CHANNEL :00
ADAPTER :00
IF THESE VALUES ARE CORRECT, ENTER 'YES'
IF NOT, ENTER 'NO' AND YOU MAY REENTER THEM.
IF YOU WANT TO GO TO EOJ, ENTER STOP
```

Upon confirmation a message appears with the identity of the BDLC adapter.

Example: 01:00:00 IS A BDLC TWS LEASED READ ADAPTER

As soon as the adapter locations are known, the parameters values are written to the adapters. The adapters are then read. Both the Read Adapter and Write Adapter parameters are displayed to the ODT. The Read Adapter parameters are displayed first. An example of the display is:

THE PARAMETERS READ FROM THE READ ADAPTER ARE:

00 @00000@
01 @FFF0@
02 @02000@
03 @F0000@
04 @01280@
05 @FFFF@
06 @000A@
07 @31280@
08 @00000@
09 @18000@
10 @03FF@

After the display of the values the operator is prompted for changes by:

ANY CHANGES ? ANSWER YES OR NO

If changes are elected by entering YES, then the operator receives a further prompt as to how to enter the changes and the process to follow. This is described in Case 1 of the section on ACTION AFTER REQUESTING PARAMETER CHANGE. The parameters for the Write Adapter are displayed next followed by the same prompts as for the Read Adapter display.

At this point the system waits until the Data Carrier is activated by the remote system and then puts up read ops. At completion a message appears on the ODT screen indicating the system is waiting to receive data from the remote system or ODT input:

READ OP PENDING OR WAITING FOR ODT INPUT.

Once this message appears on the screen, the system is ready to receive any of the RSVP commands or data sent from the remote system.

To establish the system as the MASTER system in either mode, it is necessary to enter the RSVP command CONNECT;. If the system is to become the SLAVE system then the system must wait for a command sent from the remote system which is activated by the entering of CONNECT; at the remote system. The commands that may be entered are described in full in the RSVP specification, S.D.S. 2228 2065.

ERROR MESSAGES

The following is a list of error messages which may be displayed during the input of the adapter location with a brief explanation as to the cause:

1) NO INPUT RECEIVED, TRY AGAIN
result of blank line entered on ODT.

2) EXPECTING : NONE FOUND
wrong format for entry, a colon omitted.

3) PORT VALUE TOO LARGE OR NOT NUMBER OR LENGTH OUT OF RANGE
number entered for port larger than 7, or a non-numeric value entered or the number exceeded two digits.

4) MORE THAN ONE : RECEIVED
wrong format, more than one colon between numbers entered

5) CHANNEL VALUE TOO LARGE OR NOT NUMERIC OR LENGTH OUT OF RANGE
number entered for channel was larger than 15, or a non-numeric value entered or the number exceeded two digits.

6) CANNOT HAVE A NON-ZERO CHANNEL ON A PORT OTHER THAN PORT 7
The control is a Multi Line Control and the Channel number must be 0. Only Port 7 may have a single line control.

7) ADAPTER VALUE NOT NUMERIC OR LENGTH ZERO
The Adapter value was a non-numeric value or none was entered.

8) LENGTH OF UNIT IS TOO LARGE
The entry for the Adapter was more than two digits.

9) UNIT NUMBER IS TOO LARGE (>15)
The entry for the Adapter was greater than 15.

10) CANNOT HAVE A NON-ZERO UNIT ON PORT 7
The adapter number is always 0 on a Single Line Control which is located on Port 7.

SYNTAX CHECKING AND PARSING OF COMMANDS

A command entered during the execution of RSVP is processed as follows:

1) The line is first checked for syntax errors. Any errors found cause the rejection of the entire line. The portion in error is displayed to the operator.

2) A single command is then acted on if action is required.

3) More than one command may be entered on a line and a line containing multiple commands is parsed as follows:

CALL — The call number is recorded, and the call flag set. The remaining portion of the line is saved to be parsed later and the call acted on.

CANCEL — If a test is in progress, or sending of a command which may be repeated is in progress, the remaining portion of the line is cancelled , the parser exited and the command activated. If no test is in progress and no retry is in progress then the CANCEL command is ignored and parsing continues.

