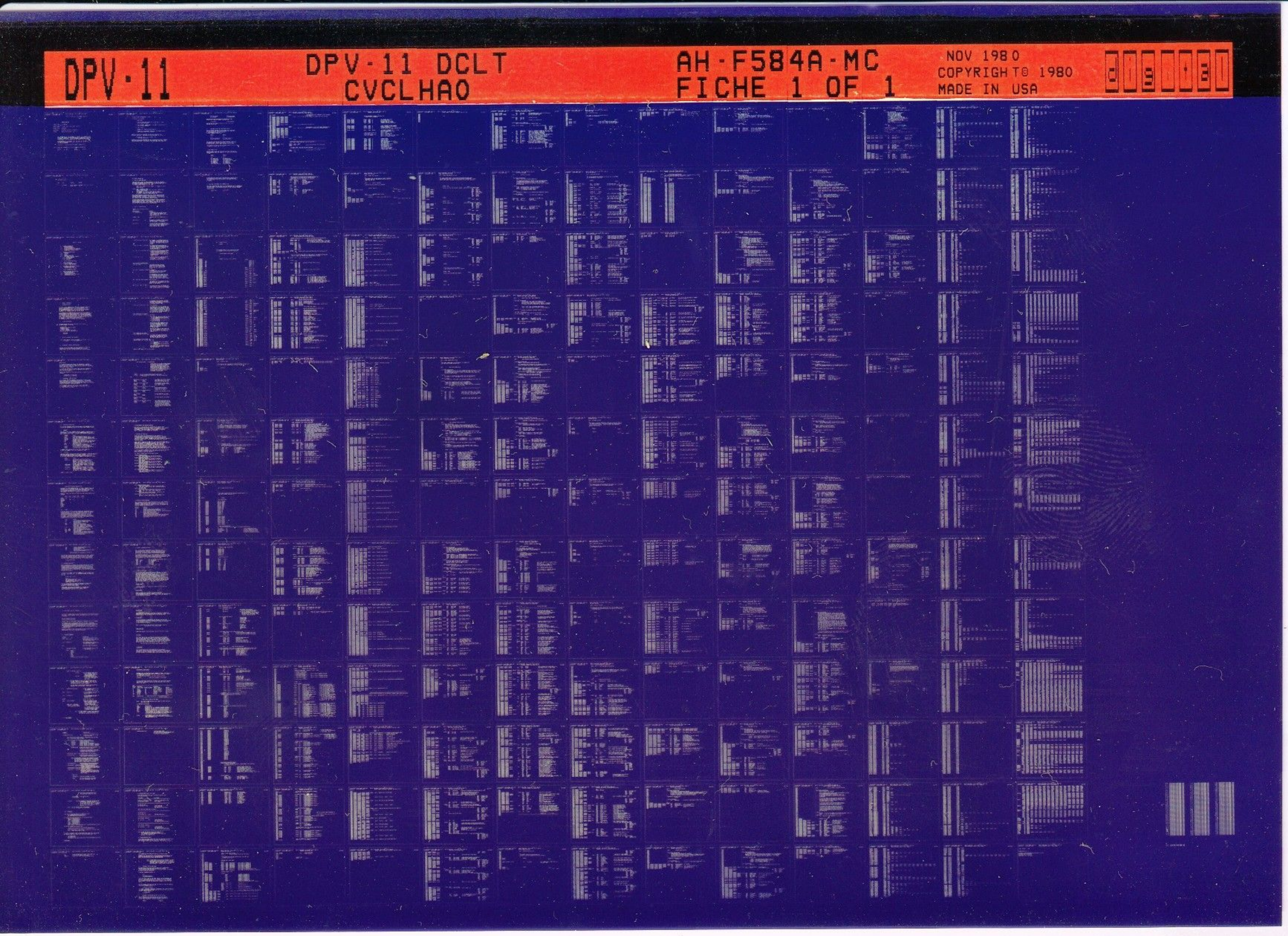
DPV-11

DPV-11 DCLT
CVCLHAO

AH-F584A-MC
FICHE 1 OF 1



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1                               .TITLE  CVCLHA DPV-11 DATA COMM. LINK TEST
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IDENTIFICATION

PRODUCT CODE: AC-F582A-MC

PRODUCT NAME: CVCLHA0 DPV-11 DATA COMM. LINK TEST

PRODUCT DATE: 20-AUG-80

MAINTAINER: MERRIMACK DIAGNOSTIC ENGINEERING

AUTHOR: BRUCE RIBOLINI-BRUCE LUHRS

REVISION HISTORY:

REV	DATE	AUTHOR	REASON
A	20-AUG-80	BRUCE RIBOLINI BRUCE LUHRS	ORIGINAL ISSUE, DCLT FOR THE DPV-11

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1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS DCLT (DATA COMMUNICATION LINK TEST) PROGRAM IS MEANT TO PROVIDE FIELD SERVICE WITH A TOOL TO MAINTAIN DPV-11 TO DPV-11 COMMUNICATION LINKS. THIS DCLT PROGRAM WILL PROVIDE THE COVERAGE NECESSARY TO DETECT FAILURES TO THE COMPUTER EQUIPMENT, THE COMMUNICATION LINK, OR THE MODEM.

THIS DIAGNOSTIC HAS BEEN WRITTEN FOR USE WITH THE DIAGNOSTIC RUNTIME SERVICES SOFTWARE (SUPERVISOR). THESE SERVICES PROVIDE THE INTERFACE TO THE OPERATOR AND TO THE SOFTWARE ENVIRONMENT. THIS PROGRAM CAN BE USED WITH XXDP+, ACT, APT, SLIDE AND PAPER TAPE. FOR A COMPLETE DESCRIPTION OF THE RUNTIME SERVICES, REFER TO THE XXDP+ USER'S MANUAL (CHQUS?.SEQ WHERE ? IS REV. LEVEL OF THE MANUAL). THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 2 OF THIS DOCUMENT.

1.2 SYSTEM REQUIREMENTS

IN ORDER TO RUN THE DPV DCLT PROGRAM, THE FOLLOWING MINIMUM HARDWARE IS REQUIRED:

- A LSI-11 CPU
- MINIMUM OF 24K WORDS OF MEMORY
- A WORKING CLOCK
- A CONSOLE TERMINAL
- ANY XXDP+ SUPPORTED LOAD MEDIA
- ONE OF THESE DPV-11 CONFIGURATIONS:

  DPV11-DB
  DPV11-DA

1.3 RELATED DOCUMENTS AND STANDARDS

- XXDP+ USER'S MANUAL (CHQUS?.SEQ WHERE ? IS THE REV. LEVEL OF THE MANUAL - "C" IS THE CURRENT REV.).

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

THE GOAL OF THE DATA COMM. LINK TEST PROGRAM IS TO TEST THE COMMUNICATION LINK AND THEREFORE ASSUMES THAT THE CPU'S, CLOCKS, AND DVP-11'S AT EACH END OF THE LINK HAVE ALREADY

BEEN TESTED.

IF A WORKING CLOCK IS NOT FOUND, THE PROGRAM WILL CONTINUE
BUT ANY OF THE PROGRAM THAT TIMES THE DEVICE WILL HANG IF THE
DEVICE TIMES OUT. ALSO, THE EVENT LOG WILL CONTAIN A ZERO EVENT
TIME FOR ALL EVENTS LOGGED.

IT IS NOT THE INTENTION OF A DATA COMM. LINK TEST PROGRAM TO
TEST THE DPV-11'S, BUT TO TEST THE COMMUNICATION LINK TO
WHICH THEY ARE CONNECTED.

SOME OF THE DIAGNOSTICS THAT COULD BE RUN IF EITHER OF THE DPV-11'S
LOOK BAD:

        CVDPVA0 DPV-11 FCTNL DIAG
        CXDPVA0 DPV-11 DECX MODULE

1.5 ASSUMPTIONS - RESTRICTIONS

IT IS ASSUMED THAT THE COMMUNICATIONS DEVICE (A DPV-11) HAS
BEEN TESTED USING THE PREREQUISTE DIAGNOSTICS. THE OPERATOR
SHOULD HAVE READ THE USER DOCUMENTATION PORTION OF THE LISTING
TO FAMILIARIZE HIMSELF WITH THE COMMANDS AND CAPABILITIES AVAILABLE
UNDER THE DIAGNOSTIC SUPERVISOR AND DCLT.

THIS DIAGNOSTIC DOES NOT RUN THE DPV IN BIT STUFF MODE
IT IS ASSUMED THAT IF THE LINK WORKS IN CHAR MODE THE LINK
WILL WORK IN BIT STUFF MODE.

2.0 OPERATING INSTRUCTIONS

THIS SECTION CONTAINS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES.
FOR DETAILED INFORMATION, REFER TO THE XXDP+ USER'S MANUAL (CHQUS).

2.1 COMMANDS

THERE ARE ELEVEN LEGAL COMMANDS FOR THE DIAGNOSTIC RUNTIME SERVICES
(SUPERVISOR). THIS SECTION LISTS THE COMMANDS AND GIVES A VERY
BRIEF DESCRIPTION OF THEM. THE XXDP+ USER'S MANUAL HAS MORE DETAILS.

COMMAND	EFFECT
START	START THE DIAGNOSTIC FROM AN INITIAL STATE
RESTART	START THE DIAGNOSTIC WITHOUT INITIALIZING
CONTINUE	CONTINUE AT TEST THAT WAS INTERRUPTED (AFTER ^C)
PROCEED	CONTINUE FROM AN ERROR HALT
EXIT	RETURN TO XXDP+ MONITOR (XXDP+ OPERATION ONLY)
ADD	ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE CONSIDERED TO BE ACTIVE AT START TIME
DROP	DEACTIVATE A UNIT
PRINT	PRINT STATISTICAL INFORMATION (IF IMPLEMENTED BY THE DIAGNOSTIC - SECTION 4.0)
DISPLAY	TYPE A LIST OF ALL DEVICE INFORMATION
FLAGS	TYPE THE STATE OF ALL FLAGS (SEE SECTION 2.3)
ZFLAGS	CLEAR ALL FLAGS (SEE SECTION 2.3)

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. SO
YOU MAY, FOR EXAMPLE, TYPE "STA" INSTEAD OF "START".

2.2 SWITCHES

THERE ARE SEVERAL SWITCHES WHICH ARE USED TO MODIFY SUPERVISOR OPERATION.
THESE SWITCHES ARE APPENDED TO THE LEGAL COMMANDS. ALL OF THE LEGAL
SWITCHES ARE TABULATED BELOW WITH A BRIEF DESCRIPTION OF EACH.
IN THE DESCRIPTIONS BELOW, A DECIMAL NUMBER IS DESIGNATED BY "DDDDD".

SWITCH	EFFECT
/TESTS:LIST	EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS, FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO BE RUN. ALL OTHER TESTS WILL NOT BE RUN.
/PASS:DDDDD	EXECUTE DDDDD PASSES (DDDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3.
/EOP:DDDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDDD = 1 TO 64000)
/UNITS:LIST	TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10-12 USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-63)

EXAMPLE OF SWITCH USAGE:

START/TESTS:1-5/PASS:1000/EOP:100

THE EFFECT OF THIS COMMAND WILL BE: 1) TESTS 1 THROUGH 5 WILL BE EXECUTED, 2) ALL UNITS WILL TESTED 1000 TIMES AND 3) THE END OF PASS MESSAGES WILL BE PRINTED AFTER EACH 100 PASSES ONLY. A SWITCH CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE "/TES:1-5" INSTEAD OF "/TESTS:1-5".

BELOW IS A TABLE THAT SPECIFIES WHICH SWITCHES CAN BE USED BY EACH COMMAND.

	TESTS	PASS	FLAGS	EOP	UNITS
START	X	X	X	X	X
RESTART	X	X	X	X	X
CONTINUE		X	X	X	
PROCEED			X		
DROP					X
ADD					X
PRINT					
DISPLAY					X
FLAGS					
ZFLAGS					
EXIT					

2.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

FLAG	EFFECT
HOE	HALT ON ERROR - CONTROL IS RETURNED TO RUNTIME SERVICES COMMAND MODE
LOE	LOOP ON ERROR
IER*	INHIBIT ALL ERROR REPORTS
IBE*	INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT)
IXE*	INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S)
PRI	DIRECT MESSAGES TO LINE PRINTER
PNT	PRINT TEST NUMBER AS TEST EXECUTES
BOE	"BELL" ON ERROR
UAM	UNATTENDED MODE (NO MANUAL INTERVENTION)
ISR	INHIBIT STATISTICAL REPORTS (DOES NOT APPLY TO DIAGNOSTICS WHICH DO NOT SUPPORT STATISTICAL REPORTING)

IDR	INHIBIT PROGRAM DROPPING OF UNITS
ADR	EXECUTE AUTODROP CODE
LCT	LOOP ON TEST
EVL	EXECUTE EVALUATION (ON DIAGNOSTICS WHICH HAVE EVALUATION SUPPORT)

*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, TO CAUSE THE PROGRAM TO LOOP ON ERROR, INHIBIT ERROR REPORTS AND TYPE A "BELL" ON ERROR, YOU MAY USE THE FOLLOWING STRING:

```
/FLAGS:LOE:IER:BOE
```

2.4 HARDWARE QUESTIONS

WHEN A DIAGNOSTIC IS STARTED, THE RUNTIME SERVICES WILL PROMPT THE USER FOR HARDWARE INFORMATION BY TYPING "CHANGE HW (L) ?" YOU MUST ANSWER "Y" AFTER A START COMMAND UNLESS THE HARDWARE INFORMATION HAS BEEN "PRELOADED" USING THE SETUP UTILITY (SEE CHAPTER 6 OF THE XXDP+ USER'S MANUAL). WHEN YOU ANSWER THIS QUESTION WITH A "Y", THE RUNTIME SERVICES WILL ASK FOR THE NUMBER OF UNITS (IN DECIMAL).

THE DPV-11 DATA COMM. LINK TEST PROGRAM WILL NOT USE MORE THAN ONE UNIT. FOR THE DPV-11 , THE HARDWARE INFORMATION REQUESTED WILL BE:

```
# UNITS (D) ? 1<CR>

UNIT 0
FULL DUPLEX OPERATION :  (L) Y ?
DPV CSR ADDRESS : (O)  160170 ?
INTERRUPT VECTOR ADDRESS:  (O)  300  ?
REMOTE NODE "ITEP" :  (L) Y ?
```

THE FULL DUPLEX QUESTION SHOULD BE ANSWERED "Y" WHEN USING FULL DUPLEX MODEMS,OR NULL MODEM, OR MODEM ELIMINATORS. ANSWER "N" FOR HALF DUPLEX MODEMS.

REMOTE NODE ITEP SHOULD BE ANSWERED "Y" IF OTHER NODE IS RUNNING SOFTWARE THAT IS USING "ITEP" FORMATS(I.E. COMM TURNARROUND SYSTEM OR PDP-11 RUNNING ITEP).

2.5 DATA COMM. LINK TEST COMMANDS

THE "DCLT>" COMMAND LEVEL FOLLOWS THE ANSWERING OF THE HARDWARE P-TABLE QUESTIONS. THESE COMMANDS CAN BE TYPED WHEN THE "DCLT> (A) ?" PROMPT IS PRINTED.

MESSAGE COMMANDS AVAILABLE:

YOU ONLY HAVE TO TYPE ENOUGH CHARACTERS TO UNIQUELY SPECIFY A COMMAND.

THE COMMAND LINE IS INTERPRETED FROM LEFT TO RIGHT. THEREFORE, IF A QUALIFIER ON THE COMMAND LINE IS RELATED OR EFFECTS A QUALIFIER TO THE LEFT ON THE COMMAND LINE, THE QUALIFIER FARTHEREST TO THE RIGHT TAKES PRECEDENCE SINCE IT IS INTERPRETED LAST. (I.E. IF /CHECK..... .../NOCHECK APPEAR ON THE SAME LINE, NOCHECK WILL BE INDICATED IN THE PARAMETERS WORD.)

REFER TO SECTION 6.0 FOR A DESCRIPTION OF THE DIFFERENT MODES OF OPERATION AND THE TYPES OF MESSAGES AVAILABLE.

2.5.1 MESSAGE COMMANDS

COMMAND	DESCRIPTION
CLEAR EXPECTLIST	ZEROES THE EXPECTLIST (00'S) AND THEN PUTS DEFAULT ITEP MSG IN SO NOT REALLY EMPTY
CLEAR TRANSMITLIST	FILLS TRANSMITLIST (000'S) AND THEN PUTS DEFAULT ITEP MSG IN SO NOT REALLY EMPTY
HELP ?	TYPES HELP INFO FOR OPERATOR
SET EXPECTMSG=TYPE/QUAL	DEFINE A MESSAGE TO BE PUT ON THE EXPECTED LIST

WHERE: "TYPE" IS:
=ONES
=ZEROES
=1ALT
=0ALT
=ITEP
=CCITT
=ALPHA
="A-Z,0-9,SPACES OR TABS IN QUOTES"

WHERE THE OPTIONAL "QUAL" IS:

/SIZE=NNN	MAKE THE MESSAGE "NNN" BYTES LONG. (DEFAULT VALUE IS SIZE OF MESSAGE SPEC'D BY OPERATOR OR DEFAULTS.)
/COPY=NN	COPY THIS MESSAGE INTO THE BUFFER "NN" TIMES (DEFAULT IS 0 = PUT THE MESSAGE IN ONLY ONCE)

NOTE: SET'S ADD MESSAGES TO THE LIST IN THE ORDER THEY'RE DEFINED. "NNN" IS A DECIMAL NUMBER. THE FIRST SET OVERWRITES THE DEFAULT ITEP MESSAGE PLACED THERE BY INITIALIZATION OR A "CLEAR" COMMAND

SEE SECTION 6.2 FOR A DESCRIPTION OF THE PRE-DEFINED MESSAGES THAT ARE AVAILABLE. (ZEROS,ONES ...)

SET	TRANSMITMSG=TYPE/QUAL	DEFINE A MESSAGE TO BE PUT ON THE TRANSMIT LIST (SEE DESCRIPT FOR SET EXP)
SHOW	EXPECTLIST	LISTS THE MESSAGE SIZE AND TYPE FOR THE MESSAGES IN THE EXPECT LIST
SHOW	TRANSMITLIST	LISTS THE MESSAGE SIZE AND TYPE FOR THE MESSAGES IN THE TRANSMIT LIST
PRINT		PRINTS THE EVENT LOG
DUMP	SSSSSS-EEFEEE/B	PRINTS THE CONTENTS OF THE MEMORY LOCATIONS BETWEEN OCTAL ADDRESSES "SSSSSS" AND "EEEEEE" WHERE "SSSSSS" IS THE START ADDRESS AND "-EEEEE" IS THE END ADDRESS.

WHERE "/B" IS OPTIONAL:
DEFAULT IS PRINT WORDS
"/B" CAUSES PRINT BYTES

IF "-EEEEEE" IS NOT SPECIFIED THEN THE CONTENTS OF "SSSSSS" IS PRINTED IN WORD FORMAT.
IS PRINTED IN WORD FORMAT.

NOTE: THE DUMP COMMAND IS USEFUL FOR EXAMINING MESSAGE DATA. STARTING ADDRESSES CAN BE FOUND BY LOOKING IN THE EVENT LOG.

2.5.2 RUN COMMAND

COMMAND	DESCRIPTION
RUN MODE=MTYPE/QUAL	STARTS DCLT EXECUTING IN THE MODE SPECIFIED

NOTE: MODE=ACTIVE IS NOT DEFAULT, A MODE=MTYPE MUST BE TYPED
----- EACH TIME A RUN IS TYPED

WHERE THE "MTYPE" IS ANY ONE OF THE FOLLOWING:

=ACTIVE	(FORCES /NOECHO ,NO LOOPING)
=PASSIVE	(FORCES NO LOOPING)
=RECEIVE	(FORCES /NOECHO ,NO LOOPING)
=LISTEN	(FORCES /NOECHO ,NO LOOPING, /NOCHECK)
=TRANSMIT	(FORCES /NOECHO ,NO LOOPING, /NOCHECK)
=TALK	(FORCES /NOECHO ,NO LOOPING, /NOCHECK)
=DOWNLINELOAD	(DOWN-LINE-LOADING IS NOT SUPPORTED FOR DPV-11 TO DPV-11 LINKS).
	(FORCING NO LOOPING MEANS IT MUST BE SPECIFIED AS A QUALIFIER ANY TIME ITS DESIRED, THERE IS NO DEFAULT)

AND OPTIONAL "QUAL" IS ANY COMBINATION OF THE FOLLOWING:

/CHECK/NOCHECK	ENABLES/DISABLES CHECKING OF RECEIVED DATA AGAINST THE EXPECTED DATA

NOTE: IF BOTH NODES IN ACTIVE AND "/NOCHECK" IS USED,
----- END-OF-PASS IS DEFINED AS RECEIVING 1 MESSAGE AND COMPLETING THE TRANSMIT LIST. WITH NO DATA CHECKING, THERE IS NO WAY FOR DCLT TO KNOW HOW MANY MESSAGES IT SHOULD EXPECT TO RECEIVE.

/STATUS/NOSTATUS	ENABLES/DISABLES PRINTING OF PROGRAM STATUS MESSAGES TO THE OPERATOR
/ECHO/NOECHO	ENABLES/DISABLES THE RETRANSMISSION OF THE DATA RECEIVED IN PASSIVE MODE. (IGNORED IN MODES OTHER THAN PASSIVE)
/MODEM/NOMODEM/	ENABLES/DISABLES THE REPORTING OF MODEM STATUS INTERRUPT CHANGES.
/LOOP=LTYPE	SPECIFIES WHICH, IF ANY, TYPE OF MAINTENANCE LOOPBACK IS BEING USED. (IGNORED IN MODES OTHER THAN ACTIVE) MUST BE SPECIFIED EACH TIME ELSE NO LOOP IS USED.

"LTYPE" IS:

=INTERNALTTL	LOOPS DATA INTERNAL TO USYNRT
=CABLE	USE THIS FOR TESTING WITH H3260 OR H3259 TURNARROUND CONNECTOR

NOTE: THIS SKIPS OVER THE CHECK
FOR MODEM READY WHEN DTR IS SET.

=LOCALMODEM NOT USED BY DPV
=REMOTEMODEM " "

/PASS=NN SPECIFIES NUMBER OF ITERATIONS TO MAKE BEFORE
END-OF-PASS. DEFAULT VALUE OF 1
WILL BE USED ON ANY RUN THAT A /PASS=N
IS NOT ADDED TO THE "RUN ..." COMMAND.
IF A "-1" IS TYPED, THEN THE PROGRAM
RUN UNTIL A ^C IS TYPED.

NOTE: SEE SECTION 6.1 FOR A DESCRIPTION
----- OF THE "RUN MODES" AND "LOOP MODES"

2.5.3 DEFAULTS

IF NO "SET'S" THEN THE DEFAULT IS SAME AS IF TYPED:
SET TRANSMITMSG=ITEP/SIZE=58/COPY=0
SET EXPECTMSG=ITEP/SIZE=58/COPY=0

THE DEFAULT COPY AND SIZE FOR EACH OF THE MESSAGE TYPES:
ONES - /SIZE=64/COPY=0
ZEROES - /SIZE=64/COPY=0
0ALT - /SIZE=64/COPY=0
1ALT - /SIZE=64/COPY=0
CCITT - /SIZE=64/COPY=0
ALPHA - /SIZE=65/COPY=0
ITEP - /SIZE=58/COPY=0
OPER. SPEC'D - /SIZE=LENGTH-OF-TEXT-TYPED-BETWEEN-QUOTES/COPY=0

FOR THE RUN COMMAND THE DEFAULTS ARE:

RUN MODE=ACTIVE/NOSTATUS/CHECK/NOECHO/NOMODEM PASS=1

NOTE: MODE=ACTIVE IS NOT DEFAULT, A MODE=MTYPE MUST BE TYPED
----- EACH TIME A RUN IS TYPED

IF THE DCLT PROGRAM IS RUN IN UNATTENDED MODE (UAM FLAG=1 OR CHAINED),
THE DEFAULTS ARE AS IF THESE SETUP AND RUN COMMANDS WERE TYPED:

SET TRANS=ITEP
SET EXPECT=ITEP
RUN MODE=ACTIVE/LOOP=INTERNAL/NOSTAT/NOECHO/NOMODEM/CHECK/PASS=1

OTHER NOTES:
---

^C	ALWAYS RETURNS YOU TO "DR>" (THE SUPERVISOR)
<CR>	IS SEEN AS A COMMAND TERMINATOR
"RUBOUT"	DELETE LAST CHAR. TYPED IN COMMAND STRING

2.6 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

1. BOOT XXDP+
2. GIVE THE DATE AND ANSWER THE LSI AND 50HZ (IF THERE IS A CLOCK) QUESTIONS
3. TYPE "R NAME", WHERE NAME IS THE NAME OF THE BIN OR BIC FILE FOR THIS PROGRAM
4. TYPE "START"
5. ANSWER THE "CHANGE HW" QUESTION WITH "Y"
6. ANSWER ALL THE HARDWARE QUESTION[illegible] THE NUMBER OF UNITS THAT CAN DCLT CAN USE IS ALWAYS '
7. AFTER THE "DCLT> (A) ?" PROMPT, TYPE "RUN MODE=ACTIVE<CR>"

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE DEFAULTS FOR FLAGS. THESE DEFAULTS ARE DESCRIBED IN SECTION 2.3.

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING the DEFAULT TRANSMIT AND EXPECTED MESSACES. THE DEFAULT PASS COUNT AND "R IN" QUALIFIERS ARE ALSO BEING USED. THESE DEFAULTS ARE DESCRIBED IN SECTION 2.5.3.

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

THERE ARE THREE LEVELS OF ERROR MESSAGES THAT MAY BE ISSUED BY A DIAGNOSTIC: GENERAL, BASIC AND EXTENDED. GENERAL ERROR MESSAGES ARE ALWAYS PRINTED UNLESS THE "IER" FLAG IS SET (SECTION 2.3). THE GENERAL ERROR MESSAGE IS OF THE FORM:

```
NAME  TYPE  NUMBER  ON UNIT NUMBER  TST NUMBER PC:XXXXXX
ERROR MESSAGE
```

,WHERE; NAME = DIAGNOSTIC NAME
TYPE = ERROR TYPE (SYS FATAL, DEV FATAL, HARD OR SOFT)
NUMBER = ERROR NUMBER
UNIT NUMBER = 0 - N (N IS LAST UNIT IN PTABLE)
TST NUMBER = TEST AND SUBTEST WHERE ERROR OCCURRED
PC:XXXXXX = ADDRESS OF ERROR MESSAGE CALL

BASIC ERROR MESSAGES ARE MESSAGES THAT CONTAIN SOME ADDITIONAL INFORMATION ABOUT THE ERROR. THESE ARE ALWAYS PRINTED UNLESS THE "IER" OR "IBE" FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL MESSAGE.

EXTENDED ERROR MESSAGES CONTAIN SUPPLEMENTARY ERROR INFORMATION SUCH AS REGISTER CONTENTS OR GOOD/BAD DATA. THESE ARE ALWAYS PRINTED UNLESS THE "IER", "IBE" OR "IXE" FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL ERROR MESSAGE AND ANY ASSOCIATED BASIC ERROR MESSAGES.

3.2 SPECIFIC ERROR MESSAGES

COMMAND LINE INTERPRETER ERRORS:

ERROR MESSAGE:	MEANING
?ILL CMD-BAD SYNTX?	A COMMAND WITH AN ILLEGAL CHAR WAS TYPED - RETYPE THE COMMAND. THE VALID COMMANDS AND THEIR SYNTAX ARE SHOWN IN SECTION 2.5.
?INCMPLTE CMD?	A REQUIRD PART OF A COMMAND WAS LEFT OUT.
?NUM TOO BIG?	THE VALUE OF A NUMERIC STRING IN THE COMMAND LINE WAS LARGER THAN 65535 OR 177777 OCTAL. (> 16 BITS).
?BAD RADIX?	A "8" OR "9" WAS TYPED WHEN AN OCTAL STRING WAS EXPECTED. PROBABLY OCCURRED WHEN TYPING A "DUMP" COMMAND WHERE OCTAL ADDRESSES ARE EXPECTED.

?"LOOP" VALID ONLY IN ACTIVE?	THE "/LOOP=.." SWITCH WAS TYPED IN A RUN COMMAND BUT THE MODE WAS NOT SET TO ACTIVE. MAINTENANCE LOOP IS ONLY POSSIBLE IF THE MODE OF OPERATION IS ACTIVE.
?"ECHO" VALID ONLY IN PASSIVE?	THE "/ECHO" SWITCH WAS TYPED IN A RUN COMMAND BUT THE MODE WAS NOT SET TO PASSIVE. ECHOING OF RECEIVED DATA IS ONLY POSSIBLE IF THE MODE OF OPERATION IS PASSIVE.
?ILL CHR- "A-Z,0-9,SP,TAB" ONLY?	A CHARACTER TYPED WITHIN QUOTES WHEN TRYING TO DEFINE THE CONTENTS OF A TRANSMIT OR EXPECT MESSAGE WAS NOT A "A-Z,0-9,SPACE OR TAB". RETYPE THE COMMAND WITH ONLY THESE CHARACTERS BETWEEN QUOTES.
?"SIZE=0" NOT VALID?	A MESSAGE ZERO BYTES LONG CAN NOT BE BUILT. RETYPE THE COMMAND WITH A "/SIZE=NNN". IF NO "/SIZE=" IS TYPED A DEFAULT SIZE WILL BE USED.

DCLT OR DEVICE ERROR MESSAGES:

CLOCK NOT FOUND	THIS MEANS THAT NO CLOCK WAS FOUND ON THE SYSTEM THE DIAG-NOSTIC WILL STILL RUN BUT NONE OF THE TIME OUT CONDITIONS WILL OCCUR
BAD CLOCK - PROGRAM WILL HANG ON "TIMEOUT"!	THIS MEANS THAT THE CLOCK FOUND ON THE SYSTEM DID NOT INTERRUPT WHEN ASKED TO DO A "TICK". THE PROGRAM W' L STILL RUN, BUT ANY OF THE PROGRAM THAT TIMES THE DEVICE WILL HANG IF THE DEVICE TIMES OUT. ALSO, THE EVENT LOG WILL CONTAIN A ZERO EVENT TIME FOR ALL EVENTS LOGGED.
MAX. CHAR. MSG COUNT EXCEEDED -	MSG. NOT BUILT ! THIS MEANS THAT THE TRANSMIT OR EXF CT BUFFER IS FULL. NO MORE MESSAGES CAN BE ADDED TO THAT BUFFER.
BUFFER FULL - MSG. NOT BUILT !	THIS MEANS THAT THE LAST MESSAGE YOU TRIED TO ADD TO EITHER THE TRANSMIT OR EXPECT BUFFER CAUSED THE TOTAL NUMBER

OF MESSAGES TO BE EXCEEDED. NO MORE MESSAGES CAN BE ADDED TO THAT BUFFER. THE LIMIT IS DETERMINED BY THE SIZE OF THE MESSAGE POINTER TABLE.

CHAR. COUNT EXCEEDS BUFF LIMIT - MSG TRUNCATED

THIS MEANS THAT THE LAST MESSAGE YOU TRIED TO ADD TO THE TRANSMIT OR EXPECT BUFFER CAUSED THE TOTAL CHAR. COUNT FOR THAT BUFFER TO EXCEED THE LIMIT. THE MESSAGE WAS TRUNCATED TO COMPLETELY FILL THE BUFFER. NO MORE MESSAGES CAN BE ADDED TO THAT BUFFER.

DATA COMPARISON DATA ERROR
BYTE # IN MSG=XXX EXPTD=YYY RECVD=ZZZ

XXX= OFFSET OF THAT BYTE FROM THE START OF THE COMPARE OR EXPECT MESSAGE.
YYY= THE CONTENTS OF THAT BYTE IN THE EXPECTED MESSAGE
ZZZ= THE CONTENTS OF THAT BYTE IN THE RECEIVED MESSAGE

UP TO FIVE OF THESE ERRORS WILL BE PRINTED PER MESSAGE COMPARED. ONLY THE FIRST FIVE MISMATCHES WILL BE INDIVIDUALLY REPORTED, BUT TOTAL NUMBER OF MISTMATCHES IS REPORTED BY ANOTHER ERROR.

PRINTING THE EVENT LOG AND USING THE DCLT "DUMP" COMMAND WILL ALLOW YOU TO FIND THE ADDRESS OF THE MESSAGE AND EXAMINE IT.

DATA COMPARISON DATA ERROR
TOTAL MISMATCHES IN MSG = NNN

THIS MEANS THAT WHEN THE MESSAGE RECEIVED WAS COMPARED AGAINST THE MESSAGE THAT WAS EXPECTED, SOME OF THE CHARS. WERE NOT THE SAME.

DATA COMPARISON LENGTH ERROR
COMPARE COUNT= XXX RECEIVE COUNT= ZZZ

XXX= NUMBER OF BYTES IN THE COMPARE MESSAGE
ZZZ= NUMBER OF BYTES IN THE RECEIVED MESSAGE
THIS MEANS THAT THE MESSAGE RECEIVED WAS A DIFFENT LENGTH THEN THE MESSAGE THAT WAS EXPECTED.

MODEM STATUS CHANGES FOR THIS PASS WERE..

HARD CHANGES=XXXXX GLITCHES=XXXXX

WHERE XXXXX IS A 5 DIGIT DECIMAL NUMBER
THIS MSG IS ONLY PRINTED IF NUMBER OF
EITHER HARD CHANGES OR GLITCHES IS
GREATER THAN 0. A HARD CHANGE IS ONE
WHERE THE DPV WAS ABLE TO LATCH UP A
DIFFERENCE IN THE MODEM STATUS. A
GLITCH IS WHEN A MODEM STATUS INTERRUPT
OCCURS BUT THE DPV CANNOT FIND A
DIFFERENCE IN STATUS BIT.

****
* NOTE * - IN THE FOLLOWING ERROR DESCRIPTIONS XXXXX
******** REFERS TO THE OCTAL CONTENTS OF THE DEVICE REGISTERS
SPECIFIED.

.ENDC

MASTER RESET DID NOT WORK
RXCSR TXCSR
XXXXXX XXXXXXX

THIS MEANS THAT AFTER A MASTER
RESET WAS ISSUED TO DPV THE
RXCSR REGSITER WAS NON ZERO.

NO CLEAR TO SEND FROM MODEM
RXCSR TXCSR
XXXXXXX XXXXXXX

WHEN REQUEST TO SEND SIGNAL
IS SET MODEM DOES NOT RESPOND
WITH CLEAR TO SEND

TIME OUT WAITING FOR RX OR TX TO COMPLETE
RXCSR TXCSR
XXXXXXX XXXXXXX

DEVICE TIMED OUT AFTER
WAITNG FOR A RECIEVER OR
TRANSMITTER TO COMPLETE

MODEM DID NOT RETURN MODEM READY
RXCSR TXCSR
XXXXXXX XXXXXXX

MODEM DID NOT RESPOND WITH MR.

CRC IN ERROR
RDSR RXCSR
XXXXXX XXXXXX

THE CRC ERROR BIT IS CLEAR
AT TIME THAT IT SHOULD BE SET

RECEIVER OVERRUN
RDSR RXCSR
XXXXXXX XXXXXXX

RECIEVER DETECTED AN OVERRUN

TIMED OUT IN START,STACK ACK SEQ
RDATA SDATA
XXXXXXX XXXXXXX

THIS ERROR OCCURS WHEN IN THE
DEVICE INIT ROUTINE A TIME OUT
OCCURS WHILE TRYING TO DO START
STACK ACK START UP SEQUENCE.
THE VALUES IN RDATA AND SDATA
INDICATE THE LAST CONTROL CHAR
RECIEVED(RDATA) AND TRANSMITTED
(SDATA).

4.0 PERFORMANCE AND PROGRESS REPORTS

DCLT USES IT'S OWN METHOD FOR DETERMINING AN "END OF PASS"
WHICH IS CALLED A "DCLT END OF PASS". THE NUMBER OF "DCLT PASSES"
TO BE RUN IS SPECIFIED BY THE "/PASS=XXX" SWITCH ON THE DCLT
RUN COMMAND. THE TOTAL NUMBER OF "DCLT ERRORS" IS REPORTED
WHEN " X NUMBER OF DCLT PASSES" ARE COMPLETED.

4.1 PRINTING OF EVENT LOG

SIGNIFICANT EVENTS OR CHECK-POINTS WILL BE LOGGED IN A
"CIRCULAR QUEUE" STORAGE AREA CALLED THE EVENT LOG. THE LAST
"N" EVENTS ARE KEPT LOGGED AND CAN BE LISTED ON THE OPERATORS
CONSOLE BY GIVING A "PRINT" COMMAND AT THE "DR>"(DIAGNOSTIC SUPERVISOR)
OR "DCLT>" (DCLT) LEVEL. THE EVENTS ARE PRINTED IN A "LAST-IN
FIRST-OUT" ORDER.

EVENT TIME IS TYPED OUT AS MMM:SS·TT (LIKE 254:36:07) WHERE MMM,SS,T
REPRESENT THE NUMBER OF MINUTES, SECONDS, CLOCK TICKS SINCE THE LAST
START OR RESTART. IT SHOULD BE NOTED THAT THE TIMES ARE
RELATIVE SINCE WHILE THE PROCESSOR IS RUNNING AT PRIORITY 7
THE CLOCK CAN'T INTERRUPT TO KEEP TIME. THIS IS THE CASE
WHILE THE PROGRAM IS FETCHING DCLT COMMANDS FROM THE OPERATOR.
IT SHOULD ALSO BE NOTED THAT THERE ARE ONLY 8 BITS AVALIABLE TO STORE
RELATIVE MINUTES SO "TIME" WILL WRAP TO 000:00:00 AFTER 256:59:59.

A START OR RESTART COMMAND AT THE "DR>" LEVEL INITIALIZES THE EVENT
LOG. THEREFORE IT IS WISE TO DO A "PRINT" AT THE "DR>" LEVEL
BEFORE GIVING A "START" OR "RESTART".

THE TYPES OF EVENTS KEPT IN THE EVENT LOG ARE:

TRANSMIT MESSAGE QUEUED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF MESSAGE,
        TOTAL NO. OF BYTES, MODEM STATUS AT THAT TIME.
TRANSMIT MESSAGE COMPLETED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF MESSAGE,
        TOTAL NO. OF BYTES, MODEM STATUS AT THAT TIME.
RECEIVE SPACE QUEUED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF MESSAGE,
        TOTAL NO. OF BYTES, MODEM STATUS AT THAT TIME.
RECEIVE MESSAGE COMPLETED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF MESSAGE,
        TOTAL NO. OF BYTES, MODEM STATUS AT THAT TIME.
DATA COMPARISON STARTED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF RECEIVED MSG.,
        TOTAL NO. OF BYTES IN RCV. MSG., TOTAL NO. OF BYTES
        IN EXPECT MSG.
DATA COMPARISON DATA ERROR:
        EVENT TIME, ADDRESS OF 1ST BYTE OF RECEIVED MSG.,
        TOTAL NO. OF BYTES IN RCV. MSG., TOTAL NO. OF
        COMPARISON FAILURES

DATA COMPARISON LENGTH ERROR:
EVENT TIME, ADDRESS OF 1ST BYTE OF RECEIVED MSG., TOTAL NO. OF BYTES IN RCV. MSG., TOTAL NO. OF BYTES IN EXPECT MSG.
DEVICE INIT AND SETUP:
EVENT TIME, MODE OF OPERATION, TYPE OF MAINTENANCE LOOP, "DCLT" PASS COUNT, "RUN" PARAMETERS
DEVICE ERROR:
EVENT TIME, DEVICE ERROR MESSAGE, CONTENTS OF TWO REGISTERS RELATING TO THE ERROR.
END OF PASS:
EVENT TIME, "DCLT" PASS COUNT, "DCLT" ERROR COUNT, AND THE "STRT-TO"(COUNT OF START TIME OUTS).

4.2 OPERATOR STATUS MESSAGES

THE "/STATUS, /NOSTATUS" QULAIFIERS FOR THE DCLT "RUN" COMMAND ENABLES/DISABLES THE PRINTING OF PROGRAM STATUS MESSAGES TO THE OPERATOR. THESE MESSAGES ARE INTENDED TO TELL THE OPERATOR WHAT THE DCLT PROGRAM IS CURRENTLY DOING. BELOW ARE THE MESSAGES THAT MIGHT BE PRINTED AND THEIR MEANING:

MESSAGE	MEANING
TXQ	DEVICE IS ABOUT START TRANSMITING A MESSAGE
TXC	TRANSMISSION OF MESSAGE COMPLETED
RXQ	DEVICE HAS QUEUED SPACE TO RECEIVE/ COMPLETED RECEIVE
ERR	DEVICE ERROR HAS OCCURRED
INI	DEVICE ABOUT TO BE INITIALIZED
MSC	ABNORMAL MODEM STATUS CHANGE
CMP	ABOUT TO DO DATA CHECK'NG OF RECVD VS. EXPTD DATA
CML	LENGTH ERROR OCCURRED DURING DATA COMPARISON
CMD	DATA ERROR OCCURRED DURING DATA COMPARISON
EOP	END OF PASS

5.0 DEVICE INFORMATION TABLES

THIS IS THE DEFAULT HARDWARE P-TABLE. THE VALUES AND
SIZE ARE USED AS A "TEMPLATE" FOR CREATING ACTUAL P-TABLE
ENTRIES AND THE DEFAULT VALUES PROVIDED FOR THE OPERATOR.
SEE SECTION 2.4 FOR AN EXAMPLE OF THE HARDWARE QUESTIONS.

THE NUMBERS IN BRACKETS (I.E. [10]) INDICATES THE OFFSET OF THE
WORD INTO THE HARDWARE P-TABLE. THE OFFSETS MUST MATCH THE P-TABLE
OFFSETS USED IN THE HARDWARE PARAMETER CODING SECTION WHERE THE
"GET PARAMETER" CALLS ARE USED TO FILL THE P-TABLE.

```
.WORD   1               ;[0] FULL OR HALF DUPLEX FLAG (BIT0=1 IF FULL)
.WORD   160170          ;[2] CSR ADDRESS
.WORD   300             ;[4] INTERRUPT VECTOR
.WORD   240             ;[6]  SPARE
.WORD   0               ;[10] SPARE
.WORD   0               ;[12] SPARE
.WORD   0               ;[14] REMOTE NODE "ITEP"
```

6.0 MODE AND MESSAGE DESCRIPTIONS

6.1 MODE DESCRIPTIONS

THE FOLLOWING MODE DESCRIPTIONS REFER TO MESSAGE LISTS BEING
TRANSMITTED AND RECIEVED BE AWARE THAT OTHER DATA IS ALSO
SENT WITH THE MESSAGE. MESSAGE FORMATS ARE..... 177(OCTAL)SYNC
CHARS;SOH CHAR(201),BYTE COUNT OF MSG.(2 BYTES);THREE BYTES OF
OCTAL 001;2 BYTES OF CRC;THE MESSAGE BODY;2BYTES OF CRC.
IF REMOTE NODE ITEP QUESTION IS ANSWERED Y THEN SYNC CHAR WILL
BE OCTAL 26 INSTEAD OF 226;NO SOH,BYTE COUNT OR HEADER DATA WILL
BE SENT. ON FULL DUPLEX LINKS A START STACK ACK SEQ WILL BE SENT
ONCE AT INIT TIME FOR EACH MODE. THIS SEQUENCE CONTAINS CONTROL
MESSAGES WHOSE FORMAT IS ..8 SYNC CHAR, 1BYTE ENQ(005),START
STACK OR ACK,3 BYTES OF 001, AND 2BYTES OF CRC.

TRANSMIT MODE

A LIST OF MESSAGES IS TRANSMITTED WITHOUT EXPECTING ANY DATA
TO BE RECEIVED.

RECEIVE MODE

SPACE IS QUEUED FOR THE DEVICE TO RECEIVE MESSAGES.
AFTER RECEIVING AN "EXPECTED" NUMBER OF MESSAGES, THE DATA RECEIVED
CAN BE COMPARED AGAINST A LIST OF "EXPECT TO RECEIVE" MESSAGES
IF DATA-CHECKING IS ENABLED.

PASSIVE MODE

THEN EVERY TIME A MESSAGE IS RECEIVED, A MESSAGE IS TRANSMITTED.
DATA CHECKING CAN BE DONE ON THE RECEIVED DATA.THE ''/ECHO, /NOECHO''
ENABLES/DISABLES THE RETRANSMISSION OF THE DATA RECEIVED.

ACTIVE MODE

A LIST OF MESSAGES IS TRANSMITTED AND MESSAGES ARE RECEIVED.
AFTER RECEIVING AN ''EXPECTED'' NUMBER OF MESSAGES, THE DATA RECEIVED
CAN BE COMPARED AGAINST A LIST OF ''EXPECT TO RECEIVE'' MESSAGES
IF DATA-CHECKING IS ENABLED.

NOTE: IF BOTH ENDS OF THE LINK ARE IN ACTIVE MODE, THEN THE
LINK MUST BE A FULL DUPLEX LINK.

DOWN-LINE-LOAD

DOWN-LINE-LOADING IS NOT SUPPORTED FOR DPV-11 TO DPV-11 LINKS.