CONNECT — The CONNECT flag is set. The remaining portion of the line is saved. The parser is exited. The CONNECT is then acted on as follows: If the CONNECT is not active an attempt to connect is made, the attempt may be retried if not successful. If the CONNECT has been established previously and is of the type RSVP-RSVP, the operator is notified of the existing connection and type. If the type is RSVP-BNA then a new attempt to connect RSVP-RSVP is made; if the connect remains RSVP-BNA the operator is notified of such.

DISCONNECT — The DISCONNECT flag is set, the remaining portion of the line is nullified, the parser exited and the disconnect activated.

DISPLAY — The DISPLAY parameter is set if indicated by + or -; otherwise, the status of the parameter is displayed Parsing of the line continues.

ECHO — The echo pattern is extracted and stored in an echo pattern queue. The next slot in the test queue is filled with a 99 to indicate an echo test. Parsing of the line continues.

EHALT — The EHALT parameter is set if indicated by + or -; otherwise, the status of the parameter is displayed. Parsing of the line continues.

GO — If the GO flag is set, the command is a no_op and parsing continues; otherwise, the GO flag is set and the remaining portion of the line is saved. There is an exit from the parser to act on the command.

PAUSE — The PAUSE value is set, the pause flag is set. Parsing of the line continues.

PRINT — The PRINT parameter is set if indicated by + or - ; otherwise, the status of the parameter is displayed. Parsing of the line continues.

REPEAT — The REPEAT value is set as indicated. The parsing of the line continues.

REPORT — If REPORT+ is entered, the report indicator is set to give a maximal report. If REPORT- is set, then the indicator is set to give a minimal report. REPORT entered without an indicator displays the REPORT setting and gives a report of the last error according to the setting. Parsing of the line continues.

RESET — The RESET flag is set, the remaining portion of the line is nullified and the parser exited for action on the command. The command is a no_op on the Slave.

RUN — The RUN flag is set. If Master then the parser is exited for action on the command. The remaining portion of the line is saved. If Slave the command is ignored and the parsing continues.

STATUS — The STATUS information is displayed and includes the remaining portion of the line to be parsed. Parsing continues.

STOP — The STOP flag is set, the remaining portion of the line is nullified and the parser is exited for action on the command.

TEACH — The TEACH data are displayed. Parsing continues.

TEST — The test numbers are entered into the test queue. If more than one TEST command appears on the line, the test numbers are entered in the queue in the same sequence as they were entered on the line; i.e., TEST 1 -3; TEST 2- 6; go into the queue as: 1,2,3,2,3,4, 5,6. Parsing of the line continues.

TIMEOUT — The TIMEOUT value is recorded, a timeout flag set and parsing continues.

TRACE — The TRACE parameters are set, the trace started or turned off as indicated by + or -. TRACE entered with no parameters causes the status of TRACE to be displayed. Parsing continues.

It must be noted for the commands PAUSE, REPEAT and TIMEOUT that if entered subsequent to the RUN command, then they have no affect on those TEST's or ECHO's entered prior to the RUN; however, if any of these commands are entered prior to the RUN then any TEST or ECHO in the TEST queue will be executed under the conditions effected by these commands.

If a test is running and new commands are entered at the ODT, then the following is the method to be used for handling these new commands.

The line is checked for syntax errors and rejected if any are found. The operator is notified of rejection and the portion of the line which was the cause of the rejection is displayed.

There are two possible conditions which may exist at the time the command is entered:

1) The previous command line was saved.

2) The previous command line was completely parsed or nullified.

CASE 1:

Action is suspended on the previous command line and the new line is acted on one command at a time with the following consequences:

A) The following commands are acted on immediately as previously described:
DISPLAY, PRINT, REPORT, STATUS, TEACH, TRACE

B) The following commands affect any remaining commands in the saved line.

PAUSE, REPEAT, TIMEOUT

The newly entered values will apply to any of the TEST's or ECHO's remaining in the Test queue.

C) The following commands are acted on as described previously and cause the nullifying of the saved line.

CANCEL, DISCONNECT, RESET, STOP, CONNECT

D) The first encounter of either TEST or ECHO causes the RUN flag to be turned off and the test queue and the ECHO queue to be emptied. The saved line is nullified. Subsequent occurrences of TEST or ECHO on the new line are treated as described previously.

E) If RUN is entered before any TEST or ECHO a message to the operator indicates a test is running and the RUN is ignored. If RUN is entered subsequent to ECHO or TEST the procedure is as described previously.