TALK MODE

THE ''TALK'' END OF THE LINK TRANSMITS OPERATOR-TYPED MESSAGES
UNTIL A ''EXIT'' MESSAGE IS TYPED. AT THAT POINT, THE NODE GOES
INTO ''LISTEN'' MODE. AN ''EXIT MESSAGE'' IS A MESSAGE WHOSE FIRST
FOUR CHARACTERS ARE ''EXIT''. SINCE ONLY THE FIRST FOUR CHARACTERS
NEED TO BE ''EXIT'', MORE CHARACTERS CAN BE ADDED SO THAT A MESSAGE
MAY BE SENT AND THE MODE SWITCHED ALL AT ONCE. FOR EXAMPLE:

TLK> EXIT ALL OF THIS LINE IS SENT THEN MODE SWTICHED

LISTEN MODE

THE ''LISTEN'' END OF THE LINK PRINTS ALL OF THE MESSAGES
RECEIVED BY THE DEVICE ON THE OPERATOR'S CONSOLE. IF THE MESSAGE
RECEIVED IS AN ''EXIT'' MESSAGE, THEN THE NODE ENTERS ''TALK' MODE.
AN ''EXIT MESSAGE'' IS A MESSAGE WHOSE FIRST FOUR CHARACTERS ARE ''EXIT''.

MAINTENANCE "LOOP" MODES

REMEMBER THAT THE WHENEVER A "RUN" COMMAND IS TYPED, THE DEFAULT IS NO LOOPBACK AND THAT A LOOP MODE MUST BE SPECIFIED BY A "/LOOP=.." IF A LOOP MODE IS DESIRED.
LOOP MODES ARE ONLY VALID IF THE MODE TO RUN IS ACTIVE !

INTERNALTTL LOOPS DATA INTERNAL TO THE USYNRT

THE FOLLOWING TABLE SUMMARIZES THE MODES THAT CAN BE RUN TOGETHER WHEN THE DCLT PROGRAM IS RUNNING ON TWO PROCESSORS (ONE AT EACH END OF THE LINK):

HALF DUPLEX START	STATION A "HOST" NODE	"/LOOP" ALLOWED?	STATION B "REMOTE" NODE	DUPLEX
B	TALK	NO	LISTEN*, RECEIVE	HALF OR FULL
A	LISTEN	NO	TALK*, TRANSMIT	HALF OR FULL
B	TRANSMIT	NO	RECEIVE*, LISTEN	HALF OR FULL
A	RECEIVE	NO	TRANSMIT*, TALK	HALF OR FULL
A	PASSIVE	NO	ACTIVE*	HALF OR FULL
-NA-	ACTIVE	YES	ACTIVE*	FULL
B	ACTIVE	YES	PASSIVE*	HALF OR FULL
-NA-	DOWNLINELOAD	** DOWN-LINE-LOADING IS NOT SUPPORTED FOR DPV-11 TO DPV-11 LINKS.		

*= MOST LIKELY TO BE IN THAT MODE

NOTE: H/D START COLUMN INDICATES WHICH NODE TO START FIRST ON A HALF DUPLEX LINK

6.2 MESSAGE DESCRIPTIONS

NAME	DESCRIPTION
ZEROES	MESSAGE OF ALL 0'S (00000000,00000000,00000000,....)
ONES	MESSAGE OF ALL 1'S (11111111,11111111,11111111,....)
1ALT	MESSAGE OF ALTERNATING 1'S (10101010,10101010,....)
0ALT	MESSAGE OF ALTERNATING 0'S (01010101,01010101,....)
CCITT	"CCITT" 512-BIT (VS. 511 BITS) TEST PATTERN
ITEP	"INTERPROCESSOR TEST PROGRAM'S (ITEP)" MESSAGE 1(DP1:) (<177><177>/$A THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG.<15><12><001><177><177><177><177>)
ALPHA	ALPHA-NUMERICS (OR FUTURE COMM TURNAROUND MSG) (#$!" (AMPERSAND)'()**,-.0123456789:;<=>?@ABCDEFGHIJK LMNOPQRSTUVWXYZ/[\]^_%)

OPERATOR-SPECIFIED		''A-Z,0-9,SPACES,TABS'' THESE ARE THAT THE CHARACTERS THAT CAN BE TYPED BETWEEN QUOTATION MARKS (''..'') TO SPECIFIY A UNIQUE MESSAGE.

6.3 INTERFACING TO AN 'ITEP'' NODE

THESE ARE THE RULES WHEN USING ITEP/WITH A DUP TO TALK
TO A DPV USING DCLT.

ITEP NODE	DCLT NODE
ANSWER ALL QUESTION TO THE SET SWITCHES PROMPT.	ANSWER ALL QUESTIONS TO THE DCLT> PROMPT.
FOR ONE WAY OUT... SET SWITCHES TO 1221	CLEAR EXPECTED SET E=ITEP/S=56 RUN MODE=REC/STATUS/CHECK
NOTE: DUP ITEP SENDS ONLY 56 CHARS	
FOR ONE WAY IN.....	
SET SWITCHES TO 1222	RUN MODE=TRA/STATUS
FOR EXTERNAL LOOPBACK....	
SET SWITCHES.....1224	CLEAR EXPECTED SET EXP=ITEP/S=56 RUN MODE=ACTIVE/STATUS/CHECK
FOR INTERNAL LOOPBACK.....	
SET SWTICHES.....1260	CLEAR EXPECTED SET EXP=ITEP/S=56 RUN MODE=ACTIVE/STATUS/CHECK

NOTE: DO NOT USE SWITCH 8 WITH ITEP GOING TO DCLT
THE ONLY MESG. DCLT SUPPORTS IS MSG 1.
DCLT IGNORES CRC ERRORS WHEN REC DATA FROM ITEP
BECAUSE ITPE SENDS NO CRC.

6.4 TROUBLESHOOTING HINTS

LISTED BELOW ARE SOME SETUPS THAT COULD BE USED FOR ISOLATING FAULTS.
THESE ARE BY NO MEANS THE ONLY WAYS DCLT CAN BE USED !!!!!!!
DCLT IS MEANT TO BE A VERY FLEXIBLE TOOL! THIS SECTION IS MEANT TO

SEQ 0026

GIVE SOMEONE NOT TOO FAMILIAR WITH DCLT A PLACE TO START.

REMEMBER THAT THE PRINTING OF STATUS MESSAGES AND PRINTING OF THE EVENT LOG CAN PROVIDE A LOT OF INFORMATION ABOUT THE SEQUENCE OF EVENTS AND HOW THE DEVICE AND LINK ARE BEHAVING.

NOTE: IF BOTH NODES IN ACTIVE AND "/NOCHECK" IS USED,
----- END-OF-PASS IS DEFINED AS RECEIVING 1 MESSAGE
AND COMPLETING THE TRANSMIT LIST. WITH NO DATA
CHECKING, THERE IS NO WAY FOR DCLT TO KNOW HOW
MANY MESSAGES IT SHOULD EXPECT TO RECEIVE.

1.) INTERNAL LOOP AT EACH NODE

RUN EACH END OF THE LINK IN ACTIVE MODE WITH LOOP=INTERNAL.
TRANSMIT TWO OR THREE MESSAGES WITH NO DATA CHECKING.
STATUS PRINTING COULD BE TURNED OFF IF ON, BUT SEEING THE SEQUENCE
OF EVENTS MIGHT BE INFORMATIVE.

A POSSIBLE COMMMAND SEQUENCE IS:

```
C E
C T
SE T=ONES/S=20/C=2
R M=A/LO=I/NOCH/STAT
```

THIS GIVES YOU A IDEA IF THE COMM. DEVICE CAN EVEN TRANSMIT AND RECEIVE. ANY ERRORS REPORTED WILL PROBABLY BE DUE TO INCORRECT DEVICE ADDRESSES BEING USED OR A FAULTY DEVICE. CHECK ADDRESSES WITH "DISPLAY" AND RUN THE PREREQUISTE DIAGNOSTICS FOR THE COMM. DEVICE.

NOW TRY RUNNING EACH NODE THE SAME WAY WITH DATA CHECKING ENABLED.
A POSSIBLE COMMMAND SEQUENCE IS:

```
R M=A/LO=I/CH/PAS=3
```

IF A CABLE TURNAROUND CONNECTOR IS AVAILABLE, PUT IT ON THE END OF THE CABLE JUST BEFORE THE MODEM AND RUN IN ACTIVE MODE WITH NO LOOP.
POSSIBLE COMMAND SEQUENCE IS:

```
R M=A/CH/PAS=3
```

2.) TRANSMIT ON ONE NODE RECEIVE ON THE OTHER

NOW TRY TRANSMITTING FROM ONE END AND RECEIVING ON THE OTHER. MAYBE WITH NO DATA CHECKING AT FIRST TO ESTABLISH IF THE LINK IS WORKING. POSSIBLE COMMAND SEQUENCES ARE:

NODE A	NODE B
C E	C E

```
                C T                             C T
                SE T=1ALT/S=250                 SE E=1ALT/S=250
                R M=TR/PAS=3                    R M=R/NOCH/PAS=3

NOW TRY DOING DATA CHECKING ON THE MESSAGE(S) BEING
TRANSMITTED.  POSSIBLE COMMAND SEQUENCES ARE:

                R M=TR/PAS=3                    R M=R/CH/PAS=3

NOW RUN THRU THE SEQUENCE AGAIN WITH NODE A RECEIVING
AND NODE B RECEIVING.



3.)     ONE NODE ACTIVE THE OTHER NODE PASSIVE

NOW TRY RUNNING ONE NODE IN ACTIVE MODE WHILE THE OTHER
END RUNS IN PASSIVE. DATA CHECKING SHOULD BE TURNED OFF
IF THE MESSAGE LISTS ARE NOT THE SAME.
POSSIBLE COMMAND SEQUENCES ARE:

                NODE A                  NODE B
                ------                  ------
                C E                     C E
                C T                     C T
                SE T=CCITT/S=10/C=2     SE T=1ALT/S=20/C=2
                R M-ACT/NOCH/PAS=3      R M=P/NOCH/PAS=3


NOW USE DATA CHECKING WITH THE "EXPECT MESSAGE LISTS" SET
UP APPROPRIATELY.  ANOTHER VARIATION IS TO HAVE LARGE SIZE
MESSAGES ON ONE SIDE WITH SMALL MESSAGES ON THE OTHER.

THEN REVERSE THE SETUP SO THAT THE NODE RUNNING IN ACTIVE
IS RUNNING IN PASSIVE AND VICE VERSA.



4.) BOTH NODES ACTIVE

NOW BOTH NODES CAN BE RUN IN ACTIVE WITH DATA CHECKING ON.
STATUS PRINTING COULD BE TURNED OFF IF YOU'RE NOT INTERESTED
IN THEM.

                NODE A                  NODE B
                ------                  ------
                C E                     C E
                C T                     C T
                SE T=0ALT/S=10          SE E=0ALT/S=10
                SE T=CCITT/S=20         SE E=CCITT/S=20
                SE T=ALPHA/S=30         SE E=ALPHA/S=30
                SE E=ZERO/S=11          SE T=ZERO/S=11
                SE E=ONES/S=21          SE T=ONES/S=21
                SE E=ITEP/S=31          SE T=ITEP/S=31
                R M=A/CH/NOST/PAS=3     R M=A/CH/NOST/PAS=3
```

A VARIATION THAT CAN BE USED IS FOR ONE END TO SEND A LOT OF
SMALL MESSAGES AND THE OTHER TO SEND A FEW LARGE MESSAGES.
THE "END-OF-PASS" POINT WILL BE OUT OF SYNC BUT THIS IS NOT
A PROBLEM.

5.) TALK AND LISTEN MODES FOR COMMUNICATING

TALK AND LISTEN MODES ARE USEFUL IF THE OPERATORS WISH TO COMMUNICATE
WITH EACH OTHER. JUST SETUP A TIME THAT EACH WILL GO TO THEIR MODE,
TALK OR LISTEN, AND SEND MESSAGES OVER THE LINK. POSSIBLE COMMAND
SEQUENCES ARE.

```
R M=LIS/NOST          R M=TA/NOST
LIS>                  TLK>
```

&

```
                                .SBTTL  PROGRAM HEADER

002000                                  BGNMOD



                                ;++
                                ; THE PROGRAM HEADER IS THE INTERFACE BETWEEN
                                ; THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
                                ;--

002000                                  POINTER BGNRPT,BGNAU,BGNDU



                                        HEADER  CVCLH,A,0,1800.,0,#PRI07
002000
002000  103                                                     LSNAME::
002001  126                                                             .ASCII /C/
002002  103                                                             .ASCII /V/
002003  114                                                             .ASCII /C/
002004  110                                                             .ASCII /L/
002005  000                                                             .ASCII /H/
002006  000                                                             .BYTE   0
002007  000                                                             .BYTE   0
002010                                                                  .BYTE   0
002010  101                                                     LSREV::
002011                                                                  .ASCII  /A/
002011  060                                                     LSDEPO::
002012                                                                  .ASCII  /0/
002012  000000                                                  LSUNIT::
002014                                                                  .WORD   0
002014  003410                                                  LSTIML::
002016                                                                  .WORD   1800.
002016  033706                                                  LSHPCP::
002020                                                                  .WORD   LSHARD
002020  000000                                                  LSSPCP::
002022                                                                  .WORD   0
002022  002130                                                  LSHPTP::
002024                                                                  .WORD   LSHW
002024  000000                                                  LSSPTP::
002026                                                                  .WORD   0
002026  034164                                                  LSLADP::
002030                                                                  .WORD   LSLAST
002030  000000                                                  LSSTA::
002032                                                                  .WORD   0
002032  000000                                                  LSCO::
002034                                                                  .WORD   0
                                                                LSDTYP::
```

```
1342  002034  000000                        .WORD   0
1343  002036                        L$APT::
1344  002036  000000                        .WORD   0
1345  002040                        L$DTP::
1346  002040  002124                        .WORD   L$DISPATCH
1347  002042                        L$PRIO::
1348  002042  000340                        .WORD   #PRIO7
1349  002044                        L$ENVI::
1350  002044  000000                        .WORD   0
1351  002046                        L$EXP1::
1352  002046  000000                        .WORD   0
1353  002050                        L$MREV::
1354  002050     003                        .BYTE   C$REVISION
1355  002051     003                        .BYTE   C$EDIT
1356  002052                        L$EF::
1357  002052  000000                        .WORD   0
1358  002054  000000                        .WORD   0
1359  002056                        L$SPC::
1360  002056  000000                        .WORD   0
1361  002060                        L$DEVP::
1362  002060  011422                        .WORD   L$DVTYP
1363  002062                        L$REPP::
1364  002062  022720                        .WORD   L$RPT
1365  002064                        L$EXP4::
1366  002064  000000                        .WORD   0
1367  002066                        L$EXP5::
1368  002066  000000                        .WORD   0
1369  002070                        L$AUT::
1370  002070  023612                        .WORD   L$AU
1371  002072                        L$DUT::
1372  002072  023604                        .WORD   L$DU
1373  002074                        L$LUN::
1374  002074  000000                        .WORD   0
1375  002076                        L$DESP::
1376  002076  011432                        .WORD   L$DESC
1377  002100                        L$LOAD::
1378  002100  104035                        EMT     E$LOAD
1379  002102                        L$ETP::
1380  002102  000000                        .WORD   0
1381  002104                        L$ICP.::
1382  002104  022734                        .WORD   L$INIT
1383  002106                        L$CCP::
1384  002106  023562                        .WORD   L$CLEAN
1385  002110                        L$ACP::
1386  002110  023560                        .WORD   L$AUTO
1387  002112                        L$PRT::
1388  002112  022726                        .WORD   L$PROT
1389  002114                        L$TEST::
1390  002114  000000                        .WORD   0
1391  002116                        L$DLY::
1392  002116  000000                        .WORD   0
1393  002120                        L$HIME::
1394  002120  000000                        .WORD   0
1395
```

```
1396                                    .SBTTL  DISPATCH TABLE
1397
1398                                    ;++
1399                                    ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
1400                                    ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
1401                                    ;--
1402
1403  002122                                    DISPATCH 1
1404  002122  000001                                                          .WORD   1
1405  002124                                                         L$DISPATCH::
1406  002124  023620                                                          .WORD   T1
1407
```

```
                        .SBTTL  DEFAULT HARDWARE P-TABLE

                        ;++
                        ; THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
                        ; THE TEST-DEVICE PARAMETERS.  THE STRUCTURE OF THIS TABLE
                        ; IS IDENTICAL TO THE STRUCTURE OF THE HARDWARE P-TABLES,
                        ; AND IS USED AS A "TEMPLATE" FOR BUILDING THE P-TABLES.
                        ;--

002126                          BGNHW   DFPTBL
002126  000010                                                          .WORD   L10000-L$HW/2
002130                                                                  L$HW::
002130                                                                  DFPTBL::


                        ;INDEPENDENT SECTION
                        ;       THE NUMBERS IN BRACKETS ARE THE OFFSET VALUES USED IN THE PARAMETER
                        ;       CODING SECTION.

002130  000001                  .WORD   1              ;[0] FULL OR HALF DUPLEX FLAG (BIT0=1 IF FULL)


                        ;DEVICE DEPENDENT SECTION
                        ;       ADDING OR REMOVING WORDS FROM THIS TABLE EFFECTS THE "GET" CALLS IN
                        ;       THE HARDWARE PARAMTER CODING SECTION BY CHANGING "OFFSETS"

002132  160170                  .WORD   160170         ;[2] CSR ADDRESS
002134  000300                  .WORD   300            ;[4] INTERRUPT VECTOR
002136  000240                  .WORD   240            ;[6] INTERRUPT PRIORITY (5)
002140  000000                  .WORD   0              ;[10] SPARE
002142  000000                  .WORD   0              ;[12] SPARE
002144  000000                  .WORD   0              ;[14] OTHER NODE "ITEP"
002146  000000                  .WORD   0              ;[16] SPARE


002150                          ENDHW
002150                                                                  L10000:
```

```
                                .SBTTL  GLOBAL EQUATES SECTION


                                ;++
                                ; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
                                ; ARE USED IN MORE THAN ONE TEST.
                                ;--

002150                                  EQUALS
                                ;
                                ; BIT DIFINITIONS
                                ;
        100000                  BIT15== 100000
        040000                  BIT14== 40000
        020000                  BIT13== 20000
        010000                  BIT12== 10000
        004000                  BIT11== 4000
        002000                  BIT10== 2000
        001000                  BIT09== 1000
        000400                  BIT08== 400
        000200                  BIT07== 200
        000100                  BIT06== 100
        000040                  BIT05== 40
        000020                  BIT04== 20
        000010                  BIT03== 10
        000004                  BIT02== 4
        000002                  BIT01== 2
        000001                  BIT00== 1
                                ;
        001000                  BIT9==  BIT09
        000400                  BIT8==  BIT08
        000200                  BIT7==  BIT07
        000100                  BIT6==  BIT06
        000040                  BIT5==  BIT05
        000020                  BIT4==  BIT04
        000010                  BIT3==  BIT03
        000004                  BIT2==  BIT02
        000002                  BIT1==  BIT01
        000001                  BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOP TO PROGRAM COMMUNICATION
                                ;
        000040                  EF.START==      32.                     ; START COMMAND WAS ISSUED
        000037                  EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
        000036                  EF.CONTINUE=-   30.                     . CONTINUE COMMAND WAS ISSUED
        000035                  EF.NEW==        29.                     . A NEW PASS HAS BEEN STARTED
        000034                  EF.PWR==        28.                     . A POWER-FAIL/POWER-UP OCCURRED
                                ;
```

```
1503                                    ;
1504                                    ; PRIORITY LEVEL DEFINITIONS
1505                                    ;
1506            000340                  PRI07== 340
1507            000300                  PRI06== 300
1508            000240                  PRI05== 240
1509            000200                  PRI04== 200
1510            000140                  PRI03== 140
1511            000100                  PRI02== 100
1512            000040                  PPI01== 40
1513            000000                  PRI00== 0
1514                                    ;
1515                                    ;OPERATOR FLAG BITS
1516                                    ;
1517            000004                  EVL==         4
1518            000010                  LOT==        10
1519            000020                  ADR==        20
1520            000040                  IDU==        40
1521            000100                  ISR==       100
1522            000200                  UAM==       200
1523            000400                  BOE==       400
1524            001000                  PNT==      1000
1525            002000                  PRI==      2000
1526            004000                  IXE==      4000
1527            010000                  IBE==     10000
1528            020000                  IER==     20000
1529            040000                  LOE==     40000
1530            100000                  HOE==    100000
1531
```

```
1532                            ;***** INDEPENDENT EQUATES
1533
1534    001000                          BUFLIM=512.             ;MAX BUFFER SIZE IN BYTES
1535                                                            ;  APPLIES TO TX,RX AND CMP BUFFS
1536    000017                          MSGLIM=15.              ;MAX NO. OF MESSAGES PER BUFFER
1537                                                            ;  (FOR EACH INCREMENT (+1) TO MSGLIM,
1538                                                            ;   ADD 6 WORDS TO THE POINTER TABLE
1539                                                            ;   (PTRTAB:) SINCE THIS MEANS 2 MORE
1540                                                            ;   "POINTER" WORDS PER BUFFER.
1541
1542                            ;MODE OF OPERATION EQUATES
1543    000000                          REC=0                   ;RECEIVE MODE
1544    000001                          TRA=1                   ;TRANSMIT MODE
1545    000002                          PAS=2                   ;PASSIVE MODE
1546    000003                          ACT=3                   ;ACTIVE MODE
1547    000004                          DOW=4                   ;DOWN-LINE-LOAD MODE
1548    000005                          TAL=5                   ;TALK MODE
1549    000006                          LIS=6                   ;LISTEN MODE
1550                            ;MAINT LOOP TYPE EQUATES
1551    000000                          NONE=   0               ;NO LOOP
1552    000001                          TTL=    1               ;INTERNAL TTL
1553    000002                          CABLE=  2               ;CABLE LOOP
1554    000003                          MODLOC= 3               ;MODEM LOCAL
1555    000004                          MODREM= 4               ;MODEM REMOTE
1556    000005                          MOP=    5               ;MOP
1557
1558
1559                            ;CLOCK ENABLE VALUES TO BE LOADED IN CLK'S CSR
1560    000100                          LCLKEN= 100             ;L-CLOCK CSR VALUE TO ENABLE THE CLOCK
1561    000111                          PCLKEN= 111             ;P-CLOCK CSR VALUE TO ENABLE THE CLOCK
1562    001600                          PCLKCT= 1600            ;P-CLOCK COUNT SET REGISTER FOR COUNTER
1563
1564                            ;PARAM WORD EQUATES
1565
1566    000001                          STATB=  BIT0            ;OPERATOR AWAKE ASKED FOR
1567    000002                          DATCKB= BIT1            ;DATA CHECK BIT
1568    000004                          ECHOB=  BIT2            ;ECHO BIT
1569    000010                          MODCHK= BIT3            ;MODEM STATUS CHECK BIT
1570    000020                          CRCB=   BIT4            ;CRC CALCUALTE ASKED FOR
1571    000040                          PROTOB= BIT5            ;PROTOCOL PROCESSING ASKED FOR
1572
1573                            ;OPTION TYPE EQUATES
1574
1575
1576    000000                          DPV=    0       ;CODE FOR DPV CHAR MODE
1577
1578                            ;EVENT LOG MESSAGE TYPES (USED TO LOCATE EVENT DESCRIPTION IN EVENT TABLE
1579                            ;  AND DISPATCHING TO SEPERATE SECTIONS OF THE EVENT REPORTING SECTION)
1580    000000                          TXQ=    0               ;TRANSMIT MESSAGE QUEUED
1581    000002                          TXC=    2               ;TRANSMIT COMPLETE
1582    000004                          RXQ=    4               ;RECEIVE BUFFER QUEUED
1583    000006                          RXC=    6               ;RECEIVE COMPLETE
1584    000010                          DER=    10              ;DEVICE INFORMATION
1585    000012                          DVI=    12              ;DEVICE ABOUT TO INIT
1586    000014                          DCK=    14              ;DATA COMPARISON RESULTS
1587
```

```
1588    000016                  MSC=    16              ;MODEM STATUS CHANGE
1589
1590    000020                  DLE=    20              ;DATA COMPARISON LENGH ERROR
1591    000022                  DDE=    22              ;DATA COMPARISON DATA ERROR
1592    000024                  EOP=    24              ;END OF PASS
1593
1594                    ;EQUATES FOR FLAG WORD
1595
1596    000001                  ININT=  BIT0            ;INPUT INT. REC.
1597    000002                  OTINT=  BIT1            ;OUTPUT INT REC
1598    000004                  QRX=    BIT2            ;RX QUED /COMPL
1599    000010                  QTX=    BIT3            ;TX QUED/COMPL
1600    000100                  ERX=    BIT6            ;EXPECT TO GET A RX COMPLED
1601    000200                  ETX=    BIT7            ;EXPECT TO GET A TX COMPLETED
1602
1603
1604    000020                  TXM=    BIT4            ;INDICATES TO TX INTERRUPT ROUTINE
1605                                                    ;THAT IT IS TIME TO TRANSMIT BODY OF MSG.
1606    000040                  RXM=    BIT5            ;INDICATES TO RX INTERUPPT ROUTINE
1607                                                    ;THAT IT IS TIME TO REC MSG BODY
1608    000400                  BCC=    BIT8            ;TIME FOR CRC CHECK.
1609
1610    001000                  PAD=    BIT9            ;INDICATES THAT PAD MUST BE SENT
1611
1612    002000                  INOVR=  BIT10           ;INIT OVER
1613
1614    004000                  FIRST=  BIT11           ;FIRST  TIME FOR CTS
1615
1616                    ; SPECIAL CLI CODES FOR "CHAR" ARGUMENT IN CLI CALLS
1617                    ;  (COMMAND LINE INTERPRETER DFFINITIONS)
1618    000000                  CLIERR= 0
1619    000001                  CLIEXI= 1
1620    000002                  CLIBR=  2
1621    000003                  CLIBIF= 3
1622    000004                  CLISPA= 4
1623    000005                  CLINUM= 5
1624    000006                  CLIALP= 6
1625    000007                  CLIALN= 7
1626    000010                  CLIOCT= 8.
1627    000011                  CL!DEC= 9.
1628    000012                  CLISTR= 10.
1629
1630                    ; DEFS FOR COMMAND LINE INTERPRETATION ACTION VALUES
1631    000000                  NULL=0
1632    000001                  CLEAR=1
1633    000002                  SHOW=2
1634    000003                  CHECK=3
1635    000004                  RUN=4
1636    000005                  HLP=5
1637    000006                  CSHEXP=6
1638    000007                  CSHTRN=7
1639    000010                  SETEXP=10
1640    000011                  SETTRN=11
1641    000012                  SIZE=12
1642    000013                  QCOPY=13
1643    000014                  NUM=14
```

```
1644            000015                  OPRMSG=15
1645            000016                  STATUS=16
1646            000017                  ENDQQ=17
1647            000020                  CMSG0=20
1648            000021                  CMSG1=21
1649            000022                  CMSG2=22
1650            000023                  CMSG3=23
1651            000024                  CMSG4=24
1652            000025                  CMSG5=25
1653            000026                  CMSG6=26
1654            000027                  ATVMOD=27
1655            000030                  PASMOD=30
1656            000031                  RECMOD=31
1657            000032                  LISMOD=32
1658            000033                  DLLMOD=33
1659            000034                  TRAMOD=34
1660            000035                  TALMOD=35
1661            000036                  NO=36
1662            000037                  ECHO=37
1663            000040                  CRC=40
1664            000041                  PROTO=41
1665            000042                  PASC=42
1666            000043                  MOP=43
1667            000044                  TTLLOP=44
1668            000045                  CBLLOP=45
1659            000046                  LMDLOP=46
1670            000047                  RMDLOP=47
1671            000050                  NOTNUF=50
1672            000051                  BADCHR=51
1673            000052                  DMPS=52
1674            000053                  DMPE=53
1675            000054                  DMPQ=54
1676            000055                  PRNT=55
1677            000056                  MOSC=56
1678
1679
1680                                ;***** DEVICE DEPENDENT EQUATES
1681                                ; MODEM SIGNAL BIT DEFINITONS
1682                                ;       IF SIGNAL AVAILABLE IN DEVICE, EQUATE NAME TO BIT POSITION,
1683                                ;       ELSE EQUATE IT TO = 0
1684
1685            020000                      CTS=    BIT13           ;CLEAR TO SEND (CIRCUIT CB)
1686            001000                      DSR=    BIT9            ;DATA SET READY (CIRCUIT CC)
1687            010000                      DCD=    BIT12           ;DATA CARRIER DETECT (CIRCUIT CF)
1688            000004                      RTS=    BIT2            ;REQUEST TO SEND (CIRCUIT CA)
1689            040000                      RI=     BIT14           ;RING INDICATOR (CIRCUIT CE)
1690            000040                      SQD=    BIT5            ;SIGNAL QUALITY DETECT (CIRCUIT CG)
1691            000040                      TM=     BIT5            ;MODEM IN TEST MODE (RS 449 ONLY CIRCUIT TM)
1692
1693
1694
1695                                ; DEVICE SIGNALS
1696            000002                      DTR=    BIT1            ;DATA TERMINAL READY
1697            000020                      RXENA=  BIT4            ;RECEIVER ENABLE
1698            000040                      DSITEN= BIT5            ;DATA SET CHANGE ENABLE
1699            000100                      RINTEN= BIT6            ;REC INT. ENABLE
```

```
1700            000200                  RDATRY= BIT7            ;REC DATA READY
1701            002000                  RSTARY= BIT10           ;REC STATUS READY
1702            004000                  RXACT=  BIT11           ;REC ACTIVE
1703            000001                  RESET=  BIT0            ;MASTER RESET
1704            000002                  TXACT=  BIT1            ;TX ACTIVE
1705            000004                  TBMT=   BIT2            ;TX BUFFER EMPTY
1706            000010                  TTLL=   BIT3            ;TTL LOOP BIT
1707            000020                  TXENA=  BIT4            ;TX ENABLE
1708            000100                  TINTEN= BIT6            ;TX INT ENABLE
1709            000400                  TSOM=   BIT8            ;TX START OF MSG.
1710            001000                  TEOM=   BIT9            ;TX END OF MSG.
1711            100000                  TERR=   BIT15           ;TX ERROR
1712            100000                  RERR=   BIT15           ;REC OVER RUN
1713            000226                  SYN=    226             ;SYNC WORD
1714
```

```
                                                    N  3
 1715                                .SBTTL  GLOBAL DATA SECTION
 1716                                .SBTTL          DEFAULT MESSAGE DEFINITIONS AND TABLES
 1717
 1718                                ;++
 1719                                ; THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
 1720                                ; IN MORE THAN ONE TEST.
 1721                                ;--
 1722
 1723                                ;MESSAGE BYTE COUNT TABLE
 1724
 1725  002150                        DMSGCT:
 1726  002150  000001               MSG0C:  .WORD   EMSG0-MSG0      ;BYTE COUNT OF MESSAGE #0
 1727  002152  000001               MSG1C:  .WORD   EMSG1-MSG1      ;BYTE COUNT OF MESSAGE #1
 1728  002154  000001               MSG2C:  .WORD   EMSG2-MSG2      ;BYTE COUNT OF MESSAGE #2
 1729  002156  000001               MSG3C:  .WORD   EMSG3-MSG3      ;BYTE COUNT OF MESSAGE #3
 1730  002160  000100               MSG4C:  .WORD   EMSG4-MSG4      ;BYTE COUNT OF MESSAGE #4
 1731  002162  000072               MSG5C:  .WORD   EMSG5-MSG5      ;BYTE COUNT OF MESSAGE #5
 1732  002164  000101               MSG6C:  .WORD   EMSG6-MSG6      ;BYTE COUNT OF MESSAGE #6
 1733  002166  000000               OPCNT:  .WORD   0               ;BYTE COUNT FOR OPERATOR SPEC'D MSG.
 1734  002170  000001               MSG8C:  .WORD   EMSG8-MSG8      ;BYTE COUNT OF RECEIVE BUFFER FILL PATTERN
 1735
 1736                                ;MESSAGE ADDRESS TABLE
 1737
 1738  002172                        DMSGAD:
 1739  002172  002214                       MSG0                    ;ADDRESS OF MESSAGE #0
 1740  002174  002215                       MSG1                    ;ADDRESS OF MESSAGE #1
 1741  002176  002216                       MSG2                    ;ADDRESS OF MESSAGE #2
 1742  002200  002217                       MSG3                    ;ADDRESS OF MESSAGE #3
 1743  002202  002220                       MSG4                    ;ADDRESS OF MESSAGE #4
 1744  002204  002320                       MSG5                    ;ADDRESS OF MESSAGE #5
 1745  002206  002412                       MSG6                    ;ADDRESS OF MESSAGE #6
 1746  002210  002520                       OPBUF                   ;ADDRESS OF OPERATOR SPEC'D MSG.
 1747  002212  002642                       MSG8                    ;ADDRESS OF RECEIVE BUFFER FILL PATTERN
 1748
 1749  002214     000                MSG0:   .BYTE   000             ;MESSAGE OF ALL 0'S
 1750  002215                        EMSG0:
 1751  002215     377                MSG1:   .BYTE   377             ;MESSAGE OF ALL 1'S
 1752  002216                        EMSG1:
 1753  002216     252                MSG2:   .BYTE   252             ;MESSAGE OF ALTERNATING 1'S
 1754  002217                        EMSG2:
 1755  002217     125                MSG3:   .BYTE   125             ;MESSAGE OF ALTERNATING 0'S
 1756  002220                        EMSG3:
 1757  002220                        MSG4:                           ;"CCITT" 512-BIT (VS. 511 BITS) TEST PATTERN
 1758  002220  177603  157427  031011        .WORD   177603,157427,031011,047321,163715,105221,143325,142304
 1759  002226  047321  163715  105221
 1760  002234  143325  142304
 1761  002240  040041  014116  052606        .WORD   040041,014116,052606,172334,105025,123754,111337,111523
 1762  002246  172334  105025  123754
 1763  002254  111337  111523
 1764  002260  030030  145064  137642        .WORD   030030,145064,137642,143531,063617,135075,066730,026575
 1765  002266  143531  063617  135075
 1766  002274  066730  026575
 1767  002300  052012  053627  070071        .WORD   052012,053627,070071,151172,165044,031605,166632,016741
 1768  002306  151172  165044  031605
 1769  002314  166632  016741
 1770  002320                        EMSG4:
```

```
 1771  002320                          MSG5:                           ;"INTERPROCESSOR TEST PROGRAM'S (ITEP)" MESSAGE
 1772                                                                  ; #1, (DP1:)
 1773  002320  077577  040444  052040          .ASCII  <177><177>/$A THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG./
 1774  002326  042510  050440  044525
 1775  002334  045503  041040  047522
 1776  002342  047127  043040  054117
 1777  002350  045040  046525  042520
 1778  002356  020104  053117  051105
 1779  002364  052040  042510  046040
 1780  002372  055101  020131  047504
 1781  002400  027107
 1782  002402  005015  077401  077577          .ASCIZ  <15><12><001><177><177><177><177>
 1783  002410  000177
 1784  002412                          EMSG5:
 1785  002412                          MSG6:                           ;ALPHA-NUMERICS (OR FUTURE COMM TURNAROUND MSG)
 1786  002412  022043  021041  023040          .ASCII  /#$!" &'()**,-.0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ/
 1787  002420  024047  025051  026053
 1788  002426  027055  030460  031462
 1789  002434  032464  033466  034470
 1790  002442  035472  036474  037476
 1791  002450  040500  041502  042504
 1792  002456  043506  044510  045512
 1793  002464  046514  047516  050520
 1794  002472  051522  052524  053526
 1795  002500  054530     132
 1796  002503     057  056133  057135          .ASCIZ  ?/[\]^_%?
 1797  002510  022537     000
 1798  002513                          EMSG6:
 1799          002514                          .EVEN
 1800
 1801                                  ; ***************************************************************************
 1802                                  ;THESE THREE STORAGE AREAS MUST NOT BE SEPERATED !!!
 1803
 1804  002514  047045  040445         OPBFPT: .ASCII  /%N%A/
 1805  002520  000122                  OPBUF:  .BLKB   82.              ;BUFFER FOR OPERATOR SPEC'D MESSAGES
 1806  002642                          OPEND:
 1807
 1808                                  ; THE ABOVE THREE LINES MUST BE KEPT TOGETHER
 1809                                  ; ***************************************************************************
 1810
 1811  002642     033                  MSG8:   .BYTE   33              ;RECEIVE BUFFER FILL PATTERN
 1812  002643                          EMSG8:
 1813          002644                          .EVEN
```

```
                          ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
                          ; THE FOLLWING IS THE AREA USED TO TRANSMIT AND REC THE ;
                          ; HEADER MSGS. AND THE START,STACK ACK SEQUENCES.        ;
                          ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
002644     000            HDMSG:  .BYTE 0         ;FILLER
002645     201                    .BYTE 201       ;SOH CHAR
002646  000000            HDMCC:  .WORD   0       ;CHAR COUNT GOES HERE
002650     001                    .BYTE   1       ;RESPONSE NUMBER
002651     001                    .BYTE   1       ;MSG. NUMBER
002652     001                    .BYTE   1       ;ADDR TO.
002653                    HSMSE:
        002654                    .EVEN
002654  000006            HDMC:   .WORD   6

002656     000            RHDMSG: .BYTE 0
002657     201                    .BYTE 201       ;SOH GOES IN HERE
002660  000000            RHDMCC: .WORD           ;BYTE COUNT GOES HERE
002662     001                    .BYTE   1       ;RESP NUM
002663     001                    .BYTE   1       ;MSG NUM
002664     001                    .BYTE   1       ;ADDR TO.
        002666                    .EVEN
```

```
  18:6
  1837
  1838  002666  000122                    CMDBUF: .BLKB   82.              ;BUFFER FOR OPERATOR COMMANDS
  1839  003010  000000                    KEYWD1: .WORD   0                ;THIS LOC WILL =1 IF CLEAR TYPED, 2 FOR SHOW,
  1840                                                                     ; A 4 IF RUN WAS TYPED, 5 IF HELP WAS TYPED
  1841  003012  000000                    QUALFG: .WORD   0                ;THIS LOC HOLDS QUALIFIER VALUE (SIZE OR COPY)
  1842  003014  000000                    QUALVL: .WORD   0
  1843  003016  012077                    HLPTAB: .WORD   HLP1
  1844  003020  012112                            .WORD   HLP2
  1845  003022  012220                            .WORD   HLP3
  1846  003024  012305                            .WORD   HLP4
  1847  003026  012364                            .WORD   HLP4A
  1848  003030  012442                            .WORD   HLP5
  1849  003032  012532                            .WORD   HLP6
  1850  003034                            HLPEND:
  1851  003034  012665  012674  012701    SHTYTB: .WORD   SHTYP0,SHTYP1,SHTYP2,SHTYP3,SHTYP4,SHTYP5,SHTYP6,SHTYP7
  1852  003042  012706  012713  012721
  1853  003050  012726  012734
  1854
  1855                                    ; THE LIST OF BYTES BELOW ARE THE FIRST BYTES OF THE PREDEFINED MESSAGES
  1856                                    ;  USED TO "SHOW" THE TRANSMIT AND COMPARE BUFFER CONTENTS.
  1857
  1858  003054     000     377     252    SHTAB:  .BYTE   0,377,252,125,203,177,043
  1859  003057     125     203     177
  1860  003062     043
  1861  003063                            SHTEND:
  1862          003064                            .EVEN
  1863
  1864  003064  012745                    MODES:  .WORD   M00      ;ADDRESSES OF MODE TYPES IN ASCII
  1865  003066  012755                            .WORD   M01
  1866  003070  012766                            .WORD   M02
  1867  003072  012776                            .WORD   M03
  1868  003074  013005                            .WORD   M04
  1869  003076  013022                            .WORD   M05
  1870  003100  013027                            .WORD   M06
  1871
  1872  003102  013036                    LOOPS:  .WORD   LP0      ;ADDRESSES OF LOOP TYPES IN ASCII
  1873  003104  013046                            .WORD   LP1
  1874  003106  013057                            .WORD   LP2
  1875  003110  013065                            .WORD   LP3
  1876  003112  013100                            .WORD   LP4
  1877
  1878                                    .COMMAND LINE TRAVERSE LOCATIONS (USED BY "PSTRV")
  1879
  1880  003114  000000                    PSBUFA: .WORD   0                ;LOC  TO HOLD ADDR. OF CMD LINE BUFFER
  1881  003116  000000                    PSTREE: .WORD   0                ;LOC. TO HOLD ADDR. OF PARSING TREE
  1882  003120  000000                    PSACT:  .WORD   0                ;LOC. TO HOLD ADDR. OF ACTION ROUTINE
  1883  003122  000000                    PSCNT:  .WORD   0                ;LOC. TO BE A COUNTER LOCATION
  1884  003124  000000                    PSNUM:  .WORD   0                ;LOC. TO HOLD NUMERIC VALUE FROM PARSE
  1885  003126  000000                    PSRADX: .WORD   0                ;LOC. TO HOLD RADIX USED(LO) AND +/-(HI BYTE)
  1886  003130     000                    PSNNUF: .BYTE   0                ;RETURN =0 IF ENOUGH OF COMMAND FOUND
  1887  003131     000                    PSGDBD: .BYTE   0                ;RETURN CODE 0 IF NO ERROR FOUND
  1888
```

```
                                .SBTTL          MESSAGE BUFFERS AND POINTER TABLES

003132  001000  TXBUF:  .BLKB   BUFLIM  ;TRANSMITTER BUFFERS
004132  001000  RXBUF:  .BLKB   BUFLIM  ;RECEIVER BUFFERS
005132  001000  CMPBUF: .BLKB   BUFLIM  ;COMPARISON BUFFERS
006132  000036  PTRTAB: .BLKW   MSGLIM*2        ;TABLE FOR MESSAGE ADDRS. & BYTE COUNTS
006210  000036  PTR13:  .BLKW   MSGLIM*2
006322  000036  PTR23:  .BLKW   MSGLIM*2
0064'6          PTREND:                 ; END OF MSG. PTR. TABLE

006416  000002          .BLKW   2       ;FILLER FOR OVERFLOW OF RX POINTER TABLE

006422  000000  RXPTR:  .WORD   0       ;RECEIVER MESSAGE POINTER
006424  000000  TXPTR:  .WORD   0       ;TRANMITTER BUFFER POINTER
006426  000000  CMPPTR: .WORD   0       ;COMPARISON BUFFER POINTER
006430  000000  CMPTOT: .WORD   0       ;CMP MSG TOTAL
006432  000000  CTOTCC: .WORD   0       ;COMPARE BUFFER CHAR. COUNT
006434  000000  CCURAD: .WORD   0       ;CURRENT ADDR OF CMP BUFF TO ADD AT

006436  000000  DVTXA:  .WORD   0       ;DEVICE TX ADDR
006440  000000  DVTCC:  .WORD   0       ;DEVICE TX CHAR COUNT
006442  000000  DVTCT:  .WORD   0       ;DEVICE TX MESSAGE COUNT
006444  000000  TXMTOT: .WORD   0       ;TX MSG TOTAL
006446  000000  TTOTCC: .WORD   0       ;TX BUFFER CHAR. COUNT
006450  000000  TCURAD: .WORD   0       ;CURRENT ADDR. OF TX BUFF TO ADD AT

006452  000000  DVRXA:  .WORD   0       ;DEVICE RX ADDR
006454  000000  DVRCC:  .WORD   0       ;DEVICE RX CHAR COUNT
006456  000000  DVRCT:  .WORD   0       ;DEVICE RX MESSAGE COUNT
006460  000000  RXMTOT: .WORD   0       ;RX MSG TOTAL

006462  000000  LNCNT:  .WORD   0       ;NUMBER OF OPERATOR AWAKE MSGS
006464  000000  OPVAR:  .WORD   0       ;OPTIONAL VARIABLE LOCATION
006466  000000  PSCNT:  .WORD   0       ;PASS COUNTER
006470  000000  ERRCNT: .WORD   0       ;ERROR COUNTER
006472  000000  STADD:  .WORD   0       ;START ADDR.
006474  000000  ENADD:  .WORD   0       ;END ADDR. FOR DUMP
006476  000000  BYTBIT: .WORD   0       ;BYTE BIT FOR DUMP ROUTINE

                ;OTHER MESSSAGE RELATED STORAGE LOCATIONS

006500  000000  MSGTYP: .WORD   0       ;TYPE OF DATA 0=0'S,1=1'S,2=10'S,3-01'S
                                        ;4=CCITT,5=QUICK FOX,6=ALPHA/NUM,7=OPER
006502  000000  CURCC:  .WORD   0       ;TX/RX/CMP CHAR COUNT
006504  000000  CPTRR:  .WORD   0       ;CURRENT RX POINTER
006506  000000  CPTR:   .WORD   0       ;CURRENT POINTER
006510  000000  CURADD: .WORD   0       ;CURRENT TX/RX/CMP START ADDD
006512  000000  TOTCC:  .WORD   0       ;TOTAL CHAR COUNT NOT MORE THEN 'BUFLIM'
006514  000000  OFSET:  .WORD   0       ;OFFSET COUNT
006516  000000  TEMP:   .WORD   0       ;TEMPORARY LOCATIONS (USED A LOT)
006520  000000  TEMP1:  .WORD   0
006522  000000  TEMP2:  .WORD   0
006524  000000  TEMP3:  .WORD   0
006526  000000  TEMP4:  .WORD   0
006530  000000  TEMP5:  .WORD   0
006532  000000  CONOTM  .WORD   0       ;CONTROL OUT ERROR MSG. ADDRESS
```

```
 1945  006534  000000                CONTIN: .WORD   0       ;WORD FOR CONTROL IN
 1946  006536     000                GOOD:   .BYTE   0       ;BYTE TO HOLD EXPECTED MESSAGE DATA BYTE FOR ERR REPORT
 1947  006537     000                BAD:    .BYTE   0       ;BYTE TO HOLD RECEIVED MESSAGE DATA BYTE FOR ERR REPORT
 1948
```

```
1949                                ;MORE INDEPENDENT CODE STORAGE LOCATIONS
1950
1951  006540  000000                LOGUNT: .WORD   0       ;LOC. TO HOLD LOGICAL UNIT NUMBER
1952  006542  000000                PCADD:  .WORD   0       ;LOC. HOLD PC OF CALLING ROUTINE
1953  006544  000000                RESFLG: .WORD   0       ;LOC TO HOLD FLAG (-1) THAT A RESTART WAS GIVEN
1954  006546  000000                MODTYP: .WORD   0       ;DCLT MODE OF OPERATION TYPE
1955                                                        ;  (0=REC-ONLY, 1=TX-ONLY, 2=PASSIVE-LOOPBK,
1956                                                        ;   3=ACTIVE LOOPBK, 4=DOWN L.L., 5=TALK, 6=LISTEN)
1957  006550  000000                MLTYP:  .WORD   0       ;MAINTENANCE LOOP TYPE (0=NONE, 1=INTERNAL TTL,
1958                                                        ;  2=CABLE, 3=MODEM-ANALOG LOOPBK (LOCAL),
1959                                                        ;  4=MODEM-DIGITAL LOOPBK (REMOTE), 5=MOP)
1960  006552  000000                FHDPLX: .WORD   0       ;FULL OR HALF DUPLEX FLAG (1=FULL FROM P-TABLE)
1961  006554  000002                PARAM:  .WORD   2       ;PROGRAM PARAMETERS
1962                                                        ; BIT0= STATUS MSGS TO OPR PRINTED (1=YES)
1963                                                        ; BIT1= DATA CHECKING DONE ON RCVD MSGS (1=YES)
1964                                                        ; BIT2= ECHO (TRANSMIT) RCV'D MSG.(PASSIVE)(1=YES)
1965                                                        ; BIT3= MODEM STATUS CHECK (1=YES)
1966                                                        ; BIT4= CRC CALC./CHECK DONE (1=YES)
1967                                                        ; BIT5= PROTOCOL EMULATION (1=YES)
1968                                                        ; BIT6= SPARE
1969  006556  000000                RPASS:  .WORD   0       ;PASS NUMBER FROM RUN COMMAND
1970  006560  000000                FLAG:   .WORD   0       ;DEVICE FLAG WORD
1971
1972                                ;MODE DISPATCH TABLE
1973  006562  027250                MODE:   .WORD   RXONLY  ;RX ONLY DISPATCH
1974  006564  027302                        .WORD   TXONLY  ;TX ONLY DISPATCH
1975  006566  027342                        .WORD   PLCK    ;PASSIVE LOOP BACK DISP
1976  006570  027376                        .WORD   ALCK    ;ACTIVE LOOP BACK DISP
1977  006572  030556                        .WORD   DLL     ;DOWN LINE LOAD DISP
1978  006574  030602                        .WORD   TALCK   ;TALK MODE DISPATCH
1979  006576  031022                        .WORD   LISCK   ;LISTEN MODE DISPATCH
1980
1981
1982                                .SBTTL          CLOCK TABLES, EVENT LOG AND POINTERS
1983  006600  000000                CLKCSR: .WORD   0       ;CLOCK CSR ADDRESS
1984  006602  000000                CLKBR:  .WORD   0       ;CLOCK INTERRUPT LEVEL
1985  006604  000000                CLKVEC: .WORD   0       ;CLOCK INTERRUPT VECTOR
1986  006606  000074                CLKHZ:  .WORD   60.     ;CLOCK'S HERTZ RATE
1987  006610  000000                CLKEN:  .WORD   0       ;CLOCK'S CSR VALUE TO INTRPT. ENABLE IT
1988
1989  006612  000000                TIMMIN: .WORD   0       ;PLACE TO KEEP TIME-SINCE-START
1990  006614  000000                TIMSEC: .WORD   0
1991  006616  000000                TIMTCK: .WORD   0       ;PLACE TO KEEP # OF TICKS/SEC
1992
1993  006620  000000                TIMER1: .WORD   0       ;EVENT TIMER #1 (TICKS)
1994  006622  000000                TIMER2: .WORD   0       ;EVENT TIMER #2 (TICKS)
1995  006624  000000                TIMER3: .WORD   0       ;EVENT TIMER #3 (SECONDS)
1996
```

```
 1997                                ;EVENT LOG TABLE AND ITS NEXT ENTRY POINTER
 1998  006626  006630                EVTPTR: .WORD   EVTLOG  ;POINTER TO NEXT FREE SPACE IN EVENT LOG
 1999  006630  000341                EVTLOG: .BLKW   225.    ;EVENT LOG BUFFER
 2000  007532  000001                EVTEND: .BLKW   1.      ;APPROXIMATE END OF EVENT TABLE (ALLOWS CIRCULAR QUE)
 2001
 2002                                .SBTTL          MODEM DATA SECTION
 2003
 2004  007534  000000                MODS:   .WORD   0       ;MODEM STATUS
 2005
 2006
```

```
2007
2008                                    ;TABLE OF MODEM SIGNAL BIT DEFINITIONS
2009
2010  007536  020000                    MOBITS: .WORD   CTS             ;CLEAR TO SEND (CIRCUIT CB)
2011  007540  001000                            .WORD   DSR             ;DATA SET READY (CIRCUIT CC)
2012  007542  010000                            .WORD   DCD             ;DATA CARRIER DETECT (CIRCUIT CF)
2013  007544  000004                            .WORD   RTS             ;REQUEST TO SEND (CIRCUIT CA)
2014  007546  040000                            .WORD   RI              ;RING INDICATOR (CIRCUIT CE)
2015  007550  000040                            .WORD   SQD             ;SIGNAL QUALITY DETECT (CIRCUIT CG)
2016  007552  000040                            .WORD   TM              ;MODEM IN TEST MODE (RS 449 ONLY CIRCUIT TM)
2017  007554                            MOBITE:
2018
2019                                    ;TABLE OF ADDRESSES OF MODEM SIGNAL MESSAGE POSITIONS
2020
2021  007554  015564                    MOMSGS: .WORD   EVMCTS           ;CLEAR TO SEND (CIRCUIT CB)
2022  007556  015570                            .WORD   EVMDSR           ;DATA SET READY (CIRCUIT CC)
2023  007560  015574                            .WORD   EVMDCD           ;DATA CARRIER DETECT (CIRCUIT CF)
2024  007562  015600                            .WORD   EVMRTS           ;REQUEST TO SEND (CIRCUIT CA)
2025  007564  015604                            .WORD   EVMRI            ;RING INDICATOR (CIRCUIT CE)
2026  007566  015610                            .WORD   EVMSQD           ;SIGNAL QUALITY DETECT (CIRCUIT CG)
2027  007570  015614                            .WORD   EVMTM            ;MODEM IN TEST MODE (RS 449 ONLY CIRCUIT TM)
2028
2029                                    ;TABLE OF ADDRESSES OF EVENT DESCRIPTION MESSAGES
2030                                    ;       ORDER CORRESPONDS TO MESSAGE TYPE VALUES
2031
2032  007572  014202                    EVTLST: .WORD   EDTXQ    ;TRANSMIT MESSAGE QUEUED
2033  007574  014226                            .WORD   EDTXC    ;TRANSMIT OF MESSAGE COMPLETE
2034  007576  014255                            .WORD   EDRXQ    ;RECEIVE MESSAGE SPACE QUEUED
2035  007600  014302                            .WORD   EDRXC    ;MESSAGE RECEIVED - RECEIVE COMPLETE
2036  007602  014330                            .WORD   EDDER    ;DEVICE INFORMATION
2037  007604  014375                            .WORD   EDDVI    ;DEVICE INITIALIZE STARTED
2038  007606  014345                            .WORD   EDDCK    ;DATA COMPARISON DONE
2039  007610  014527                            .WORD   EDMOS    ;MODEM STATUS CHANGE
2040  007612  014423                            .WORD   EDDLE    ;DATA COMPARE LENGTH ERROR
2041  007614  014460                            .WORD   EDDDE    ;DATA COMPARE DATA ERROR
2042  007616  014513                            .WORD   EDEOP    ;END OF PASS
2043
2044                                    ;LOCATIONS USED DURING EVENT REPORTING
2045
2046  007620  000000                    EVTSEC: .WORD   0        ;TEMPORARY LOCS TO KEEP EVENT TIME WHILE REPORTING
2047  007622  000000                    EVTMIN: .WORD   0
2048  007624  000000                    EVTTCK: .WORD   0
2049  007626  000000                    EVTADD: .WORD   0        ;TEMP. LOC. TO HOLD ADDRESS DURING EVENT REPORTING
2050  007630  000000                    EVTBCT: .WORD   0        ;       "       "  BYTE COUNT   "       "       "
2051  007632  000000                    EVTTMP: .WORD   0        ;       "       "  OTHER DATA   "       "       "
2052
2053                                    ;REPORT CODING DISPATCH TABLE
2054
2055  007634  020116                    RPTDSP:  WORD   RPTTXQ   ;TRANSMIT QUEUED ENTRY DECODING
2056  007636  020116                            .WORD   RPTTXQ   ;TRANSMIT COMPLETE ENTRY DECODING
2057  007640  020116                            .WORD   RPTTXQ   ;RECEIVER QUEUED ENTRY DECODING
2058  007642  020116                            .WORD   RPTTXQ   ;RECEIVER COMPLETE ENTRY DECODING
2059  007644  020170                            .WORD   RPTDER   ;DEVICE ERROR ENTRY DECODING
2060  007646  020264                            .WORD   RPTDVI   ;DEVICE INIT ENTRY DECODING
2061  007650  020460                            .WORD   RPTDCK   ;DATA COMPARISON ENTRY DECODING
2062  007652  020534                            .WORD   RPTMSC   ;REPORT MODEM STATUS CHANGE
```

```
2063  007654  020460                          .WORD   RPTDLE  ;DATA COMPARISON LENGH ERROR
2064  007656  020404                          .WORD   RPTDDE  ;DATA COMPARISON DATA ERROR
2065  007660  020330                          .WORD   RPTEOP  ;END OF PASS
2066
2067
2068  007662  000000                  DEV1:   .WORD   0               ;TEMP LOCS TO HOLD DATA FOR EVENT REPORTING
2069  007664  000000                  DEV2:   .WORD   0               ;  AND SHOW MODE,... SUBROUTINE
2070  007666  000000                  DEV3:   .WORD   0
2071  007670  000000                  DEV4:   .WORD   0
2072
```

```
                        .SBTTL          COMMAND LINE ACTION TREE

                        ;SAMPLE CLI TREE NODE   (ALWAYS AT LEAST 1 WORD)
                        ; ----------------------
                        ; ! ACTION  ! CHAR CODE !
                        ; ----------------------
                        ; !  MISS DISPLACEMENT          ONLY IF "MISS" ARGUMENT DEFINED
                        ; ----------------------
                        ; ! NEXT NODE DISPLMNT .        ONLY IF "ASCII" ARGUMENT DEFINED
                        ; ----------------------
                        ; . ASCIZ MATCH STRING  '       ONLY IF "ASCII" ARGUMENT DEFINED
                        ; !                (.EVEN) .
                        ; ----------------------

007672                  CLITRE:

                        ;FIRST KEYWORD
007672                          CLI     CLISPA,0,N10$                   ;SKIP ANY LEADING SPACES
007676                  N10$:   CLI     <'?>,HLP,N42$                   ;IS THE FIRST NON-SP CHAR A "?"
007702                          CLI     CLIEXI,0                        ;  IF YES DO "HLP" AND EXIT
007704                  N42$:   CLI     CLISTR,HLP,N43$,<'HELP'>        ;ELSE, IS FIRST WORD A "HELP"
007720                          CLI     CLIEXI,0                        ;  IF YES DO "HLP" AND EXIT
007722                  N43$:   CLI     CLISTR,PRNT,N45$,<'PRINT'>      ;ELSE, IS FIRST WORD A "PRINT"
007736                          CLI     CLIEXI,0                        ;  IF YES DO "PRINT" AND EXIT
007740                  N45$:   CLI     CLISTR,RUN,N46$,<'RUN'>         ;ELSE, IS FIRST WORD A "RUN"
007752                          CLI     CLIBR,0,N80$                    ;  IF YES DO "RUN" & GOTO N80$
007756                  N46$:   CLI     CLISTR,NOTNUF,N40$,<'DUMP'>     ;ELSE, IS FIRST WORD A "DUMP"
007772                          CLI     CLIBR,0,N50$                    ;  IF YES GOTO N80$
007776                  N40$:   CLI     CLISTR,CLEAR,N20$,<'CLEAR'>     ;ELSE, IS FIRST WORD A "CLEAR"
010012                          CLI     CLIBR,NOTNUF,N100$              ;  IF YES DO "CLR" & GOTO N100$
010016                  N20$:   CLI     <'S>,NOTNUF,N30$                ;ELSE, IS FIRST CHAR, A "S"
010022                          CLI     CLISTR,SHOW,N25$,<'HOW'>        ;  IF YES IS REST OF WORD "HOW"
010034                          CLI     CLIBR,0,N100$                   ;    IF YES, DO "SHOW",BR N100$
010040                  N25$:   CLI     CLISTR,0,N30$,<'ET'>            ;  ELSE, IS REST OF WORD "ET"
010052                          CLI     CLIBR,0,N110$                   ;    IF YES, DO "SET", BR N110$
010056                  N30$:   CLI     CLIERR,0                        ;OTHERWISE "ILL CMD" - EXIT

                        ;SECOND KEYWORD (MODE=) FOR RUN COMMAND

010060                  N80$:   CLI     CLISPA,0,N30$                   ;SKIP LEADING SPS, IF NONE-ERR
010064                  N81$:   CLI     CLISTR,NOTNUF,N30$,<'MODE'>     ;IS NEXT WORD "MODE="
010100                          CLI     <'=>,0,N30$                     ;  IF NO, IT'S WRONG -ERR -EXIT
010104                          CLI     CLISTR,ATVMOD,N82$,<'ACTIVE'>   ;IS NEXT WORD "ACTIVE"
010122                          CLI     CLIBR,0,N115$                   ;  IF YES, DO "ACTIVE",BR N115$
010126                  N82$:   CLI     CLISTR,PASMOD,N83$,<'PASSIVE'>  ;IS NEXT WORD "PASSIVE"
010144                          CLI     CLIBR,0,N115$                   ;  IF YES, DO "PASSVE",BR N115$
010150                  N83$:   CLI     CLISTR,RECMOD,N84$,<'RECEIVE'>  ;IS NEXT WORD "RECEIVE"
010166                          CLI     CLIBR,0,N115$                   ;  IF YES, DO "RECVE",BR N115$
010172                  N84$:   CLI     CLISTR,LISMOD,N85$,<'LISTEN'>   ;IS NEXT WORD "LISTEN"
010210                          CLI     CLIBR,0,N115$                   ;  IF YES, DO "LISTEN",BR N115$
010214                  N85$:   CLI     CLISTR,DLLMOD,N86$,<'DOWNLINELOAD'>     ;IS NEXT WORD "DOW..."
010240                          CLI     CLIBR,0,N115$                   ;  IF YES, DO "DWNLL",BR N115$
010244                  N86$:   CLI     <'T>,0,N30$                     ;IS NEXT CHAR A "T"
010250                          CLI     CLISTR,TRAMOD,N87$,<'RANSMIT'>  ; IS REST OF WORD "RANSMIT"
010266                          CLI     CLIBR,0,N115$                   ;  IF YES, DO "TRANSM",BR N115$
```