F) If CALL is entered and the CALL is actually required, then the previous line is nullified and the CALL processed as previously described. If no CALL is necessary then it is a no_op and parsing continues.

G) At the completion of the new command line, if the saved line has not be nullified it is retreived for continued parsing.

CASE 2:

The new command line is processed as previously described.

ERROR MESSAGES FOR INCORRECT ENTRY OF COMMAND

If a syntax error is committed upon entering a command at the ODT the operator is notified by:

ERROR COMMAND LINE REJECTED

then there is a display of the faulting command. For example:

DISCONNECT HAR;

There is no other message.

RUN TIME MESSAGES FOR INCORRECT ENTRY OF COMMAND

There are two errors which can be considered run time errors.

1) If the operator entered a test number which is not valid for the B1900 system then when RSVP attempts to run the test, the error will be noted and the operator notified with the following message:

INVALID TEST NUMBER

2) If testing is under the RSVP to BNA connection then only the command ECHO with the desired test pattern is acceptable for testing purposes. If the operator enters a TEST into the queue then RSVP notes the error and notifies the operator with the message:

CONNECT IS RSVP-BNA, ONLY ECHO IS ALLOWED

ERROR MESSAGES DURING RSVP EXECUTION AND DATA TRANSMISSION

During the execution of RSVP, errors may occur. Failures may occur during transmission of data, receiving of data or as a result of a dispatched operation to the BDLC adapter failing. When these failures occur, the B1900 RSVP program analyzes the failure and a message is displayed on the ODT. Messages will be sent to the ODT or printer depending on the DISPLAY and PRINT options. The detail of many of the error descriptions is determined by the setting of the REPORT option. (See section B1900 SYSTEM DEPENDENCIES for the report format.) Each of these error messages is preceded by "ERROR_TEST nn". The messages that may be displayed and their probable causes are:

1) INVALID ADDRESS RECEIVED FROM THE REMOTE SYSTEM
The address field of the received frame was incorrect.

2) INVALID COMMAND RECEIVED FROM THE REMOTE SYSTEM
The command field did not contain a proper command.

3) TIMEOUT OCCURRED ON WRITE
A write operation was dispatched and did not complete during the time allowed. The default timeout period is 10 seconds, but the operator can change this time to any period desired using the TIMEOUT command.

4) TIMEOUT OCCURRED
No operation dispatched has completed during a time period during which the operation(s) dispatched should have completed.

5) EXCEPTION BIT SET ON READ
The read operation dispatched has completed with the exception bit set in the result descriptor. The result descriptor is displayed if the REPORT flag is on.

6) WRITE OP COMPLETED, TIMEOUT ON READ
A write operation was dispatched and completed without exception, the dispatched read operation did not complete during the time period allowed.

7) EXCEPTION BIT SET ON WRITE
A write operation dispatched has completed with the exception bit set in the result descriptor. The result descriptor is displayed if the REPORT flag is on.

8) READ OP COMPLETED, TIMEOUT ON WRITE
This would only apply to TWS. Both a read operation and a write operation have been dispatched. The read operation has completed normally, but the write operation has not completed during the time period allowed.

9) REMOTE SYSTEM RECEIVED A BAD FRAME
This only applies when the system is MASTER. The Slave has

received a frame and found it not to match what was expected, or the frame had an Address field in error or a Command field in error. The Slave indicates this condition by sending a message to the Master.

10) INVALID TEST NUMBER RECEIVED FROM REMOTE SYSTEM
The Slave has received a command from the Master to start a test but the test is not valid for the Slave system.

11) INVALID FRAME LESS THAN 32 BITS
At least two bytes of data must be sent to the BDLC adapter. The BDLC adapter supplies a Frame Check Sequence which is 2 bytes long; hence; at least four bytes of data are sent by the BDLC adapter. Fewer bytes cause an exception condition.

12) READ COMPLETED BUT NO DATA RECORDED
A dispatched read operation has completed without exception, but no data was received.

13) INVALID FRAME RECEIVED FROM REMOTE SYSTEM
The frame received from the remote system did not match what was exoected and is not a recognizable command or response.

14) FRAME RETURN AFTER EIF INDICATED BUT NONE RECEIVED; TIME OUT
The Slave sent an EIF frame indicating an error. A bit was set in the EIF frame indicating that the faulting frame was to follow. The frame was not received during the time period allowed.

15) FRAME RETURN AFTER EIF INDICATED BUT NONE RECEIVED; EXCEPTION COND
The Slave sent an EIF frame indicating a frame received in error. The bit indicating that the faulting frame was to follow was set. The read operation dispatched for receiving the frame completed with an exception bit set in the result descriptor.

16) TIMEOUT ON READ
A dispatched read operation has not completed during the time period allowed.

17) NO I-FIELD RETURNED FROM REMOTE SYSTEM
The frame returned from the remote system was expected to contain an address field, a command field and an information field. Only tne address field and the command field were returned.

18) NOT A VALID TEST NUMBER FOR THE REMOTE SYSTEM
An attempt to start a certain test in the Slave failed because this is not a valid test in the Slave system. The Slave sent a negative acknowledgment to the Master to indicate this.

19) NOT COMPLETED PROPERLY; NEW TEST STARTED
The Slave system has received a command from the Master to start a new test while the previous test has not been completed properly.

20) INCORRECT N(R) FIELD
The N(R) field of either an RR response or and I_frame did not match the V(S) variable kept and updated by the system.

21) INCORRECT N(S) FIELD
The N(S) field of an I_frame did not match the V(R) variable kept and updated by the system.

22) UNABLE TO FORCE AN ABORT
RSVP has attempted to force an abort by setting a certain parameter in the BDLC parameter field. The abort did not occur.

23) UNABLE TO TRANSMIT IDLE. EXCEPTION CONDITION
An operation to cause an idle sequence on a TWA line was dispatched. The operation completed with an exception.

24) UNABLE TO TRANSMIT IDLE. TIMEOUT
An operation to cause an idle sequence on a TWA line was dispatched. The operation did not complete during the alloted time period.

25) INCORRECT I-FIELD RECEIVED FROM REMOTE SYSTEM
The frame received from the remote system contained an I-field that did not match the expected data.

DC/AUDIT

The entry of TRACE+ or TRACE+ EXCEPTION causes execution of the utility program DC/AUDIT. The following is an explanation of the DC/AUDIT as used by RSVP.

When a dispatched data comm IO completes, RSVP writes information regarding the IO into a disk file that can be printed by DC/AUDIT. The audit option for RSVP is controlled by use of the RSVP command TRACE.

The audit file, DC/AUDIT.FILE, is maintained as a circular disk file. When this file gets filled, the oldest record is overwritten with the new record. This approach optimizes disk space and at the same time allows the user to monitor all data comm I/O activity. The utility program, DC/AUDIT, may be executed concurrently with the RSVP and prints records written into the audit file. RSVP and DC/AUDIT maintain synchronization through a mailbox (record [0] of the audit file). DC/AUDIT accepts several input parameters. The parameters are set by RSVP according to the TRACE command.

TRACE COMMAND AND DC/AUDIT FILE IMPLEMENTATION

When TRACE+ or TRACE+ EXCEPTION is entered at the ODT, RSVP opens the file in the following manner.

```
OPEN AUDIT INPUT, OUTPUT, LOCK;
ON FILE MISSING < a new file is created>
ON FILE LOCKED <message is displayed as:
      FILE "DC/AUDIT.FILE" LOCKED
```

The FILE.LOCKED condition indicates that the file is inaccessible for outout because another data comm handler has opened it with the LOCK option;-- under this circumstance the RSVP program displays the message as shown above and ignores the TRACE command. No two data comm handlers may write to the same audit file at the same time. This is enforced through the LOCK option of the OPEN statement.

The FILE MISSING condition indicates that the file is not present. RSVP then creates a new audit file. The file is closed with the LOCK option to ensure that it is a permanent file. It is then reopened as described above by RSVP with the LOCK option. Though no more than one handler may write to the audit file, DC/AUDIT may still access the audit file on a read only basis. If two audit sesssions are initiated concurrently, then the two data comm handlers must access different audit files; this may be accomplished through file equation. For RSVP this implies that if back to back testing is being done with two RSVP programs then if the TRACE option is to be used for both RSVP programs, then a file equation must be done for at least one of the audit files. For example:

```
EX RSVP FILE AUDIT NAM REAUDIT
```

Record zero of the audit provides the mailbox between RSVP and DC/AUDIT. It contains two pointers. START.POINTER and NEXT.AVAILABLE.RECORD. The former points to the oldest record in the file and the latter to the next available location in the audit file. Record zero also contains a count of all valid records (RECORDS.WRITTEN) in the file. On the first OPEN, RSVP initializes NEXT.AVAILABLE.RECORD and START.POINTER to one and RECORDS.WRITTEN to zero. On subsequent opens, record zero is not initialized.