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2129  010272                  N87$:   CLI     CLISTR,TALMOD,N30$,<'ALK'>      ; IS REST OF WORD "ALK"
2130  010304                          CLI     CLIBR,0,N115$                   ;  IF YES, DO "TALK",BR N115$
2131                                                                          ; IF NO, ERROR - EXIT
2132
2133                          ;SECOND KEYWORD (FOR CLEAR OR SHOW)
2134  010310                  N100$:  CLI     CLISPA,0,N30$                   ;SKIP LEADING SPACES, NONE=ERR
2135  010314                  N102$.  CLI     CLISTR,CSHEXP,N104$,<'EXPECTBUFF'>      ;IS NEXT WORD "EXPE..."
2136  010336                          CLI     CLIEXI,0                        ; IF YES, DO CLR-EXP,EXIT
2137  010340                  N104$:  CLI     CLISTR,CSHTRN,N30$,<'TRANSMITBUFF'>     ;IS NEXT WORD "TRANS.."
2138  010364                          CLI     CLIEXI,0                        ; IF YES, DO CLR-TRN,EXIT
2139                                                                          ;IF NO - ERROR - EXIT
2140
2141
2142                          ;SECOND KEYWORD (FOR SET)
2143  010366                  N110$:  CLI     CLISPA,0,N30$
2144  010372                  N111$:  CLI     CLISTR,SETEXP,N112$,<'EXPECTMSG'>
2145  010412                          CLI     CLIBR,0,N120$
2146  010416                  N112$:  CLI     CLISTR,SETTRN,N30$,<'TRANSMITMSG'>
2147  010440                          CLI     CLIBR,0,N120$
2148
2149                          ;GET ADDRESSES FOR DUMP COMMAND
2150  010444                  N50$:   CLI     CLIALP,0,N51$
2151  010450                  N51$:   CLI     CLISPA,0,N52$
2152  010454                  N52$:   CLI     CLIOCT,DMPS,N30$
2153  010460                          CLI     <'->,NOTNUF,N125$
2154  010464                          CLI     CLIOCT,DMPE,N30$
2155  010470                          CLI     <'/>,NOTNUF,N125$
2156  010474                          CLI     <'B>,DMPQ,N30$
2157  010500                          CLI     CLIBR,0,N125$
2158
2159                          ;QUALIFIERS FOR THE RUN COMMAND
2160  010504                  N115$:  CLI     CLIALP,0,N114$
2161  010510                  N114$:  CLI     <'/>,NOTNUF,N125$
2162  010514                          CLI     CLISTR,NO,N116$,<'NO'>
2163  010526                  N116$:  CLI     <'C>,0,N117$
2164  010532                          CLI     CLISTR,CHECK,N117$,<'HECK'>
2165  010546                          CLI     CLIBR,0,N115$
2166
2167
2168  010552                  N117$:  CLI     CLISTR,STATUS,N118$,<'STATUS'>
2169  010570                          CLI     CLIBR,0,N115$
2170  010574                  N118$:  CLI     CLISTR,ECHO,N130$,<'ECHO'>
2171  010610                          CLI     CLIBR,0,N115$
2172
2173
2174
2175  010614                  N130$:  CLI     CLISTR,0,N132$,<'PASS'>
2176  010630                          CLI     CLIBR,0,N150$
2177
2178
2179  010634                  N132$:  CLI     CLISTR,MOSC,N131$,<'MODEM'>
2180  010650                          CLI     CLIBR,0,N115$
2181
2182  010654                  N131$:  CLI     CLISTR,0,N30$,<'LOOP'>
2183  010670                          CLI     CLIBR,0,N140$
2184
```

```
2185
2186  010674                    ;GET MESSAGE TYPE FOR SET MESSAGE COMMANDS
2187                            N120$:  CLI     <'=>,0,N30$
2188
2189  010700                    ;   LOOK FOR DEFAULT MESSAGE NAME
2190  010714                    N60$:   CLI     CLISTR,CMSG1,N61$,<'ONES'>
2191  010720                            CLI     CLIBR,0,N121$
2192  010736                    N61$:   CLI     CLISTR,CMSG0,N62$,<'ZEROES'>
2193  010742                            CLI     CLIBR,0,N121$
2194  010756                    N62$:   CLI     CLISTR,CMSG2,N63$,<'1ALT'>
2195  010762                            CLI     CLIBR,0,N121$
2196  010776                    N63$:   CLI     CLISTR,CMSG3,N64$,<'0ALT'>
2197  011002                            CLI     CLIBR,0,N121$
2198  011016                    N64$:   CLI     CLISTR,CMSG5,N65$,<'ITEP'>
2199  011022                            CLI     CLIBR,0,N121$
2200  011036                    N65$:   CLI     CLISTR,CMSG4,N66$,<'CCITT'>
2201  011042                            CLI     CLIBR,0,N121$
2202  011056                    N66$:   CLI     CLISTR,CMSG6,N67$,<'ALPHA'>
2203                                    CLI     CLIBR,0,N121$
2204
2205  011062                    ;   LOOK FOR QUOTED MESSAGE
2206  011066                    N67$:   CLI     <''>,QPRMSG,N30$
2207  011072                    N70$:   CLI     <''>,ENDQQ,N71$
2208  011076                            CLI     CLIBR,0,N121$
2209  011102                    N71$:   CLI     CLISPA,0,N72$
2210  011106                    N72$:   CLI     CLIALN,0,N73$           ;ONLY A-Z,SP,TAB, OR 0-9 BETWEEN '"S
2211  011112                            CLI     CLIBR,0,N70$
2212                            N73$:   CLI     CLIERR,BADCHR           ;PRINT ERROR IF NONE LEGAL CHAR FOR '"S
2213
2214  011114                    ;GET QUALIFIERS (SIZE OR COPY) FOR SET MESSAGE COMMANDS
2215  011120                    N121$:  CLI     CLIALP,0,N123$
2216  011124                    N123$:  CLI     <'/>,NOTNUF,N125$
2217  011140                            CLI     CLISTR,SIZE,N122$,<'SIZE'>
2218  011144                            CLI     CLIBR,0,N126$
2219  011160                    N122$:  CLI     CLISTR,QCOPY,N30$,<'COPY'>
2220                                    CLI     CLIBR,0,N126$
2221
2222  011164                    ;NUMER FOR SIZE OR COPY
2223  011170                    N126$:  CLI     <'=>,0,N30$
2224  011174                            CLI     CLIDEC,NUM,N30$
2225                                    CLI     CLIBR,0,N121$
2226
2227  011200                    ;GET MAINTENANCE LOOP TYPE FOR RUN 'LOOP" QUIALIFIER
2228                            N140$:  CLI     <'=>,0,N30$
2229
2230  011204                    N141$:  CLI     CLISTR,TTLLOP,N142$,<'INTERNALTTL'>
2231  011226                            CLI     CLIBR,0,N115$
2232  011232                    N142$:  CLI     CLISTR,CBLLOP,N143$,<'CABLE'>
2233  011246                            CLI     CLIBR,0,N115$
2234  011252                    N143$:  CLI     CLISTR,LMDLOP,N144$,<'LOCALMODEM'>
2235  011274                            CLI     CLIBR,0,N115$
2236  011300                    N144$:  CLI     CLISTR,RMDLOP,N30$,<'REMOTEMODEM'>
2237  011322                            CLI     CLIBR,0,N115$
2238
2239                            ;GET LINE NUMBER FOR "PASS" RUN QUALIFIER
2240  011326                    N150$:  CLI     <'=>,0,N30$
```

```
                                                        N  4
 2241  011332                          CLI     CLIDEC,PASC,N30$
 2242  011336                          CLI     CLIBR,0,N115$
 2243
 2244
 2245
 2246                                  ;END-OF-LINE
 2247  011342                          N125$:  CLI     CLIEXI,0
 2248
```

```
2249
2250
2251                            ;DEVICE DEPENDENT STORAGE LOCATIONS FOR
2252                            ;  CURRENT DEVICE PARAMTERS
2253
2254
2255  011344  000000            RXCSR:  .WORD   0               ;REC CONTROL AND STATUS
2256  011346  000000            PCSAR:  .WORD   0               ;STATUS REGISTIER
2257  011350  000000            RDSR:   .WORD   0               ;REC DATA AND STATUS REG
2258  011352  000000            TXCSR:  .WORD   0               ;TRANSMIT AND REC. CONTROL
2259  011354  000000            TDSR:   .WORD   0               ;TRANSMIT DATA AND STATUS REG
2260
2261
2262  011356  000000            INVEC:  .WORD   0               ;INPUT INTERRUPT VECTOR ADDRESS
2263  011360  000000            OUTVEC: .WORD   0               ;OUTPUT INTERRUPT VECTOR ADDRESS
2264  011362  000000            INTPRI: .WORD   0               ;INTERRUPT PRIORITY
2265  011364  000000            OPTYP:  .WORD   0               ;DEVICE OPTION TYPE(0=DMC,5=DMR-DMC MODE
2266
2267  011366  065626            DPVP1:  .WORD   065626          ;THIS WORD IS BROKEN DOWN AS FOLLOWS
2268                                                            ;BITS 0-7 =SYNC WORD
2269                                                            ;BITS 8-10=ERR DET SELECTED
2270                            ;THIS IS SET TO SYNC 262        ;BIT11 = IDLE
2271                            ;CRC 16 INIT TO 1               ;BIT12 = SEC ADDR. MODE
2272                            ;STRIP SYNC AND BCP MODE        ;BIT13 = STRIP SYNC
2273                            ;IDLE SET TO MARK               ;BIT14 = PORT0 TYPE SEL(1=BCP 0=BOP)
2274                                                            ;BIT15 = ALL PARTIES ADDRESS..
2275
2276
2277  011370  000000            CMODS:  .WORD   0               ;CURRENT MODEM
2278  011372  000000            IRXCSR: .WORD   0               ;IMAGE OF RXCSR
2279  011374  000000            IRDSR:  .WORD   0               ;IMAGE OR RDSR
2280  011376  000000            MSGPTR: .WORD   0               ;MSG PTR.FOR HEADER OR CONTROL
2281  011400  000000            MSGCC:  .WORD   0               ;MSG COUNTER OR CC
2282  011402  000000            SYNCC:  .WORD   0               ;SYNC CHAR COUNT.
2283  011404  000000            SYNCW:  .WORD   0               ;SYNC WORD.PLUS TSOM BIT.
2284  011406  000000            RMSGPT: .WORD   0               ;MSG PTR FOR REC
2285  011410  000000            RMSGCC: .WORD   0               ;CHAR COUNTER FOR REC
2286  011412  000000            BCCW:   .WORD   0               ;CRC HOLDING LOC.
2287  011414  000000            MGLCNT: .WORD   0               ;COUNT OF GLITCH ERRORS
2288  011416  000000            MHRCNT: .WORD   0               ;COUNT OF HARD ERRORS
2289  011420  000000            RNODE:  .WORD   0               ;1-REMOTE NODE ITEP,0=NON ITEP
2290
2291
2292                            ;       ERRTBL
```

```
                                .SBTTL  GLOBAL TEXT SECTION

                                ;++
                                ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
                                ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
                                ; MORE THAN ONE TEST.
                                ;--

                                .SBTTL          DEVICE SUPPORTED
                                ;
                                ; NAMES OF DEVICES SUPPORTED BY PROGRAM
                                ;


011422                                  DEVTYP  <DPV-11>
011422                                                                  L$DVTYP::
011422  050104  026526  030461                                                  .ASCIZ  /DPV-11/
011430     000
        011432                                                                  .EVEN


                                .SBTTL          PROGRAM IDENTIFICATION
                                ; TEST DESCRIPTION
                                ;
011432                                  DESCRIPT        <DPV-11 DATA COMM LINK TEST >
011432                                                                  L$DESC::
011432  050104  026526  030461                                                  .ASCIZ  /DPV-11 DATA COM
011440  042040  052101  020101
011446  047503  046515  046040
011454  047111  020113  042524
011462  052123  000040
                                                                                .EVEN
                                .EVEN
```

```
2330                                    .SBTTL          GLOBAL FORMAT STATEMENTS, MESSAGES, AND ASCII INFO
2331
2332
2333  011466  041504  052114  000076  CLI$PM: .ASCIZ  /DCL?>/
2334  011474  047045  040445  044477  CLIERM: .ASCIZ  /%N%A?ILL CMD-BAD SYNTX?/
2335  011502  046114  041440  042115
2336  011510  041055  042101  051440
2337  011516  047131  054124  000077
2338  011524  047045  040445  044477  CLINUF: .ASCIZ  /%N%A?INCMPLTE CMD?/
2339  011532  041516  050115  052114
2340  011540  020105  046503  037504
2341  011546     000
2342  011547     045  022516  037501  CLINBG: .ASCIZ  /%N%A?NUM TOO BIG?/
2343  011554  052516  020115  047524
2344  011562  020117  044502  037507
2345  011570     000
2346  011571     045  022516  037501  CLIBRX: .ASCIZ  /%N%A?BAD RADIX?/
2347  011576  040502  020104  040522
2348  011604  044504  037530     000
2349  011611     045  022516  037501  CLIBDL: .ASCIZ  /%N%A?''LOOP'' VALID ONLY IN ACTIVE?/
2350  011616  046042  047517  021120
2351  011624  053040  046101  042111
2352  011632  047440  046116  020131
2353  011640  047111  040440  052103
2354  011646  053111  037505     000
2355  011653     045  022516  037501  CLINPS: .ASCIZ  /%N%A?''ECHO'' VALID ONLY IN PASSIVE?/
2356  011660  042442  044103  021117
2357  011666  053040  046101  042111
2358  011674  047440  046116  020131
2359  011702  047111  050040  051501
2360  011710  044523  042526  000077
2361  011716  047045  040445  044477  CLIBCR: .ASCIZ  /%N%A?ILL CHR- ''A-Z,0-9,SP,TAB'' ONLY?/
2362  011724  046114  041440  051110
2363  011732  020055  040442  055055
2364  011740  030054  034455  051454
2365  011746  026120  040524  021102
2366  011754  047440  046116  037531
2367  011762     000
2368  011763     045  022516  037501  CLISEO: .ASCIZ  /%N%A?''SIZE=0'' NOT VALID?/
2369  011770  051442  055111  036505
2370  011776  021060  047040  052117
2371  012004  053040  046101  042111
2372  012012  000077
2373  012014  047045  040445  044124  HLP0:   .ASCIZ  /%N%ATHIS IS DCLT. TYPE ''H'' OR ''?'' FOR DETAILS/
2374  012022  051511  044440  020123
2375  012030  041504  052114  020056
2376  012036  054524  042520  021040
2377  012044  021110  047440  020122
2378  012052  037442  020042  047506
2379  012060  020122  042504  040524
2380  012066  046111  000123
2381  012072  047045  052045     000  HLPF:   .ASCIZ  /%N%T/
2382  012077     104  046103  020124  HLP1:   .ASCIZ  /DCLT CMDS:/
2383  012104  046503  051504  000072
2384  012112  041440  042514  051101  HLP2:   .ASCII  / CLEAR OR SHOW  EXPECTLIST OR TRANSMITLIST/<15><12>
2385  012120  047440  020122  044123
```

```
 2386  012126  053517  020040  054105
 2387  012134  042520  052103  044514
 2388  012142  052123  047440  020122
 2389  012150  051124  047101  046523
 2390  012156  052111  044514  052123
 2391  012164  005015
 2392  012166  050040  044522  052116          .ASCII  / PRINT/<15><12>
 2393  012174  005015
 2394  012176  042040  046525  020120          .ASCIZ  ? DUMP START-END/B?
 2395  012204  052123  051101  026524
 2396  012212  047105  027504  000102
 2397  012220  051440  052105  042440  P3:     .ASCIZ  ? SET EXPECTMSG OR TRANSMITMSG=TYPE/SIZE=N OR /COPY=N?
 2398  012226  050130  041505  046524
 2399  012234  043523  047440  020122
 2400  012242  051124  047101  046523
 2401  012250  052111  051515  036507
 2402  012256  054524  042520  051457
 2403  012264  055111  036505  020116
 2404  012272  051117  027440  047503
 2405  012300  054520  047075     000
 2406  012305     040  020040  054524  HLP4:   .ASCIZ  ?   TYPE=ONES,ZEROES,1ALT,0ALT,ITEP,CCITT,ALPHA?
 2407  012312  042520  047475  042516
 2408  012320  026123  042532  047522
 2409  012326  051505  030454  046101
 2410  012334  026124  040460  052114
 2411  012342  044454  042524  026120
 2412  012350  041503  052111  026124
 2413  012356  046101  044120  000101
 2414  012364  020040  020040  020040  HLP4A:  .ASCIZ  /       OR ''OPR SPCD=A-Z,SP,TAB,0-9 IN QUOTES''/
 2415  012372  047440  020122  047442
 2416  012400  051120  051440  041520
 2417  012406  036504  026501  026132
 2418  012414  050123  052054  041101
 2419  012422  030054  034455  044440
 2420  012430  020116  052521  052117
 2421  012436  051505  000042
 2422  012442  051040  047125  046440  HLP5:   .ASCIZ  ? RUN MODE=MTYP/LOOP=LTYP/CHECK,STATUS,ECHO,MODEM,PASS=N?
 2423  012450  042117  036505  052115
 2424  012456  050131  046057  047517
 2425  012464  036520  052114  050131
 2426  012472  041457  042510  045503
 2427  012500  051454  040524  052524
 2428  012506  026123  041505  047510
 2429  012514  046454  042117  046505
 2430  012522  050054  051501  036523
 2431  012530  000116
 2432  012532  020040  046440  054524  HLP6:   .ASCII  /   MTYP-TRAN,REC,ACT,PAS,TAL,LIS,DOWN/<15><12>
 2433  012540  036520  051124  047101
 2434  012546  051054  041505  040454
 2435  012554  052103  050054  051501
 2436  012562  052054  046101  046054
 2437  012570  051511  042054  053517
 2438  012576  006516     012
 2439  012601     040  020040  052114          .ASCIZ  /   LTYP=INT,CAB,LOC,REM/
 2440  012606  050131  044475  052116
 2441  012614  041454  041101  046054
```

```
2442  012622  041517  051054  046505
2443  012630     000
2444
2445  012631     045  022516  046501  SHMSG:  .ASCIZ  ?%N%AMSG- TYPE=%T%A/SIZE=%D3?
2446  012636  043523  020072  054524
2447  012644  042520  022475  022524
2448  012652  027501  044523  042532
2449  012660  022475  071504     000
2450  012665     132  051105  042517  SHTYP0: .ASCIZ  /ZEROES/
2451  012672  000123
2452  012674  047117  051505     000  SHTYP1: .ASCIZ  /ONES/
2453  012701     061  046101  000124  SHTYP2: .ASCIZ  /1ALT/
2454  012706  040460  052114     000  SHTYP3: .ASCIZ  /0ALT/
2455  012713     103  044503  052124  SHTYP4: .ASCIZ  /CCITT/
2456  012720     000
2457  012721     111  042524  000120  SHTYP5: .ASCIZ  /ITEP/
2458  012726  046101  044120  000101  SHTYP6  .ASCIZ  /ALPHA/
2459  012734  050117  020122  050123  SHTYP7: .ASCIZ  /OPR SPEC/
2460  012742  041505     000
2461  012745     122  041505  044505  MO0:    .ASCIZ  /RECEIVE/
2462  012752  042526     000
2463  012755     124  040522  051516  MO1:    .ASCIZ  /TRANSMIT/
2464  012762  044515  000124
2465  012766  040520  051523  053111  MO2:    .ASCIZ  /PASSIVE/
2466  012774  000105
2467  012776  041501  044524  042526  MO3:    .ASCIZ  /ACTIVE/
2468  013004     000
2469  013005     104  053517  046116  MO4:    .ASCIZ  /DOWNLINELOAD/
2470  013012  047111  046105  040517
2471  013020  000104
2472  013022  040524  045514     000  MO5:    .ASCIZ  /TALK/
2473  013027     114  051511  042524  MO6:    .ASCIZ  /LISTEN/
2474  013034  000116
2475  013036     000                  LP0:    .ASCIZ  //
2476  013037     057  047514  050117  LP00:   .ASCIZ  ?/LOOP=?
2477  013044  000075
2478  013046  047111  042524  047122  LP1:    .ASCIZ  ?INTERNAL?
2479  013054  046101     000
2480  013057     103  041101  042514  LP2:    .ASCIZ  ?CABLE?
2481  013064     000
2482  013065     114  041517  046101  LP3:    .ASCIZ  ?LOCALMODEM?
2483  013072  047515  042504  000115
2484  013100  042522  047515  042524  LP4:    .ASCIZ  ?REMOTEMODEM?
2485  013106  047515  042504  000115
2486  013114  047516                  PNST:   .ASCII  /NO/
2487  013116  052123  052101  051525  PST:    .ASCIZ  /STATUS/
2488  013124     000
2489  013125     116     117          PNCK:   .ASCII  /NO/
2490  013127     103  042510  045503  PCK:    .ASCIZ  /CHECK/
2491  013134     000
2492  013135     116     117          PNEC:   .ASCII  /NO/
2493  013137     105  044103  000117  PEC:    .ASCIZ  /ECHO/
2494  013144  047516                  PNMS:   .ASCII  /NO/
2495  013146  047515  042504  000115  PMS:    .ASCIZ  /MODEM/
2496
2497
```

```
                                                                
                                                                
013154  047045  040445  044514  LISP:   .ASCIZ  /%N%ALIS>/
013162  037123     000
013165     124  045514  000076  OPRMM:  .ASCIZ  /TLK>/
013172  044124  051511  040440  L5060:  .ASCIZ  /THIS A 50. OR 60. HZ. LSI-11:/
013200  032440  027060  047440
013206  020122  030066  020056
013214  055110  020056  051514
013222  026511  030461  000072
                        .EVEN
                                                                
                                                                
                                                                
                        ;
                        ; FORMAT STATEMENTS USED IN PRINT CALLS
                        ;
                                                                
                                                                
013230  047045  040445  047504  DLLCM:  .ASCIZ  /%N%ADOWN LINE LOAD NOT SUPPORTED BY THIS DEVICE/
013236  047127  046040  047111
013244  020105  047514  042101
013252  047040  052117  051440
013260  050125  047520  052122
013266  042105  041040  020131
013274  044124  051511  042040
013302  053105  041511  000105
                                                                
                                                                
013310  047045  040445  046103  BDCLK:  .ASCIZ  /%N%ACLOCK NOT FOUND/
013316  041517  020113  047516
013324  020124  047506  047125
013332  000104
013334  047045  040445  040502  NOCLK.  .ASCIZ  /%N%ABAD CLOCK - PROGRAM WILL HANG ON ''TIMEOUT''!!/
013342  020104  046103  041517
013350  020113  020055  051120
013356  043517  040522  020115
013364  044527  046114  044040
013372  047101  020107  047117
013400  021040  044524  042515
013406  052517  021124  020441
013414     000
013415     115  054101  020056  TABEX:  .ASCIZ  /MAX. CHAR. MSG COUNT EXCEEDED -/
013422  044103  051101  020056
013430  051515  020107  047503
013436  047125  020124  054105
013444  042503  042105  042105
013452  026440     000
013455     102  043125  042506  BUFEX:  .ASCIZ  /BUFFER FULL -/
013462  020122  052506  046114
013470  026440     000
013473     045  022516  022524  MSGTRN. .ASCIZ  /%N%T%A MSG. NOT BUILT ../
013500  020101  051515  027107
013506  047040  052117  041040
013514  044525  052114  020440
013522  000041
013524  047045  040445  044103  MSGTRU: .ASCIZ  /%N%ACHAR. COUNT EXCEEDS BUFF LIMIT - MSG TRUNCATED/
```

```
 2554  013532  051101  020056  047503
 2555  013540  047125  020124  054105
 2556  013546  042503  042105  020123
 2557  013554  052502  043106  046040
 2558  013562  046511  052111  026440
 2559  013570  046440  043523  052040
 2560  013576  052522  041516  052101
 2561  013604  042105     000
 2562  013607     045  022516  032523  SHF0:   .ASCIZ  ?%N%S5%AMODE=%T%T%T%A/PASS-%Z5?
 2563  013614  040445  047515  042504
 2564  013622  022475  022524  022524
 2565  013630  022524  027501  040520
 2566  013636  051523  022475  032532
 2567  013644     000
 2568
 2569  013645     045  022516  032523  SHF1:   .ASCIZ  ?%N%S5%S5%S5%A/%T%A/%T%A/%T%A/%T?
 2570  013652  051445  022465  032523
 2571  013660  040445  022457  022524
 2572  013666  027501  052045  040445
 2573  013674  022457  022524  027501
 2574  013702  052045     000
 2575
 2576  013705     045  032523  040445  EFM2:   .ASCIZ  /%S5%ATOTAL MISMATCHES IN MSG = %D5/
 2577  013712  047524  040524  020114
 2578  013720  044515  046523  052101
 2579  013726  044103  051505  044440
 2580  013734  020116  051515  020107
 2581  013742  020075  042045  000065
 2582  013750  047045  051445  022463  PCPM:   .ASCIZ  /%N%S3%ACALLED FROM PC-%O6/
 2583  013756  041501  046101  042514
 2584  013764  020104  051106  046517
 2585  013772  050040  036503  047445
 2586  014000  000066
 2587  014002  051445  022465  041501  EFM11:  .ASCIZ  /%S5%ACOMPARE COUNT=%D5%S3%ARECEIVE COUNT=%D5/
 2588  014010  046517  040520  042522
 2589  014016  041440  052517  052116
 2590  014024  022475  032504  051445
 2591  014032  022463  051101  041505
 2592  014040  044505  042526  041440
 2593  014046  052517  052116  022475
 2594  014054  032504     000
 2595  014057     115  042117  046505  MSCMS:  .ASCIZ  /MODEM STATUS CHANGES FOR THIS PASS WERE../
 2596  014064  051440  040524  052524
 2597  014072  020123  044103  047101
 2598  014100  042507  020123  047506
 2599  014106  020122  044124  051511
 2600  014114  050040  051501  020123
 2601  014122  042527  042522  027056
 2602  014130     000
 2603  014131     045  032523  040445  EFM13:  .ASCIZ  /%S5%AHARD CHANGES=%D5%A%S3%AGLITCHES=%D5/
 2604  014136  040510  042122  041440
 2605  014144  040510  043516  051505
 2606  014152  022475  032504  040445
 2607  014160  051445  022463  043501
 2608  014166  044514  041524  042510
 2609  014174  036523  042045  000065
```

```
2610
2611
2612                                    ;EVENT DESCRIPTION MESSAGES
2613
2614  014202  051124  047101  046523  EDTXQ:  .ASCIZ  /TRANSMIT MSG QUEUED/
2615  014210  052111  046440  043523
2616  014216  050440  042525  042525
2617  014224  000104
2618  014226  051124  047101  046523  EDTXC:  .ASCIZ  /TRANSMIT MSG COMPLETED/
2619  014234  052111  046440  043523
2620  014242  041440  046517  046120
2621  014250  052105  042105     000
2622  014255     122  041505  044505  EDRXQ:  .ASCIZ  /RECEIVE SPACE QUEUED/
2623  014262  042526  051440  040520
2624  014270  042503  050440  042525
2625  014276  042525  000104
2626  014302  042522  042503  053111  EDRXC:  .ASCIZ  /RECEIVE MSG COMPLETED/
2627  014310  020105  051515  020107
2628  014316  047503  050115  042514
2629  014324  042524  000104
2630  014330  042504  044526  042503  EDDER:  .ASCIZ  /DEVICE ERROR/
2631  014336  042440  051122  051117
2632  014344     000
2633  014345     104  052101  020101  EDDCK:  .ASCIZ  /DATA COMPARISON STARTED/
2634  014352  047503  050115  051101
2635  014360  051511  047117  051440
2636  014366  040524  052122  042105
2637  014374     000
2638  014375     104  053105  041511  EDDVI:  .ASCIZ  /DEVICE INIT AND SETUP/
2639  014402  020105  047111  052111
2640  014410  040440  042116  051440
2641  014416  052105  050125     000
2642  014423     104  052101  020101  EDDLE:  .ASCIZ  /DATA COMPARISON LENGTH ERROR/
2643  014430  047503  050115  051101
2644  014436  051511  047117  046040
2645  014444  047105  052107  020110
2646  014452  051105  047522  000122
2647  014460  040504  040524  041440  EDDDE:  .ASCIZ  /DATA COMPARISON DATA ERROR/
2648  014466  046517  040520  044522
2649  014474  047523  020116  040504
2650  014502  040524  042440  051122
2651  014510  051117     000
2652  014513     105  042116  047440  EDEOP:  .ASCIZ  /END OF PASS/
2653  014520  020106  040520  051523
2654  014526     000
2655  014527     115  042117  046505  EDMOS:  .ASCIZ  /MODEM STATUS CHANGE/
2656  014534  051440  040524  052524
2657  014542  020123  044103  047101
2658  014550  042507     000
2659
2660                                    ;EVENT REPORTING MESSAGES
2661  014553     045  031523  047445  BASM3:  .ASCIZ  /%S3%03/
2662  014560  000063
2663  014562  051445  022463  033117  BASM2:  .ASCIZ  /%S3%06/
2664  014570     000
2665  014571     045  022516  033117  BASM1:  .ASCIZ  /%N%06/
```

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 2666  014576     000
 2667  014577     045  022516  052101  NULEVT: .ASCIZ  /%N%ATHE EVENT LOG IS EMPTY/
 2668  014604  042510  042440  042526
 2669  014612  052116  046040  043517
 2670  014620  044440  020123  046505
 2671  014626  052120  000131
 2672  014632  047045  040445  037076  EVTF0:  .ASCIZ  /%N%A>>> EVENT LOG ENTRY <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<</
 2673  014640  020076  053105  047105
 2674  014646  020124  047514  020107
 2675  014654  047105  051124  020131
 2676  014662  036074  036074  036074
 2677  014670  036074  036074  036074
 2678  014676  036074  036074  036074
 2679  014704  036074  036074  036074
 2680  014712  036074  036074  036074
 2681  014720  036074  036074  036074
 2682  014726  000074
 2683  014730  047045  042045  022465  EVTF1:  .ASCIZ  /%N%D5%A:%Z2%A:%Z2%S3%T/
 2684  014736  035101  055045  022462
 2685  014744  035101  055045  022462
 2686  014752  031523  052045     000
 2687  014757     045  022516  031523  EVTF2:  .ASCIZ  /%N%S3%AADDR OF MSG=%O6%S3%ABYTE COUNT=%D5/
 2688  014764  040445  042101  051104
 2689  014772  047440  020106  051515
 2690  015000  036507  047445  022466
 2691  015006  031523  040445  054502
 2692  015014  042524  041440  052517
 2693  015022  052116  022475  032504
 2694  015030     000
 2695  015031     045  022516  031523  EVTF3:  .ASCIZ  /%N%S3%T%N/
 2696  015036  052045  047045     000
 2697  015043     045  031523  047445  EVTF3C: .ASCIZ  /%S3%O6%S3%O6/
 2698  015050  022466  031523  047445
 2699  015056  000066
 2700  015060  051445  022463  033117  EVTF3D: .ASCIZ  /%S3%O6%S3%O6%S3%T/
 2701  015066  051445  022463  033117
 2702  015074  051445  022463  000124
 2703  015102  047045  051445  022463  EVTF4:  .ASCIZ  /%N%S3%AADDR OF MSG=%O6%S3%ABYTE COUNT=%D5%S3%ANO. OF CMP ERRS=%D5/
 2704  015110  040501  042104  020122
 2705  015116  043117  046440  043523
 2706  015124  022475  033117  051445
 2707  015132  022463  041101  052131
 2708  015140  020105  047503  047125
 2709  015146  036524  042045  022465
 2710  015154  031523  040445  047516
 2711  015162  020056  043117  041440
 2712  015170  050115  042440  051122
 2713  015176  036523  042045  000065
 2714  015204  047045  051445  022463  EVTF4A: .ASCIZ  /%N%S3%AADDR OF MSG-%O6%S3%ARX BYTES=%D5%S3%ACOMPARE BYTES-%D5/
 2715  015212  040501  042104  020122
 2716  015220  043117  046440  043523
 2717  015226  022475  033117  051445
 2718  015234  022463  051101  020130
 2719  015242  054502  042524  036523
 2720  015250  042045  022465  031523
 2721  015256  040445  047503  050115
```