The operator may control the writing to the audit file during the execution of RSVP by using TRACE+ and TRACE-. The first TRACE+ causes the opening of the file with the initialization of record zero. TRACE- causes the cessation of writing to the Audit file. A subsequent TRACE+ would start the recording of the data comm communication once again.

When adding records to the audit file, RSVP writes the record to the location indicated by NEXT.AVAILABLE.RECORD. After each write, RSVP updates record [0] by rewriting it with NEXT.AVAILABLE.RECORD and RECORDS.WRITTEN updated. If the number of records written has caused the file to cycle (the number of records written is greater than the file size (1000)), the oldest record will have been overwitten and the START.POINTER is set equal to NEXT.AVAILABLE.RECORD to indicate that the file has cycled. In a cycled file START.POINTER will be updated each time the NEXT.AVAILABLE.RECORD is updated.

DC/AUDIT is run concurrently with RSVP. This means that if the printer is on and not in use, then as the IO data is recorded by DC/AUDIT it will be printed. If DC/AUDIT catches up with RSVP it waits for a short while. When awakened DC/AUDIT accesses record zero to determine if there are any records to be printed.

RUN TIME PARAMETERS AND HOW CONTROLLED BY THE USE OF TRACE

Upon execution of DC/AUDIT by RSVP, the program will look for a file labeled "DC/PARAMETERS" which contains the run time parameters for DC/AUDIT. DC/AUDIT will read this file and process the parameters. The parameter file is created by RSVP. The parameters used by RSVP are:

ADDRESS	Print port, channel and adapter where IO DESCRIPTOR was dispatched.
ALL.LINES	Processes records in the audit file from all data comm lines included in the file.
BUFFERS	Output all buffers associated with IO DESCRIPTOR and the continuation records.
ERROR=(1,3)	If ERROR=1, then output all operations. If ERROR=3, then ignore all operations that completed without exceptions.
IO.DESC=(1)	If IO.DESC=1, then print the entire IO DESCRIPTOR in hex with each field separated by blanks.
OUTPUT=(H)	OUTPUT=H causes DC/AUDIT to print all buffers with an EBCDIC representation of the hexidecimal code. EXAMPLE: @01AB@ will be printed as 01AB.

If TRACE+ is entered by the operator, RSVP first checks whether DC/AUDIT is currently being executed. If not, then the proper parameters are written into the parameter file and DC/AUDIT started. If DC/AUDIT is running then RSVP resets the parameter ERROR=1 to ensure that operations are recorded. If TRACE+ EXCEPTION is entered, RSVP checks for DC/AUDIT in progress and if not sets the parameter ERROR=3 and starts DC/AUDIT. If it is in progress then RSVP ensures that ERROR=3 is set and nothing further is done. If either TRACE- or TRACE- EXCEPTION is entered, then no more data comm communication is recorded. To start the recording once again, TRACE+ or TRACE+ EXCEPTION must be entered. The only difference between TRACE+ and TRACE+ EXCEPTION is that TRACE+ causes all operations to the data comm devices to be recorded. TRACE+ EXCEPTION records only those operations which complete with an exception.

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THE OUTPUT FORMAT OF DC/AUDIT

The output format of DC/AUDIT for RSVP is as follows:

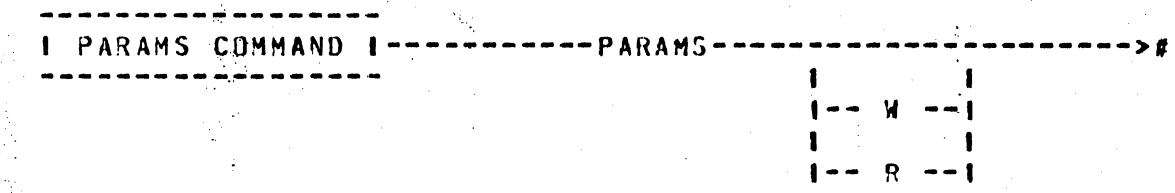
```
          ****B1800/1700 DC/AUDIT <DATE TIME> ****

  TIME      OP        BUFFER                DESCRIPTOR
  ----      --        ------                ----------

NN:NN:NN  AAAAAA     DATA      AE=xxxxxx RS=xxxxxx LK=xxxxxx OP=xxxxxx
   *         *         *       SA=xxxxxx EA=xxxxxx MS=xxxxxx xx xxxx
   *      op type      *       xxxxxx xxxxxx xxxxxx port:channel:adapter
   *                   *       LENGTH = nnnn
   *                   *
   *                   *
For read op,       Data written or read.
time op            Data will be in
completed.         hexadecimal representation.