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 2722  015264  051101  020105  054502
 2723  015272  042524  036523  042045
 2724  015300  000065
 2725
 2726  015302  047045  051445  022463  EVTF4B: .ASCIZ  /%N%S3%APASS=%D5%S3%AERRORS=%D5%S3%ASTRT-TO=%D5/
 2727  015310  050101  051501  036523
 2728  015316  042045  022465  031523
 2729  015324  040445  051105  047522
 2730  015332  051522  022475  032504
 2731  015340  051445  022463  051501
 2732  015346  051124  026524  047524
 2733  015354  022475  032504     000
 2734
 2735  015361     045  032523  040445  EVTF5A: .ASCIZ  /%S5%ABYTE# IN MSG.=%D5%S3%AEXPTD=%O3%S3%ARECVD=%O3/
 2736  015366  054502  042524  020043
 2737  015374  047111  046440  043523
 2738  015402  036456  042045  022465
 2739  015410  031523  040445  054105
 2740  015416  052120  036504  047445
 2741  015424  022463  031523  040445
 2742  015432  042522  053103  036504
 2743  015440  047445  000063
 2744
 2745  015444  047045  051445  022471  EVMOCG: .ASCIZ  /%N%S9%ACHANGED TO:/
 2746  015452  041501  040510  043516
 2747  015460  042105  052040  035117
 2748  015466     000
 2749
 2750                                  ; ************************************************************************
 2751                                  ;DO NOT SEPERATE THE NEXT LIST OF MESSAGES - MODEM SIGNAL HEADER AND REPORT
 2752
 2753  015467     045  022516  034123  EVMO4D: .ASCIZ  /%N%S8%AMODEM STATUS: CTS DSR DCD RTS RI  SQD TM/
 2754  015474  040445  047515  042504
 2755  015502  020115  052123  052101
 2756  015510  051525  020072  052103
 2757  015516  020123  051504  020122
 2758  015524  041504  020104  052122
 2759  015532  020123  044522  020040
 2760  015540  050523  020104  046524
 2761  015546     000
 2762  015547     045  022516  034523  EVMOST: .ASCII  /%N%S9%S9%S5%A/
 2763  015554  051445  022471  032523
 2764  015562  040445
 2765  015564     130     040     040  EVMCTS: .BYTE   'X,40,40,40
 2766  015567     040
 2767  015570     130     040     040  EVMDSR: .BYTE   'X,40,40,40
 2768  015573     040
 2769  015574     130     040     040  EVMDCD: .BYTE   'X,40,40,40
 2770  015577     040
 2771  015600     130     040     040  EVMRTS: .BYTE   'X,40,40,40
 2772  015603     040
 2773  015604     130     040     040  EVMRI:  .BYTE   'X,40,40,40
 2774  015607     040
 2775  015610     130     040     040  EVMSQD: .BYTE   'X,40,40,40
 2776  015613     040
 2777  015614     130     040     040  EVMTM:  .BYTE   'X,40,40,40
```

```
 2778  015617     040
 2779  015620     000                        .BYTE   0
 2780           015622                       .EVEN
 2781
 2782                                        ;EXECUTION STATUS MESSAGES TO BE PRINTED TO KEEP OPERATOR AWAKE
 2783  015622  047045     000                CR:     .ASCIZ  /%N/            ;CR FOR LINES IN A ROW
 2784  015625     045  031523  040445        STXQ:   .ASCIZ  /%S3%ATXQ/      ;ABOUT TO TRANSMIT
 2785  015632  054124  000121
 2786  015636  051445  022463  052101        STXC:   .ASCIZ  /%S3%ATXC/      ;TX COMPLETED
 2787  015644  041530     000
 2788  015647     045  031523  040445        SRXQ:   .ASCIZ  /%S3%ARXQ/      ;ABOUT TO RECEIVE
 2789  015654  054122  000121
 2790  015660  051445  022463  042501        SDVE:   .ASCIZ  /%S3%AERR/      ;DEVICE ERROR
 2791  015666  051122     000
 2792  015671     045  031523  040445        SCM:    .ASCIZ  /%S3%ACMP/      ;ABOUT TO DO DATA CHECKING OF RECVD VS. EXPTD
 2793  015676  046503  000120
 2794  015702  051445  022463  044501        SDVI:   .ASCIZ  /%S3%AINI/      ;DEVICE ABOUT TO BE INITIALIZED
 2795  015710  044516     000
 2796  015713     045  031523  040445        SCML:   .ASCIZ  /%S3%ACML/      ;COMPARE LENGTH ERROR
 2797  015720  046503  000114
 2798  015724  051445  022463  041501        SCMD:   .ASCIZ  /%S3%ACMD/      ;COMPARE DATA ERROR
 2799  015732  042115     000
 2800  015735     045  031523  040445        SEOP:   .ASCIZ  /%S3%AEOP/      ;END  OF PASS
 2801  015742  047505  000120
 2802                                        .EVEN
 2803
 2804  015746  051445  022463  046501        SMSC:   .ASCIZ  /%S3%AMSC/      ;MODEM STATUS CHANGE.
 2805  015754  041523     000
 2806
 2807  015757     115  042117  046505        GLMSG:  .ASCIZ  /MODEM STATUS GLITCHED/
 2808  015764  051440  040524  052524
 2809  015772  020123  046107  052111
 2810  016000  044103  042105     000
 2811  016005     115  042117  046505        HRDMSG: .ASCIZ  /MODEM STATUS HARD ERROR/
 2812  016012  051440  040524  052524
 2813  016020  020123  040510  042122
 2814  016026  042440  051122  051117
 2815  016034     000
 2816
```

```
2817
2818
2819  016035     115  051501  042524  DVEM0:  .ASCII  /MASTER RESET DID NOT WORK/
2820  016042  020122  042522  042523
2821  016050  020124  044504  020104
2822  016056  047516  020124  047527
2823  016064  045522
2824  016066  005015  020040  051040          .ASCIZ  <15><12>/   RXCSR    TXCSR  /
2825  016074  041530  051123  020040
2826  016102  020040  054124  051503
2827  016110  020122  000040
2828  016114  047516  041440  042514  DVEM1:  .ASCII  /NO CLEAR TO SEND FROM MODEM /
2829  016122  051101  052040  020117
2830  016130  042523  042116  043040
2831  016136  047522  020115  047515
2832  016144  042504  020115
2833  016150  005015  020040  051040          .ASCIZ  <15><12>/   RXCSR    TXCSR  /
2834  016156  041530  051123  020040
2835  016164  020040  054124  051503
2836  016172  020122  000040
2837  016176  044524  042515  047440  DVEM2:  .ASCII  /TIME OUT WAITING FOR RX OR TX TO COMPLETE/
2838  016204  052125  053440  044501
2839  016212  044524  043516  043040
2840  016220  051117  051040  020130
2841  016226  051117  052040  020130
2842  016234  047524  041440  046517
2843  016242  046120  052105     105
2844  016247     015  020012  020040          .ASCIZ  <15><12>/   RXCSR    TXCSR/
2845  016254  054122  051503  020122
2846  016262  020040  052040  041530
2847  016270  051123     000
2848  016273     103  041522  044440  DVEM3:  .ASCII  /CRC IN ERROR/
2849  016300  020116  051105  047522
2850  016306     122
2851  016307     015  020012  020040          .ASCIZ  <15><12>/   RDSR     RXCSR/
2852  016314  042122  051123  020040
2853  016322  020040  051040  041530
2854  016330  051123     000
2855  016333     122  041505  044505  DVEM4:  .ASCII  /RECEIVER OVERRUN/
2856  016340  042526  020122  053117
2857  016346  051105  052522     116
2858  016353     015  020012  020040          .ASCIZ  <15><12>/   RDSR     RXCSR/
2859  016360  042122  051123  020040
2860  016366  020040  051040  041520
2861  016374  051123     000
2862  016377     124  046511  042105  DVEM5:  .ASCII  /TIMED OUT IN START,STACK,ACK SEQ/
2863  016404  047440  052125  044440
2864  016412  020116  052123  051101
2865  016420  026124  052123  041501
2866  016426  026113  041501  020113
2867  016434  042523     121
2868  016437     015  020012  020040          .ASCIZ  <15><12>/   RDATA    SDATA/
2869  016444  042122  052101  020101
2870  016452  020040  051440  040504
2871  016460  040524     000
2872  016463     115  042117  046505  DVEM6:  .ASCII  /MODEM DID NOT RETURN MODEM READY/
```

```
 2873  016470  042040  042111  047040
 2874  016476  052117  051040  052105
 2875  016504  051125  020116  047515
 2876  016512  042504  020115  042522
 2877  016520  042101     131
 2878  016523     015  020012  020040          .ASCIZ  <15><12>/   RXCSR     TXCSR/
 2879  016530  054122  051503  020122
 2880  016536  020040  020040  054124
 2881  016544  051503  000122
 2882
```

```
2863
2884
2885                                    .EVEN
2886
2887
2888
2889
2890
2891
2892
```

```
                        .SBTTL  GLOBAL ERROR REPORT SECTION

                        ;++
                        ; THE GLOBAL ERROR REPORT SECTION CONTAINS MESSAGE PRINTING AREAS
                        ; USED BY MORE THAN TEST TO OUTPUT ADDITIONAL ERROR INFORMATION.  PRINTB
                        ; (BASIC) AND PRINTX (EXTENDED) CALLS ARE USED TO CALL PRINT SERVICES.
                        ;--

016550                          BGNMSG  ERR1
016550                                                                  ERR1::
016550                          PRINTB  #EVTF5A,OFSET,<B,GOOD>,<B,BAD>  ;INDIVIDUAL DATA COMPARE ERROR
016550  005046                                                                  CLR     -(SP)
016552  153716  006537                                                          BISB    BAD,(SP)
016556  005046                                                                  CLR     -(SP)
016560  153716  006536                                                          BISB    GOOD,(SP)
016564  013746  006514                                                          MOV     OFSET,-(SP)
016570  012746  015361                                                          MOV     #EVTF5A,-(SP)
016574  012746  000004                                                          MOV     #4,-(SP)
016600  010600                                                                  MOV     SP,R0
016602  104414                                                                  TRAP    C$PNTB
016604  062706  000012                                                          ADD     #12,SP
016610                          ENDMSG
016610                                                                  L10001:
016610  104423                                                                  TRAP    C$MSG
                        ;
016612                          BGNMSG  ERR2
016612                                                                  ERR2::
016612                          PRINTB  #EFM2,TEMP4                     ;TOTAL DATA COMPARE FAILS ERROR
016612  013746  006526                                                          MOV     TEMP4,-(SP)
016616  012746  013705                                                          MOV     #EFM2,-(SP)
016622  012746  000002                                                          MOV     #2,-(SP)
016626  010600                                                                  MOV     SP,R0
016630  104414                                                                  TRAP    C$PNTB
016632  062706  000006                                                          ADD     #6,SP
016636                          ENDMSG
016636                                                                  L10002:
016636  104423                                                                  TRAP    C$MSG
                        ;
016640                          BGNMSG  ERR10
016640                                                                  ERR10::
016640                          PRINTB  #EFM11,R4,TEMP3                 ;LENGH COMPARISON ERROR
016640  013746  006524                                                          MOV     TEMP3,-(SP)
016644  010446                                                                  MOV     R4,-(SP)
016646  012746  014002                                                          MOV     #EFM11,-(SP)
016652  012746  000003                                                          MOV     #3,-(SP)
016656  010600                                                                  MOV     SP,R0
016660  104414                                                                  TRAP    C$PNTB
016662  062706  000010                                                          ADD     #10,SP
016666                          ENDMSG
016666                                                                  L10003:
016666  104423                                                                  TRAP    C$MSG
```

```
2949  016670                          BGNMSG  ERR4
2950  016670                                                                  ERR4::
2951  016670                          PRINTB  #EFM13,MHRCNT,MGLCNT            ;MODEM STATUS CHANGE
2952  016670  013746  011414                                                          MOV     MGLCNT,-(SP)
2953  016674  013746  011416                                                          MOV     MHRCNT,-(SP)
2954  016700  012746  014131                                                          MOV     #EFM13,-(SP)
2955  016704  012746  000003                                                          MOV     #3,-(SP)
2956  016710  010600                                                                MOV     SP,R0
2957  016712  104414                                                                TRAP    C$PNTB
2958  016714  062706  000010                                                        ADD     #10,SP
2959  016720                          ENDMSG
2960  016720                                                                  L10004:
2961  016720  104423                                                                TRAP    C$MSG
2962
2963
2964
2965                                  ;
2966                                  ;PRINT THE 2 OCTAL #'S IN TEMP3/4
2967                                  ;
2968
2969  016722                          BGNMSG  ERR13
2970  016722                                                                  ERR13::
2971  016722                          PRINTB  #EVTF3C,TEMP3,TEMP4
2972  016722  013746  006526                                                          MOV     TEMP4,-(SP)
2973  016726  013746  006524                                                          MOV     TEMP3,-(SP)
2974  016732  012746  015043                                                          MOV     #EVTF3C,-(SP)
2975  016736  012746  000003                                                          MOV     #3,-(SP)
2976  016742  010600                                                                MOV     SP,R0
2977  016744  104414                                                                TRAP    C$PNTB
2978  016746  062706  000010                                                        ADD     #10,SP
2979  016752                          ENDMSG
2980  016752                                                                  L10005:
2981  016752  104423                                                                TRAP    C$MSG
2982
2983                                  ;
2984                                  ;PRINT THE 2 OCTAL #'S IN TEMP3/4
2985                                  ; AND THE MESG. WHOSE ADDR. IS IN CONOTM
2986                                  ;
2987
2988  016754                          BGNMSG  ERR14
2989  016754                                                                  ERR14::
2990  016754                          PRINTB  #EVTF3D,TEMP3,TEMP4,CONOTM
2991  016754  013746  006532                                                          MOV     CONOTM,-(SP)
2992  016760  013746  006526                                                          MOV     TEMP4,-(SP)
2993  016764  013746  006524                                                          MOV     TEMP3,-(SP)
2994  016770  012746  015060                                                          MOV     #EVTF3D,-(SP)
2995  016774  012746  000004                                                          MOV     #4,-(SP)
2996  017000  010600                                                                MOV     SP,R0
2997  017002  104414                                                                TRAP    C$PNTB
2998  017004  062706  000012                                                        ADD     #12,SP
2999  017010                          ENDMSG
3000  017010                                                                  L10006:
3001  017010  104423                                                                TRAP    C$MSG
3002
3003  017012                          EXIT    MSG
3004  017012  000167                                                                .WORD   C$JMP
```

```
                                                                    E 6
3005  017014  177772                                          .WORD   L10006-2-.
3006
3007
```

```
                        .SBTTL  GLOBAL SUBROUTINES SECTION

                        ;++
                        ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
                        ; THAT ARE USED IN MORE THAN ONE TEST.
                        ;--


                        .SBTTL          CLOCK SETUP SUBROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       THIS SUBROUTINE SETS UP THE CLOCK INFORMATION TABLE FOLLOWING A "CLOCK"
                        ;       CALL EXECUTED IN THE INITIALIZATION CODE. BUT SINCE THE "CLOCK" CALL
                        ;       SAYS NOTHING ABOUT AN LSI-11'S CLOCK, THIS ROUTINE IS ONLY USED IF A
                        ;       LINE OR P-CLOCK IS FOUND.
                        ;
                        ; INPUTS:
                        ;       R1= POINTS TO SUPERVISOR SPACE WHERE CLOCK INFO WAS RETURNED
                        ;       R2= POINTS TO "CLK" TABLE WHERE CLOCK INFO WILL BE KEPT
                        ;
                        ; IMPLICIT INPUTS:
                        ;       THE SUPERVISOR  SPACE WHERE CLOCK INFO WAS RETURNED BY THE "CLOCK" CALL
                        ;
                        ; OUTPUTS:
                        ;       "CLKCSR" GETS LOADED WITH THE CLOCK'S CSR ADDRESS
                        ;       "CLKBR" GETS LOADED WITH THE CLOCK'S INTERRUPT LEVEL
                        ;       "CLKVEC" GETS LOADED WITH THE CLOCK'S INTERRUPT VECTOR
                        ;       "CLKHZ" GETS LOADED WITH THE LINE FREQ. (HERTZ RATE) WHICH DETERMINES
                        ;               THE NUMBER OF TICKS IN A SECOND
                        ;
                        ; CALLING SEQUENCE:
                        ;       JSR     PC,CLKSET               ;CALL CLOCK SETUP WITH R1 & R2 SETUP
                        ;--

 017016                 CLKSET:
 017016  012122                 MOV     (R1)+,(R2)+             ;LOAD CLOCK'S CSR ADDR. INTO "CLKCSR"
 017020  012112                 MOV     (R1)+,(R2)              ;LOAD CLOCK'S INT. LEVEL INTO "CLKBR"
 017022  006312                 ASL     (R2)                    ;ADJUST THE INT. LEVEL FOR LOADING INTO
 017024  006312                 ASL     (R2)                    ;    THE PSW WITH A "SETVEC" CALL
 017026  006312                 ASL     (R2)
 017030  006312                 ASL     (R2)
 017032  006322                 ASL     (R2)+
 017034  012122                 MOV     (R1)+,(R2)+             ;LOAD CLOCK'S INT. VECTOR INTO "CLKVEC"
 017036  012122                 MOV     (R1)+,(R2)+             ;LOAD CLOCK'S HERTZ RATE INTO "CLKHZ"
 017040  000207                 RTS     PC
```

```
3055
3056                            .SBTTL          CLOCK INTERRUPT SERVICE ROUTINE
3057                            ;**
3058                            ; FUNCTIONAL DESCRIPTION:
3059                            ;       THIS IS THE CLOCK INTERRUPT SERVICE ROUTINE WHICH TAKES CARE OF
3060                            ;       KEEPING THE "TIME-SINCE-START" AND COUNTING DOWN ANY OF THE
3061                            ;       "EVENT" TIMERS. THE TIMERS ARE USED TO TIME COMPLETION OF  DEVICE
3062                            ;       REQUESTS. THE "TIME-SINCE-START" IS USED TO BE LOGGED WITH EACH ENTRY
3063                            ;       INTO THE EVENT LOG.
3064                            ;
3065                            ; IMPLICIT INPUTS:
3066                            ;       TIMTCK: THE CURRENT NO. OF TICKS LEFT TO BE COUNTED UNTIL A SECOND
3067                            ;               HAS BEEN COUNTED OFF
3068                            ;       CLKHZ:  THE NO. OF TICKS IN A SECOND, DETERMINED BY THE SYS. LINE FREQ.
3069                            ;       TIMMIN & TIMSEC: CURRENT VALUE OF "TIME-SINCE-START"
3070                            ;                               IN MINUTES & SECONDS
3071                            ;       TIMER 1,2, & S: CURRENT VALUES OF THE "EVENT TIMERS"
3072                            ;
3073                            ; IMPLICIT OUTPUTS:
3074                            ;       NEW VALUE OF EVENT TIMER "1" DECREMENTED BY 1 TICK IF IT WAS NON-ZERO
3075                            ;       NEW VALUE OF EVENT TIMER "2" DECREMENTED BY 1 TICK IF IT WAS NON-ZERO
3076                            ;       NEW VALUE OF EVENT TIMER "S" DECREMENTED BY 1 SECOND IF IT WAS NON-ZERO
3077                            ;
3078                            ; FUNCTIONAL SIDE EFFECTS:
3079                            ;       THE CLOCK IS DISABLED UPON ENTRY AND REENABLED WHEN LEAVING
3080                            ;
3081                            ; CALLING SEQUENCE.
3082                            ;       THIS ROUTINE IS CALLED WHEN THE CLOCK INTERRUPTS THRU "CLKVEC".
3083                            ;       THE ADDRESS OF THIS ROUTINE WAS LOADED INTO THE CLOCK'S INTERRUPT
3084                            ;       VECTOR WITH A SUPERVISOR "SETVEC" CALL.
3085                            ;--
3086
3087  017042                            BGNSRV  CLKINT
3088  017042                                                                    CLKINT::
3089
3090  017042  005077  167532            CLR     @CLKCSR         ;DISABLE THE CLOCK FORM INTERRUPTING
3091  017046  005337  006616            DEC     TIMTCK          ;DECREMENT THE # OF TICKS/SEC.
3092  017052  001015                    BNE     1$              ;GO CHECK TIMERS (1&2-TICKS, 3-SECONDS)
3093  017054  013737  006606  006616    MOV     CLKHZ,TIMTCK    ;RESET THE # OF TICKS/SEC.
3094  017062  005237  006614            INC     TIMSEC          ;INC # OF SECS-SINCE-START
3095  017066  022737  000074  006614    CMP     #60.,TIMSEC     ;SEE IF WE'VE COUNTED 60 SECS. YET
3096  017074  001004                    BNE     1$              ;IF NOT, GO CHECK TIMERS
3097  017076  005237  006612            INC     TIMMIN          ; ELSE INC MINUTES-SINCE-START
3098  017102  005037  006614            CLR     TIMSEC          ; AND RESTART SECOND COUNTER
3099
3100  017106  005737  006620      1$:   TST     TIMER1          ;SEE IF TIMER #', TIMING ANYTHING
3101  017112  001402                    BEQ     2$              ; IF=0, NOTHING BEING TIMED CHECK NEXT TIMER
3102  017114  005337  006620            DEC     TIMER1          ; ELSE DECREMENT THE TIMER VALUE (BY 1 TICK)
3103  017120  005737  006622      2$:   TST     TIMER2          ;SEE IF TIMER #2, TIMING ANYTHING
3104  017124  001402                    BEQ     3$              ; IF=0, NOTHING BEING TIMED CHECK NEXT TIMER
3105  017126  005337  006622            DEC     TIMER2          ; ELSE DECREMENT THE TIMER VALUE (BY 1 TICK)
3106  017132  005737  006624      3$:   TST     TIMERS          ;SEE IF TIMER #3, TIMING ANYTHING
3107  017136  001406                    BEQ     4$              ; IF=0, NOTHING BEING TIMED, LEAVE
3108  017140  023737  006606  006616    CMP     CLKHZ,TIMTCK    ;SEE IF A SECOND HAS BEEN COUNTED OFF
3109  017146  001002                    BNE     4$              ; BR IF NO
3110  017150  005337  006624            DEC     TIMERS          ; ELSE DECREMENT THE TIMER VALUE (BY 1 SEC.)
```

```
3111  017154  013777  006610  167416  4$:     MOV     CLKEN,@CLKCSR   ;REENABLE THE CLOCK TO INTERRUPT
3112  017162                                  ENDSRV
3113  017162                                                          L10007:
3114  017162  000002                                                          RTI
```

```
                                .SBTTL          EVENT LOG SUBROUTINES

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       THIS SUBROUTINE HAS A DIFFERENT ENTRY POINT
                                ;       FOR EACH EVENT TO BE LOGGED AND ALWAYS PRINTS
                                ;       THE SHORT "OPERATOR AWAKE" MESSAGE TO CONSOLE THEN LOGS THE
                                ;       EVENT TYPE, TIME, AND THE OTHER 3 WORDS OF INFO PASSED TO THE
                                ;       SUBROUTINE AT CALLING TIME
                                ;
                                ; INPUTS:
                                ;       TIMMIN & TIMSEC:        CURRENT VALUE OF "TIME-SINCE-START"
                                ;       TEMP2:  WORD #1 OF EVENT LOG INFORMATION (FOR MOST EVENT TYPES)
                                ;       TEMP3:  WORD #2 OF EVENT LOG INFORMATION
                                ;       TEMP4:  WORD #3 OF EVENT LOG INFORMATION
                                ;       MODS:   CURRENT VALUE OF THE MODEM SIGNALS AVAILABLE FROM THE DEVICE
                                ;
                                ; OUTPUTS:
                                ;       "OPERATOR AWAKE" MESSAGE SENT TO THE CONSOLE
                                ;       NEW EVENT LOGGED IN "EVTLOG" (EVENT LOG)
                                ;       UPDATED "EVTPTR" (EVENT LOG ENTRY POINTER)
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;       "DVMODS" THE DEVICE SUBROUTINE THAT RETURNS MODEM STATUS IN "MODS"
                                ;               (FOR SOME EVENT TYPES)
                                ;
                                ; FUNCTIONAL SIDE EFFECTS:
                                ;       TEMP:   USED TO STORE ADDRESS OF "OPERATOR AWAKE" MESSAGE
                                ;       TEMP1:  USED TO SETUP THE VALUE OF THE "EVENT TYPE" BYTE FOR LOGGING
                                ;
                                ; CALLING SEQUENCE:
                                ;       JSR     PC,LOGTXQ       ;CALL THE LOG EVENT SUBROUTINE WITH TEMP,TEMP1,
                                ;        "       "   "          ; TEMP2, TEMP3, AND TEMP4 SETUP
                                ;        "       "   "
                                ;       JSR     PC,LOGCMP
                                ;--

017164                          LOGTXQ:
017164  012737  015625  006520          MOV     #STXQ,TEMP1     ;SET UP MSG. TO PRINT
017172  012737  000000  006516          MOV     #TXQ,TEMP       ;SET UP EVENT TYPE
017200  000517                          BR      LOGS1           ;GO LOG EVENT AND TIME

017202                          LOGTXC:
017202  012737  015636  006520          MOV     #STXC,TEMP1     ;SET UP MSG. TO PRINT
017210  012737  000002  006516          MOV     #TXC,TEMP       ;SET UP EVENT TYPE
017216  000510                          BR      LOGS1           ;GO LOG EVENT AND TIME

017220                          LOGRXQ:
017220  012737  015647  006520          MOV     #SRXQ,TEMP1     ;SET UP MSG. TO PRINT
017226  012737  000004  006516          MOV     #RXQ,TEMP       ;SET UP EVENT TYPE
017234  000501                          BR      LOGS1           ;GO LOG EVENT AND TIME

017236                          LOGRXC:
017236  012737  000006  006516          MOV     #RXC,TEMP       ;SET UP EVENT TYPE
017244  000475                          BR      LOGS1           ;GO LOG EVENT AND TIME
017246                          LGDVE:
```

```
3171  017246  012737  015660  006520          MOV     #SDVE,TEMP1     ;SET UP MSG. TO PRINT
3172  017254  012737  000010  006516          MOV     #DER,TEMP       ;SET UP EVENT TYPE
3173  017262  000503                          BR      LOGS3           ;GO LOG EVENT AND TIME
3174
3175  017264                          LOGDVI:
3176  017264  012737  015702  006520          MOV     #SDVI,TEMP1     ;SET UP MSG. TO PRINT
3177  017272  012737  000012  006516          MOV     #DVI,TEMP       ;SET UP EVENT TYPE
3178  017300  113737  006546  006522          MOVB    MODTYP,TEMP2
3179  017306  113737  006550  006523          MOVB    MLTYP,TEMP2+1
3180  017314  013737  006556  006524          MOV     RPASS,TEMP3
3181  017322  013737  006554  006526          MOV     PARAM,TEMP4     ;SET UP EVNT ENTRIES
3182  017330  000460                          BR      LOGS3           ;GO LOG EVENT AND TIME
3183
3184  017332                          LOGCMP:
3185  017332  012737  015671  006520          MOV     #SCM,TEMP1      ;SET UP MSG. TO PRINT
3186  017340  012737  000014  006516          MOV     #DCK,TEMP       ;SET UP EVENT TYPE
3187  017346  000451                          BR      LOGS3
3188  017350                          LOGCML:
3189  017350  012737  015713  006520          MOV     #SCML,TEMP1
3190  017356  012737  000020  006516          MOV     #DLE,TEMP       ;SET UP MSG. AND TYPE
3191  017364  000442                          BR      LOGS3           ;GO LOG EVENT AND TIME
3192  017366                          LOGCMD:
3193  017366  012737  015724  006520          MOV     #SCMD,TEMP1
3194  017374  012737  000022  006516          MOV     #DDE,TEMP
3195  017402  000433                          BR      LOGS3           ;GO LOG MSG TYPE AND TIME
3196  017404                          LOGEOP:
3197  017404  012737  015735  006520          MOV     #SEOP,TEMP1
3198  017412  012737  000024  006516          MOV     #EOP,TEMP
3199  017420  000424                          BR      LOGS3           ;GO LOG MSG TYPE AND TIME
3200
3201
3202  017422                          LOGMSC:
3203  017422  012737  015746  006520          MOV     #SMSC,TEMP1
3204  017430  012737  000016  006516          MOV     #MSC,TEMP
3205  017436  000415                          BR      LOGS3
3206
3207
3208  017440  013746  006470          LOGS1:  MOV     ERRCNT,-(SP)    ;SAVE CURRENT ERROR COUNT
3209  017444  004737  032042                  JSR     PC,DVMODS       ; GO GET MODEM STATUS
3210  017450  012604                          MOV     (SP)+,R4        ;GET SAVED ERRCNT VALUE
3211  017452  020437  006470                  CMP     R4,ERRCNT       ;WHERE ANY ERRORS FOUND
3212  017456  001402                          BEQ     1$              ; BR IF NONE
3213  017460  000137  017674                  JMP     LOGEX           ; ELSE, LEAVE WITHOUT LOGGING ANYTHING
3214                                                                  ;   BUT THE DEVICE ERROR FROM "DVMODS"
3215  017464  013737  007534  006526  1$:     MOV     MODS,TEMP4      ;AND PUT IT IN TEMP4
3216
3217  017472                          LOGS3:
3218  017472  022737  000006  006516          CMP     #RXC,TEMP
3219  017500  001434                          BEQ     LOGS5           ;IF RXC DONT PRINT
3220  017502  032737  000001  006554          BIT     #STATB,PARAM
3221  017510  001430                          BEQ     LOGS5           ;IF NO STATUS SELECTED
3222                                                                  ;GO TO 5
3223
3224  017512  022737  000010  006462          CMP     #10,LNCNT       ;HAVE WE DONE 10?
3225  017520  001012                          BNE     LOGS4           ;IF NOT GO TO 4
3226  017522  005037  006462                  CLR     LNCNT           ;ESLE CLEAR IT
```

```
3227
3228  017526                                          PRINTF  #CR             ;ELSE PRINT CR
3229  017526  012746  015622                                                          MOV     #CR,-(SP)
3230  017532  012746  000001                                                          MOV     #1,-(SP)
3231  017536  010600                                                                  MOV     SP,R0
3232  017540  104417                                                                  TRAP    C$PNTF
3233  017542  062706  000004                                                          ADD     #4,SP
3234  017546                                  LOGS4:
3235  017546  005237  006462                          INC     LNCNT           ;INC COUNTER OF # OF AWAKE MSGS
3236  017552                                          PRINTF  TEMP1           ;PRINT OPERATOR AWAKE MSG.
3237  017552  013746  006520                                                          MOV     TEMP1,-(SP)
3238  017556  012746  000001                                                          MOV     #1,-(SP)
3239  017562  010600                                                                  MOV     SP,R0
3240  017564  104417                                                                  TRAP    C$PNTF
3241  017566  062706  000004                                                          ADD     #4,SP
3242  017572  010346                          LOGS5:  MOV     R3,-(SP)        ;SAVE R3 ON THE STACK
3243  017574  013703  006626                          MOV     EVTPTR,R3
3244  017600  113723  006516                          MOVB    TEMP,(R3)+      ;LOG EVENT
3245  017604  013737  006606  006516                  MOV     CLKHZ,TEMP
3246  017612  163737  006616  006516                  SUB     TIMTCK,TEMP
3247  017620  113723  006516                          MOVB    TEMP,(R3)+      ;LOG TIME SINCE START
3248  017624  113723  006614                          MOVB    TIMSEC,(R3)+
3249  017630  113723  006612                          MOVB    TIMMIN,(R3)+    ;TICKS,SECS AND MINS.
3250  017634  013723  006522                          MOV     TEMP2,(R3)+     ;LOG EVNT ENTRY 3
3251  017640  013723  006524                          MOV     TEMP3,(R3)+     ;LOG EVNT ENTRY 4
3252  017644  013723  006526                          MOV     TEMP4,(R3)+     ;LOG EVNT ENTRY 5
3253  017650  020327  007532                          CMP     R3,#EVTEND
3254  017654  103404                                  BLO     LOGS2           ;IF EVENT LOG FULL GO
3255                                                                          ;CONTINUE;ELSE GO TO 2
3256  017656  012713  177777                          MOV     #-1,(R3)        ;LOG A TABLE END
3257  017662  012703  006630                          MOV     #EVTLOG,R3      ;PUT R3 TO START OF TABLE
3258  017666  010337  006626                  LOGS2:  MOV     R3,EVTPTR       ;RESTORE POINTER
3259  017672  012603                                  MOV     (SP)+,R3        ;RESTORE R3
3260  017674  000207                          LOGEX:  RTS     PC
3261
3262
```

```
                                .SBTTL          DUMP EVENT LOG AND BASE TABLE
                        
017676  010246          REPORT: MOV     R2,-(SP)        ;SAVE R2,R3,R4 ON THE STACK
017700  010346                  MOV     R3,-(SP)
017702  010446                  MOV     R4,-(SP)
                        
                        
                        
                        
017704  013702  006626          MOV     EVTPTR,R2       ;MAKE R2 A POINTER TO EVENT TABLE
017710  023727  006630  177777  CMP     EVTLOG,#-1      ;SEE IF EVENT TABLE IS EMPTY
017716  001034                  BNE     RPT0            ;BR IF NO
017720                          PRINTS  #NULEVT         ;IF EMPTY TELL OPRERATOR.
017720  012746  014577                                                  MOV     #NULEVT,-(SP)
017724  012746  000001                                                  MOV     #1,-(SP)
017730  010600                                                          MOV     SP,R0
017732  104416                                                          TRAP    C$PNTS
017734  062706  000004                                                  ADD     #4,SP
017740  000137  020624          JMP     ENDEVT          ;AND END
                        
017744  162702  000012  RPT:    SUB     #12,R2          ;NOW POINT BACK TO TOP OF ENTRY U
                                                        ;JUST PRINTED
                        
017750  020227  006630          CMP     R2,#EVTLOG      ;POINTING TO TOP OF EVNT LOG QUEUE?
017754  001010                  BNE     RPT1            ; BR IF NO
017756  012702  007532          MOV     #EVTEND,R2      ;SET R2 TO POINT TO BOTTOM OF LOG
017762  026227  177776  177777  CMP     -2(R2),#-1
017770  001007                  BNE     RPT0            ;IF END OF LOG IS NOT EMPTY
017772  000137  020624          JMP     ENDEVT          ;CONTINUE...FLSE EXIT
                        
020000  020237  006626  RPT1:   CMP     R2,EVTPTR       ;ARE WE BACK TO POINTER?
020002  001002                  BNE     RPT0            ;IF NOT CONTINUE
020004  000137  020624          JMP     ENDEVT          ;IF SO EXIT....
                        
020010  162702  000012  RPT0:   SUB     #12,R2          ;POINT R2 TO START OF ENTRY
020014                  RPTAA:  PRINTS  #EVTF0          ;PRINT EVENT ENTRY HEADER
020014  012746  014632                                                  MOV     #EVTF0,-(SP)
020020  012746  000001                                                  MOV     #1,-(SP)
020024  010600                                                          MOV     SP,R0
020026  104416                                                          TRAP    C$PNTS
020030  062706  000004                                                  ADD     #4,SP
020034  112203                  MOVB    (R2)+,R3        ;PUT EVENT TYPE INTO R3
020036  112237  007624          MOVB    (R2)+,EVTTCK
020042  112237  007620          MOVB    (R2)+,EVTSEC    ;PUT EVENT TIME (TICKS,SECS,MINS IN TEMP LOC.S)
020046  112237  007622          MOVB    (R2)+,EVTMIN
020052                          PRINTS  #EVTF1,EVTMIN,EVTSEC,EVTTCK,EVTLST(R3)  ;PRINT EVENT TIME AND DESCRIPT.
020052  016346  007572                                                  MOV     EVTLST(R3),-(SP)
020056  013746  007624                                                  MOV     EVTTCK,-(SP)
020062  013746  007620                                                  MOV     EVTSEC,-(SP)
020066  013746  007622                                                  MOV     EVTMIN,-(SP)
020072  012746  014730                                                  MOV     #EVTF1,-(SP)
020076  012746  000005                                                  MOV     #5,-(SP)
020102  010600                                                          MOV     SP,R0
020104  104416                                                          TRAP    C$PNTS
020106  062706  000014                                                  ADD     #14,SP
```

```
3319  020112  000173  007634          JMP     @RPTDSP(R3)     ;DISPATCH TO DECODING SECTION FOR SPECIFIC TYPE
3320
3321  020116  012237  007626  RPTTXQ: MOV     (R2)+,EVTADD    ;STORE MESSAGE ADDRESS FOR PRINTING
3322  020122  012237  007630          MOV     (R2)+,EVTBCT    ;STORE BYTE COUNT FOR PRINTING
3323  020126  012203                  MOV     (R2)+,R3        ;STORE MODEM STATUS FOR PRINTING
3324  020130                          PRINTS  #EVTF2,EVTADD,EVTBCT    ;PRINT ADDR,BYTE CNT
3325  020130  013746  007630                                                  MOV     EVTBCT,-(SP)
3326  020134  013746  007626                                                  MOV     EVTADD,-(SP)
3327  020140  012746  014757                                                  MOV     #EVTF2,-(SP)
3328  020144  012746  000003                                                  MOV     #3,-(SP)
3329  020150  010600                                                          MOV     SP,R0
3330  020152  104416                                                          TRAP    C$PNTS
3331  020154  062706  000010                                                  ADD     #10,SP
3332  020160  004737  020634          JSR     PC,RPTMSB       ;GO PRINT MODEM STATUS
3333  020164  000137  017744          JMP     RPT             ;GO BACK FOR NEXT EVENT ENTRY
3334
3335  020170  012237  007632  RPTDER: MOV     (R2)+,EVTTMP    ;GET ADDRESS OF DEVICE INFO MESSAGE
3336  020174  012237  007662          MOV     (R2)+,DEV1      ;STORE DEVICE REG CONTENTS FOR PRINTING
3337  020200  012237  007664          MOV     (R2)+,DEV2
3338  020204                          PRINTS  #EVTF3,EVTTMP   ;PRINT DEVICE REG CONTENTS.
3339  020204  013746  007632                                                  MOV     EVTTMP,-(SP)
3340  020210  012746  015031                                                  MOV     #EVTF3,-(SP)
3341  020214  012746  000002                                                  MOV     #2,-(SP)
3342  020220  010600                                                          MOV     SP,R0
3343  020222  104416                                                          TRAP    C$PNTS
3344  020224  062706  000006                                                  ADD     #6,SP
3345  020230                          PRINTS  #EVTF3C,DEV1,DEV2
3346  020230  013746  007664                                                  MOV     DEV2,-(SP)
3347  020234  013746  007662                                                  MOV     DEV1,-(SP)
3348  020240  012746  015043                                                  MOV     #EVTF3C,-(SP)
3349  020244  012746  000003                                                  MOV     #3,-(SP)
3350  020250  010600                                                          MOV     SP,R0
3351  020252  104416                                                          TRAP    C$PNTS
3352  020254  062706  000010                                                  ADD     #10,SP
3353  020260  000137  017744          JMP     RPT             ;GO BACK FOR NEXT EVENT ENTRY
3354
3355  020264  005037  007662  RPTDVI: CLR     DEV1
3356  020270  005037  007664          CLR     DEV2            ;CLEAR UPPER BYTES OF DEV1 & DEV2 BEFORE USE
3357  020274  112237  007662          MOVB    (R2)+,DEV1      ;STORE SETUP OPERATION PARAMETERS FOR PRINTING
3358  020300  112237  007664          MOVB    (R2)+,DEV2
3359  020304  012237  007666          MOV     (R2)+,DEV3
3360  020310  012237  007670          MOV     (R2)+,DEV4
3361  020314  010246                  MOV     R2,-(SP)        ;SAVE R2 ON THE STACK
3362  020316  004737  021326          JSR     PC,SHWOP        ;GO PRINT MODE, MAINT-LOOP TYPE, PARAMTERS.
3363  020322  012602                  MOV     (SP)+,R2        ;RESTORE R2
3364  020324  000137  017744          JMP     RPT             ;GO BACK FOR NEXT EVENT ENTRY
3365  020330  012237  007626  RPTEOP: MOV     (R2)+,EVTADD
3366  020334  012237  007630          MOV     (R2)+,EVTBCT
3367  020340  012237  007632          MOV     (R2)+,EVTTMP
3368  020344                          PRINTS  #EVTF4B,EVTADD,EVTBCT,EVTTMP    ;PRINT ADDR,RXBYTES,CMPBYTES.
3369  020344  013746  007632                                                  MOV     EVTTMP,-(SP)
3370  020350  013746  007630                                                  MOV     EVTBCT,-(SP)
3371  020354  013746  007626                                                  MOV     EVTADD,-(SP)
3372  020360  012746  015302                                                  MOV     #EVTF4B,-(SP)
3373  020364  012746  000004                                                  MOV     #4,-(SP)
3374  020370  010600                                                          MOV     SP,R0
```

```
3375  020372  104416                                                          TRAP    C$PNTS
3376  020374  062706  000012                                                  ADD     #12,SP
3377
3378  020400  000137  017744          JMP     RPT             ;THEN GO GET NEXT EVENT ENTRY
3379
3380
3381  020404  012237  007626  RPTDDE: MOV     (R2)+,EVTADD    ;STORE MESSAGE ADDRESS FOR PRINTING
3382  020410  012237  007630          MOV     (R2)+,EVTBCT    ;STORE BYTE COUNT FOR PRINTING
3383  020414  012237  007632          MOV     (R2)+,EVTTMP    ;STORE TOTAL # OF CMP ERRORS
3384  020420                          PRINTS  #EVTF4,EVTADD,EVTBCT,EVTTMP     ;PRINT ADDR, BYTE CNT, # CMP ERRS
3385  020420  013746  007632                                                  MOV     EVTTMP,-(SP)
3386  020424  013746  007630                                                  MOV     EVTBCT,-(SP)
3387  020430  013746  007626                                                  MOV     EVTADD,-(SP)
3388  020434  012746  015102                                                  MOV     #EVTF4,-(SP)
3389  020440  012746  000004                                                  MOV     #4,-(SP)
3390  020444  010600                                                          MOV     SP,R0
3391  020446  104416                                                          TRAP    C$PNTS
3392  020450  062706  000012                                                  ADD     #12,SP
3393  020454  000137  017744          JMP     RPT             ;THEN GO GET NEXT EVENT ENTRY
3394
3395  020460                  RPTDLE:
3396  020460  012237  007626  RPTDCK: MOV     (R2)+,EVTADD    ;STORE MSG ADDR FOR PRINT
3397  020464  012237  007630          MOV     (R2)+,EVTBCT    ;STORE BYTE COUNT
3398  020470  012237  007632          MOV     (R2)+,EVTTMP    ;STORE BYTE COUNT COMP
3399  020474                          PRINTS  #EVTF4A,EVTADD,EVTBCT,EVTTMP    ;PRINT ADDR,RXBYTES,CMPBYTES.
3400  020474  013746  007632                                                  MOV     EVTTMP,-(SP)
3401  020500  013746  007630                                                  MOV     EVTBCT,-(SP)
3402  020504  013746  007626                                                  MOV     EVTADD,-(SP)
3403  020510  012746  015204                                                  MOV     #EVTF4A,-(SP)
3404  020514  012746  000004                                                  MOV     #4,-(SP)
3405  020520  010600                                                          MOV     SP,R0
3406  020522  104416                                                          TRAP    C$PNTS
3407  020524  062706  000012                                                  ADD     #12,SP
3408
3409  020530  000137  017744          JMP     RPT             ;THEN GO GET NEXT EVENT ENTRY
3410
3411
3412
3413
3414
3415  020534  012237  007632  RPTMSC: MOV     (R2)+,EVTTMP
3416  020540                          PRINTS  #EVTF3,EVTTMP   ;PRINT CHANGE TYPE
3417  020540  013746  007632                                                  MOV     EVTTMP,-(SP)
3418  020544  012746  015031                                                  MOV     #EVTF3,-(SP)
3419  020550  012746  000002                                                  MOV     #2,-(SP)
3420  020554  010600                                                          MOV     SP,R0
3421  020556  104416                                                          TRAP    C$PNTS
3422  020560  062706  000006                                                  ADD     #6,SP
3423  020564  012203          MOV     (R2)+,R3        ;PUT OLD MODEM STATUS IN R3 FOR PRINTING
3424  020566  004737  020634  JSR     PC,RPTMSB       ;GO PRINT OLD MODEM STATUS
3425  020572                  PRINTS  #EVMOCG         ;GO PRINT "CHANGED TO:"
3426  020572  012746  015444                                                  MOV     #EVMOCG,-(SP)
3427  020576  012746  000001                                                  MOV     #1,-(SP)
3428  020602  010600                                                          MOV     SP,R0
3429  020604  104416                                                          TRAP    C$PNTS
3430  020606  062706  000004                                                  ADD     #4,SP
```

```
3431  020612  012203                  MOV     (R2)+,R3        ;PUT NEW MODEM STATUS IN R3 FOR PRINTING
3432  020614  004737  020634          JSR     PC,RPTMSB       ;GO PRINT NEW MODEM STATUS
3433  020620  000137  017744  RPTMSE: JMP     RPT             ;THEN GO GET NEXT EVENT
3434
3435
3436  020624  012604          ENDEVT: MOV     (SP)+,R4        ;RESTORE R4,R3,R2
3437  020626  012603                  MOV     (SP)+,R3
3438  020630  012602                  MOV     (SP)+,R2
3439  020632  000207                  RTS     PC              ;RETURN TO CALLING ROUTINE
3440
3441
3442                          ;REPORT MODEM STATUS SUBROUTINE
3443                          ;       PART OF STATISICAL REPORTING (DUMPING EVENT LOG)
3444
3445  020634          RPTMSB: PRINTS  #EVMOHD                 ;PRINT MODEM STATUS HEADER
3446  020634  012746  015467                                          MOV     #EVMOHD,-(SP)
3447  020640  012746  000001                                          MOV     #1,-(SP)
3448  020644  010600                                                  MOV     SP,R0
3449  020646  104416                                                  TRAP    C$PNTS
3450  020650  062706  000004                                          ADD     #4,SP
3451  020654  012704  007536          MOV     #MOBITS,R4      ;MAKE R4 A POINTER TO MODEM SIG. BIT DEF. TABLE
3452  020660  012705  007554          MOV     #MOMSGS,R5      ;MAKE R5 A POINTER TO MODEM MSG. POSITION TABLE
3453  020664  005714          6$:     TST     (R4)            ;SEE IF BIT AVAIABLE FROM DEVICE
3454  020666  001004                  BNE     7$              ;BR IF THAT MODEM SIG. AVAIABLE
3455  020670  112735  000130          MOVB    #'X,@(R5)+      ;ELSE PUT "X" IN REPORT IF SIGNAL NOT AVAILABLE
3456  020674  005724                  TST     (R4)+           ;BUMP R4 TO POINT TO NEXT BIT DEFINITION
3457  020676  000407                  BR      9$              ;GO SEE IF CHECKED ALL MODEM SIGNALS
3458  020700  032403          7$:     BIT     (R4)+,R3        ;IF THERE, SEE IF THAT BIT IN DEVICE'S ENTRY=1
3459  020702  001403                  BEQ     8$              ;BR IF BIT (SIGNAL) VALUE =0
3460  020704  112735  000061          MOVB    #'1,@(R5)+      ;IF=1, PUT '1" IN REPORT MESSAGE
3461  020710  000402                  BR      9$              ;GO SEE IF ALL MODEM SIGNALS CHECKED
3462  020712  112735  000060  8$:     MOVB    #'0,@(R5)+      ;IF BIT(SIGNAL)=0, PUT "0" IN REPORT MESSAGE
3463  020716  020427  007554  9$:     CMP     R4,#MOBITE      ;SEE IF ALL BITS(SIGNALS) CHECKED
3464  020722  002760                  BLT     6$              ;LOOP UNTIL ALL SIGNALS(BITS) CHECKED
3465  020724                          PRINTS  #EVMOST         ;THEN PRINT MODEM SIGNAL VALUE MESSAGE
3466  020724  012746  015547                                          MOV     #EVMOST,-(SP)
3467  020730  012746  000001                                          MOV     #1,-(SP)
3468  020734  010600                                                  MOV     SP,R0
3469  020736  104416                                                  TRAP    C$PNTS
3470  020740  062706  000004                                          ADD     #4,SP
3471  020744  000207                  RTS     PC              ;RETURN TO EVENT DECODING
3472
3473
```

```
                        .SBTTL          DUMP BYTES OR WORDS


                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       DUMPSR - DUMP BYTES OR WORDS SUBROUTINE
                        ;
                        ;       THIS SUBROUTINE PRINTS THE CONTENTS OF THE LOCATIONS BETWEEN
                        ;       A STARTING AND END ADDRESS IN LOCS. "STADD" AND "ENADD".
                        ;       THE WORD OR BYTE CONTENTS ARE PRINTED 8 TO A LINE WITH THE
                        ;       ADDRESS OF THE FIRST BYTE AS THE FIRST 6 OCTAL CHARS. FOLLOWED
                        ;       BY A SEMICOLON.
                        ;
                        ; INPUTS:
                        ;       STADD=  STARTING ADDRESS (FIRST LOC. TO PRINT)
                        ;       ENADD=  END ADDRESS (LAST LOCATION TO DUMP)
                        ;       BYTBIT= 1 IF SUPPOSED TO PRINT "BYTES"
                        ;               0 IF SUPPOSED TO PRINT "WORDS"
                        ;
                        ; OUTPUTS:
                        ;       CONTENTS OF A RANGE OF LOC.S PRINTED ON THE OPERATORS CONSOLE.
                        ;
                        ; CALLING SEQUENCE:
                        ;       JSR PC,DUMPSR           ;CALL DUMP BYTES SUBROUTINE
                        ;
                        ;--

020746 013702 006472    DUMPSR: MOV     STADD,R2        ;SET R2 UP TO STARTING ADDR.
020752 005003           DUM4:   CLR     R3              ;CLEAR R3
020754                          PRINTF  #BASM1,R2       ;PRINT ADDRESS
020754 010246                           MOV     R2,-(SP)
020756 012746 014571                    MOV     #BASM1,-(SP)
020762 012746 000002                    MOV     #2,-(SP)
020766 010600                           MOV     SP,R0
020770 104417                           TRAP    C$PNTF
020772 062706 000006                    ADD     #6,SP
020776 005737 006476    DUM3:   TST     BYTBIT          ;IS THIS BYTE OR WORD
021002 001416                   BEQ     DUM1            ;BR IF WORD
021004 112237 006516            MOVB    (R2)+,TEMP      ;MOV BYTE TO TEMP
021010                          PRINTF  #BASM3,<B,TEMP> ;PRINT BYTE
021010 005046                           CLR     -(SP)
021012 153716 006516                    BISB    TEMP,(SP)
021016 012746 014553                    MOV     #BASM3,-(SP)
021022 012746 000002                    MOV     #2,-(SP)
021026 010600                           MOV     SP,R0
021030 104417                           TRAP    C$PNTF
021032 062706 000006                    ADD     #6,SP
021036 000411                   BR      DUM2
021040                  DUM1:   PRINTF  #BASM2,(R2)+    ;PRINT WORD
021040 012246                           MOV     (R2)+,-(SP)
021042 012746 014562                    MOV     #BASM2,-(SP)
021046 012746 000002                    MOV     #2,-(SP)
021052 010600                           MOV     SP,R0
021054 104417                           TRAP    C$PNTF
021056 062706 000006                    ADD     #6,SP
021062 020237 006474    DUM2:   CMP     R2,ENADD        ;COMPARE FOR LAST ADD
```

```
3530  021066  003005                  BGT     DUMEX           ;IF DONE EXIT
3531  021070  005203                  INC     R3              ;ELSE BUMP R3
3532  021072  022703  000010          CMP     #8.,R3          ;HAVE WE PRINTED 8 ACCROSS
3533  021076  001725                  BEQ     DUM4            ;IF SO GO BACK TO 4
3534  021100  000736                  BR      DUM3            ;ELSE GO BACK AND PRINT ANOTHER
3535                                                          ;BYTE OR WORD
3536  021102  000207          DUMEX:  RTS     PC              ;RETURN TO CALLER
3537
```

```
                        .SBTTL          UPDATE TOTAL CHAR. COUNT SUBROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;               UPDATES TOTAL CHAR. COUNT TOTCC BASED ON CURCC.
                        ;               LAST MESSAGE IS TRUNCATED TO FIT INTO THE
                        ;               BUFFER IF TOTAL CHAR. COUNT EXCEEDS 'BUFLIM'  A MESSAGE
                        ;               IS PRINTED TELLING THE OPERATOR THE TRUNCATION OCCURED.
                        ;
                        ; INPUTS:
                        ;               CURCC=  CHAR. COUNT OF MESSAGE BEING ADDED
                        ;               TOTCC=  TOTAL CHAR COUNT OF BUFFER ITS BEING ADDED TO
                        ;
                        ; OUTPUTS:
                        ;               MESSAGE TO OPERATOR IF MESSAGE TRUNCATED TO FIT
                        ;
                        ; FUNCTIONAL SIDE EFFECTS:
                        ;               LOCATION "TEMP" USED FOR CALCULATIONS
                        ; CALLING SEQUENCE:
                        ;               JSR     PC,ADCC         ;UPDATED TOTAL CHAR. COUNT
                        ;--

021104  063737  006502  006512  ADDCC:  ADD     CURCC,TOTCC     ;ADD CURRENT TO TOTAL
021112  022737  001000  006512          CMP     #BUFLIM,TOTCC   ; COMPARE TO 'BUFLIM'
021120  103027                         BHIS    ADDC1           ;IF NOT MORE THEN 'BUFLIM' EXIT

                                        ; PRINT MESSAGE AND TRUNCATE COUNT

021122                                  PRINTF  #MSGTRU
021122  012746  013524                                                  MOV     #MSGTRU,-(SP)
021126  012746  000001                                                  MOV     #1,-(SP)
021132  010600                                                          MOV     SP,R0
021134  104417                                                          TRAP    C$PNTF
021136  062706  000004                                                  ADD     #4,SP
021142  163737  006502  006512          SUB     CURCC,TOTCC     ;SUB CURRENT FROM TOTAL
021150  012737  001000  006516          MOV     #BUFLIM,TEMP    ;MOV 'BUFLIM' TO TEMP
021156  163737  006512  006516          SUB     TOTCC,TEMP      ;SUB TOTAL FROM 'BUFLIM'
021164  013737  006516  006502          MOV     TEMP,CURCC      ;AND ESTABLISH NEW CURRENT
021172  063737  006502  006512          ADD     CURCC,TOTCC     ;ADD "ADJUSTED CURRENT" TO TOTAL CHAR. CNT.
021200  000207                  ADDC1:  RTS     PC              ;RETURN TO CALLER
```

```
                        .SBTTL          BUILD MESSAGE BUFFERS SUBROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       BLDBUF--  BUILD POINTER TABLE AND BUFFERS
                        ;
                        ;       THIS SUBROUTINE ADDS A MESSAGE TO THE TRANSMIT OR EXPECT LIST
                        ;       USING THE POINTER, BYTE COUNT, AND ADDRESS PASSED TO IT.
                        ;
                        ; INPUTS:
                        ;       CURCC=  CHAR. COUNT OF MESSAGE TO BE ADDED
                        ;       CURADD= ADDRESS OF MESSAGE TO BE ADDED
                        ;       CPTR=   ADDRESS OF POINTER TABLE WORD WHERE MESSAGE POINTERS ARE
                        ;                       TO BE BUILT
                        ;       MSGTYP= VALUE TO USE AS AN INDEX TO FIND SOURCE OF MESSAGE DATA
                        ;                       INDEX INTO DMSGCT() AND DMSGAD().
                        ; OUTPUTS:
                        ;       A MESSAGE ADDED TO EITHER TXBUF OR CMPBUF
                        ;       APPROPRIATE POINTERS IN PTRTAB POINTER TABLE
                        ;
                        ; CALLING SEQUENCE:
                        ;       JSR PC,BLDBUF           ;BUILD MESSAGE IN BUFFER AND ADD PTRS.
                        ;--

021202                  BLDBUF:
021202  010246                  MOV     R2,-(SP)        ;SAVE R2 AND R3 ON THE STACK
021204  010346                  MOV     R3,-(SP)
021206  013702  006506          MOV     CPTR,R2

021212  013722  006510  BLDB1:  MOV     CURADD,(R2)+    ;PUT CURRENT ADD ON POINTER TAB
021216  013722  006502          MOV     CURCC,(R2)+     ;PUT CURRENT CC ON POINTER TAB
021222  010237  006506          MOV     R2,CPTR         ;PUT UPDATED R2 BACK TO CURRENT POINT
021226  013702  006500          MOV     MSGTYP,R2       ;GET MESSAGE TYPE TO USE AS INDEX
021232  006302                  ASL     R2              ;DOUBLE FOR WORD INDEX
021234  013737  006510  006516  MOV     CURADD,TEMP     ;MOVE CURRENT ADD TO TEMP
021242  063737  006502  006516  ADD     CURCC,TEMP      ;ADD CHAR COUNT TO IT TO GET END
021250  013703  006510          MOV     CURADD,R3       ;SET R3 TO CURRENT START ADD
021254  016237  002150  006522  BLDB2:  MOV     DMSGCT(R2),TEMP2        ;GET BYTE COUNT
021262  016204  002172          MOV     DMSGAD(R2),R4   ;PUT STARTING FROM ADD IN R4
021266  060437  006522          ADD     R4,TEMP2        ;ADD IT TO TEMP2 TO GET END OF FROM
021272  112423          BLDB3:  MOVB    (R4)+,(R3)+     ;MOV BYTE FROM PATTERN TO BUFFER
021274  020337  006516          CMP     R3,TEMP         ;ALL DONE?
021300  001404                  BEQ     BLDBEX          ;IF SO EXIT
021302  020437  006522          CMP     R4,TEMP2        ;IS PATTERN COUNT EXPIRED
021306  001762                  BEQ     BLDB2           ;IF SO GO START AGAIN
021310  000770                  BR      BLDB3           ;IF NOT GET ANOTHER BYTE
021312  063737  006502  006510  BLDBEX: ADD     CURCC,CURADD    ;BUMP CURADD
021320  012603                  MOV     (SP)+,R3        ;RESTORE R3 AND R2
021322  012602                  MOV     (SP)+,R2
021324  000207                  RTS     PC              ;RETURN TO CALLER
```

```
                        .SBTTL          SHOW MODE OF OPERATION, LOOP TYPE AND QUALIFIERS

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       SHWOP - SHOW MODE OF OPERATION, LOOP, QULAIFIERS
                        ;               PRINTED ON THE OPERATOR'S CONSOLE.
                        ;
                        ; INPUTS:
                        ;       DEV1=   MODE TYPE (MODTYP)
                        ;       DEV2=   MAINT LOOP TYPE (MLTYP)
                        ;       DEV3=   "RUN PASS" COUNT (RPASS) - COUNT DOWN
                        ;       DEV4=   PARAMTERS WORD (PARAM)
                        ;
                        ; IMPLICIT INPUTS:
                        ;       MODES= TABLE OF ADDRESSES OF MODE NAME STRINGS
                        ;       LOOPS= TABLE OF ADDRESSES OF LOOP TYPE NAMES
                        ;
                        ; CALLING SEQUENCE:
                        ;       JSR PC,SHWOP
                        ;--

021326  013702  007662          SHWOP:  MOV     DEV1,R2         ;GET THE MODE TYPE IN R2
021332  006302                          ASL     R2              ;MAKE IT A WORD TABLE OFFSET
021334  016237  003064  006516          MOV     MODES(R2),TEMP  ;GET ADDRESS OF MODE-IN-ASCII
021342  013702  007664                  MOV     DEV2,R2         ;GET MAINTENANCE LOOP TYPE
021346  006302                          ASL     R2
021350  012737  013037  006524          MOV     #LP00,TEMP3     ;LOAD TEMP3 TO POINT TO "/LOOP-"
021356  005702                          TST     R2              ;SEE IF /LOOP=XXXXX OR NONE
021360  001003                          BNE     10$             ; BR IF /LOOP= OF SOME KIND
021362  012737  013036  006524          MOV     #LP0,TEMP3      ;IF NO LOOP THEN DON'T PRINT "/LOOP "
021370  016237  003102  006520  10$:    MOV     LOOPS(R2),TEMP1 ;GET ADDRESS OF LOOP-IN-ASCII
021376  013737  007666  006522          MOV     DEV3,TEMP2      ;GET NUMBER OF PASSES
021404                                  PRINTS  #SHF0,TEMP,TEMP3,TEMP1,TEMP2
021404  013746  006522                                                  MOV     TEMP2,-(SP)
021410  013746  006520                                                  MOV     TEMP1,-(SP)
021414  013746  006524                                                  MOV     TEMP3,-(SP)
021420  013746  006516                                                  MOV     TEMP,-(SP)
021424  012746  013607                                                  MOV     #SHF0,-(SP)
021430  012746  000005                                                  MOV     #5,-(SP)
021434  010600                                                          MOV     SP,R0
021436  104416                                                          TRAP    C$PNTS
021440  062706  000014                                                  ADD     #14,SP

021444  005002                          CLR     R2              ;NOW SET UP FOR QUALIFIERS IN ASCII
021446  012737  013116  006516          MOV     #PST,TEMP
021454  032737  000001  007670          BIT     #STATB,DEV4     ;SEE IF /STATUS OR /NOSTATUS
021462  001003                          BNE     1$              ;BR IF /STATUS
021464  012737  013114  006516          MOV     #PNST,TEMP
021472  012737  013127  006520  1$:     MOV     #PCK,TEMP1
021500  032737  000002  007670          BIT     #DATCKB,DEV4    ;SEE IF /CHECK OR /NOCHECK
021506  001003                          BNE     2$              ;BR IF /CHECK
021510  012737  013125  006520          MOV     #PNCK,TEMP1
021516  012737  013137  006522  2$:     MOV     #PEC,TEMP2
021524  032737  000004  007670          BIT     #ECHOB,DEV4     ;SEE IF /ECHO JR /NOECHO
021532  001003                          BNE     3$              ;BR IF /ECHO
021534  012737  013135  006522          MOV     #PNEC,TEMP2
```

```
3687
3688  021542  012737  013146  006530  3$:     MOV     #PMS,TEMP5
3689  021550  032737  000010  007670          BIT     #MODHK,DEV4     ;SEE IF /MODEM OR /NOMODEM
3690  021556  001003                          BNE     5$              ;BR IF MODEM
3691  021560  012737  013144  006530          MOV     #PNMS,TEMP5
3692
3693
3694  021566                          5$:     PRINTS  #SHF1,TEMP,TEMP1,TEMP2,TEMP5    ;,TEMP3,TEMP4 **RFU**
3695  021566  013746  006530                                                          MOV     TEMP5,-(SP)
3696  021572  013746  006522                                                          MOV     TEMP2,-(SP)
3697  021576  013746  006520                                                          MOV     TEMP1,-(SP)
3698  021602  013746  006516                                                          MOV     TEMP,-(SP)
3699  021606  012746  013645                                                          MOV     #SHF1,-(SP)
3700  021612  012746  000005                                                          MOV     #5,-(SP)
3701  021616  010600                                                                  MOV     SP,R0
3702  021620  104416                                                                  TRAP    C$PNTS
3703  021622  062706  000014                                                          ADD     #14,SP
3704  021626  000207                          RTS     PC              ;RETURN
3705
3706
```

```
                                .SBTTL          TRAVERSE COMMAND LINE SUBROUTINES

                                ;++
                                ;       P$TRV SUBROUITNE
                                ;
                                ;PARSE THE COMMAND LINE SUBROUTINE
                                ;TAKE ACTIONS (VIA ACTION TREE) AS PARSING LINE
                                ;PARSING DIRECTIONS FROM "CLI PARSING NODES"
                                ;   REGS USED:
                                ;
                                ;       R1,R5=SCRATCH                           P$NUM=NUMERIC CODE FROM DATA
                                ;       R2=ACTION CODE PARAMETER FROM TREE
                                ;       R3=PARSE TREE POINTER
                                ;       R4=INPUT STRING POINTER
                                ; CALLING SEQUENCE:
                                ;       JSR     PC,P$TRV
                                ;--

021630                          P$TRV:
021630  013704  003114                  MOV     P$BUFA,R4
021634  013703  003116                  MOV     P$TREE,R3
021640  105714                  P$TR5:  TSTB    (R4)                    ;SEE IF ANY CHARS LEFT IN INPUT STRING
021642  001441                          BEQ     P$EXIT                  ;BR IF NO
021644  121327  000013                  CMPB    (R3),#11.               ;SEE IF SPECIAL CLI CHAR CODE OR ASCII
021650  003023                          BGT     20$                     ;BR IF REGULAR ASCII CHAR.
021652  111305                          MOVB    (R3),R5                 ;GET SPECIAL CHAR CODE INTO R5
021654  006305                          ASL     R5
021656  016505  021672                  MOV     10$(R5),R5              ;BUILD TRAVERSE ROUTINE ADDRESS
021662  062705  021672                  ADD     #10$,R5
021666  004715                          JSR     PC,(R5)                 ;JSR TO SPECIAL CLI TRAVERSE ROUTINE
021670  000763                          BR      P$TR5                   ;GO SEE IF MORE OF STRING LEFT

021672  000114          10$:            .WORD   TRVERR-10$              ;TRAVERSE TABLE FOR "CLI FUNTIONS"
021674  000134                          .WORD   TRVEXI-10$              ;1
021676  000152                          .WORD   TRVBR-10$               ;2
021700  000162                          .WORD   TRVBIF-10$              ;3
021702  000204                          .WORD   TRVSPA-10$              ;4
021704  000270                          .WORD   TRVNUM-10$              ;5
021706  000604                          .WORD   TRVALP-10$              ;6
021710  000650                          .WORD   TRVALN-10$              ;7
021712  000270                          .WORD   TRVOCT-10$              ;8
021714  000256                          .WORD   TRVDEC-10$              ;9
021716  000736                          .WORD   TRVSTR-10$              ;10

                                ;NOT A SPECIAL CODE

021720  121314          20$:            CMPB    (R3),(R4)               ;SEE IF FIRST CHAR OF STRING IS A MATCH
021722  001403                          BEQ     22$                     ;BR IF A MATCH
021724  004737  021770                  JSR     PC,TRVBRC               ;IF NOT A MATCH, GO TAKE MISS BRANCH
021730  000743                          BR      P$TR5                   ; THEN GO BACK PT'G TO MISS NODE
021732  004737  021750          22$:    JSR     PC,TRVACT               ;IF A MATCH, GO DO ACTION DEFINED BY
021736  062703  000004                  ADD     #4,R3                   ; ACTION CODE IN CLI NODE, THEN
                                                                        ; ADJUST PTR TO NEXT CLI NODE
021742  005204                          INC     R4                      ;ADJUST BUF PTR TO NEXT CHAR IF MATCH
021744  000735                          BR      P$TR5
```

```
3763
3764  021746  000207                  P$EXIT: RTS     PC                      ;RETURN FROM PARSER
3765
3766                                  ;-----------------------------------------------------------------------
3767
3768                                  ;GOTO USER ACTION ROUTINE
3769  021750  116302  000001          TRVACT: MOVB    1(R3),R2                ;GET ACTION CODE FROM CLI NODE
3770  021754  042702  177400                  BIC     #177400,R2              ;CLEAR ANY SIGN EXTENSION
3771  021760  013705  003120                  MOV     P$ACT,R5                ;GET ADDRESS OF CLI ACTION ROUTINE
3772  021764  004715                          JSR     PC,(R5)                 ;GO DO ACTION DEFINED BY CODE
3773  021766  000207                          RTS     PC                      ;RETURN TO CALLING CODE
3774
3775                                  ;TAKE BRANCH IN TREE
3776  021770  016305  000002          TRVBRC: MOV     2(R3),R5                ;GET BRANCH DISPLACEMENT FROM TREE
3777  021774  060503                          ADD     R5,R3                   ; AND POINT R3 TO THE "MISS" NODE
3778  021776  000207                          RTS     PC                      ; RETURN TO P$TRV
3779
3780                                  ;NO BRANCH TAKEN
3781  022000  062703  000004          TRVNOB: ADD     #4,R3                   ;THINGS OK, UPDATE R3 TO POINT TO NEXT
3782  022004  000207                          RTS     PC                      ; NODE AND RETURN TO P$TRV
3783
3784                                  ;-----------------------------------------------------------------------
3785  022006  004737  021750          TRVERR: JSR     PC,TRVACT               ;TAKE ERROR ACTION
3786  022012  112737  177777  003131          MOVB    #-1,P$GDBD              ;SET ERROR RETURN FLAG
3787  022020  005726                          TST     (SP)+                   ;GET RID OF "JSR PUSH TO TRVERR"
3788  022022  000137  021746                  JMP     P$EXIT                  ;RETURN DIRECT TO EXIT OF P$TRV ROUTINE
3789
3790  022026  004737  021750          TRVEXI: JSR     PC,TRVACT               ;TAKE EXIT ACTION
3791  022032  105037  003131                  CLRB    P$GDBD                  ;SET GOOD/BAD FLAG TO "SUCCESS (0)"
3792  022036  005726                          TST     (SP)+                   ;GET RID OF "JSR PUSH TO TRVEXI"
3793  022040  000137  021746                  JMP     P$EXIT                  ;RETURN DIRECT TO EXIT OF P$TRV ROUTINE
3794
3795  022044  004737  021750          TRVBR:  JSR     PC,TRVACT               ;GO TAKE BRANCH ACTION
3796  022050  000137  021770                  JMP     TRVBRC
3797
3798  022054  004737  021750          TRVBIF: JSR     PC,TRVACT
3799  022060  105737  003131                  TSTB    P$GDBD                  ;SEE IF P$GDBD SET OR CLEARED BY ACTION
3800  022066  001402                          BEQ     1$                      ;IF CLEAR FALL THRU TO NEXT NODE
3801  022066  000137  021770                  JMP     TRVBRC                  ;ELSE TAKE THE "MISS" BRANCH
3802  022072  000137  022000          1$:     JMP     TRVNOB                  ;JUST UPDATE TO NEXT NODE IF THINGS OK
3803
3804  022076  005005          TRVSPA: CLR     R5                      ;CLEAR "SPACE OR TAB FOUND" FLAG
3805  022100  121427  000011  1$:     CMPB    (R4),#11                ;SEE IF CHAR. IN CMD LINE- TAB
3806  022104  001003                  BNE     2$                      ;BR IF NO, NOT A TAB
3807  022106  005204                  INC     R4                      ;INC INPUT STRING POINTER
3808  022110  005205                  INC     R5                      ;INDICATE A TAB FOUND
3809  022112  000772                  BR      1$                      ;GO CHECK NEXT CHAR
3810
3811  022114  121427  000040  2$:     CMPB    (R4),#40                ;SEE IF CHAR. IN CMD LINE- SPACE
3812  022120  001003                  BNE     10$                     ;BR IF NO, NON-SPACE OR NON-TAB CHAR.
3813  022122  005204                  INC     R4                      ;INC INPUT STRING POINTER
3814  022124  005205                  INC     R5                      ;INDICATE A SPACE FOUND
3815  022126  000764                  BR      1$                      ;GO CHECK NEXT CHAR
3816  022130  005705          10$:    TST     R5                      ;SEE IF ANY SPACES OR TABS FOUND
3817  022132  001404                  BEQ     15$                     ;BR IF NO, TAKE NO ACTION
3818  022134  004737  021750          JSR     PC,TRVACT               ;GO TAKE ACTION IF ANY FOUND
```

```
3819  022140  000137  022000                    JMP     TRVNOB                  ;JUST GO UPDATE R3 TO NEXT NODE IF OK
3820  022144  000137  021770            15$:    JMP     TRVBRC                  ;TAKE BRANCH (MISS) IF NONE FOUND
3821
3822
3823  022150  012737  000012  003126    TRVDEC: MOV     #10.,P$RADX             ;USE DECIMAL AS RADIX AND ASSUME +
3824  022156  000137  022170            TRVOCT: JMP     TRVNMA
3825  022162                            TRVNUM: ;(SAME AS TRVNUM SINCE DEFAULT RADIX IS OCTAL)
3826  022162  012737  000010  003126            MOV     #8.,P$RADX              ;USE OCTAL AS RADIX AND ASSUME +
3827  022170  005005                    TRVNMA: CLR     R5                      ;CLEAR DIGIT COUNTER
3828  022172  121427  000053                    CMPB    (R4),#'+                ;SEE IF THERE'S A + SIGN THERE
3829  022176  001001                            BNE     10$                     ; BR IF NO
3830  022200  000406                            BR      11$                     ; ELSE P$RADX ALREADY SAYS +, JUST BR
3831  022202  121427  000055            10$:    CMPB    (R4),#'-                ;SEE IF THERE'S A - SIGN THERE
3832  022206  001004                            BNE     1$                      ; BR IF NO
3833  022210  112737  177777  003127            MOVB    #-1,P$RADX+1            ;SET 'MINUS FLAG'' (HI BYTE OF P$RADX)
3834  022216  005204                    11$.    INC     R4                      ;BUMP R4 TO POINT TO FIRST CHAR
3835
3836  022220  121427  000060            1$:     CMPB    (R4),#60                ;SEE IF CHAR. LESS THAN A ''0''
3837  022224  002434                            BLT     2$                      ;BR IF YES (NOT NUMERIC)
3838  022226  121427  000067                    CMPB    (R4),#67                ;SEE IF CHAR. GREATER THAN A ''7''
3839  022232  003426                            BLE     13$                     ; BR IF YES
3840  022234  123727  003126  000012            CMPB    P$RADX,#10.             ;SEE IF IN DECIMAL MODE
3841  022242  001417                            BEQ     12$                     ; BR IF YES (CAN USE HIGHER LIMIT)
3842  022244  121427  000071                    CMPB    (R4),#71                ;SEE IF DIGIT WAS A 8 OR 9
3843  022250  003022                            BGT     2$                      ;BR IF NON-NUMERIC
3844  022252                                    PRINTF  #CLIBRX                 ;ELSE WAS A 8 OR 9 WHEN IN OCTAL RADIX
3845  022252  012746  011571                                                            MOV     #CLIBRX,-(SP)
3846  022256  012746  000001                                                            MOV     #1,-(SP)
3847  022262  010600                                                                     MOV     SP,R0
3848  022264  104417                                                                     TRAP    C$PNTF
3849  022266  062706  000004                                                            ADD     #4,SP
3850  022272  112737  177777  003131            MOVB    #-1,P$GDBD              ;SET ERROR RETURN FLAG
3851  022300  000474                            BR      5$                      ; PRINT ERROR AND TAKE MISS
3852
3853  022302  121427  000071            12$:    CMPB    (R4),#71                ;SEE IF CHAR. GREATER THAN A ''9''
3854  022306  003003                            BGT     2$                      ;BR IF YES (NOT NUMERIC)
3855  022310  005204                    13$:    INC     R4                      ;UPDATE CMD LINE PTR TO NEXT CHAR.
3856  022312  005205                            INC     R5                      ;INDICATE A NUMERIC FOUND
3857  022314  000741                            BR      1$                      ;GO LOOK AT NEXT CHAR.
3858
3859  022316  005705                    2$:     TST     R5                      ;SEE IF FOUND ANY NUMERICS
3860  022320  001464                            BEQ     5$                      ;BR IF NO, TAKE ''MISS'' BRANCH
3861  022322  010401                            MOV     R4,R1                   ;GET POINTER TO START OF NUMERIC STRING
3862  022324  160501                            SUB     R5,R1
3863  022326  005037  003124                    CLR     P$NUM                   ;CLEAR LOC. WHERE VALUE WILL BE STORED
3864  022332  112102                    3$:     MOVB    (R1)+,R2                ;GET ASCII CHAR AND CONVERT IT TO A #
3865  022334  162702  000060                    SUB     #60,R2
3866  022340  006337  003124                    ASL     P$NUM                   ;SHIFT CURRENT VALUE TO MAKE ROOM
3867  022344  103437                            BCS     7$                      ;ERROR IF NUMBER TOO BIG
3868  022346  013737  003124  003122            MOV     P$NUM,P$CNT             ;SAVE FOR LATER IN CASE DECIMAL RADIX
3869  022354  006337  003124                    ASL     P$NUM
3870  022360  103431                            BCS     7$                      ;ERROR IF NUMBER TOO BIG
3871  022362  006337  003124                    ASL     P$NUM
3872  022366  103426                            BCS     7$                      ;ERROR IF NUMBER TOO BIG
3873  022370  123727  003126  000012            CMPB    P$RADX,#10.             ;SEE IF DECIMAL RADIX
3874  022376  001004                            BNE     4$                      ;BR IF NOT EQUAL
```

```
3875  022400  063737  003122  003124          ADD     P$CNT,P$NUM
3876  022406  103416                          BCS     7$                      ;ERROR IF NUMBER TOO BIG
3877  022410  060237  003124          4$:     ADD     R2,P$NUM
3878  022414  103413                          BCS     7$                      ;ERROR IF NUMBER TOO BIG
3879  022416  005305                          DEC     R5
3880  022420  001344                          BNE     3$
3881  022422  105737  003127                  TSTB    P$RADX+1                ;SEE IF NUM WAS PRECEDED BY A - SIGN
3882  022426  001402                          BEQ     15$                     ; BR IF NO
3883  022430  005437  003124                  NEG     P$NUM                   ; ELSE NEGATE THE NUMBER BEFORE LEAVING
3884  022434  004737  021750          15$:    JSR     PC,TRVACT               ;SINCE NUMERIC FOUND, GO TAKE ACTION
3885  022440  000137  022000                  JMP     TRVNOB                  ;GO POINT R3 TO NEXT NODE
3886
3887  022444                          7$:     PRINTF  #CLINBG                 ;PRINT NUMBER TOO BIG ERROR
3888  022444  012746  011547                                                          MOV     #CLINBG,-(SP)
3889  022450  012746  000001                                                          MOV     #1,-(SP)
3890  022454  010600                                                                  MOV     SP,R0
3891  022456  104417                                                                  TRAP    C$PNTF
3892  022460  062706  000004                                                          ADD     #4,SP
3893  022464  112737  177777  003131          MOVB    #-1,P$GDBD              ;SET ERROR RETURN FLAG
3894  022472  000137  021770          5$:     JMP     TRVBRC                  ;TAKE "MISS" BRANCH
3895
3896
3897  022476  005005                  TRVALP: CLR     R5                      ;CLEAR ALPHA FOUND FLAG
3898  022500  121427  000101          1$:     CMPB    (R4),#101               ;SEE IF CHAR. LESS THAN A "A"
3899  022504  002406                          BLT     2$                      ;BR IF YES (NOT ALPHA)
3900  022506  121427  000132                  CMPB    (R4),#132               ;SEE IF CHAR. GREATER THAN A "Z"
3901  022512  003003                          BGT     2$                      ;BR IF YES (NOT ALPHA)
3902  022514  005204                          INC     R4                      ;UPDATE CMD LINE PTR TO NEXT CHAR
3903  022516  005205                          INC     R5                      ;INDICATE AN ALPHA WAS FOUND
3904  022520  000767                          BR      1$                      ;GO LOOK AT NEXT CHAR.
3905  022522  005705          2$:     TST     R5                      ;SEE IF ANY ALPHA'S WERE FOUND
3906  022524  001404                          BEQ     3$                      ;BR IF NO
3907  022526  004737  021750                  JSR     PC,TRVACT               ;IF ANY FOUND TAKE ACTION
3908  022532  000137  022000                  JMP     TRVNOB                  ;THEN UPDATE R3 TO NEXT NODE -NO BRANCH
3909  022536  000137  021770          3$:     JMP     TRVBRC                  ;NONE FOUND, TAKE MISS BRANCH
3910
3911  022542  005005                  TRVALN: CLR     R5                      ;CLEAR ALPHANUM FOUND FLAG
3912  022544  121427  000060          10$:    CMPB    (R4),#60                ;SEE IF CHAR. LESS THAN A "0"
3913  022550  002417                          BLT     2$                      ;BR IF YES (NOT NUMERIC OR ALPHA)
3914  022552  121427  000072                  CMPB    (R4),#72                ;SEE IF CHAR. GREATER THAN A "9"
3915  022556  003003                          BGT     1$                      ;BR IF YES (NOT NUMERIC)
3916  022560  005204                          INC     R4                      ;UPDATE CMD LINE PTR TO NEXT CHAR.
3917  022562  005205                          INC     R5                      ;INDICATE A NUMERIC FOUND
3918  022564  000767                          BR      10$                     ;GO LOOK AT NEXT CHAR.
3919  022566  121427  000101          1$:     CMPB    (R4),#101               ;SEE IF CHAR. LESS THAN A "A"
3920  022572  002406                          BLT     2$                      ;BR IF YES (NOT ALPHA)
3921  022574  121427  000132                  CMPB    (R4),#132               ;SEE IF CHAR. GREATER THAN A "Z"
3922  022600  003003                          BGT     2$                      ;BR IF YES (NOT ALPHA)
3923  022602  005204                          INC     R4                      ;UPDATE CMD LINE PTR TO NEXT CHAR
3924  022604  005205                          INC     R5                      ;INDICATE AN ALPHA FOUND
3925  022606  000756                          BR      10$                     ;GO LOOK AT NEXT CHAR.
3926  022610  005705          2$:     TST     R5                      ;SEE IF ANY ALPHANUM'S WERE FOUND
3927  022612  001404                          BEQ     3$                      ;BR IF NO
3928  022614  004737  021750                  JSR     PC,TRVACT               ;IF ANY FOUND TAKE ACTION
3929  022620  000137  022000                  JMP     TRVNOB                  ;THEN UPDATE R3 TO NEXT NODE -NO BRANCH
3930  022624  000137  021770          3$:     JMP     TRVBRC                  ;NONE FOUND, TAKE MISS BRANCH
```

```
3931
3932
3933
3934  022630  010401              TRVSTR: MOV     R4,R1                   ;POINT R1 TO CMD STRING
3935  022632  010305                      MOV     R3,R5
3936  022634  062705  000006              ADD     #6,R5                   ;POUNT R5 TO MATCH STRING FROM CLI NODE
3937  022640  005037  003122              CLR     P$CNT                   ;CLEAR CHAR MATCH COUNT
3938  022644  105715              2$:     TSTB    (R5)                    ;SEE IF END OF MATCH STRING YET
3939  022646  001411                      BEQ     10$                     ;BR IF YES
3940  022650  105711                      TSTB    (R1)                    ;SEE IF END OF CMD LINE YET
3941  022652  001407                      BEQ     10$                     ;BR IF YES
3942  022654  121115                      CMPB    (R1),(R5)               ;SEE IF CHARACTERS MATCH
3943  022656  001005                      BNE     10$                     ;BR IF NO
3944  022660  005237  003122              INC     P$CNT                   ;MATCH -INCREMENT MATCH COUNT
3945  022664  005201                      INC     R1                      ;UPDATE STRING POINTERS
3946  022666  005205                      INC     R5
3947  022670  000765                      BR      2$                      ;BR TO CONTINUE CHECKING CHARS.
3948
3949  022672  005737  003122      10$:    TST     P$CNT                   ;WHEN DONE SEE IF ANY MATCHES FOUND
3950  022676  001406                      BEQ     15$                     ;BR IF NO, GO TAKE THE MISS BRANCH
3951  022700  010104                      MOV     R1,R4                   ;POINT CMD POINTER TO END OF STRING &
3952  022702  004737  021750              JSR     PC,TRVACT               ;IF A MATCH FOUND, GO DO MATCH ACTION
3953  022706  066303  000004              ADD     4(R3),R3                ;UPDATE R3 TO NEXT NODE (NO BRANCH)
3954  022712  000207                      RTS     PC                      ; (NO RETURN THRU TRVNOB SINCE DIFFERNT
3955                                                                      ;  DISPLACEMENT DUE TO MATCH STRING)
3956  022714  000137  021770      15$:    JMP     TRVBRC                  ; GO TAKE BRANCH
3957
3958                                                                      ; (PARSED OK), -1 IF ILL CMD.....
3959                              ;-----------------------------------------------------------------------
3960
```

```
                        .SBTTL  REPORT CODING SECTION


                        ;++
                        ; THE REPORT CODING SECTION CONTAINS THE
                        ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                        ;--

                                BGNRPT
                                                                        L$RPT::

                                JSR     PC,REPORT               ;CALL SUBROUTINE TO DUMP EVENT LOG
                                                                ; AND BASE TABLE



                                ENDRPT
                                                                        L10010:
                                                                                TRAP    C$RPT
```

```
                                .SBTTL  PROTECTION TABLE

                                ;++
                                ; THIS TABLE IS USED BY THE RUNTIME SERVICES
                                ; TO PROTECT THE LOAD MEDIA.
                                ;--

022726                                  BGNPROT
022726                                                                  L$PROT::

022726  177777                          -1              ;OFFSET INTO P-TABLE FOR CSR ADDRESS
022730  177777                          -1              ;OFFSET INTO P-TABLE FOR MASSBUS ADDRESS
022732  177777                          -1              ;OFFSET INTO P-TABLE FOR DRIVE NUMBER

022734                                  ENDPROT
```

```
                        .SBTTL  INITIALIZE SECTION

                        ;++
                        ; THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                        ; AT THE BEGINNING OF EACH PASS.
                        ;--

022734                          BGNINIT
022734                                                          L$INIT::


022734  012737  177777  006544          MOV     #-1,RESFLG              ;SET RESTART FLAG
022742                                  READEF  #EF.START               ;IF HERE CAUSE OF START,DO SOME INIT
022742  012700  000040                                                    MOV     #EF.START,R0
022746  104447                                                          TRAP    C$REFG
022750                                  BCOMPLETE       START
022750  103417                                                          BCS     START
022752                                  READEF  #EF.RESTART             ;IF HERE CAUSE OF RESTART, DO SOME INIT
022752  012700  000037                                                    MOV     #EF.RESTART,R0
022756  104447                                                          TRAP    C$REFG
022760                                  BCOMPLETE       RESTRT
022760  103513                                                          BCS     RESTRT
022762                                  READEF  #EF.CONTINUE            ;SEE IF WE'RE HERE CAUSE OF A CONTINUE
022762  012700  000036                                                    MOV     #EF.CONTINUE,R0
022766  104447                                                          TRAP    C$REFG
022770                                  BNCOMPLETE      S1              ;BR IF NOT HERE CAUSE OF CONITNUE
022770  103002                                                          BCC     S1
022772  000137  023442                  JMP     ENDIT                   ;JMP IF HERE CAUSE OF A CONTINUE
022776                          S1:     READEF  #EF.NEW                 ;SEE IF THIS IS A 'NEW PASS'
022776  012700  000035                                                    MOV     #EF.NEW,R0
023002  104447                                                          TRAP    C$REFG
023004                                  BCOMPLETE       NEW             ;IF YES, BR AROUND LOGUNIT # SETUP
023004  103521                                                          BCS     NEW
023006  000523                          BR      GETPRM

023010  005037  006544          START:  CLR     RESFLG                  ;CLEAR RESTART FLAG SINCE HERE ON START
023014  005037  006604                  CLR     CLKVEC                  ;CLEAR CLK VECTOR PTR. AS A FLAG IN
                                                                        ; NO CLOCK IS FOUND.
023020  012702  006600                  MOV     #CLKCSR,R2              ;SETUP R2 AS A PTR. TO CLOCK INFO BLOCK
023024                                  CLOCK   L,R1                    ;LOOK FOR A LINE CLOCK
023024  012700  000114                                                    MOV     #'L,R0
023030  104462                                                          TRAP    C$CLCK
023032  010001                                                          MOV     R0,R1
023034                                  BNCOMPLETE      S2              ; IF NONE THERE GO LOOK FOR A P-CLOCK
023034  103006                                                          BCC     S2
023036  004737  017016                  JSR     PC,CLKSET               ; GO SET UP CLOCK INFO TABLE & CLK VEC.
023042  012737  000100  006610          MOV     #LCLKEN,CLKEN           ;SETUP THE ENABLE LINE CLOCK DATA
023050  000457                          BR      RESTRT

023052                          S2:     CLOCK   P,R1                    ;LOOK FOR A P-CLOCK SINCE NO LINE CLOCK
023052  012700  000120                                                    MOV     #'P,R0
023056  104462                                                          TRAP    C$CLCK
023060  010001                                                          MOV     R0,R1
023062                                  BNCOMPLETE      S3              ; IF NONE THERE GO SEE IF THIS IS LSI
023062  103017                                                          BCC     S3
023064  004737  017016                  JSR     PC,CLKSET               ; ELSE GO SET UP CLOCK INFO & VECTOR
```