For write op,
time op
dispatched.
```

CHANGING THE BDLC ADAPTER PARAMETERS.

The BDLC adapter parameters may be changed through the use of a specific B1900 RSVP command. This command is entered like any other command. The command and its consequences are:



For the TWA mode, PARAMS is entered. For the TWS mode, either PARAMS R for the read BDLC adapter, or PARAMS W for the write BDLC adapter is entered.

PARAMS may be entered at either the Master or the Slave system. The current settings of the parameters are displayed to the operator. The operator may then elect to change any, all or none of the parameters. After the operator has entered the changes, the parameters are again read and displayed to the operator. The operator may again elect to change the parameters or accept the changes.

THE PARSING OF PARAMS.

PARAMS is processed as follows:

PARAMS is first checked for syntax errors. If the mode is TWS then R or W is required. If only PARAMS is entered then a message is displayed:

"THE ADAPTER IS NOT TWA, AN R OR A W IS NEEDED"

The command will be rejected in this case. If the mode is TWA then the R or W if entered, is ignored.

ACTION AFTER REQUESTING PARAMETER CHANGE

PARAMS may be entered under three possible conditions. These conditions and the actions taken are:

Case 1. No test is running.

The parameters are read from the BDLC adapter and displayed on the ODT. In TWS mode the display message identifies the adapter as the READ or WRITE adapter and displays:

THE PARAMETERS READ FROM THE READ/WRITE ADAPTER ARE:

In TWA mode, the display message appears as:

THE PARAMETERS READ FROM THE ADAPTER ARE:

These display messages are followed by a linear display of all the parameters and their values. The values are in hexadecimal representation.

The operator is then queried for any changes by:

ANY CHANGES? ANSWER YES OR NO

If the operator wanted a reading of the parameters and desires no changes, entering a NO will leave the parameters as set and the RSVP program will proceed normally.

Entering a YES causes a display of instructions to the operator as to how the changes may be entered. The messages appearing are:

```
ALL THE CHANGES MAY BE ENTERED AT ONCE.
USE THE FOLLOWING FORMAT:
PARAMETER NUMBER IN DECIMAL FOLLOWED BY
THE VALUE IN HEX AS: DD @NNNNN@ DD @NNNNN@ . . .
```

The changes entered are written to the BDLC adapter. After they are written. The parameters are read once again and displayed in the linear fashion described previously. The operator is again queried about any more changes. An answer of NO continues the RSVP program and an answer of YES again causes a display of the entering format and cycles through the process again.

If the operation to change the parameters fails then the operator is notified by:

```
ATTEMPT TO CHANGE PARAMETERS FAILED
```

Case 2. A test is running.

If the PARAMS command was entered at the Master, then the operator is notified that the test must be cancelled. After the test has been cancelled, the parameter changing process as described above then takes place. If the operator does not wish to cancel the test, then the params process will occur at the end of the test. If PARAMS is entered at the Slave, then the params process takes place when the test has ended or been cancelled by the Master.

Case 3. The program is in a waiting state due to EHALT setting, or the retry count has been exhausted during an attempted retry of certain commands.

If PARAMS is entered, then the operator is notified in the case of Master that a CANCEL must be entered. If Slave then the operator is notified to wait until the end of the test. The operator may abort the PARAMS command by entering GO;

ERROR MESSAGES DURING PARAM CHANGE

The parameter change entries will be processed one at a time. If an error occurs, those changes prior to the error will be made and the operator notified of the error and the remaining entries displayed. Those entries subsequent to the error will not be changed and must be reentered.

The error messages and their meaning are:

1) PARAMETER NUMBER IS MISSING PORTION OF LINE NOT PARSED: (the portion of the line not parsed is displayed)

   The number of the parameter to be changed was not entered.

2) THE @ SIGN IS MISSING (the portion of the line not parsed is displayed)

   The number of the parameter was not followed by an @ sign.