```
4054  023070  062737  000002  006600          ADD     #2,CLKCSR               ;POINT CLKCSR TO P-CLK COUNT SET REG.
4055  023076  012777  001600  163474          MOV     #PCLKCT,@CLKCSR         ;LOAD CLK SET REG. WITH COUNT VALUE
4056  023104  162737  000002  006600          SUB     #2,CLKCSR               ;POINT CLKCSR BAC TO P-CLK CSR
4057  023112  012737  000111  006610          MOV     #PCLKEN,CLKEN           ;SETUP THE ENABLE THE P-CLK DATA
4058  023120  000433                          BR      RESTRT
4059
4060  023122                          S3:     READBUS                         ;READ BUS TYPE TO SEE IF ON AN LSI
4061  023122  104407                                                                  TRAP    C$RDBU
4062  023124                                  BNCOMPLETE      S4              ;BR IF NOT, NO CHANCE OF A CLOCK
4063  023124  103021                                                                  BCC     S4
4064  023126  012737  000100  006604          MOV     #100,CLKVEC             ;LOAD 100 AS CLK VECTOR
4065  023134  005037  006602                  CLR     CLKBR                   ;LOAD 0 AS CLK INT. LEVEL
4066  023140  012737  006610  006600          MOV     #CLKEN,CLKCSR           ;KLUDGE UP THE CSR & ENABLE DATA LOCS
4067  023146                                  GMANID  L5060,CLKHZ,D,377,50.,60.,YES
4068  023146  104443                                                                  TPAP    C$GMAN
4069  023150  000406                                                                  BR      10000$
4070  023152  006606                                                                  .WORD   CLKHZ
4071  023154  000052                                                                  .WORD   T$CODE
4072  023156  013172                                                                  .WORD   L5060
4073  023160  000377                                                                  .WORD   377
4074  023162  000062                                                                  .WORD   T$LOLIM
4075  023164  000074                                                                  .WORD   T$HILIM
4076  023166                                                                  10000$:
4077  023166  000410                          BR      RESTRT
4078
4079  023170                          S4:     PRINTF  #BDCLK                  ;INFORM OPR. NO CLOCK, & EXIT INIT
4080  023170  012746  013310                                                          MOV     #BDCLK,-(SP)
4081  023174  012746  000001                                                          MOV     #1,-(SP)
4082  023200  010600                                                                  MOV     SP,R0
4083  023202  104417                                                                  TRAP    C$PNTF
4084  023204  062706  000004                                                          ADD     #4,SP
4085
4086  023210  005037  006612          RESTRT: CLR     TIMMIN                  ;CLEAR TIME SINCE START LOCATIONS
4087  023214  005037  006614                  CLR     TIMSEC
4088  023220  013737  006606  006616          MOV     CLKHZ,TIMTCK            ;LOAD TICKS/SEC
4089  023226  012702  006630                  MOV     #EVTLOG,R2              ;INIT EVENT TABLE TO ALL 1'S AFTER EACH
4090  023232  010237  006626                  MOV     R2,EVTPTR               ; START OR RES AND INIT TABLE POINTER
4091  023236  012722  177777          1$:     MOV     #-1,(R2)+
4092  023242  020227  007532                  CMP     R2,#EVTEND              ;SEE IF REACHED END OF TABLE
4093  023246  001373                          BNE     1$                      ;LOOP UNTIL DONE
4094
4095  023250  012737  177777  006540  NEW:    MOV     #-1,LOGUNT              ;INITIALIZE LOGICAL UNIT #
4096
4097  023256  005237  006540          GETPRM: INC     LOGUNT                  ;POINT TO NEXT LOGICAL UNIT
4098  023262  023737  006540  002012          CMP     LOGUNT,L$UNIT           ;SEE IF PAST MAX. LOG. UNIT #
4099  023270  002367                          BGE     NEW                     ;BR IF YES, AND START OVER
4100
4101  023272                                  GPHARD  LOGUNT,R1               ;GET THE P-TABLE FOR THIS LOG. UNIT
4102  023272  013700  006540                                                          MOV     LOGUNT,R0
4103  023276  104442                                                                  TRAP    C$GPHRD
4104  023300  010001                                                                  MOV     R0,R1
4105  023302                                  BNCOMPLETE      GETPRM          ;IF NO P-TABLE AVAIL., GO GET NEXT ONE
4106  023302  103365                                                                  BCC     GETPRM
4107
4108  023304  011137  006552                  MOV     (R1),FMDPLX             ;PUT FULL OR HALF DUPLEX ANSWER IN LOC.
4109
```

```
4110
4111                                        ;DEVICE DEPENDENT PART OF GETTING INFO FROM P-TABLE
4112
4113  023310  016137  000002  011344        MOV     2(R1),RXCSR             ;STORE AWAY CSR ADDRESSES
4114
4115
4116  023316  016137  000002  011346        MOV     2(R1),PCSAR
4117  023324  062737  000002  011346        ADD     #2,PCSAR
4118  023332  016137  000002  011350        MOV     2(R1),RDSR
4119  023340  062737  000002  011350        ADD     #2,RDSR
4120  023346  016137  000002  011352        MOV     2(R1),TXCSR
4121  023354  062737  000004  011352        ADD     #4,TXCSR
4122  023362  016137  000002  011354        MOV     2(R1),TDSR
4123  023370  062737  000006  011354        ADD     #6,TDSR
4124
4125  023376  016137  000004  011356        MOV     4(R1),INVEC             ;STORE AWAY INPUT INTERRUPT VECTOR
4126  023404  016137  000004  011360        MOV     4(R1),OUTVEC
4127  023412  062737  000004  011360        ADD     #4,OUTVEC               ;BUILD OUTPUT INTERRUPT VECTOR
4128  023420  016137  000006  011362        MOV     6(R1),INTPRI            ;STORE AWAY INTERRUPT PRIORITY
4129  023426  016137  000012  011364        MOV     12(R1),OPTYP            ;STORE AWAY DEVICE OPTION TYPE
4130  023434  016137  000014  011420        MOV     14(R1),RNODE            ;STORE AWAY THE REMOTE NODE TYPE
4131  023442                              ENDIT:
4132  023442                              SETVEC  CLKVEC,#CLKINT,#340     ;SETUP CLOCK VECTOR
4133  023442  012746  000340                                                     MOV     #340,-(SP)
4134  023446  012746  017042                                                     MOV     #CLKINT,-(SP)
4135  023452  013746  006604                                                     MOV     CLKVEC,-(SP)
4136  023456  012746  000003                                                     MOV     #3,-(SP)
4137  023462  104437                                                             TRAP    C$SVEC
4138  023464  062706  000010                                                     ADD     #10,SP
4139
4140                                        ;DEVICE DEPENDENT VECTOR SETUP
4141
4142  023470                              SETVEC  INVEC,#DVRXI,#PRI04     ;SETUP INPUT INTERRUPT VECTOR
4143  023470  012746  000200                                                     MOV     #PRI04,-(SP)
4144  023474  012746  032472                                                     MOV     #DVRXI,-(SP)
4145  023500  013746  011356                                                     MOV     INVEC,-(SP)
4146  023504  012746  000003                                                     MOV     #3,-(SP)
4147  023510  104437                                                             TRAP    C$SVEC
4148  023512  062706  000010                                                     ADD     #10,SP
4149  023516                              SETVEC  OUTVEC,#DVTXI,#PRI04    ;SETUP OUTPUT INTERRUPT VECTOR
4150  023516  012746  000200                                                     MOV     #PRI04,-(SP)
4151  023522  012746  033166                                                     MOV     #DVTXI,-(SP)
4152  023526  013746  011360                                                     MOV     OUTVEC,-(SP)
4153  023532  012746  000003                                                     MOV     #3,-(SP)
4154  023536  104437                                                             TRAP    C$SVEC
4155  023540  062706  000010                                                     ADD     #10,SP
4156
4157  023544                              SETPRI  #PRI00                  ;SET THE "RUN" PRIORITY TO 0
4158  023544  012700  000000                                                     MOV     #PRI00,R0
4159  023550  104441                                                             TRAP    C$SPRI
4160  023552
4161  023552  104432                              EXIT    INIT                                TRAP    C$EXIT
4162  023554  000002                                                             .WORD   L10012-.
4163
4164
4165                                        .EVEN
```

```
 4166
 4167  023556                          ENDINIT
 4168  023556                                                  L10012:
 4169  023556  104411                                                  TRAP    C$INIT
```

```
                                .SBTTL  AUTODROP SECTION

                                ;++
                                ; THIS CODE IS EXECUTED IMMEDIATELY AFTER THE INITIALIZE CODE IF
                                ; THE "ADR" FLAG WAS SET.  THE UNIT(S) UNDER TEST ARE CHECKED TO
                                ; SEE IF THEY WILL RESPOND.  THOSE THAT DON'T ARE IMMEDIATELY
                                ; DROPPED FROM TESTING.
                                ;--

023560                                  BGNAUTO
023560                                                                  L$AUTO::

023560                                  ENDAUTO
023560                                                                  L10013:
023560  104461                                                                  TRAP    C$AUTO
```

```
                        .SBTTL  CLEANUP CODING SECTION

                        ;++
                        ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
                        ; AFTER THE HARDWARE TESTS HAVE BEEN PERFORMED.
                        ;--

                                BGNCLN
                                                                        L$CLEAN::

023562  005077  1630*2          CLR     @CLKCSR         ;DISABLE CLOCK
                                SETPRI  #PRI07          ;SET PROCESSOR PRIORITY BACK TO 7
                                                                        MOV     #PRI07,R0
023566  012700  000340                                                  TRAP    C$SPRI
023572  104441
                                BRESET                  ;CLEAR ALL BEFORE END
023574  104433                                                          TRAP    C$RESET

                                EXIT    CLN
023576  104432                                                          TRAP    C$EXIT
023600  000002                                                          .WORD   L10014-.

                                .EVEN

                                ENDCLN
                                                                        L10014:
023602  104412                                                          TRAP    C$CLEAN
```

```
                                .SBTTL  DROP UNIT SECTION

                                ;++
                                ; THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
                                ; TO NO LONGER BE TESTED.
                                ;--

023604                                  BGNDJ
023604                                                                  L$DU::

                                        EXIT    DU
023604  000167                                                                 .WORD   J$JMP
023606  000000                                                                 .WORD   L10015-2-.

                                        .EVEN

023610                                  ENDDU
023610                                                                  L10015:
023610  104453                                                                 TRAP    C$DU
```

```
                                .SBTTL  ADD UNIT SECTION

                                ;++
                                ; THE ADD-UNIT SECTION CONTAINS ANY CODE THE PROGRAMMER WISHES
                                ;  TO BE EXECUTED IN CONJUNCTION WITH THE ADDING OF A UNIT BACK
                                ;  TO THE TEST CYCLE.
                                ;--

023612                                  BGNAU
023612                                                                  L$AU::

023612                                  EXIT    AU
023612  000167                                                                  .WORD   J$JMP
023614  000000                                                                  .WORD   L10016-2-.

                                .EVEN

                                ENDAU
023616                                                                  L10016:
023616  104452                                                                  TRAP    C$AU
```

```
                                .SBTTL  TEST 1:  SETUP AND MODES OF OPERATION


                                ;++
                                ; TEST TO DETECT FAULTS IN THE DATA COMMUNICATION LINK.  THIS TES' WILL
                                ; THE PROVIDE COVERAGE NECESSARY TO ISOLATE FAILURES TO THE COMPUTER
                                ; EQUIPMENT, THE COMMUNICATION LINK, OR THE MODEM.
                                ;--



023620                                  BGNTST
023620                                                                          T1::


                                .SBTTL          PROGRAM SETUP SECTION

023620  013777  006610  162752          MOV     CLKEN,@CLKCSR   ;ENABLE THE CLOCK

023626                          GTXRXB:
023626  005001                  GTRA2:  CLR     R1
023630  012737  000001  006620          MOV     #1,TIMER1       ;SET TIMER TO COUNT 1 TICK
023636  005737  006620          1$:     TST     TIMER1          ;CHECK FOR IT TO BE COUNTED OFF
023642  001412                          BEQ     GTRA3           ;BRANCH IF CLOCK EXISTS (COUNTED A TICK)
023644  005301                          DEC     R1
023646  001373                          BNE     1$              ;KEEP CHECKING UNTIL R1 DOES FULL COUNTDWN
023650                                  PRINTF  #NOCLK          ;PRINT BAD CLK MSG AND WARN OF HANG IF TIMEOUT
023650  012746  013334                                                          MOV     #NOCLK,-(SP)
023654  012746  000001                                                          MOV     #1,-(SP)
023660  010600                                                                  MOV     SP,R0
023662  104417                                                                  TRAP    C$PNTF
023664  062706  000004                                                          ADD     #4,SP

023670  005737  006544          GTRA3:  TST     RESFLG          ;SEE IF HERE AFTER A RESTART.
023674  001112                          BNE     GTRA5           ;BR IF HERE CAUSE OF A RESTART

                                        ; CLEAR COUNTS AND SET UP DEFAULTS

023676  005037  006512          GTRA4:  CLR     TOTCC           ;CLEAR TOTAL CHAR. COUNT TEMP. LOC.
023702  005037  006446                  CLR     TTOTCC          ; CLEAR TOTAL CHAR. COUNT FOR TX BUFF
023706  005037  006432                  CLR     CTOTCC          ; CLEAR TOTAL CHAR. COUNT FOR CMP BUFF
023712  012701  006132                  MOV     #PTRTAB,R1      ;INIT TRANSMIT MESSAGE POINTER
023716  010137  006424                  MOV     R1,TXPTR
023722  005037  006422                  CLR     RXPTR           ; ZERO RX POINTER

023726  012737  006226  006426          MOV     #PTR13,CMPPTR   ;INIT COMPARE MESSAGE POINTER

023734  012737  000005  006500          MOV     #5,MSGTYP       ;SET UP DEFAULT MSG TYPE (QUICK FOX - ITEP MSG)
023742  013737  002162  006502          MOV     MSG5C,CURCC     ;SET UP DEFAULT CHAR COUNT
023750  012737  003132  006450          MOV     #TXBUF,TCURAD   ;SET UP CURRENT ADD TO START OF TX BUFFER
023756  012737  005132  006434          MOV     #CMPBUF,CCURAD  ;SET UP CURRENT ADD TO START OF CMP BUFFER

023764  013737  006450  006510          MOV     TCURAD,CURADD   ;SETUP CURRENT ADDR TO START OF TXBUF
023772  013737  006424  006506          MOV     TXPTR,CPTR      ;SETUP CURRENT POINTER TABLE POINTER FOR TXBUF
024000  004737  021202                  JSR     PC,BLDBUF       ; GO BUILD POINTER TABLE AND BUFFER
024004  012737  000001  006444          MOV     #1,TXMTOT       ;BUMP TOTAL MESSAGE COUNT
```

```
4314
4315  024012  013737  006426  006506          MOV     CMPPTR,CPTR     ;SET UP START OF COMPARE POINTER TABLE
4316  024020  013737  006434  006510          MOV     CCURAD,CURADD   ;SET UP CURRENT ADDR. TO START OF CMPBUF
4317  024026  012737  000005  006500          MOV     #5,MSGTYP
4318  024034  013737  002162  006502          MOV     MSG5C,CURCC
4319  024042  004737  021202                  JSR     PC,BLDBUF       ;PUT DEFAULT MESSAGE INTO CMPBUF
4320  024046  012737  000001  006430          MOV     #1,CMPTOT       ;BUMP THE COMP MESG COUNT
4321  024054  012737  000003  006546          MOV     #ACT,MODTYP     ;SET DEFAULT MODE= ACTIVE
4322  024062  005037  006550                  CLR     MLTYP           ;SET DEFAULT MAINTENANCE LOOP MODE =NONE
4323  024066  012737  000001  006556          MOV     #1,RPASS        ;SET UP DEFAULT "RUN PASS" COUNT TO 1
4324  024074  012737  000002  006554          MOV     #2,PARAM        ;SET UP PROG. PARAMETERS - DATACHECKING ENABLED
4325                                                                  ;                  OPERATOR STATUS MSGS. PRINT OFF
4326  024102                                  PRINTF  #HLP0
4327  024102  012746  012014                                                  MOV     #HLP0,-(SP)
4328  024106  012746  000001                                                  MOV     #1,-(SP)
4329  024112  010600                                                          MOV     SP,R0
4330  024114  104417                                                          TRAP    C$PNTF
4331  024116  062706  000004                                                  ADD     #4,SP
4332  024122  013737  006546  007662  GTRA5:  MOV     MODTYP,DEV1
4333  024130  013737  006550  007664          MOV     MLTYP,DEV2
4334  024136  013737  006556  007666          MOV     RPASS,DEV3
4335  024144  013737  006554  007670          MOV     PARAM,DEV4
4336  024152  004737  021326                  JSR     PC,SHWOP        ;PRINT TO OPERATOR THE CURRENT MODE.....
4337
4338  024156                                  MANUAL                  ;SEE IF MANUAL INTERVENTION ALLOWED
4339  024156  104450                                                          TRAP    C$MANI
4340  024160                                  BCOMPLETE       GETCL   ;  BR IF YES (UAM=0 AND NOT CHAINED)
4341  024160  103412                                                          BCS     GETCL
4342  024162  005737  006556                  TST     RPASS           ;SEE IF THIS IS FIRST "DCLT PASS"
4343  024166  001002                          BNE     1$              ; BR IF NOT COMPLETED 1 PASS
4344  024170                                  EXIT    TST             ; IF DONE 1 PASS IN UNATTENDED MODE - EXIT
4345  024170  104432                                                          TRAP    C$EXIT
4346  024172  007510                                                          .WORD   L10017-.
4347  024174  012737  000001  006550  1$:     MOV     #TTL,MLTYP      ;SET UP DEFAULT FOR UNATTENDED MODE
4348  024202  000137  027054                  JMP     GTR9            ;   'R M=ACT/LO=1/PAS=1/NOST/CH" AND RUN
4349
4350                                  .SBTTL          COMMAND LINE FETCH & INTERPRETATION SECTION
4351
4352  024206  105037  003131          GETCL:  CLRB    P$GDBD          ;CLEAR CMD LINE PARSING ERROR FLAGS
4353  024212  105037  003130                  CLRB    P$NNUF
4354  024216                                  GMANID  CLI$PM,CMDBUF,A,0,1,72.,NO      ;GET A COMMAND LINE FROM OPR.
4355  024216  104443                                                          TRAP    C$GMAN
4356  024220  000406                                                          BR      10000$
4357  024222  002666                                                          .WORD   CMDBUF
4358  024224  000142                                                          .WORD   T$CODE
4359  024226  011466                                                          .WORD   CLI$PM
4360  024230  000000                                                          .WORD   0
4361  024232  000001                                                          .WORD   T$LOLIM
4362  024234  000110                                                          .WORD   T$HILIM
4363  024236                                                          10000$:
4364  024236  012737  002666  003114          MOV     #CMDBUF,P$BUFA
4365  024244  012737  007672  003116          MOV     #CLITRE,P$TREE
4366  024252  012737  025130  003120          MOV     #CLIACT,P$ACT
4367  024260  005037  003012                  CLR     QUALFG                  ;CLEAR QUALIFIER FLAG LOCATION
4368  024264  004737  021630                  JSR     PC,P$TRV                ;GO PARSE COMMAND LINE
4369  024270  105737  003131                  TSTB    P$GDBD                  ;SEE IF PARSED OK OR AN ERROR
```

```
4370  024274  001412                      BEQ     1$
4371  024276                              PRINTF  #CLIERM
4372  024276  012746  011474                                                  MOV     #CLIERM,-(SP)
4373  024302  012746  000001                                                  MOV     #1,-(SP)
4374  024306  010600                                                          MOV     SP,R0
4375  024310  104417                                                          TRAP    C$PNTF
4376  024312  062706  000004                                                  ADD     #4,SP
4377  024316  000137  024206              JMP     GETCL
4378  024322  105737  003130      1$:     TSTB    P$NNUF          ;SEE IF INCOMPLETE COMMAND TYPED
4379  024326  001412                      BEQ     10$
4380  024330                              PRINTF  #CLINUF
4381  024330  012746  011524                                                  MOV     #CLINUF,-(SP)
4382  024334  012746  000001                                                  MOV     #1,-(SP)
4383  024340  010600                                                          MOV     SP,R0
4384  024342  104417                                                          TRAP    C$PNTF
4385  024344  062706  000004                                                  ADD     #4,SP
4386  024350  000137  024206              JMP     GETCL
4387
4388  024354  023727  003010  000005  10$:  CMP     KEYWD1,#HLP     ;SEE IF HELP WAS TYPED
4389  024362  001711                      BEQ     GETCL           ;GO GET CMD AGAIN IF YES
4390  024364  023727  003010  000055      CMP     KEYWD1,#PRNT    ;SEE IF PRINT WAS TYPED
4391  024372  001705                      BEQ     GETCL           ; GO GET CMD AGAIN IF YES
4392  024374  023727  003010  000004      CMP     KEYWD1,#RUN     ;SEE IF RUN WAS TYPED
4393  024402  001002                      BNE     11$             ; BR IF NO
4394  024404  000137  027054              JMP     GTR9            ; START EXEC. IF YES
4395  024410  023727  003010  000052  11$:  CMP     KEYWD1,#DMPS    ;SEE IF DUMP WAS TYPED
4396  024416  001004                      BNE     12$             ; BR IF NO
4397  024420  004737  020746              JSR     PC,DUMPSR       ; ELSE, DUMP PART OF MEMORY
4398  024424  000137  024206              JMP     GETCL           ; THEN RETURN TO GET ANOTHER CMD.
4399  024430  023727  003010  000001  12$:  CMP     KEYWD1,#CLEAR   ;SEE IF CLEAR WAS TYPED
4400  024436  001663                      BEQ     GETCL           ; IF YES, BACK TO GET ANOTHER CMD.
4401  024440  023727  003010  000002      CMP     KEYWD1,#SHOW    ;SEE IF SHOW WAS TYPED
4402  024446  001657                      BEQ     GETCL           ; IF YES, BACK TO GET ANOTHER CMD.
4403  024450  023727  003010  000010  4$:  CMP     KEYWD1,#SETEXP  ;SEE IF SET EXPECTED
4404  024456  001512                      BEQ     2$              ; BR IF YES (A SETEXP WAS TYPED)
4405  024460  013737  006446  006512  5$:  MOV     TTOTCC,TOTCC
4406  024466  023727  006512  001000      CMP     TOTCC,#BUFLIM   ;SEE IF BUFFER ALREADY FULL
4407  024474  002414                      BLT     15$             ; BR IF NOT FULL (BUFLIM # OF CHARS.)
4408  024476                              PRINTF  #MSGTRN,#BUFEX  ; ELSE TELL OPR. AND DON'T BUILD MSG.
4409  024476  012746  013455                                                  MOV     #BUFEX,-(SP)
4410  024502  012746  013473                                                  MOV     #MSGTRN,-(SP)
4411  024506  012746  000002                                                  MOV     #2,-(SP)
4412  024512  010600                                                          MOV     SP,R0
4413  024514  104417                                                          TRAP    C$PNTF
4414  024516  062706  000006                                                  ADD     #6,SP
4415  024522  000137  024206              JMP     GETCL           ; THEN GO GET A NEW COMMAND
4416  024526  005737  006446      15$:    TST     TTOTCC          ;IF FIRST "SET" THEN GET RID OF DEFAULT
4417  024532  001002                      BNE     6$
4418  024534  005037  006444              CLR     TXMTOT
4419  024540  012737  006132  006424  6$:  MOV     #PTRTAB,TXPTR   ;GET POSITION OF END OF TX LIST
4420  024546  013701  006444              MOV     TXMTOT,R1
4421  024552  020127  000017              CMP     R1,#MSGLIM      ;SEE IF MSG COUNT EXCEEDED.
4422  024556  002414                      BLT     17$             ; BR IF NO
4423  024560                              PRINTF  #MSGTRN,#TABEX  ; ELSE TELL OPR. AND DON'T BUILD MSG.
4424  024560  012746  013415                                                  MOV     #TABEX,-(SP)
4425  024564  012746  013473                                                  MOV     #MSGTRN,-(SP)
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4426  024570  012746  000002                                                  MOV     #2,-(SP)
4427  024574  010600                                                          MOV     SP,R0
4428  024576  104417                                                          TRAP    C$PNTF
4429  024600  062706  000006                                                  ADD     #6,SP
4430  024604  000137  024206                JMP     GETCL                    ; THEN GO GET A NEW COMMAND.
4431  024610  006301                17$:    ASL     R1                       ;# OF MSGS *4 = NEXT FREE PTR BLOCK
4432  024612  006301                        ASL     R1
4433  024614  060137  006424                ADD     R1,TXPTR
4434  024620  013737  006424  006506        MOV     TXPTR,CPTR               ;SETUP CHAR. COUNT, CURRENT ADDR, & PTR
4435  024626  013737  006450  006510        MOV     TCURAD,CURADD
4436  024634  004737  021104                JSR     PC,ADDCC                 ;ADD IN CHAR. COUNT AND CHECK TOTAL
4437  024640  004737  021202                JSR     PC,BLDBUF                ;GO BUILD MESSAGE IN BUFFER AND PTRS.
4438  024644  013737  006506  006424        MOV     CPTR,TXPTR
4439  024652  013737  006512  006446        MOV     TOTCC,TTOTCC             ;UPDATE CHAR. COUNT, CURR ADDR, & PTR
4440  024660  013737  006510  006450        MOV     CURADD,TCURAD
4441  024666  005237  006444                INC     TXMTOT
4442  024672  005337  003014                DEC     QUALVL                   ;DEC THE COPY COUNT
4443  024676  001270                        BNE     5$
4444  024700  000137  024206                JMP     GETCL
4445
4446  024704  013737  006432  006512  2$:   MOV     CTOTCC,TOTCC             ;SETUP CHAR. COUNT, CURR. ADDR. & PTR
4447  024712  023727  006512  001000        CMP     TOTCC,#BUFLIM            ;SEE IF BUFFER ALREADY FULL
4448  024720  002414                        BLT     16$                      ; BR IF NOT FULL (BUFLIM # OF CHARS.)
4449  024722                                PRINTF  #MSGTRN,#BUFEX           ; ELSE TELL OPR. AND DON'T BUILD MSG.
4450  024722  012746  013455                                                  MOV     #BUFEX,-(SP)
4451  024726  012746  013473                                                  MOV     #MSGTRN,-(SP)
4452  024732  012746  000002                                                  MOV     #2,-(SP)
4453  024736  010600                                                          MOV     SP,R0
4454  024740  104417                                                          TRAP    C$PNTF
4455  024742  062706  000006                                                  ADD     #6.SP
4456  024746  000137  024206                JMP     GETCL                    ; THEN GO GET A NEW COMMAND
4457  024752  005737  006432          16$:  TST     CTOTCC                   ;IF FIRST "SET" THEN GET RID OF DEFAULT
4458  024756  001002                        BNE     7$
4459  024760  005037  006430                CLR     CMPTOT
4460  024764                          7$:
4461  024764  012737  006226  006426        MOV     #PTR13,CMPPTR            ;INIT COMPARE MESSAGE POINTER
4462  024772  013701  006430                MOV     CMPTOT,R1
4463  024776  020127  000017                CMP     R1,#MSGLIM               ;SEE IF MSG COUNT EXCEEDED.
4464  025002  002414                        BLT     18$                      ; BR IF NO
4465  025004                                PRINTF  #MSGTRN,#TABEX           ; ELSE TELL OPR. AND DON'T BUILD MSG.
4466  025004  012746  013415                                                  MOV     #TABEX,-(SP)
4467  025010  012746  013473                                                  MOV     #MSGTRN,-(SP)
4468  025014  012746  000002                                                  MOV     #2,-(SP)
4469  025020  010600                                                          MOV     SP,R0
4470  025022  104417                                                          TRAP    C$PNTF
4471  025024  062706  000006                                                  ADD     #6,SP
4472  025030  000137  024206                JMP     GETCL                    ; THEN GO GET A NEW COMMAND.
4473  025034  006301                18$:    ASL     R1                       ;# OF MSGS *4 = NEXT FREE PTR BLOCK
4474  025036  006301                        ASL     R1
4475  025040  060137  006426                ADD     R1,CMPPTR
4476  025044  013737  006426  006506        MOV     CMPPTR,CPTR
4477  025052  013737  006434  006510        MOV     CCURAD,CURADD
4478  025060  004737  021104                JSR     PC,ADDCC                 ;ADD IN XHAR. COUNT AND CHECK TOTAL
4479  025064  004737  021202                JSR     PC,BLDBUF
4480  025070  013737  006506  006426        MOV     CPTR,CMPPTR
4481  025076  005237  006430                INC     CMPTOT
```

```
 4482  025102  013737  006510  006434          MOV     CURADD,CCURAD           ;UPDATE CHAR. COUNT, CURR ADDRR. & PTR
 4483  025110  013737  006512  006432          MOV     TOTCC,CTOTCC
 4484  025116  005337  003014                  DEC     QUALVL                  ;IF COPY WAS GIVEN, PUT MSG IN BUFF
 4485  025122  001270                          BNE     2$                      ; AGAIN
 4486  025124  000137  024206                  JMP     GETCL                   ;GO BACK UNTIL GET A ''RUN'
 4487
 4488
 4489
 4490
 4491
```

```
                                .SBTTL          ACTION TABLE AND ROUTINES
                                ;       USER MUST CLEAR/SET P$GDBD IF USE "CLIBIF" IN CONNECTION WITH ACTION
                                ;       R2 WILL HOLD ACTION CODE FROM PARSING (CLI) NODE
                                ;
025130                          CLIACT:
025130  006302                          ASL     R2
025132  016202  025146                  MOV     10$(R2),R2      ;FORM ADDRESS OF ACTION ROUTINE
025136  062702  025146                  ADD     #10$,R2
025142  004712                          JSR     PC,(R2)
025144  000207                          RTS     PC
                                
025146  000144                  10$:     .WORD   ACTNUL-10$
025150  000146                           .WORD   ACTCLR-10$
025152  000156                           .WORD   ACTSHO-10$
025154  001476                           .WORD   ACTCHK-10$
025156  000246                           .WORD   ACTRUN-10$
025160  000166                           .WORD   ACTHLP-10$
025162  000272                           .WORD   ACTCSE-10$
025164  000364                           .WORD   ACTCST-10$
025166  000706                           .WORD   ACTSTE-10$
025170  000716                           .WORD   ACTSTT-10$
025172  000734                           .WORD   ACTSZ_-10$
025174  000744                           .WORD   ACTCOP-10$
025176  000754                           .WORD   ACTNUM-10$
025200  001046                           .WORD   ACTOPM-10$
025202  001504                           .WORD   ACTSTS-10$
025204  001066                           .WORD   ACTEQO-10$
025206  001146                           .WORD   ACTMS0-10$
025210  001154                           .WORD   ACTMS1-10$
025212  001164                           .WORD   ACTMS2-10$
025214  001174                           .WORD   ACTMS3-10$
025216  001204                           .WORD   ACTMS4-10$
025220  001214                           .WORD   ACTMS5-10$
025222  001232                           .WORD   ACTMS6-10$
025224  001262                           .WORD   ACTATV-10$
025226  001272                           .WORD   ACTPAS-10$
025230  001312                           .WORD   ACTREC-10$
025232  001320                           .WORD   ACTLIS-10$
025234  001330                           .WORD   ACTDLL-10$
025236  001340                           .WORD   ACTTRA-10$
025240  001350                           .WORD   ACTTAL-10$
025242  001376                           .WORD   ACTNO-10$
025244  001406                           .WORD   ACTECH-10$
025246  001512                           .WORD   ACTCRC-10$
025250  001526                           .WORD   ACTPRO-10$
025252  001560                           .WORD   ACTRPS-10$
025254  001570                           .WORD   ACTMOP-10$
025256  001600                           .WORD   ACTTLP-10$
025260  001610                           .WORD   ACTCLP-10$
025262  001620                           .WORD   ACTLLP-10$
025264  001630                           .WORD   ACTRLP-10$
025266  000136                           .WORD   ACTNUF-10$
025270  001124                           .WORD   ACTBCR-10$
025272  000642                           .WORD   ACTDMS-10$
025274  000672                           .WORD   ACTDME-10$
025276  000664                           .WORD   ACTDMQ-10$
```

```
 4548  025300  000232                    .WORD   ACTPRT-10$
 4549  025302  001520                    .WORD   ACTMOS-10$
 4550
```

```
  45:1
  4552  025304  112737  177777  003130  ACTNUF: MOVB    #-1,P$NNUF      ;SET FLAG TO SAY NEED MORE OF COMMAND
  4553  025312  000207                  ACTNUL: RTS     PC              ;RETURN TO PARSER
  4554
  4555  025314  012737  000001  003010  ACTCLR: MOV     #CLEAR,KEYWD1   ;SET LOC TO SAY A CLEAR WAS TYPED
  4556  025322  000207                          RTS     PC
  4557
  4558  025324  012737  000002  003010  ACTSHO: MOV     #SHOW,KEYWD1    ;SET LOC. TO SAY A SHOW WAS TYPED
  4559  025332  000207                          RTS     PC
  4560
  4561  025334  012702  003016          ACTHLP: MOV     #HLPTAB,R2      ;SETUP R2 AS A POINTER TO HELP MSG TABLE
  4562  025340                          1$:     PRINTF  #HLPF,(R2)+     ;PRINT HELP INFORMATION MESSAGES
  4563  025340  012246                                                                  MOV     (R2)+,-(SP)
  4564  025342  012746  012072                                                          MOV     #HLPF,-(SP)
  4565  025346  012746  000002                                                          MOV     #2,-(SP)
  4566  025352  010600                                                                  MOV     SP,R0
  4567  025354  104417                                                                  TRAP    C$PNTF
  4568  025356  062706  000006                                                          ADD     #6,SP
  4569  025362  020227  003034                  CMP     R2,#HLPEND      ;SEE IF ALL INFO PRINTED YET
  4570  025366  001364                          BNE     1$              ;IF NO KEEP PRINTING
  4571  025370  012737  000005  003010          MOV     #HLP,KEYWD1     ;SET LOC. TO SAY A HELP WAS TYPED
  4572  025376  000207                          RTS     PC
  4573
  4574  025400  012737  000055  003010  ACTPRT: MOV     #PRNT,KEYWD1    ;SET LOC. TO SAY A HELP WAS TYPED
  4575  025406  004737  017676                  JSR     PC,REPORT       ;CALL ROUTINE TO PRINT EVENT LOG AND BASE TABLE
  4576  025412  000207                          RTS     PC
  4577
  4578  025414  012737  000004  003010  ACTRUN: MOV     #RUN,KEYWD1     ;SET RUN FLAG
  4579  025422  112737  177777  003130          MOVB    #-1,P$NNUF      ;SET FLAG TO SAY NEED MORE OF COMMAND
  4580  025430  012737  000001  006556          MOV     #1,RPASS        ;SET DEFAULT RUN "PASS" TO 1
  4581  025436  000207                          RTS     PC
  4582
  4583  025440  012737  006226  006426  ACTCSE: MOV     #PTR13,CMPPTR   ;INIT COMPARE MESSAGE POINTER
  4584  025446  013701  006426                  MOV     CMPPTR,R1
  4585
  4586  025452  013702  006430                  MOV     CMPTOT,R2
  4587  025456  105037  003130                  CLRB    P$NNUF          ;FLAG THAT HAVE VALID COMMAND AT THIS PT.
  4588  025462  023727  003010  000002          CMP     KEYWD1,#SHOW    ;SEE IF A CLEAR OR SHOW WAS TYPED
  4589  025470  001471                          BEQ     ACTSHW          ;BR IF A SHOW WAS TYPED
  4590  025472  012737  000001  006430          MOV     #1,CMPTOT       ;CLEAR COMPARE MESSAGE COUNT, CHAR. COUNT
  4591  025500  005037  006432                  CLR     CTOTCC          ; AND RESET POINTER
  4592
  4593  025504  012737  006226  006426          MOV     #PTR13,CMPPTR   ;INIT COMPARE MESSAGE POINTER
  4594  025512  013737  006426  006506          MOV     CMPPTR,CPTR     ;SET UP TO FILL IN DEFAULT MESSAGE
  4595  025520  012701  005132                  MOV     #CMPBUF,R1
  4596  025524  010137  006434                  MOV     R1,CCURAD
  4597  025530  000431                          BR      ACTCLB
  4598
  4599  025532  012701  006132          ACTCST: MOV     #PTRTAB,R1
  4600  025536  013702  006444                  MOV     TXMTOT,R2
  4601  025542  105037  003130                  CLRB    P$NNUF          ;FLAG THAT HAVE VALID COMMAND AT THIS PT.
  4602  025546  023727  003010  000002          CMP     KEYWD1,#SHOW    ;SEE IF A CLEAR OR SHOW WAS TYPED
  4603  025554  001437                          BEQ     ACTSHW          ;BR IF A SHOW WAS TYPED
  4604  025556  012737  000001  006444          MOV     #1,TXMTOT       ;CLEAR TRANSMIT MESSAGE COUNT, CHAR. COUNT
  4605  025564  005037  006446                  CLR     TTOTCC          ; AND RESET POINTER
  4606  025570  012737  006132  006424          MOV     #PTRTAB,TXPTR
```

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4607  025576  013737  006424  006506          MOV     TXPTR,CPTR
4608  025604  012701  003132                  MOV     #TXBUF,R1
4609  025610  010137  006450                  MOV     R1,TCURAD
4610
4611  025614  012702  001000          ACTCLB: MOV     #BUFLIM,R2
4612  025620  010137  006510                  MOV     R1,CURADD       ;SET UP TO PUT DEFAULT MSG IN LIST AFTER 033'S
4613  025624  012737  000005  006500          MOV     #5,MSGTYP
4614  025632  013737  002162  006502          MOV     MSGSC,CURCC
4615  025640  105021                  1$:     CLRB    (R1)+           ;FILL EXPT OR TRAN BUFFER WITH 0'S IF A CLEAR
4616  025642  005302                          DEC     R2              ;DO "BUFLIM" NUMBER OF BYTE LOCATIONS
4617  025644  001375                          BNE     1$
4618  025646  004737  021202                  JSR     PC,BLDBUF       ;"CLEAR" REALLY MEANS TO PUT DEFAULT MSG IN
4619  025652  000207                          RTS     PC              ;WHEN DONE, RETURN TO PARSER
4620
4621
4622  025654  012705  003054          ACTSHW: MOV     #SHTAB,R5
4623  025660  122571  000000          5$:     CMPB    (R5)+,@(R1)     ;LOOK AT FIRST BYTE OF MSG TO DECIPHER TYPE
4624  025664  001404                          BEQ     6$
4625  025666  020527  003063                  CMP     R5,#SHTEND      ;SEE IF LOOKED AT ALL OF DEFAULTS YET
4626  025672  001372                          BNE     5$
4627  025674  005205                          INC     R5              ;MUST BE OPR. SPEC'D THEN
4628  025676  162705  003055          6$:     SUB     #SHTAB+1,R5
4629  025702  006305                          ASL     R5
4630  025704  016137  000002  006516          MOV     2(R1),TEMP
4631  025712                                  PRINTF  #SHMSG,SHTYTB(R5),TEMP  ;PRINT MSG SIZE & TYPE
4632  025712  013746  006516                                                          MOV     TEMP,-(SP)
4633  025716  016546  003034                                                          MOV     SHTYTB(R5),-(SP)
4634  025722  012746  012631                                                          MOV     #SHMSG,-(SP)
4635  025726  012746  000003                                                          MOV     #3,-(SP)
4636  025732  010600                                                                  MOV     SP,R0
4637  025734  104417                                                                  TRAP    C$PNTF
4638  025736  062706  000010                                                          ADD     #10,SP
4639  025742  062701  000004                          ADD     #4,R1           ;BUMP R1 TO NEXT SET OF POINTERS
4640  025746  005302                          DEC     R2
4641  025750  001341                          BNE     ACTSHW
4642  025752  013737  006546  007662          MOV     MODTYP,DEV1
4643  025760  013737  006550  007664          MOV     MLTYP,DEV2
4644  025766  013737  006556  007666          MOV     RPASS,DEV3
4645  025774  013737  006554  007670          MOV     PARAM,DEV4
4646  026002  004737  021326                  JSR     PC,SHWOP        ;SHOW THE OPERATOR THE CURRENT MODE..... ALSO
4647  026006  000207                          RTS     PC
4648
4649  026010  013737  003124  006472  ACTDMS: MOV     P$NUM,STADD     ;SETUP STARTING ADDRESS FOR DUMP
4650  026016  005037  006476                  CLR     BYTBIT          ;SET DEFAULT OF WORD DUMP
4651  026022  012737  000052  003010          MOV     #DMPS,KEYWD1    ;FLAG THAT A DUMP WAS TYPED
4652  026030  000403                          BR      ACTDME
4653
4654  026032  012737  177777  006476  ACTDMQ: MOV     #-1,BYTBIT      ;SET DUMP FLAG TO "DUMP-WORD"
4655  026040  013737  003124  006474  ACTDME: MOV     P$NUM,ENADD     ;SETUP END ADDRESS FOR DUMP (-START IF NO "EEE"
4656  026046  105037  003130          ACTDMX: CLRB    P$NNUF          ;CLEAR NOT-ENOUGH FLAG, "DUMP N-N/B" IS VALID
4657  026052  000207                          RTS     PC
4658
```

```
4659
4660
4661  026054  012737  000010  003010  ACTSTE: MOV     #SETEXP,KEYWD1
4662  026062  000403                  BR      ACTSTX
4663
4664  026064  012737  000011  003010  ACTSTT: MOV     #SETTRN,KEYWD1
4665  026072  012737  000001  003014  ACTSTX: MOV     #1,QUALVL       ;SET UP DEFAULT COPY TO 1 (/COPY=0)
4666  026100  000207                  RTS     PC
4667
4668  026102  012737  000012  003012  ACTSZE: MOV     #SIZE,QUALFG
4669  026110  000207                  RTS     PC
4670
4671  026112  012737  000013  003012  ACTCOP: MOV     #QCOPY,QUALFG
4672  026120  000207                  RTS     PC
4673
4674  026122  023727  003012  000012  ACTNUM: CMP     QUALFG,#SIZE    ;SEE IF A SIZE OR COPY TYPED
4675  026130  001023                  BNE     1$              ;BR IF IT WAS A COPY
4676  026132  005737  003124          TST     P$NUM           ;CHECK TO BE SURE DIDN'T TRY SIZE=0
4677  026136  001014                  BNE     3$              ; BR IF NO
4678  026140                          PRINTF  #CLISEO
4679  026140  012746  011763                                                  MOV     #CLISEO,-(SP)
4680  026144  012746  000001                                                  MOV     #1,-(SP)
4681  026150  010600                                                          MOV     SP,R0
4682  026152  104417                                                          TRAP    C$PNTF
4683  026154  062706  000004                                                  ADD     #4,SP
4684  026160  112737  177777  003131          MOVB    #-1,P$GDBD      ;SEE ERROR-IN-CMD FLAG
4685  026166  000411                  BR      2$
4686  026170  013737  003124  006502  3$.     MOV     P$NUM,CURCC     ;IF A SIZE LOAD CURCC WITH BYTE COUNT
4687  026176  000405                  BR      2$
4688  026200  013737  003124  003014  1$:     MOV     P$NUM,QUALVL    ;IF A COPY, LOAD COPY COUNT
4689  026206  005237  003014                  INC     QUALVL          ;INCREMENT SO FIRST DEC MAKES IT REAL #
4690  026212  000503                  2$:     BR      ACTMEX
4691
4692  026214  012737  000007  006500  ACTOPM: MOV     #7,MSGTYP
4693  026222  010437  006516                  MOV     R4,TEMP         ;KEEP TRACK OF START OF QUOTED TEXT
4694  026226  005237  006516                  INC     TEMP            ; SO CAN CALC OPCNT AT END OF QUOTES
4695  026232  000207                  RTS     PC
4696
4697  026234  010402                  ACTEQO: MOV     R4,R2
4698  026236  163702  006516                  SUB     TEMP,R2
4699  026242  010237  006502                  MOV     R2,CURCC        ;CALC BYTE COUNT FOR QUOTED TEXT
4700  026246  010237  002166                  MOV     R2,OPCNT
4701  026252  013701  006516                  MOV     TEMP,R1
4702  026256  012705  002520                  MOV     #OPBUF,R5
4703  026262  112125                  1$:     MOVB    (R1)+,(R5)+     ;COPY QUOTED TEXT TO OPBUF
4704  026264  005302                  DEC     R2
4705  026266  001375                  BNE     1$
4706  026270  000454                  BR      ACTMEX
4707
4708  026272                          ACTBCR: PRINTF  #CLIBCR         ;BAD CHAR. IN OPR. QUOTED STRING
4709  026272  012746  011716                                                  MOV     #CLIBCR,-(SP)
4710  026276  012746  000001                                                  MOV     #1,-(SP)
4711  026302  010600                                                          MOV     SP,R0
4712  026304  104417                                                          TRAP    C$PNTF
4713  026306  062706  000004                                                  ADD     #4,SP
4714  026312  000207                  RTS     PC
```

```
4715
4716  026314  005037  006500          ACTMS0: CLR     MSGTYP
4717  026320  000435                  BR      ACTME1
4718  026322  012737  000001  006500  ACTMS1: MOV     #1,MSGTYP
4719  026330  000431                  BR      ACTME1
4720  026332  012737  000002  006500  ACTMS2: MOV     #2,MSGTYP
4721  026340  000425                  BR      ACTME1
4722  026342  012737  000003  006500  ACTMS3: MOV     #3,MSGTYP
4723  026350  000421                  BR      ACTME1
4724  026352  012737  000004  006500  ACTMS4: MOV     #4,MSGTYP
4725  026360  000415                  BR      ACTME1
4726  026362  012737  000005  006500  ACTMS5: MOV     #5,MSGTYP
4727  026370  013737  002162  006502          MOV     MSG5C,CURCC             ;SETUP DEFAULT SIZE FOR THIS TYPE
4728  026376  000411                  BR      ACTMEX
4729  026400  012737  000006  006500  ACTMS6: MOV     #6,MSGTYP
4730  026406  013737  002164  006502          MOV     MSG6C,CURCC             ;SETUP DEFAULT SIZE FOR THIS TYPE
4731
4732  026414  012737  000100  006502  ACTME1: MOV     #64.,CURCC              ;SETUP DEFAULT SIZE FOR MSG0-4
4733  026422  105037  003130          ACTMEX: CLRB    P$NNUF                  ;CLEAR NOT-ENOUGH FLAG
4734  026426  000207                          RTS     PC
4735
```

```
4736  026430  012737  000003  006546  ACTATV: MOV     #ACT,MODTYP
4737  026436  000432                  BR      ACTM2X
4738
4739  026440  012737  000002  006546  ACTPAS: MOV     #PAS,MODTYP
4740  026446  105037  003130          CLRB    PSNNUF                  ;CLEAR NOT-ENOUGH FLAG
4741  026452  005037  006550          CLR     MLTYP                   ;CLEAR MAINT LOOP TYPE
4742  026456  000207                  RTS     PC
4743
4744  026460  005037  006546  ACTREC: CLR     MODTYP
4745  026464  000417                  BR      ACTM2X
4746
4747  026466  012737  000006  006546  ACTLIS: MOV     #LIS,MODTYP
4748  026474  000413                  BR      ACTM2X
4749
4750  026476  012737  000004  006546  ACTDLL: MOV     #DOW,MODTYP
4751  026504  000407                  BR      ACTM2X
4752
4753  026506  012737  000001  006546  ACTTRA: MOV     #TRA,MODTYP
4754  026514  000403                  BR      ACTM2X
4755
4756  026516  012737  000005  006546  ACTTAL: MOV     #TAL,MODTYP
4757
4758  026524  042737  000004  006554  ACTM2X: BIC     #ECHOB,PARAM            ;DISABLE /ECHO (ALL BUT PASSIVE MODE)
4759  026532  105037  003130          CLRB    PSNNUF                  ;CLEAR NOT-ENOUGH FLAG
4760  026536  005037  006550          CLR     MLTYP                   ;CLEAR MAINT LOOP TYPE
4761  026542  000207                  RTS     PC
4762
```

```
 47e3  026544  012737  000036  003012  ACTNO:  MOV     #NO,QUALFG
 4764  026552  000207                  RTS     PC
 4765
 4766  026554  022737  000036  003012  ACTECH: CMP     #NO,QUALFG
 4767  026562  001422                  BEQ     1$
 4768  026564  052737  000004  006554          BIS     #ECHOB,PARAM
 4769  026572  022737  000002  006546          CMP     #PAS,MODTYP             ;BE SURE IN PASSIVE MODE IF
 4770  026600  001416                  BEQ     2$                              ;IF TRYING TO SET /ECHO
 4771  026602                          PRINTF  #CLINPS
 4772  026602  012746  011653                                                          MOV     #CLINPS,-(SP)
 4773  026606  012746  000001                                                          MOV     #1,-(SP)
 4774  026612  010600                                                                  MOV     SP,R0
 4775  026614  104417                                                                  TRAP    C$PNTF
 4776  026616  062706  000004                                                          ADD     #4,SP
 4777  026622  112737  177777  003131          MOVB    #-1,P$GDBD
 4778  026630  042737  000004  006554  1$:     BIC     #ECHOB,PARAM
 4779  026636  005037  003012          2$:     CLR     QUALFG                  ;CLEAR 'NO' OUT OF QUALIFIER FLAG
 4780  026642  000501                  BR      ACTLXX
 4781
 4782  026644  012701  000002          ACTCHK: MOV     #DATCKB,R1              ;SET DATA CHECK BIT
 4783  026650  000413                  BR      ACTQFG
 4784
 4785  026652  012701  000001          ACTSTS: MOV     #STATB,R1       ;SET THE STATUS BIT
 4786  026656  000410                  BR      ACTQFG
 4787
 4788  026660  012701  000020          ACTCRC: MOV     #CRCB,R1        ;SET THE CRC BIT
 4789  026664  000405                  BR      ACTQFG
 4790
 4791  026666  012701  000010          ACTMOS: MOV     #MOCHK,R1       ;SET THE MODEM BIT
 479c  026672  000402                  BR      ACTQFG
 4793
 4794  026674  012701  000040          ACTPRO: MOV     #PROTOB,R1      ;SET THE PROTOCOL BIT
 4795
 4796  026700  050137  006554          ACTQFG: BIS     R1,PARAM
 4797  026704  022737  000036  003012          CMP     #NO,QUALFG
 4798  026712  001002                  BNE     1$
 4799  026714  040137  006554                  BIC     R1,PARAM
 4800  026720  005037  003012          1$:     CLR     QUALFG                  ;CLEAR 'NO' OUT OF QUALIFIER FLAG
 4801  026724  000450                  BR      ACTLXX
 4802
 4803  026726  013737  003124  006556  ACTRPS: MOV     P$NUM,RPASS             ;GET NUMBER OF ''RUN PASSES''
 4804  026734  000444                  BR      ACTLXX
 4805
 4806  026736  012737  000005  006550  ACTMOP: MOV     #5,MLTYP
 4807  026744  000417                  BR      ACTLPX
 4808  026746  012737  000001  006550  ACTTLP: MOV     #1,MLTYP
 4809  026754  000413                  BR      ACTLPX
 4810  026756  012737  000002  006550  ACTCLP: MOV     #2,MLTYP
 4811  026764  000407                  BR      ACTLPX
 4812  026766  012737  000003  006550  ACTLLP: MOV     #3,MLTYP
 4813  026774  000403                  BR      ACTLPX
 4814  026776  012737  000004  006550  ACTRLP: MOV     #4,MLTYP
 4815
 4816  027004  022737  000003  006546  ACTLPX: CMP     #ACT,MODTYP     ;BE SURE IN ACTIVE IF TRYING TO SET LOOP
 4817  027012  001415                  BEQ     ACTLXX          ; BR IF IN ACTIVE
 4818  027014  112737  177777  003131          MOVB    #-1,P$GDBD
```

```
4819  027022  005037  006550          CLR     MLTYP           ;CLEAR ANY LOOP TYPE THAT MAY HAVE GOT SET
4820  027026                          PRINTF  #CLIBDL
4821  027026  012746  011611                                                  MOV     #CLIBDL,-(SP)
4822  027032  012746  000001                                                  MOV     #1,-(SP)
4823  027036  010600                                                          MOV     SP,R0
4824  027040  104417                                                          TRAP    C$PNTF
4825  027042  062706  000004                                                  ADD     #4,SP
4826  027046  105037  003130  ACTLXX: CLRB    P$NNUF          ;CLEAR NOT-ENOUGH FLAG
4827  027052  000207                  RTS     PC
4828
```

```
4829
4830                                        ; RX ALLOCATE CODE
4831  027054  012737  006132  006424  GTR9:   MOV     #PTRTAB,TXPTR   ;INIT TRANSMIT MESSAGE POINTER
4832  027062  012737  006226  006426          MOV     #PTR13,CMPPTR   ;INIT COMPARE MESSAGE POINTER
4833  027070  012737  006322  006422          MOV     #PTR23,RXPTR    ;INIT RECEIVE MESSAGE POINTER
4834
4835  027076  013737  006430  006460          MOV     CMPTOT,RXMTOT   ;MAKE COMPARE AND RX MESSAGE COUNTS EQUAL
4836
4837
4838  027104  005037  006560          GTREX:  CLR     FLAG            ;CLEAR FLAG
4839  027110  005037  006464                  CLR     OPVAR           ;CLEAR OPTIONAL VARIABLE COUNTER
4840  027114  005037  006466                  CLR     PSCNT           ;CLEAR PASS COUNT
4841  027120  005037  006470                  CLR     ERRCNT          ;CLEAR ERROR COUNT
4842  027124  005037  011414                  CLR     MGLCNT          ;CLEAR GLITCH COUNT
4843  027130  005037  011416                  CLR     MHRCNT          ;CLEAR HARD ERR. COUNT
4844  027134  012737  000626  011404          MOV     #626,SYNCW      ;SET UP SYNCW FOR 226 SYNC +TSOM
4845  027142  052737  000200  011366          BIS     #BIT7,DPVP1     ;SET UP PARAM WORD FOR 226 RX SYNC
4846  027150  005737  011420                  TST     RNODE
4847  027154  001406                          BEQ     1$              ;IF NON ITEP GO TO 1
4848  027156  042737  000200  011366          BIC     #BIT7,DPVP1     ;SET UP FOR 26 SYNC WORD ON RX.
4849  027164  012737  000426  011404          MOV     #426,SYNCW      ;ELSE SET UP SYNC FOR 26 AND TSOM
4850  027172  004737  017264          1$:     JSR     PC,LOGDVI       ;LOG ABOUT TO INIT DEVICE
4851  027176  004737  031232                  JSR     PC,DVINIT       ;INIT DEVICE
4852
4853  027202  012737  001000  006502  GTRX2:  MOV     #BUFLIM,CURCC   ;SET CHAR COUNT TO "BUFLIM" NO. OF BYTES
4854  027210  012737  004132  006510          MOV     #RXBUF,CURADD   ;SET UP RX BUFFER AS CURRRENT ADD.
4855  027216  013737  006422  006506          MOV     RXPTR,CPTR
4856  027224  012737  000010  006500          MOV     #10,MSGTYP      ;SET UP FOR 33 TO FILL RX BUFFERS
4857  027232  004737  021202                  JSR     PC,BLDBUF       ;CLEAR RX BUFFER
4858  027236  013702  006546                  MOV     MODTYP,R2
4859  027242  006302                          ASL     R2
4860  027244  000172  006562                  JMP     @MODE(R2)       ;MODE DISPATCH
4861
```

```
                                .SBTTL          RECEIVE MODE SECTION
                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       RECEIVE-ONLY (OR ONE-WAY-IN) ROUTINE
                                ;       IN THIS MODE OF TESTING THE DEVICE'S RECEIVER IS ENABLED IN EXPECTATION
                                ;       OF RECEIVING A MESSAGE.  AFTER RECEIVING AN "EXPECTED" NUMBER OF
                                ;       MESSAGES, THE DATA RECEIVED CAN BE COMPARED AGAINST A LIST OF "EXPECT
                                ;       TO RECEIVE" MESSAGES IF DATA-CHECKING IS ENABLED.
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;               "ALLTR"
                                ;
                                ; CALLING SEQUENCE:
                                ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                                ;--

027250                          RXONLY:
027250  013737  006422  006504  RXON2:  MOV     RXPTR,CPTRR
027256  013737  006460  006456          MOV     RXMTOT,DVRCT    ;SET UP MESSAGE COUNT
027264  052737  000104  006560          BIS     #QRX+#ERX,FLAG  ;SET UP RX QUE
027272  005037  006506                  CLR     CPTR            ;CLEAR THE TX POINTER
027276  000137  027434                  JMP     ALLTR           ;GO RX.
```

```
                                .SBTTL          TRANSMIT MODE SECTION

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       TRANSMIT-ONLY (OR ONE-WAY-OUT) ROUTINE
                                ;       IN THIS MODE OF TESTING A LIST OF MESSAGES IS TRANSMITTED WITHOUT
                                ;       EXPECTING ANY DATA TO BE RECEIVED.  A REPETITION COUNT CAN BE
                                ;       SPECIFIED TO REPETITIVELY TRANSMIT THE LIST.
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;               "ALLTR"
                                ;
                                ; CALLING SEQUENCE:
                                ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                                ;--

027302  042737  000002  006554  TXONLY: BIC     #DATCKB,PARAM   ;SET NOCHECK
027310  013737  006424  006506  TXO^^:  MOV     TXPTR,CPTR
027316  013737  006444  006442          MOV     TXMTOT,DVTCT    ;COPY COUNTER FOR THIS PASS
027324  052737  000210  006560          BIS     #QTX+#ETX,FLAG  ;SET THE QUE TX FLAG
027332  005037  006504                  CLR     CPTRR           ;CLEAR RX POINTER
027336  000137  027434                  JMP     ALLTR           ;GO TX.
```

```
                        .SBTTL          PASSIVE MODE SECTION

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       PASSIVE MODE SECTION
                        ;       IN THIS MODE OF TESTING, THE DEVICE'S RECEIVER IS ENABLED IN
                        ;       EXPECTATION OF RECEIVING A MESSAGE.  THEN EVERY TIME A MESSAGE IS
                        ;       RECEIVED, A MESSAGE IS TRANSMITTED.  DATA CHECKING CAN BE DONE ON THE
                        ;       RECEIVED DATA.
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;
                        ;               "ALLTR"
                        ;
                        ; CALLING SEQUENCE:
                        ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                        ;--

027342                  PLCK:
027342  013737  006444  006442  PLCK2:  MOV     TXMTOT,DVTCT    ;SET UP  THE TRANSMIT COUNT
027350  013737  006424  006506          MOV     TXPTR,CPTR      ;SET UP CPTR TO TRANSMIT POINTER
027356  013737  006422  006504  PLCK3:  MOV     RXPTR,CPTRR     ;SET UP CPTRR TO REC POINTER
027364  052737  000104  006560          BIS     #QRX+#ERX,FLAG  ;SET UP Q AND EXPECT RX
027372  000137  027434                  JMP     ALLTR           ;AND GO RX FIRST MSG.
```

```
                                .SBTTL          ACTIVE MODE SECTION

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       ACTIVE MODE SECTION
                                ;       IN THIS MODE OF TESTING A LIST OF MESSAGES IS TRANSMITTED AND
                                ;       MESSAGES ARE EXPECTED TO BE RECEIVED.  RECEIVED DATA CAN BE COMPARED
                                ;       AGAINST "EXPECTED" DATA IF DATA-CHECKING IS ENABLED.
                                ;               NOTE: IF BOTH ENDS OF THE LINK ARE IN ACTIVE MODE, THEN THE
                                ;                       LINK MUST BE A FULL DUPLEX LINK!
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;
                                ;               "ALLTR"
                                ;
                                ; CALLING SEQUENCE:
                                ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                                ;--

027376  013737  006444  006442  ALCK:   MOV     TXMTOT,DVTCT
027404  013737  006424  006506          MOV     TXPTR,CPTR      ;SET UP TX COUNTS
027412  013737  006460  006456          MOV     RXMTOT,DVRCT    ;SET UP COUNTS
027420  013737  006422  006504          MOV     RXPTR,CPTRR
027426  052737  000314  006560          BIS     #QRX+#QTX+#ETX+#ERX,FLAG
```

```
                                .SBTTL          TRANSMIT - RECEIVE FOR ALL STANDARD MODES

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       THIS CODE PERFORMS THE FOLLOWING FUNCTIONS
                                ;       1.) IF RX BUFFERS ARE TO BE QUED,TELL DEVICE
                                ;           CODE TO QUE THEM ,LOG RECEIVE QUED.
                                ;       2.) IF TX BUFFERS ARE TO BE QUED ,TELL DEVICE
                                ;           CODE TO QUE THEM, LOG TRANSMIT QUED.
                                ;       3.) WAIT FOR EITHER RECIVE BUFFER OR TRANSMIT BUFFER OR
                                ;           BOTH TO COMPLETE
                                ;       4.) IF RECEIVE COMPLETE LOG IT UPDATE RX TABLE IF DATA
                                ;           CHECKING.
                                ;       5.) IF TRANSMIT COMPLETE LOG IT.
                                ;       6.) WHEN BOTH TRANSMIT AND RECIEVE LISTS ARE DONE
                                ;           GO TO THE COMPARE BUFFER CODE
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;               "DVRXQ" -QUE RECEIVE BUFFER SPACE TO DEVICE
                                ;               "LOGRXQ"-LOG RECEIVE BUFFER SPACE TO EVENT LOG
                                ;               "LOGTXQ"-LOG TRANSMIT BUFFER QUED TO EVENT LOG
                                ;               "DVTXRX"-QUE TRANSMIT BUFFER AND WAI  FOR RX
                                ;                       OR TX TO COMPLETE
                                ;               "LOGRXC"-LOG RECEIVE BUFFER COMPLETED TO EVENT LOG
                                ;               "LOGTXC"-LOG TRANSMIT BUFFER COMPLETED TO EVENT LOG
                                ;
                                ; USE OF FLAG BITS.
                                ;               QRX - SET ON INPUT TO ALLTR IF REC IS TO BE QUED TO
                                ;                     DEVICE. CLEARED BY DVRXQ AND THEN SET BY DVTXRX
                                ;                     WHEN RX BUFFER IS COMPLETED.
                                ;               QTX - SET ON INPUT TO ALLTR IF TRANSMIT IS TO BE QUED TO
                                ;                     DEVICE. CLEARED ON ENTRY TO DVTXRX AND SET BY DVTXRX
                                ;                     WHEN TX BUFFER IS COMPLETED.
                                ;               ETX - USED BY DVTXRX TO DETERMINE IF TX BUFFER COMPLETED IS
                                ;                     EXPECTED.
                                ;               ERX - USED BY DVTXRX TO DETERMINE IF RX BUFFER COMPLETED IS
                                ;                     EXPECTED.
                                ;
                                ;
                                ; CALLING SEQUENCE:
                                ;       JMP     ALLTR           ;GO TO TRANSMIT-RECEIVE FOR ALL STANDARD MODES
                                ;--

027434                          ALLTR:
027434  032737  000004  006560  ALCK5:  BIT     #QRX,FLAG
027442  001420                         BEQ     ALCK1           ;IF NOT RX GO TO TX'S
027444  013702  006504                 MOV     CPTRR,R2
027450  011237  006522                 MOV     (R2),TEMP2
027454  012237  006452                 MOV     (R2)+,DVRXA
027460  011237  006524                 MOV     (R2),TEMP3
027464  011237  006454                 MOV     (R2),DVRCC
027470  010237  006504                 MOV     R2,CPTRR
027474  004737  032104                 JSR     PC,DVRXQ        ;GO QUE DEVICE
027500  004737  017220                 JSR     PC,LOGRXQ       ;LOG REC QUED
027504  032737  000010  006560  ALCK1:  BIT     #QTX,FLAG
```

```
5016  027512  001416                          BEQ     ALCK2           ;IF NO TX'S GO TO 2
5017  027514  013702  006506                  MOV     CPTR,R2
5018  027520  011237  006522                  MOV     (R2),TEMP2
5019  027524  012237  006436                  MOV     (R2)+,DVTXA
5020  027530  011237  006524                  MOV     (R2),TEMP3
5021  027534  012237  006440                  MOV     (R2)+,DVTCC
5022  027540  010237  006506                  MOV     R2,CPTR
5023  027544  004737  017164                  JSR     PC,LOGTXQ
5024
5025  027550  004737  032206          ALCK2:  JSR     PC,DVTXRX       ;GO TO TX AND RX SUB ROUT.
5026
5027  027554  032737  000004  006560          BIT     #QRX,FLAG       ;CHECK FOR REC. MSG.
5028  027562  001514                          BEQ     ALCK3
5029  027564  013737  006452  006522          MOV     DVRXA,TEMP2
5030  027572  013737  006454  006524          MOV     DVRCC,TEMP3
5031  027600  004737  017236                  JSR     PC,LOGRXC       ;LOG REC COMPLETE
5032  027604  032737  000004  006554  UPTABL: BIT     #ECHOB,PARAM    ;IS THIS ECHO MODE(PASSIVE)
5033  027612  001406                          BEQ     UPTA4           ;IF NOT GO TO 4
5034  027614  013702  006506                  MOV     CPTR,R2         ;ELSE SET R2 TO PRESENT TX TABL
5035  027620  013722  006522                  MOV     TEMP2,(R2)+     ;STORE OFF RX ADD
5036  027624  013712  006524                  MOV     TEMP3,(R2)      ;AND CC
5037  027630  032737  000002  006554  UPTA4:  BIT     #DATCKB,PARAM   ;IS DATA CHECKING ASKED FOR
5038  027636  001015                          BNE     UPTA1           ;IF SO GO TO 1
5039  027640  012737  000001  006456          MOV     #01,DVRCT       ;ELSE SET DVRCT TO A 1
5040  027646  013737  006422  006504          MOV     RXPTR,CPTRR     ;RESET POINTER
5041  027654  022737  000003  006546          CMP     #ACT,MODTYP     ;IS THIS ACTIVE
5042  027662  001002                          BNE     UPTA3
5043  027664  005237  006456                  INC     DVRCT           ;IF YES BUMP COUNT
5044  027670  000424                  UPTA3:  BR      UPTEX
5045  027672  013702  006504          UPTA1:  MOV     CPTRR,R2
5046  027676  011237  006516                  MOV     (R2),TEMP       ;LOAD TEMP WITH PREV. COUNT
5047  027702  163737  006524  006516          SUB     TEMP3,TEMP      ;LOAD TEMP WITH PREV.COUNT-CURRENT
5048  027710  013722  006524                  MOV     TEMP3,(R2)+
5049  027714  063737  006524  006522          ADD     TEMP3,TEMP2
5050  027722  013722  006522                  MOV     TEMP2,(R2)+     ;STORE OF NEW ADD
5051  027726  013712  006516                  MOV     TEMP,(R2)       ;AND NEW CC
5052  027732  162702  000002                  SUB     #2,R2           ;PUT POINTER BACK TO ADDR.
5053
5054  027736  010237  006504                  MOV     R2,CPTRR        ;AND RESTORE IT.
5055
5056  027742                          UPTEX:
5057  027742  022737  000002  006546          CMP     #PAS,MODTYP
5058  027750  001007                          BNE     ALCK2A          ;IF NOT PASSIVE LOOP THEN GO TO 2A
5059  027752  042737  000104  006560          BIC     #QRX+#ERX,FLAG  ;CLEAR BOTH EXPECTED AND COMPLETED FLAGS
5060  027760  052737  000210  006560          BIS     #QTX+#ETX,FLAG  ;SET THE TX FLAGS
5061  027766  000646                          BR      ALCK1
5062
5063  027770  005337  006456          ALCK2A: DEC     DVRCT           ;DEC REC COUNT
5064  027774  005737  006456                  TST     DVRCT           ;IS IT ALL DONE
5065  030000  001005                          BNE     ALCK3           ;NO. GO CHECK TX
5066  030002  042737  000004  006560          BIC     #QRX,FLAG       ;CLEAR THE RX FLAG
5067  030010  005037  006504                  CLR     CPTRR           ;YES. CLEAR POINTER
5068  030014  032737  000010  006560  ALCK3:  BIT     #QTX,FLAG       ;IS IT TX
5069  030022  001447                          BEQ     ALCK4           ;IF NOT TX THEN GO BACK
5070  030024  013737  006436  006522          MOV     DVTXA,TEMP2
5071  030032  013737  006440  006524          MOV     DVTCC,TEMP3     ;LOG TX COMPLETED
```

```
5072  030040  004737  017202                JSR     PC,LOGTXC
5073  030044  005337  006442                DEC     DVTCT           ;DEC TX COUNT
5074  030050  022737  000002  006546        CMP     #PAS,MODTYP
5075  030056  001013                        BNE     ALCK3A          ;IF NOT PASSIVE MODE GO TO 3A
5076  030060  042737  000210  006560        BIC     #QTX+ETX,FLAG   ;CLEAR THE TX FLAGS
5077  030066  052737  000104  006560        BIS     #QRX+ERX,FLAG   ;AND SET THE RX FLAGS
5078  030074  005737  006442                TST     DVTCT
5079  030100  001005                        BNE     ALCK3C          ;IF MORE RX'S DO IT
5080  030102  000137  030162                JMP     CMPSR           ; ELSE COMPARE
5081  030106  005737  006442        ALCK3A: TST     DVTCT           ;IS IT ALL DONE
5082  030112  001402                        BEQ     ALCK3B          ;IF NOT GO BACK TO 5
5083  030114  000137  027434        ALCK3C: JMP     ALCK5
5084  030120  005037  006506        ALCK3B: CLR     CPTR            ;IF SO CLEAR POINTER
5085  030124  042737  000010  006560        BIC     #QTX,FLAG       ;CLEAR TX FLAG
5086  030132  032737  000002  006554        BIT     #DATCKB,PARAM   ;IS IT DAT CK
5087  030140  001403                        BEQ     ALCK4A          ;IF NOT THEN END WO CKING RX.
5088  030142  005737  006504        ALCK4:  TST     CPTRR
5089
5090  030146  001362                        BNE     ALCK3C          ;IF SOME RX'S LEFT GO BACK
5091  030150  005737  006506        ALCK4A: TST     CPTR
5092  030154  001402                        BEQ     ALCK4B          ;BRANCH IF ANY TX'S LEFT
5093  030156  000137  027550                JMP     ALCK2
5094  030162                        ALCK4B:
5095
5096
5097
```

```
                        .SBTTL          DATA COMPARISON CODE


                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;
                        ;       CMPSR - COMPARE CODE
                        ;       THIS CODE COMPARES THE RECEIVED DATA AGAINST THE
                        ;       EXPECTED AND FILLS THE EVENT LOG WITH 1 OF 3 MSGS.
                        ;
                        ;       NOTE: IF NO DATA CHECKING SKIP THIS CODE
                        ;
                        ;       1.) A DATA COMPARISON ENTRY WHICH REPORTS THE NUMBER
                        ;           OF COMPARISON ERRORS FOUND.
                        ;       2.) A DATA COMPARISON ENTRY WHICH REPORTS DIFFERENCES
                        ;           IN REC LENGTH TO COMPARE LENGTH.
                        ;       3.) A DATA COMPARISON STARTED ENTRY WHICH REPORTS ADDRESS
                        ;           OF RECEIVE BUFFER AND BYTE COUNT.
                        ;       THIS CODE ALSO REPORTS SOFT ERRORS FOR DATA COMPARISON
                        ;       (THE FIRST 5 ONLY),LENGTH ERROR,AND TOTAL NUMBER OF ERRORS
                        ;
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;
                        ;               "LOGCMP" - SEE ITEM 3 ABOVE
                        ;               "LOGCML" - SEE ITEM 2 ABOVE
                        ;               "LOGCMD" - SEE ITEM 1 ABOVE
                        ;
                        ; CALLING SEQUENCE:
                        ;       JMP     CMPSR           ;JUMP TO DATA COMPARISON CODE
                        ;--
030162  032737  000002  006554  CMPSR:  BIT     #DATCKB,PARAM   ;IS DATA CHECKING TO BE DONE
030170  001522                          BEQ     CMPSEX          ;IF NOT THEN EXIT
030172  013737  006422  006506          MOV     RXPTR,CPTR      ;PUT START OF RX POINTERS TO CPTR
030200  013737  006426  006504          MOV     CMPPTR,CPTRR    ; AND START OF COMPARE POINTS TO CPTRR
030206  013737  006460  006456          MOV     RXMTOT,DVRCT
                        
030214                          CMPS3:
030214  013702  006506                  MOV     CPTR,R2         ;MOVE CURRET RX PT.TO R2
030220  011237  006522                  MOV     (R2),TEMP2      ;MOVE RX ADD TO EVENT LOG
030224  012201                          MOV     (R2)+,R1        ;SET R1 TO START ADD OF RX
030226  012237  006524                  MOV     (R2)+,TEMP3     ;SET CHAR  COUNT TO EVENT LOG
030232  010237  006506                  MOV     R2,CPTR         ;RESTORE RX POINT
                        
030236  013702  006504                  MOV     CPTRR,R2        ;PUT R2 AT COMPARE TABLE
030242  012203                          MOV     (R2)+,R3        ;SET R3 TO COMPARE ADD
030244  012204                          MOV     (R2)+,R4        ;SET R4 TO COMP CC
030246  010237  006504                  MOV     R2,CPTRR        ;RESTORE POINTER
030252  010437  006526                  MOV     R4,TEMP4
030256  004737  017332                  JSR     PC,LOGCMP       ;LOG COMPARE START.
                        
030262  020437  006524                  CMP     R4,TEMP3        ;IS COMPARE COUNT   TO RX COUNT
030266  001410                          BEQ     CMPS7           ;IF SO GO TO 7
030270  005237  006470                  INC     ERRCNT
030274                                  ERRSOFT 1,EDDLE,ERR10   ,PRINT ERROR
```

```
5154  030274  104457                                                          TRAP    C$ERSOFT
5155  030276  000001                                                          .WORD   1
5156  030300  014423                                                          .WORD   EDDLE
5157  030302  016640                                                          .WORD   ERR10
5158  030304  004737  017350          JSR     PC,LOGCML       ;LOG LENGTH ERROR
5159
5160  030310  005037  006526  CMPS7:  CLR     TEMP4           ;CLEAR BAD BYTE COUNTER
5161  030314  012737  000001  006514  MOV     #1,OFSET        ;SET OFSET BYTE COUNT TO 1
5162  030322  122123          CMPS1:  CMPB    (R1)+,(R3)+     ;COMPARE RX WITH EXPETED
5163  030324  001422                  BEQ     CMPS6           ;IF EQUAL THEN GO TO 6
5164
5165  030326  005237  006526  CMPS2:  INC     TEMP4           ;INC BAD COUNT
5166  030332  023727  006526  000005  CMP     TEMP4,#5        ;IS IT MORE THEN 5
5167  030340  101014                  BHI     CMPS6           ;IF SO GO  FOR MORE
5168  030342  114337  006536          MOVB    -(R3),GOOD      ;STORE GOOD BYTE FOR ERROR
5169  030346  114137  006537          MOVB    -(R1),BAD       ;STORE BAD BYTE FOR ERROR
5170  030352  005237  006470          INC     ERRCNT
5171  030356                          ERRSOFT 2,EDDDE,ERR1    ;REPORT COMPARISON FAILURE TO OPR.
5172  030356  104457                                                          TRAP    C$ERSOFT
5173  030360  000002                                                          .WORD   2
5174  030362  014460                                                          .WORD   EDDDE
5175  030364  016550                                                          .WORD   ERR1
5176  030366  005201                  INC     R1
5177  030370  005203                  INC     R3
5178  030372  005237  006514  CMPS6:  INC     OFSET           ;INC OFFSET
5179  030376  005304                  DEC     R4              ;ELSE DEC CHAR COUNT AND SEE IF 0
5180  030400  001350                  BNE     CMPS1           ;IF NOT GO BACK
5181  030402  005737  006526          TST     TEMP4           ;SEE IF ANY CMP ERRS FOR THIS MSG
5182  030406  001410                  BEQ     CMPS5A          ;BR IF NONE
5183  030410  005237  006470          INC     ERRCNT
5184  030414                          ERRSOFT 3,EDDDE,ERR2    ;REPORT # OF MISMATCHES FOR MESSAGE
5185  030414  104457                                                          TRAP    C$ERSOFT
5186  030416  000003                                                          .WORD   3
5187  030420  014460                                                          .WORD   EDDDE
5188  030422  016612                                                          .WORD   ERR2
5189  030424  004737  017366  CMPS5:  JSR     PC,LOGCMD       ;LOG DATA ERROR IN COMPARE
5190  030430                  CMPS5A:
5191  030430  005337  006456          DEC     DVRCT
5192  030434  001267                  BNE     CMPS3           ;IF NOT ALL DONE GO BACK
5193
```

```
 5194                                   .SBTTL          MODEM CHANGE REPORTS
 5195
 5196                                   ;++
 5197                                   ; FUNCTIONAL DESCRIPTION:
 5198                                   ;       THIS SECTION REPORTS THE NUMBER OF MOMDEM STATUS CHANGES
 5199                                   ;       THAT OCCUR ON EACH PASS. THE ERROR IS ONLY REPORTED IF
 5200                                   ;       THERE WERE ANY CHANGES IN OTHER WORDS A COUNT OF ZERO IS
 5201                                   ;       NOT REPORTED. THE CHANGES ARE REPORTED IN TWO CLASSES ..
 5202                                   ;       HARD ERRORS AND GLITCHES. HARD ERRORS ARE WHEN THE DEVICE
 5203                                   ;       IS ABLE TO LATCH UP THE BAD MODEM STATUS. GLITCHES OCCUR
 5204                                   ;       WHEN THE MODEM STATUS CHANGES TO CAUSE A DATA SET CHANGE
 5205                                   ;       INTERRUPT BUT THE CHANGE DOES NOT OCCUR LONG ENOUGH FOR
 5206                                   ;       THE DEVICE TO LATCH THE DATA
 5207                                   ;
 5208                                   ; INPUTS:
 5209                                   ;       'MGLCNT'        - CONTAINS NUMBER OF GLITCH ERRORS
 5210                                   ;       'MHRCNT'        - CONTAINS NUMBER OF HARD ERRORS
 5211                                   ;
 5212                                   ; OUTPUTS:
 5213                                   ;       'MGLCNT'        -ZEROED BY THIS SECTION
 5214                                   ;       'MHRCNT'        -ZEROED BY THIS SECTION
 5215                                   ;
 5216                                   ;;
 5217                                   ;;--
 5218
 5219  030436  005737  011414           CMPSEX: TST     MGLCNT          ;CHECK FOR ANY GLITCH ERRORS
 5220  030442  001003                           BNE     MCREP           ;IF NON ZERO REPORT THEM
 5221  030444  005737  011416                   TST     MHRCNT          ;CHECK FOR ANY HARD ERRORS
 5222  030450  001412                           BEQ     ENDPS           ;IF NONE GO TO END OF PASS
 5223                                          ;
 5224                                          ;REPORT ANY MODEM ERRORS HERE
 5225                                          ;
 5226  030452  005237  006470           MCREP:  INC     ERRCNT          ;BUMP ERROR COUNT
 5227  030456                                   ERRSOFT 4,MSCMS,ERR4
 5228  030456  104457                                                                   TRAP    C$ERSOFT
 5229  030460  000004                                                                   .WORD   4
 5230  030462  014057                                                                   .WORD   MSCMS
 5231  030464  016670                                                                   .WORD   ERR4
 5232  030466  005037  011414                   CLR     MGLCNT          ;CLEAR GLITCH COUNT
 5233  030472  005037  011416                   CLR     MHRCNT          ;CLEAR THE HARD COUNT
 5234
```

```
                                .SBTTL          INTERNAL END OF PASS CODE

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       THIS CODE INCREMENTS THE PASS COUNT FOR THE
                                ;       EVENT LOG. LOGS THE END OF PASS EVENT
                                ;       IF "RPASS" IS A MINUS ONE RETURN TC MODE
                                ;       DISPATCHER. IF NOT -1 THEN DECREMENT RPASS
                                ;       AND IF "RPASS" IS THEN = TO 0 GO TO DCLT PROMT
                                ;       IN NOT = TO 0 THEN GO BACK TO MODE DISPATCHER
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;
                                ;               "LOGEOP" - LOG END OF PASS TO EVENT LOG
                                ;------

030476  005237  006466          ENDPS:  INC     PSCNT           ;BUMP PASS COJNT

030502  013737  006464  006526          MOV     OPVAR,TEMP4
030510  013737  006466  006522          MOV     PSCNT,TEMP2
030516  013737  006470  006524          MOV     ERRCNT,TEMP3
030524  004737  017404                  JSR     PC,LOGEOP       ;LOG END OF PASS

030530  022737  177777  006556          CMP     #-1,RPASS       ;SEE IF RPASS=-1
030536  001403                          BEQ     1$              ;IF IT IS DON'T DECRMNT, LOOP FOREVER
030540  005337  006556                  DEC     RPASS           ;DEC PASS COUNT
030544  001402                          BEQ     2$              ;IF DONE EXIT TEST
030546  000137  027202          1$:     JMP     GTRX2           ;ELSE GO BACK AND DISPATCH
030552  000137  024122          2$:     JMP     GTRA5           ;WHEN RPASS=0 GO BACK TO "DCLT>"
```

```
5266                                    .SBTTL          DOWN-LINE-LOAD SECTION
5267                                    ;++
5268                                    ; FUNCTIONAL DESCRIPTION:
5269                                    ;       DOWN LINE LOAD IS NOT SUPPORTED BY THIS DEVICE..
5270                                    ;       IF THIS MODE IS CALLED BY THE COMMAND LINE INTERPRETER
5271                                    ;       THEN A MESSAGE WILL BE PRINTED ....THAT SAYS DOWN LINE
5272                                    ;       LOAD IS NOT!. SUPPORTED BY THIS DEVICE.
5273                                    ;--
5274
5275
5276
5277  030556                            D L:
5278  030556                                    PRINTF  #DLLCM
5279  030556  012746  013230                                            MOV     #DLLCM,-(SP)
5280  030562  012746  000001                                            MOV     #1,-(SP)
5281  030566  010600                                                    MOV     SP,R0
5282  030570  104417                                                    TRAP    C$PNTF
5283  030572  062706  000004                                            ADD     #4,SP
5284  030576  000137  024122                    JMP     GTRA5
5285
```

```
                                .SBTTL          TALK MODE SECTION

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       TALK MODE SECTION
                                ;       IN THIS MODE, THE "TALK" END OF THE LINK TRANSMITS OPERATOR
                                ;       SPECIFIED MESSAGES UNTIL A "EXIT" MESSAGE IS TYPE.  AT THAT POINT,
                                ;       THIS END OF THE LINK GOES INTO "LISTEN" MODE.
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;
                                ;               "LOGTXQ" - LOG TX BUFFER QUED TO EVENT LOG
                                ;               "DVTXRX" - QUE TX BUFFER TO DEVICE AND WAIT FOR COMPLETE
                                ;               "LOGTXC" - LOG TX COMPLETE TO EVENT LOG
                                ;
                                ; CALLING SEQUENCE:
                                ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                                ;--

030602                          TALCK:
030602  042737  000002  006554          BIC     #DATCKB,PARAM   ;SET NOCHECK
030610  012702  002520                  MOV     #OPBUF,R2
030614  012722  177777          1$:     MOV     #-1,(R2)+       ;CLEAR OUT OPBUFFER FIRST
030620  022702  002642                  CMP     #OPEND,R2
030624  001373                          BNE     1$
030626                                  GMANID  OPRMM,OPBUF,A,0,1,72.,NO        ;GET TALK MESSAGE
030626  104443                                                                    RAP     C$GMAN
030630  000406                                                                  BR      10001$
030632  002520                                                                  .WORD   OPBUF
030634  000142                                                                  .WORD   T$CODE
030636  013165                                                                  .WORD   OPRMM
030640  000000                                                                  .WORD   0
030642  000001                                                                  .WORD   T$LOLIM
030644  000110                                                                  .WORD   T$HILIM
030646                                                                  10001$:
030646  005002                          CLR     R2              ;NOW GET CHAR COUNT
030650  122762  000377  002520  2$:     CMPB    #377,OPBUF(R2)
030656  001402                          BEQ     3$
030660  005202                          INC     R2
030662  000772                          BR      2$
030664  010237  002166          3$:     MOV     R2,OPCNT

030670  012737  002520  006436          MOV     #OPBUF,DVTXA    ;SET UP TX ADDR.
030676  012737  002520  006522          MOV     #OPBUF,TEMP2
030704  013737  002166  006524          MOV     OPCNT,TEMP3
030712  013737  002166  006440          MOV     OPCNT,DVTCC     ;SET UP TX CC
030720  004737  017164                  JSR     PC,LOGTXQ
030724  052737  000210  006560          BIS     #QTX+#ETX,FLAG  ;SET UP FLAGS
030732  005037  006504                  CLR     CPTRR           ;CLEAR RX POINTER

030736  004737  032206                  JSR     PC,DVTXRX

030742  013737  006436  006522          MOV     DVTXA,TEMP2
030750  013737  006440  006524          MOV     DVTCC,TEMP3
030756  004737  017202                  JSR     PC,LOGTXC
030762  022737  054105  002520          CMP     #"EX,OPBUF      ;CHECK FOR EXIT
```

```
 5342  030770  001304                          BNE     TALCK
 5343  030772  022737  052111  002522          CMP     #''IT,OPBUF+2
 5344  031000  001300                          BNE     TALCK
 5345  031002  042737  000210  006560          BIC     #QTX+#ETX,FLAG  ;CLEAR THE TX BITS
 5346  031010  012737  000006  006546          MOV     #LIS,MODTYP     ;CHANGE TO LISTEN MODE
 5347  031016  000137  027202                  JMP     GTRX2           ;AND GO BACK TO DISPATCH
```

```
                                .SBTTL          LISTEN MODE SECTION

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       LISTEN MODE SECTION
                                ;       IN THIS MODE, THE "LISTEN" END OF THE LINK PRINTS ALL OF THE MESSAGES
                                ;       RECEIVED BY THE DEVICE ON THE OPERATOR'S CONSOLE.  IF THE MESSAGE
                                ;       RECEIVED IS AN "EXIT" MESSAGE, THEN THE NODE ENTERS "TALK" MODE.
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;
                                ;               "DVRXQ" - QUE RECEIVE BUFFER SPACE TO DEVICE
                                ;              "LOGRXQ" - LOG RECEIVE BUFFER QUED TO EVENT LOG
                                ;              "DVTXRX" - WAIT FOR RX TO COMPLETE
                                ;              "LOGRXC" - LOG RX COMPLETE TO EVENT LOG
                                ;
                                ; CALLING SEQUENCE:
                                ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                                ;--

031022  042737  000002  006554  LISCK:  BIC     #DATCKB,PARAM   ;CLEAR CHECK BIT
031030                          LISCK:  PRINTF  #LISP           ;PRINT PROMPT FOR OPR.
031030  012746  013154                                                  MOV     #LISP,-(SP)
031034  012746  000001                                                  MOV     #1,-(SP)
031040  010600                                                          MOV     SP,R0
031042  104417                                                          TRAP    C$PNTF
031044  062706  000004                                                  ADD     #4,SP
031050  012737  002520  006452  LISCKA: MOV     #OPBUF,DVRXA    ;SET DEVICE UP TO REC AT OPBUF
031056  012737  002520  006522          MOV     #OPBUF,TEMP2
031064  012737  000122  006454          MOV     #82.,DVRCC      ;SET UP CHAR COUNT TO 82.
031072  012737  000122  006524          MOV     #82.,TEMP3
031100  052737  000104  006560          BIS     #QRX+#ERX,FLAG  ;SET UP FLAG
031106  005037  006506                  CLR     CPTR            ;CLEAR THE TX.

031112  004737  032104                  JSR     PC,DVRXQ        ;QUE RX
031116  004737  017220                  JSR     PC,LOGRXQ

031122  004737  032206                  JSR     PC,DVTXRX       ;GO TO DEVICE RX. SUBROUTINE

031126  013737  006452  006522          MOV     DVRXA,TEMP2
031134  013737  006454  006524          MOV     DVRCC,TEMP3     ;SET UP ADDR.AND CC.
031142  004737  017236                  JSR     PC,LOGRXC       ;LOG COMPLETED
031146  063737  006452  006454          ADD     DVRXA,DVRCC
031154  105077  155274                  CLRB    @DVRCC
031160                                  PRINTF  #OPBFPT
031160  012746  002514                                                  MOV     #OPBFPT,-(SP)
031164  012746  000001                                                  MOV     #1,-(SP)
031170  010600                                                          MOV     SP,R0
031172  104417                                                          TRAP    C$PNTF
031174  062706  000004                                                  ADD     #4,SP
031200  022737  054105  002520          CMP     #"EX,OPBUF      ;COMPARE FOR EX OF "EXIT"
031206  001320                          BNE     LISCKA          ;IF NOT EXIT THEN GO BACK
031210  022737  052111  002522          CMP     #"IT,OPBUF+2    ;IF FIRST HALF OK CHECK NEXT PART
031216  001314                          BNE     LISCKA          ;IF NOT EXIT THE GO BACK
031220  012737  000005  006546          MOV     #TAL,MODTYP     ;CHANGE MODE TO TALK
031226  000137  027202                  JMP     GTRX2           ;RETURN TO DISPATCHER
```

```
5404
5405
```

```
                        .SBTTL          DEVICE FUNCTION SUBROUTINES



                        .SBTTL                  DEVICE INIT SUBROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       DVINIT- DEVICE INIT ROUTINE
                        ;       THIS ROUTINE IS DEVICE DEPENDENT CODE THAT INITS
                        ;       THE DEVICE BEING TESTED.
                        ;       IT SETS THE DEVICE UP TO THE MODE IT IS TO RUN IN AND
                        ;       INITIATES THE START,STACK,ACK SEQUENCE IF THE "RNODE"(REMOTE
                        ;       NODE)INPUT INDICATES THE REMOTE NODE IS NON-ITEP.
                        ;
                        ; INPUTS:       "FHDPLX" INDICATES IF MODE IS FULL OR HALF DUPLEX. (1=FULL)
                        ;               ADDRESS POINTERS (SEL0,...) ALREADY POINT TO DEVICE'S REG.S
                        ;
                        ;               "MLTYP" INDICATES THE LOOP TYPE (1=TTL,2=CAB,3=RM,4=LM)
                        ;               "RNODE" INDICATES THE TYPE OF REMOTE NODE (ITEP=1,NON-ITEP=0)
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;
                        ;               "CTSSR"  - CLEAR TO SEND SUB ROUTINE
                        ;               "DVIN31" - SEND CONTROL AND REC OR TIME OUT
                        ;               "CLRRTS" - CLEAR REQUEST TO SEND ROUTINE
                        ;                "LGDVE" - LOG DEVICE ERROR TO EVENT LOG
                        ;
                        ; CALLING SEQUENCE:
                        ;               JSR     PC,DVINIT
                        ;--
                        ;
031232                  DVINIT:
                                ;MASTER CLEAR DEVICE
                        ;
031232  012777  000001  160112          MOV     #RESET,@TXCSR   ;DO A MASTER CLEAR
                        ;
031240  105777  160100                  TSTB    @RXCSR          ;SEE IF IT WORKED
031244  001423                          BEQ     DVIN1           ;BRANCH IF OK
031246                                  BREAK
031246  104422                                                                  TRAP    C$BRK
                        ;
                                ;REPORT ERROR IF RESET
                                ;DOES NOT WORK
                        ;
031250  012737  016035  006522          MOV     #DVEM0,TEMP2
031256  017737  160062  006524          MOV     @RXCSR,TEMP3
031264  017737  160062  006526          MOV     @TXCSR,TEMP4    ;LOAD UP ERRM. AND REG OUTPUTS
031272  004737  017246                  JSR     PC,LGDVE        ;LOG TIME OUT WAITING FOR RUN
031276  005237  006470                  INC     ERRCNT
031302                                  ERRSOFT 5,DVEM0,ERR13
031302  104457                                                                  TRAP    C$ERSOFT
031304  000005                                                                  .WORD   5
031306  016035                                                                  .WORD   DVEM0
```

```
                                                                                .WORD   ERR13
031312  000747                          BR DVINIT               ;GO BACK AND TRY MSTR CLR AGAIN IF ERROR
                                        ;SET TTL LOOP IF REQU'D
031314  042737  000003  006560  DVIN1:  BIC     #3,FLAG         ;CLEAR INPUT AND OUTPUT INT FLAGS
031322  042777  000010  160022          BIC     #TTLL,@TXCSR    ;CLEAR INTERNAL LOOP
031330  022737  000001  006550          CMP     #TTL,MLTYP      ;IS TTL SELECTED
031336  001004                          BNE     DVIN3           ; IF NOT GO TO 3
031340  052777  000010  160004          BIS     #TTLL,@TXCSR    ;ELSE SET INTERNAL LOOP
031346  000455                          BR      DVIN37
031350  022737  000002  006550  DVIN3:  CMP     #CABLE,MLTYP
031356  001451                          BEQ     DVIN37          ;IF CABLE LOOP SKIP CHECK
                                                                ;FOR MODEM READY
031360  022737  000004  006546          CMP     #DDW,MODTYP     ;CHECK IF DLL
031366  001002                          BNE     DVIN3A          ;BRANCH IF NOT DLI
031370  000137  032020                  JMP     DVINEX          ;ELSE EXIT
031374  012777  000002  157742  DVIN3A: MOV     #DTR,@RXCSR     ;SET UP DTR.
031402  012737  002000  006620          MOV     #2000,TIMER1
031410  005737  006620          DVIN38: TST     TIMER1
031414  001022                          BNE     DVIN39          ;IF TIMER NOT OUT GO TO 39
                                        ;SET ERROR FOR NO MODEM READY
031416  012737  016463  006522          MOV     #DVEM6,TEMP2
031424  017737  157714  006524          MOV     @RXCSR,TEMP3
031432  017737  157714  006526          MOV     @TXCSR,TEMP4
031440  004737  017246                  JSR     PC,LGDVE
031444  005237  006470                  INC     ERRCNT
031450                                  ERRSOFT 11,DVEM6,ERR13
031450  104457                                                  TRAP    C$ERSOFT
031452  000013                                                  .WORD   11
031454  016463                                                  .WORD   DVEM6
031456  016722                                                  .WORD   ERR13
031460  000745                          BR      DVIN3A          ;THEN TRY TO SET DTR AGAIN
031462                          DVIN39: BREAK
031462  104422                                                  TRAP    C$BRK
031464  017737  157654  011372          MOV     @RXCSR,IRXCSR   ;GET COPY OR RXCSR
031472  032737  001000  011372          BIT     #BIT9,IRXCSR    ;IS MODEM READY SET
031500  001743                          BEQ     DVIN38
031502  013777  011366  157636  DVIN37: MOV     DPVP1,@PCSAR    ;SET UP PCASAR
031510  005737  011420                  TST     RNODE           ;CHECK REMOTE NODE
031514  001141                          BNE     DVINEX          ;EXIT IF ITEP
031516  005737  006552                  TST     FHDPLX          ;IS THIS FULL DUPLEX
031522  001536                          BEQ     DVINEX          ;BANCH IF NOT
                                        ;SET UP TO SEND STRT
031524  112737  000005  002645          MOVB    #5,HDMSG+1      ;SET UP ENQ
031532  052737  000060  006560          BIS     #RXM!TXM,FLAG   ;SET FLAG WORD
031540  012737  000074  006624          MOV     #60.,TIMER5     ;SET TIMER FOR 1 MINUTE
031546  004737  033476                  JSR     PC,CTSSR        ;SET CTS IF NESC.
031552  012737  000006  002646  DVIN41: MOV     #6,HDMCC        ;SET UP STRT CODE
```

```
5518  031560  004737  033346              JSR     PC,DVIN31       ;GO TX STRT AND CHK FOR RX.
5519  031564  005737  006624              TST     TIMERS
5520  031570  001466                      BEQ     DVIN81          ;IF TIMER EXPIERED EXIT
5521
5522  031572  022737  000006  002660  DVIN4:  CMP     #6,RHDMCC       ;IS THE RCVD=STRT
5523  031600  001441                      BEQ     DVIN8           ;IF SO GO TO ASTR'
5524  031602  022737  000007  002660          CMP     #7,RHDMCC       ;IS IT A STACK
5525  031610  001360                      BNE     DVIN41          ;IF NOT STACK ETIMER GO BACK
5526
5527  031612  004737  033476          DVIN9:  JSR     PC,CTSSR        ;SET REQUEST TO SEND
5528  031616  042737  001010  006560          BIC     #QTX!PAD,FLAG   ;CLEAR TX COMPT FLAG.
5529  031624  012737  000001  002646          MOV     #1,HDMCC        ;SET UP ACK
5530  031632  012737  002645  011376          MOV     #HDMSG+1,MSGPTR ;SET UP POINTER
5531  031640  013737  002654  011400          MOV     HDMC,MSGCC
5532  031646  012737  000010  011402          MOV     #8.,SYNCC       ;SET UP SYNC COUNT
5533  031654  052777  000120  157470          BIS     #TXENA!TINTEN,@TXCSR
5534  031662  032737  000010  006560  DIVN91: BIT     #QTX,FLAG
5535  031670  001053                      BNE     DVINEX          ;EXIT IF ACK SENT
5536  031672                              BREAK
5537  031672  104422                                                          TRAP    C$BRK
5538  031674  005737  006624              TST     TIMERS
5539  031700  001370                      BNE     DIVN91          ;IF NOT TIMER EXPIRED RECHK TX.
5540  031702  000421                      BR      DVIN81          ;IF TIMER OUT REPORT IT
5541
5542  031704  012737  000007  002646  DVIN8:  MOV     #7,HDMCC        ;SET POTINTER TO STACK
5543  031712  004737  033346              JSR     PC,DVIN31               ;AND GO SEND STACK
5544  031716  005737  006624              TST     TIMERS
5545  031722  001411                      BEQ     DVIN81          ;REPORT ERROR IF TIME OUT
5546  031724  022737  000001  002660          CMP     #1,RHDMCC       ;IS IT ACK RCVD?
5547  031732  001432                      BEQ     DVINEX          ;IF SO EXIT
5548  031734  022737  000007  002660          CMP     #7,RHDMCC       ;IS IT STACK RCVD
5549  031742  001723                      BEQ     DVIN9           ;IF SO SEND ACK
5550  031744  000757                      BR      DVIN8           ;IF NEITHER SEND ANOTHER ACK
5551
5552                                      ;DO EPROR AND REPEAT
5553
5554  031746  012737  016377  006522  DVIN81: MOV     #DVEM5,TEMP2
5555  031754  013737  002660  006524          MOV     RHDMCC,TEMP3
5556  031762  013737  002646  006526          MOV     HDMCC,TEMP4     ;LOAD UP ERRM. AND REG OUTPUTS
5557  031770  004737  017246              JSR     PC,LGDVE        ;LOG TIME OUT WAITING FOR RUN
5558  031774  005237  006470              INC     ERRCNT
5559  032000                              ERRSOFT 10.,DVEM5,ERR13
5560  032000  104457                                                          TRAP    C$ERSOFT
5561  032002  000012                                                          .WORD   10
5562  032004  016377                                                          .WORD   DVEM5
5563  032006  016722                                                          .WORD   ERR13
5564  032010  005237  006464              INC     OPVAR           ;COUNT HOW MANY TIMES WE DO THIS.
5565  032014  000137  031232              JMP     DVINIT          ;TRY ALL OVER AGAIN
5566
5567  032020  004737  033650          DVINEX: JSR     PC,CLRRTS       ;CLEAR RTS IF NESC
5568  032024  042737  173777  006560          BIC     #173777,FLAG    ;CLEAR FLAG WORD
5569  032032  052737  002000  006560          BIS     #INOVR,FLAG     ;SET THE INITT OVER FLAG
5570  032040  000207                      RTS     PC              ;RETURN TO CALLER
5571
5572
```

```
5573                                    .SBTTL                  DEVICE GET MODEM STATUS SUBROUTINE
5574
5575
5576
5577                                    ;++
5578                                    ; FUNCTIONAL DESCRIPTION:
5579                                    ;       ''DVMODS''   GET MODEM STATUS
5580                                    ;
5581                                    ; IMPLICIT INPUTS:
5582                                    ;       THE BIT POSITION AND AVAILABILITY OF THE MODEM SIGNALS CTS,DSR,...RI,.
5583                                    ;       FOUND IN THE DEPENDENT PORTION OF THE GLOBAL EQUATES SECTION.
5584                                    ;
5585                                    ; OUTPUTS:
5586                                    ;       CURRENT MODEM SIGNAL VALUES IN 'MODS''
5587                                    ;
5588                                    ;
5589                                    ; CALLING SEQUENCE:
5590                                    ;       JSR     PC,DVMODS
5591                                    ;--
5592
5593  032042  017737  157276  007534  DVMODS: MOV     @RXCSR,MODS
5594  032050  042737  000040  007534          BIC     #BIT5,MODS      ;CLEAR BIT 5
5595  032056  032777  000040  157266          BIT     #BIT5,@TXCSR    ;SEE IT TM OR SQ SET
5596  032064  001403                          BEQ     DVMEX           ;IF NOT EXIT
5597  032066  052737  000040  007534          BIS     #BIT5,MODS      ;IF SET SET BIT 5 IN MODS
5598  032074  042737  106720  007534  DVMEX:  BIC     #106720,MODS    ;CLEAR ALL UNUSED BITS
5599  032102  000207                          RTS     PC              ;RETURN TO CALLER
5600
5601
```

```
                        .SBTTL                  DEVICE QUEUE RECEIVE SPACE SUBROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       DVRXQ - THIS SUBROUTINE QUEUES THE RECIEVER BUFFER SPACE TO THE
                        ;               DEVICE, THEN CLEARS THE QRX BIT OF THE FLAG WORD.
                        ;
                        ; INPUTS:
                        ;       DVRXA = ADDRESS OF RX BUFFER SPACE
                        ;       DVRCC = BYTE CHAR COUNT OF RX BUFFER
                        ;       QRX FLAG BIT = SET BY CALLING ROUTINE
                        ;
                        ; OUTPUTS:
                        ;       QRX FLAG BIT = CLEARED BY ROUTINE
                        ;
                        ; CALLING SEQUENCE:
                        ;       JSR     PC,DVRXQ
                        ;--


032104                  DVRXQ:
032104  032737  000004  006560          BIT     #QRX,FLAG
032112  001434                        BEQ     DVREX                   ;IF NOT RX THEN EXIT
                                                                        ;ELSE QUE RX
032114  042737  000444  006560          BIC     #QRX+#BCC+#RXM,FLAG     ;CLEAR FLAG FOR RX
032122  005737  011420                  TST     RNODE                   ;IF NON ITEP GO TO 2
032126  001415                        BEQ     DVRX2
032130  052737  000440  006560          BIS     #RXM+#BCC,FLAG          ;GET JUST THE DATA NO CRC.
032136  013737  006452  011406          MOV     DVRXA,RMSGPT
032144  012737  000072  011410          MOV     #72,RMSGCC              ;SET UP RX TO GET ITEP MSG.
032152  012737  000070  006454          MOV     #70,DVRCC
032160  000406                        BR      DVRX3

                        ;ENABLE RX, RX INTERRUPTS,AND DATA SET INTERRUPTS

032162  012737  002657  011406  DVRX2:  MOV     #RHDMSG+1,RMSGPT        ;SET UP POINTER
032170  013737  002654  011410          MOV     HDMC,RMSGCC             ;AND CC
032176  052777  000160  157140  DVRX3:  BIS     #RINTEN!RXENA #DSITEN,@RXCSR
032204  000207                  DVREX:  RTS     PC                      ;RETURN TO CALLER
```

```
                                                    H 11
5642                            .SBTTL                  DEVICE TRANSMIT AND RECEIVE SUBROUTINE
5643
5644
5645                            ;++
5646                            ; FUNCTIONAL DESCRIPTION:
5647                            ;       DVTXRX-DEVICE TRANSMIT AND RECEIVE ROUTINE
5648                            ;       THIS CODE QUES THE TRANSMIT BUFFER TO THE DEVICE
5649                            ;       IF NEEDED. THE CODE THEN WAITS FOR A TX COMPLE,
5650                            ;       RX COMPLETE OR BOTH. THE CODE REPORTS A TIME OUT
5651                            ;       ERROR IF NO  OUTPUT INTERRUPT IS RECIEVED BEFORE
5652                            ;       60 SECONDS. AFTER REPORTING ERROR TIMER IS RE STARTED
5653                            ;       AND DEVICE WILL CONTINUE TO WAIT FOR INTERRUPT.
5654                            ;
5655                            ;INPUTS:
5656                            ;       "DVTXA" = ADDRESS OF TRANSMIT MSG.
5657                            ;       "DVTCC" = BYTE COUNT OF TRANSMIT MSG.
5658                            ;    "QTX" BIT  = SET IF TRANSMIT REQUESTED
5659                            ;    "ETX" BIT  = SET IF TRNASMIT EXPECTED
5660                            ;    "ERX" BIT  = SET IF RECIEVE EXPECTED
5661                            ;
5662                            ;OUTPUTS:
5663                            ;       "DVTXA" = ADDRESS OF TX MSG. COMPLETED
5664                            ;       "DVTCC" = BYTE COUNT OF TX MSG. COMPLETED
5665                            ;       "QTX"   = SET IF TX COMPLETED
5666                            ;       "DVRXA" = ADDRESS OF RX MSG. COMPLETED
5667                            ;       "DVRCC" = BYTE COUNT OF RX MSG. COMPLETED
5668                            ;       "QRX"   = SET IF RX COMPLETED
5669                            ;
5670                            ;
5671                            ; SUBORDINATE ROUTINES USED:
5672                            ;
5673                            ;               "LGDVE"  - LOG DEVICE ERROR TO EVENT LOG
5674                            ;
5675                            ; CALLING SEQUENCE:
5676                            ;       JSR     PC,DVTXRX
5677                            ;--
5678
5679  032206  032737  000010  006560  DVTXRX: BIT     #QTX,FLAG               ;ANY TX TO QUE
5680  032214  001444                          BEQ     DVTR3                   ;IF NOT GO WAIT FOR OUPUT
5681  032216  042737  001030  006560          BIC     #QTX+#TXM+PAD,FLAG      ;CLEAR FLAG
5682  032224  004737  033476                  JSR     PC,CTSSR                ;GO SET CTS
5683  032230  005737  011420                  TST     RNODE
5684  032234  001412                          BEQ     DVTR1                   ;IF NON-ITEP GO TO 1
5685  032236  052737  000020  006560          BIS     #TXM,FLAG               ;SET THE BODY BIT
5686  032244  013737  006436  011376          MOV     DVTXA,MSGPTR
5687  032252  013737  006440  011400          MOV     DVTCC,MSGCC             ;AND SET UP FOR ACTUAL DATA
5688  032260  000414                          BR      DVTR2
5689                                          ;ENABLE TX AND TX INTER.
5690
5691  032262  112737  000201  002645  DVTR1:  MOVB    #201,HDMSG+1            ;SET UP SOH
5692  032270  012737  002645  011376          MOV     #HDMSG+1,MSGPTR         ;SET POINTER TO HEADER
5693  032276  013737  006440  002646          MOV     DVTCC,HDMCC
5694  032304  013737  002654  011400          MOV     HDMC,MSGCC              ;SET CC FOR HEADER
5695  032312  012737  000177  011402  DVTR2:  MOV     #177,SYNCC              ;SET UP FOR 177 SYNCS.
5696  032320  052777  000120  157024          BIS     #TXENA!#TINTEN,@TXCSR
5697
```

```
5698  032326  012737  000074  006624  DVTR3:  MOV     #60.,TIMERS             ;SET TIMER FOR 60 SECS
5699
5700  032334                          DVTR8:  BREAK
5701  032334  104422                                                          TRAP    C$BRK
5702  032336  005737  006624                  TST     TIMERS                  ;IS TIMER EXPIRED
5703  032342  001022                          BNE     TOINOT
5704
5705                                          ;LOG ERROR TIME OUT RX OR TX NOT COMPLETED
5706
5707  032344  012737  016176  006522          MOV     #DVEM2,TEMP2
5708  032352  017737  156766  006524          MOV     @RXCSR,TEMP3
5709  032360  017737  156766  006526          MOV     @TXCSR,TEMP4
5710  032366  004737  017246                  JSR     PC,LGDVE
5711  032372  005237  006470                  INC     ERRCNT
5712  032376                                  ERRSOFT 7,DVEM2,ERR13
5713  032376  104457                                                          TRAP    C$ERSOFT
5714  032400  000007                                                          .WORD   7
5715  032402  016176                                                          .WORD   DVEM2
5716  032404  016722                                                          .WORD   ERR13
5717  032406  000747                          BR      DVTR3           ;RETURN TO CHECK TIMER
5718
5719  032410  032737  000010  006560  TOINOT: BIT     #QTX,FLAG       ;IS IT TX COMPL?
5720  032416  001406                          BEQ     DVTR4           ;BRANCH IF TX NOT DONE.
5721  032420  004737  033650                  JSR     PC,CLRRTS
5722  032424  032737  000100  006560          BIT     #ERX,FLAG       ;ARE WE EXPECTING TO RX
5723  032432  001416                          BEQ     DVTREX          ;BRANCH IF NOT.
5724
5725  032434  032737  000004  006560  DVTR4:  BIT     #QRX,FLAG       ;IS RX DONE
5726  032442  001734                          BEQ     DVTR8           ;GO BACK AND TIME IF NOT
5727
5728  032444  032737  000200  006560          BIT     #ETX,FLAG       ;ARE WE EXPECTG TO TX.
5729  032452  001406                          BEQ     DVTREX          ;BRANCH IF NOT.
5730
5731  032454  032737  000010  006560          BIT     #QTX,FLAG       ;IS IT TX COMPLETED
5732  032462  001724                          BEQ     DVTR8           ;GO BACK AND TIME OUT
5733  032464  004737  033650                  JSR     PC,CLRRTS       ;CLEAR RTS IF NESC.
5734  032470  000207                  DVTREX: RTS     PC              ;AND EXIT
5735
```

```
                                ; DEVICE DEPENDENT SUBROUTINES



                                .SBTTL                  DEVICE INTERRUPT SERVICE ROUTINES



                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       RECEIVER INTERRUPT ROUTINE. WHEN A RX INT. OCCURS
                                ;       THIS ROUTINE DECIDES IF IT IS A RX STATUS,DATA SET
                                ;       CHANGE OR DATA INTERRUPT. IF IT IS A DATA SET CHANGE
                                ;       INTERRUPT IT PUTS THE STATUS IN ''CMODS'' AND COMPARES
                                ;       THAT STATUS TO THE OLD STATUS IN ''MODS''. IF THEY ARE
                                ;       THE SAME THAT MEANS THE INTERRUPT WAS CAUSED BY A GLITCH
                                ;       ON ONE OF THE LINES. IF THEY ARE DIFFERENT THEN A HARD
                                ;       MODEM ERROR HAS OCCURED. IN ANY EVENT THE MODEM STATUS
                                ;       CHANGE IS LOGGED.
                                ;       IF A DATA INT. OCCURS THE ROUTINE PUTS THE DATA AWAY
                                ;       IN A BUFFER POINTED TO BY ''RMSGPT'' THE MSG. COUNT IS
                                ;       DECREMENTED BY ONE BYTE. IF COUNT IS EQUAL TO ZERO AND
                                ;       ''BCC'' BIT AND ''RXM'' BIT IS SET THEN RX IS DISABLED AND
                                ;       ''ORX'' BIT IS SET. IF COUNT IS ZERO AND ''BCC'' BIT IS SET
                                ;       BUT ''RXM'' BIT IS NOT SET THEN MSG COUNT IS SET TO LENGHT
                                ;       RECVD IN HEADER AND ''RMSGPT'' IS SET TO RX BUFFER LOCATION
                                ;       AND ''RXM'' BIT IS SET.
                                ;       IF COUNT IS EQUAL TO ZERO AND ''BCC'' IS NOT SET THEN
                                ;       COUNT IS SET TO 2 AND ''RMSGPT'' IS SET TO ''BCCW'' AND
                                ;       ''BCC'' BIT IS SET.
                                ;
                                ;       IF A STATUS INTERRUPT OCCURS THEN OVERRUN ERROR BIT IS CHECKED.
                                ;       AN ERROR IS LOGGED AND ''ORX'' IS SET AND THE RX IS DISABLED.
                                ;
                                ; INPUTS:
                                ;       RMSGPT - ADDRESS OF RX BUFFER
                                ;       RMSCC  - COUNT OF DATA TO BE RXED.
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;               ''LOGMSC''      - LOG MODEM STATUS CHANGE
                                ;               ''LGDVE''       - LOG DEVICE ERROR
                                ;--
                                ;
032472                                  BGNSRV  DVRXI
032472                                                                                  DVRXI::
032472  017737  156646  011372              MOV     @RXCSR,IRXCSR   ;MOV RX CSR TO IMAGE
032500  032737  000010  006554              BIT     #MOCHK,PARAM    ;ANY MODEM CHANGES TO REPORT
032506  001456                              BEQ     RXIN21          ;IF NOT IGNORE DS CHANGE.
032510  032737  002000  006560              BIT     #INOVR,FLAG     ;IS INIT OVER
032516  001452                              BEQ     RXIN21          ;NO THEN IGNORE DS CHANGE.
032520  005737  011372                      TST     IRXCSR
032524  100047                              BPL     RXIN21          ;IF DATA SET CHANGE IS NOT SET BR
032526  013737  011372  011370              MOV     IRXCSR,CMODS    ;MOV THE NEW MODEM STATUS IN
032534  042737  106760  011370              BIC     #106760,CMODS
032542  032777  000040  156602              BIT     #TM,@TXCSR
```