3) ONLY TWO DIGITS ARE ACCEPTED FOR THE PARAMETER NUMBER. PORTION OF THE LINE NOT PARSED: (the portion of the line not parsed is displayed)

   The number of parameters ranges currently from 0 to 10, if a number larger then two digits is entered, it is an error.

4) NOT A VALID PARAMETER NUMBER PORTION OF THE LINE NOT PARSED:

   The parameter number entered is not in the range from 0 to 10.

5) PARAMETER VALUE IS MISSING PORTION OF THE LINE NOT PARSE:

   The parameter number was not followed by a parameter value in hex and delineated by @ signs.

B1900 SYSTEM DEPENDENCIES

The files which may be referenced by RSVP and their functions are:

Internal name	External name	Purpose
DEBUG.FILE	DEBUG.FILE	Used for recording a trace of the RSVP program. Not for general use.
PRINT.FILE	PRINT.FILE	To be used for recording data when the print flag is on.
TFILE	RSVP/TEACH	The teach data is stored in this file and the file is referenced whenever the TEACH command is entered.
AUDIT	DC/AUDIT.FIL	Used by DC/AUDIT for the recording of completed dispatched operations to the BDLC adapter. Thus all data transmitted and received through the BDLC adapter are recorded.

The PAUSE time and the format of the error reporting were described in the RSVP specification as system dependent. The manner in which they are handled by the B1900 RSVP is as follows:

1) PAUSE time entry indicates 10th of seconds; hence, PAUSE 5; would cause a delay time of 5/10 of one second. The maximum time delay allowed is 1677215 tenths of seconds; i.e. in hex, @FFFFFF@.

2) The retry count for those commands which may be retried is 5.

3) The implementation of the full report of an error (REPORT +) is done in the following manner:

   If Master

   ** REPORT GENERATED FOR MASTER **

   otherwise

   ** REPORT GENERATED FOR SLAVE **

The error and the test in which it occurred:

ERROR _ TEST nn (error message)

The expected frame if there is any:

EXPECTED FRAME:
(display of the frame in hexadecimal representation)

If the error is not due to a timeout or an exception then the faulting frame is displayed:

RECEIVED FRAME:
(display of the frame in hexadecimal representation)

If the system is the Master and if the Slave returned an EIF frame then the EIF status bits are displayed. The Slave never displays EIF status bits.

INCORRECT A-FIELD	(ON or OFF)
INCORRECT C-FIELD	(ON or OFF)
INCORRECT I-FIELD	(ON or OFF)
SHORT FRAME	(ON or OFF)
FCS ERROR	(ON or OFF)
ABORT DETECTED	(ON or OFF)
NON OCTET I_FIELD	(ON or OFF)
I_FIELD TOO LARGE	(ON or OFF)
WINDOW SIZE ERROR	(ON or OFF)
NO SPACE CONDITION	(ON or OFF)
IDLE NOT DETECTED (TWA)	(ON or OFF)

If an exception occurs then the result descriptor is displayed as:

	OP COMPLETE	(ON)
	EXCEPTION CONDITION	(ON)
	OVERRUN ERROR	(ON or OFF) (if read)
or	FRAME ABORT REQUESTED	(ON or OFF) (if write)
	FCS ERROR	(ON or OFF)
	DATA ACCESS ERROR	(ON or OFF)
	MEMORY PARITY ERROR	(ON or OFF)
	TIME OUT	(ON or OFF)
	OUTPUT FRAME ABORTED	(ON or OFF) (if write)
or	INPUT FRAME OVERRUN	(ON or OFF) (if read)
	LONG RECORD (NO END)	(ON or OFF)
	SHORT FRAME	(ON or OFF) (if write)
or	ABORTED INPUT FRAME	(ON or OFF) (if read)
	IDLE DETECTED	(ON or OFF)
	DSR LOST	(ON or OFF)
	LOSS OF CARRIER	(ON or OFF) (if read)
or	LOSS OF CLEAR TO SEND	(ON or OFF) (if write)
	INVALID OP	(ON or OFF)
	NON OCTET I_FIELD	(ON or OFF)

If the display flag is on, then if the REPORT- has been set, then only the following message is displayed:

ERROR _ TEST nn (error message)

If the display flag has been turned off by the operator then there would be no display indicating an error occurred.

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