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5792  032550  001403                          BEQ     RXIN2           ;IF TEST MODE SET
5793  032552  052737  000040  011370          BIS     #TM,CMODS       ;SET IT IN NEW STATUS
5794  032560  013737  011370  006524  RXIN2:  MOV     CMODS,TEMP3
5795  032566  013737  007534  006526          MOV     MODS,TEMP4
5796  032574  023737  006526  006524          CMP     TEMP4,TEMP3     ;COMPARE OLD TO CURRENT
5797  032602  001406                          BEQ     GLINC           ;INC GLITCH COUNT
5798  032604  005237  011416                  INC     MHRCNT          ;INC HARD COUNT
5799  032610  012737  016005  006522          MOV     #HRDMSG,TEMP2   ;SET UP HARD MESG.
5800  032616  000405                          BR      RXIN1
5801  032620  005237  011414          GLINC:  INC     MGLCNT          ;INC GLITCH COUNT
5802  032626  012737  015757  006522          MOV     #GLMSG,TEMP2    ;SET UP GLITCH
5803  032632  004737  017422          RXIN1:  JSR     PC,LOGMSC       ;GO LOG MODEM STATUS CHANGE
5804  032636  013737  011370  007534          MOV     CMODS,MODS      ;MOVE CURRENT TO OLD
5805                                          ;
5806                                          ;TEST FOR STATUS OR DATA
5807
5808  032644  032737  002200  011372  RXIN21: BIT     #RSTARY.RDATRY,IRXCSR
5809  032652  001544                          BEQ     RXINEX          ;IF NEITHER EXIT
5810  032654  017737  156470  011374          MOV     @RDSR,IRDSR
5811  032662  032737  000200  011372          BIT     #RDATRY,IRXCSR  ;IS THIS DATA
5812  032670  001455                          BEQ     RXIN3           ;IF NOT GO TO 3
5813
5814                                          ;GET HERE WITH GOOD DATA
5815
5816  032672  013702  011406          RXIN4:  MOV     RMSGPT,R2
5817  032676  113722  011374                  MOVB    IRDSR,(R2)+     ;STORE DATA AWAY
5818  032702  010237  011406                  MOV     R2,RMSGPT       ;PUT POINTER BACK
5819
5820
5821  032706  005337  011410                  DEC     RMSGCC
5822  032712  001124                          BNE     RXINEX          ;GET OUT IF NOT ALL DONE
5823  032714  032737  000400  006560          BIT     #BCC,FLAG       ;IS THE BCC FLAG ALREADY SE
5824  032722  001066                          BNE     RXIN5           ;BRANCH IF YES.
5825  032724  032737  100000  011374          BIT     #RERR,IRDSR     ;IS THE ERR CHK BIT SET INDICATING
5826                                          ;GOOD BCC.
5827  032732  001022                          BNE     RXIN6           ;BRANCH IF GOO
5828  032734  013737  011374  006524          MOV     IRDSR,TEMP3
5829  032742  013737  011372  006526          MOV     IRXCSR,TEMP4
5830  032750  012737  016273  006522          MOV     #DVEM3,TEMP2
5831  032756  004737  017246                  JSR     PC,LGDVE
5832  032762  005237  006470                  INC     ERRCNT
5833  032766                                  ERRSOFT 8,DVEM3,ERR13
5834  032766  104457                                                          TRAP    C$ERSOFT
5835  032770  000010                                                          .WORD   8
5836  032772  016273                                                          .WORD   DVEM3
5837  032774  016722                                                          .WORD   ERR13
5838
5839  032776  000467                          BR      RXIN8           ;DISABLE INTERRUPTS AND EXIT
5840
5841  033000  052737  000400  006560  RXIN6:  BIS     #BCC,FLAG       ;SET FLAG
5842  033006  012737  000002  011410          MOV     #2.,RMSGCC      ;SET THE COUNT TO 2
5843  033014  012737  011412  011406          MOV     #BCCW,RMSGPT    ;SET POINTER TO BCC WORD
5844  033022  000460                          BR      RXINEX
5845
5846                                          ;STATUS CHECK
5847
```

```
 5848  033024  032737  002000  011372  RXIN3:  BIT     #RSTARY,IRXCSR  ;IS THIS A STATUS INT.
 5849  033032  001454                  BEQ     RXINEX          ;EXIT IF NOT
 5850
 5851                                  ;LOG OVERRUN ERROR
 5852
 5853  033034  012737  016333  006522          MOV     #DVEM4,TEMP2
 5854  033042  013737  011374  006524          MOV     IRDSR,TEMP3
 5855  033050  013737  011372  006526          MOV     IRXCSR,TEMP4
 5856  033056  004737  017246                  JSR     PC,LGDVE
 5857  033062  005237  006470                  INC     ERRCNT
 5858  033066                                  ERRSOFT 9,DVEM4,ERR13
 5859  033066  104457                                                          TRAP    C$ERSOFT
 5860  033070  000011                                                          .WORD   9
 5861  033072  016333                                                          .WORD   DVEM4
 5862  033074  016722                                                          .WORD   ERR13
 5863  033076  000424                  BR      RXIN7
 5864
 5865  033100  032737  000040  006560  RXIN5:  BIT     #RXM,FLAG       ;IS THE RX M BODY BIT SET
 5866  033106  001020                  BNE     RXIN7           ;   YES THEN ALL DONE
 5867  033110  052737  000040  006560          BIS     #RXM,FLAG
 5868  033116  042737  000400  006560          BIC     #BCC,FLAG         LEAR BCC AND SET RXM
 5869  033124  013737  006452  011406          MOV     DVRXA,RMSGPT    ,MOVE ADDRESS TO POINTER
 5870  033132  013737  002660  011410          MOV     RHDMCC,RMSGCC   ,MOVE THE CHAR COUNT IN
 5871  033140  013737  002660  006454          MOV     RHDMCC,DVRCC    ;SET THE CC TO AMOUNT IN HEADER
 5872  033146  000406                  BR      RXINEX          ;AND FINISH.
 5873
 5874  033150  052737  000004  006560  RXIN7:  BIS     #QRX,FLAG       ;SET FLAG BIT
 5875
 5876  033156  042777  000120  156160  RXIN8:  BIC     #RINTEN+RXENA,@RXCSR    ;CLEAR INTAND RX ENABLE
 5877
 5878  033164                          RXINEX:
 5879  033164                                  ENDSRV
 5880  033164                                                                  L10020:
 5881  033164  000002                                                                 RTI
```

```
                        .SBTTL                  DEVICE TRANSMIT INTERRUPT ROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       DEVICE TRANSMIT INT. ROUTINE
                        ;
                        ;       WHEN A TRANSMIT BUFFER EMPTY CAUSES AN INTERRUPT TO OCCUR
                        ;       THE PROGRAM COMES TO THIS ROUTINE.
                        ;       IF THE SYNC COUNT''SYNCC'' IS NON ZERO TSOM IS SET
                        ;       A SYNC CHAR IS LOADED TO TDSR AND THE SYNC COUNT IS
                        ;       DECREMENTED.
                        ;
                        ;       IF THE SYNC COUNT IS ZERO TSOM AND TEOM ARE RESET
                        ;       AND THE ''PAD'' BIT IN FLAG WORD IS CHECKED IF IT IS
                        ;       SET THEN A PAD(377) CHAR IS LOADED TO TDSR AND TX
                        ;       INTERRUPT ENABLE IS CLEARD.
                        ;
                        ;       IF THE SYNC COUNT IS ZERO AND THE ''PAD'' FLAG IS
                        ;       CLEAR THEN A BYTE IS PUT IN TDSR FROM THE ADDRESS
                        ;       IN MSGPTR AND THE MSG COUNT IS DECREMENTED
                        ;
                        ;       IF THE MSG COUNT GOES TO ZERO THE ''TXM'' BIT IS
                        ;       CHECKED IF IT  IS SET THE ''PAD'' FLAG IS SET
                        ;       IF IT IS CLEAR THEN IT GETS SET AND MSGPTR IS
                        ;       LOADED WITH THE ADDRESS OF TXBUFF AND THE MSG
                        ;       COUNT IS LOADED WITH THE COUNT OF THE MSG TO
                        ;       BE TRANSMITTED.
                        ;
                        ; INPUTS:
                        ;       MSGPTR - IS SET TO THE ADDRESS OF THE MSG OR HEADER TO BE TX'D
                        ;       MSGCC  - IS SET TO THE COUNT OF MSG TO BE TX'D
                        ; OUTPUTS:
                        ;       QTX - THIS BIT IS SET WHEN MSG IS TX'D OK.
                        ;--

033166                                  BGNSRV  DVTXI
033166                                                                          DVTXI::
033166  005737  011402                  TST     SYNCC           ;ANY SYNCS TO SEND
033172  001406                          BEQ     TXIN1           ;IF NOT GO TO 1
033174  013777  011404  156152          MOV     SYNCW,@TDSR     ;ELSE SET TSOM AND SYNC WORD
033202  005337  011402                  DEC     SYNCC           ;DEC SYNC COUNT
033206  001056                          BNE     TXINEX          ;IF NOT ZERO EXIT
033210  042777  001400  156136  TXIN1:  BIC     #TEOM!TSOM,@TDSR
033216  032737  001000  006560          BIT     #PAD,FLAG       ;IS THE PAD BIT SET
033224  001412                          BEQ     TXIN2           ;GO TO 2 IF NOT SET
033226  012777  000377  156120          MOV     #377,@TDSR      ;LOAD FF TO TX DATA REG.
033234  042777  000100  156110          BIC     #TINTEN,@TXCSR  ;CLEAR TX INT ENABLE
033242  052737  000010  006560          BIS     #QTX,FLAG       ;SET THE TX COMPLETE IN FLAG
033250  000435                          BR      TXINEX          ;AND EXIT
033252  013702  011376          TXIN2:  MOV     MSGPTR,R2       ;LOAD R2 WITH TX ADDR.
033256  112277  156072                  MOVB    (R2)+,@TDSR     ;LOAD DATA BYTE
033262  010237  011376                  MOV     R2,MSGPTR       ;RESTORE POINTER
033266  005337  011400                  DEC     MSGCC           ;DEC CC
033272  001024                          BNE     TXINEX
033274  052777  001000  156052          BIS     #TEOM,@TDSR
033302  032737  000020  006560          BIT     #TXM,FLAG       ;IS THIS THE END OF DATA MSG.
```

```
 5938  033310  001012                        BNE     TXIN3           ;IF SO SET THE PAD BIT
 5939  033312  052737  000020  006560        BIS     #TXM,FLAG       ;IF NOT MUST BE END OF HEADER
 5940  033320  013737  006436  011376        MOV     DVTXA,MSGPTR    ;SO SET UP MSGPTR FOR MSG
 5941  033326  013737  006440  011400        MOV     DVTCC,MSGCC     ;AND THE CC FOR MSG.
 5942  033334  000403                        BR      TXINEX
 5943  033336  052737  001000  006560  TXIN3:  BIS     #PAD,FLAG       ;SET THE PAD BIT
 5944
 5945  033344                            TXINEX:
 5946  033344                                    ENDSRV
 5947  033344                                                          L10021:
 5948  033344  000002                                                          RTI
```

```
                                .SBTTL                  DEVICE TRANSMIT CONTROL MSG
                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       THIS ROUTINE DOES THE FOLLOWING
                                ;       QUES A RX SPACE AT RHDMSG+1
                                ;       QUES A TX MSG FROM HDMSG+1
                                ;       CHECKS FOR A TIMER EXPIRED
                                ;       IF EXPIRED RETURN TO CALLER
                                ;       ELSE CHECK FOR A TX MSG COMPLETED
                                ;       IF TX COMPLETED CHECK FOR RX COMPLETED
                                ;       ELSE RECHECK TIMER AND TX COMPLETED UNTIL
                                ;       EITHER TX COMPLETE OR TIME OUT
                                ;       IF TX COMPLETE AND RX NOT COMPLETE THEN
                                ;       REQUE TX MSG.
                                ;       ELSE IF RX COMPLETE RETURN.
                                ;
                                ; INPUTS:
                                ;       TXM             - SET IN FLAG WORD
                                ;       HDMSG+2         - TYPE OF CONTROL MSG..
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;               "CLRRTS"        - CLEAR REQUEST TO SEND IF HALF DUP.
                                ; CALLING SEQUENCE:
                                ;               JSR     PC,DVIN31
                                ; RETURN:
                                ;       RETURN TO CALLER IF SOMETHING RX'D OR TIMER OUT.
                                ;
                                ;--

033346  042737  000004  006560  DVIN31: BIC     #QRX,FLAG               ;CLEAR RX COMPLE.

033354  012737  002657  011406          MOV     #RHDMSG+1,RMSGPT        ;SET UP POINTER
033362  013737  002654  011410          MOV     HDMC,RMSGCC             ;AND CC
                                                                        ;ENABLE RCVR.
033370  052777  000160  155746          BIS     #RINTEN!RXENA!DSITEN,@RXCSR

                                        ;SET UP TXMITTER TO SEND

033376  004737  033476          DVIN32: JSR     PC,CTSSR                ;SET RTS .
033402  042737  001010  006560          BIC     #QTX!PAD,FLAG           ;CLEAR TX COMPT FLAG.
033410  012737  002645  011376          MOV     #HDMSG+1,MSGPTR         ;MOVE THE CURRENT POINTER TO MSGPTR.
033416  013737  002654  011400          MOV     HDMC,MSGCC
033424  012737  000010  011402          MOV     #8.,SYNCC               ;SET UP SYNC COUNT
033432  052777  000120  155712          BIS     #TXENA!TINTEN,@TXCSR

                                        ;NOW WAIT FOR TIME OUT OR TX COMPLETE

033440                          DVIN35: BREAK                                   TRAP    C$BRK
033440  104422
033442  005737  006624                  TST     TIMERS          ;IS IT TIMED OUT
033446  001412                          BEQ     DVIN34          ;IF YES EXIT
033450  032737  000010  006560          BIT     #QTX,FLAG       ;IS TX DONE
033456  001770                          BEQ     DVIN35          ;IF NOT GO BACK AND CK TIME OUT
033460  004737  033650                  JSR     PC,CLRRTS       ;GO CLEAR RTS IF NESC.
033464  032737  000004  006560          BIT     #QRX,FLAG       ;DID WE RX ANYTHING
```

```
 6005  033472  001741                    BEQ     DVIN32          ;IF NOT RETRANSMIT LAST
 6006  033474  000207          DVIN34:   RTS     PC              ;RETURN TO CALLER
 6007
```

```
                        .SBTTL                  DEVICE RTS TO CTS DELAY
                        ;++
                        ; FUNCTIONAL DESCRIPTION.
                        ;       CTSSR--THIS ROUTINE SETS REQUEST TO SEND TO MODEM
                        ;       AND CHECKS FOR CLEAR TO SEND TO COME BACK
                        ;       IF CTS DOES NOT COME BACK BEFORE TIMER EXPIRES
                        ;       AND ERROR IS REPORTED AND WE TRY AGAIN.
                        ;       THE ROUTINE IS SKIPPED IF INTERNAL LOOP IS SET.
                        ;
                        ;
                        ;; OUTPUTS:
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;               "LGDVE" -       LOG DEVICE ERROR
                        ; CALLING SEQUENCE:
                        ;               JSR     PC,CTSSR
                        ;--

033476  022737  000001  006550  CTSSR:  CMP     #1,MLTYP        ;IS THIS TTL LOOP
033504  001460                        BEQ     DVTXR9          ;BR IF YES
                                ;SET RTS AND WAIT FOR CTS
033506  032737  004000  006560  DVTXR3: BIT     #FIRST,FLAG
033514  001014                        BNE     CTSS3           ;IF NOT FIRST TIME SKIP DELY
033516  012737  000000  006516        MOV     #0,TEMP
033524  005237  006516          CTSS4:  INC     TEMP
033530                                  BREAK                                   TRAP    C$BRK
033530  104422
033532  005737  006516                  TST     TEMP
033536  001372                        BNE     CTSS4           ;IF NOT ZERO GO BACK
033540  052737  004000  006560        BIS     #FIRST,FLAG     ;SET FIRST FLAG.
033546  052777  000004  155570  CTSS3:  BIS     #RTS,@RXCSR     ;SET REQUEST TO SEND
033554  012737  001750  006620        MOV     #1000.,TIMER1   ;SET UP TIMER
033562                          DVTXR2: BREAK                                   TRAP    C$BRK
033562  104422
033564  032777  020000  155552        BIT     #CTS,@RXCSR     ;IS CLEAR TO SEND BACK
033572  001025                        BNE     DVTXR1          ;BR. IF CTS IS SET
033574  005737  006620                TST     TIMER1          ;ELSE TEST IF TIME EXPIRED
033600  001370                        BNE     DVTXR2          ;BR IF TIME NOT EXPRIED.
                                ;SET ERROR FOR NO CTS
033602  012737  016114  006522        MOV     #DVEM1,TEMP2
033610  017737  155530  006524        MOV     @RXCSR,TEMP3
033616  017737  155530  006526        MOV     @TXCSR,TEMP4
033624  004737  017246                JSR     PC,LGDVE
033630  005237  006470                INC     ERRCNT
033634                                  ERRSOFT 6,DVEM1,ERR13                   TRAP    C$ERSOFT
033634  104457
033636  000006                                                                  .WORD   6
033640  016114                                                                  .WORD   DVEM1
033642  016722                                                                  .WORD   ERR13
033644  000720                        BR      DVTXR3          ;THEN TRY TO SET RTS AGAIN
```

```
  60c4  033646
  6065  033646  000207          DVTXR1:
                                DVTXR9: RTS     PC              ;
```

```
                                .SBTTL                  DEVICE CLEAR REQUEST TO SEND
                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       THIS ROUTINE CLEARS REQUEST TO SEND IF
                                ;       IN HALF DUPLEX MODE
                                ; CALLING SEQUENCE:
                                ;       JSR     PC,CLRRTS
                                ;--

033650                          CLRRTS:

033650  005737  006552                TST     FHDPLX          ;IS THIS FULL DUPLEX
033654  001011                        BNE     DVTR5           ;BRANCH IF YES
033656  012737  002000  006522        MOV     #2000,TEMP2
033664  005337  006522        CLRR1:  DEC     TEMP2
033670  001375                        BNE     CLRR1           ;DELAY A WHILE TO ALLOW CRC
                                                              ;TO BE TXMITT'D BEFORE YOU
033672  042777  000004  155444        BIC     #RTS,@RXCSR     ;CLEAR REQUEST TO SEND
033700  000207                DVTR5:  RTS     PC              ;RETURN TO CALLER
```

```
6086
6087                                    .EVEN
6088
6089  033702                            ENDTST
6090  033702                                                    L10017:
6091  033702  104401                                                   TRAP    C$ETST
6092
```

```
6093
6094
```

```
                                .SBTTL  HARDWARE PARAMETER CODING SECTION


                                ;++
                                ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--

033704                                  BGNHRD
033704  000016                                                          .WORD L10022-L$HARD/2
033706                                                          L$HARD::
                                .SBTTL          DEVICE INDEPENDENT SECTION

033706                                  GPRML   DPLX,0,1,YES
033706  000130                                                          .WORD   T$CODE
033710  033742                                                          .WORD   DPLX
033712  000001                                                          .WORD   1


                                .SBTTL          DEVICE DEPENDENT SECTION

033714                                  GPRMA   CSRADR,2,0,160000,177776,YES
033714  001031                                                          .WORD   T$CODE
033716  033773                                                          .WORD   CSRADR
033720  160000                                                          .WORD   T$LOLIM
033722  177776                                                          .WORD   T$HILIM
033724                                  GPRMA   VECTOR,4,0,300,776,YES
033724  002031                                                          .WORD   T$CODE
033726  034021                                                          .WORD   VECTOR
033730  000300                                                          .WORD   T$LOLIM
033732  000776                                                          .WORD   T$HILIM
033734                                  GPRML   RNODM,14,1,YES
033734  006130                                                          .WORD   T$CODE
033736  034054                                                          .WORD   RNODM
033740  000001                                                          .WORD   1

033742                                  ENDHRD
                                                                .EVEN
033742                                                          L10022:


                                .NLIST  BEX
                                ;DEVICE INDEPENDENT QUESTIONS
033742  052506  046114  042040  DPLX:   .ASCIZ  /FULL DUPLEX OPERATION : /

                                ;DEVICE DEPENDENT QUESTION
```

```
        033773     104  053105  041511  CSRADR: .ASCIZ  /DEVICE CSR ADDRESS : /
        034021     111  052116  051105  VECTOR: .ASCIZ  /INTERRUPT VECTOR ADDRESS: /
        034054  042522  047515  042524  RNODM:  .ASCIZ  /REMOTE NODE "ITEP":/
                                         .LIST   BEX
  6144                                           .EVEN
  6145
  6146
```

```
                                ;.SBTTL SOFTWARE PARAMETER CODING SECTION

                                ;++
                                ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD F-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--

                                ;       BGNSFT



                                ;       ENDSFT


                                ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
                                ; TEMPORARY PATCH AREA - FOR DEBUG PURPOSES
                                ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

034100                          $PATCH:
034100  000030                          .BLKW   30


034160                                  LASTAD
                                                                        .FVEN
034160  000000                                                          .WORD   0
034162  000000                                                          .WORD   0
034164                          L$LAST::
034164                                  ENDMOD

                                .END
```

```
ACT    = 000003           1546#   4321    4736    4816    5041
ACTATV  026430            4526    4736#
ACTBCR  026272            4544    4708#
ACTCHK  026644            4506    4782#
ACTCLB  025614            4597    4611#
ACTCLP  026756            4540    4810#
ACTCLR  025314            4504    4555#
ACTCOP  026112            4514    4671#
ACTCRC  026660            4535    4788#
ACTCSE  025440            4509    4583#
ACTCST  025532            4510    4599#
ACTDLL  026476            4530    4750#
ACTDME  026040            4546    4652    4655#
ACTDMQ  026032            4547    4654#
ACTDMS  026010            4545    4649#
ACTDMX  026046            4656#
ACTECH  026554            4534    4766#
ACTEQO  026234            4518    4697#
ACTHLP  025334            4508    4561#
ACTLIS  026466            4529    4747#
ACTLLP  026766            4541    4812#
ACTLPX  027004            4807    4809    4811    4813    4816#
ACTLXX  027046            4780    4801    4804    4817    4826#
ACTMEX  026422            4690    4706    4728    4733#
ACTME1  026414            4717    4719    4721    4723    4725    4732#
ACTMOP  026736            4538    4806#
ACTMOS  026666            4549    4791#
ACTMSO  026314            4519    4716#
ACTMS1  026322            4520    4718#
ACTMS2  026332            4521    4720#
ACTMS3  026342            4522    4722#
ACTMS4  026352            4523    4724#
ACTMS5  026362            4524    4726#
ACTMS6  026400            4525    4729#
ACTM2X  026524            4737    4745    4748    4751    4754    4758#
ACTNO   026544            4533    4763#
ACTNUF  025304            4543    4552#
ACTNUL  025312            4503    4553#
ACTNUM  026122            4515    4674#
ACTOPM  026214            4516    4692#
ACTPAS  026440            4527    4739#
ACTPRO  026674            4536    4794#
ACTPRT  025400            4548    4574#
ACTQFG  026700            4783    4786    4789    4792    4796#
ACTREC  026460            4528    4744#
ACTRLP  026776            4542    4814#
ACTRPS  026726            4537    4803#
ACTRUN  025414            4507    4578#
ACTSHO  025324            4505    4558#
ACTSHW  025654            4589    4603    4622#   4641
ACTSTE  026054            4511    4661#
ACTSTS  026652            4517    4785#
ACTSTT  026064            4512    4664#
ACTSTX  026072            4662    4665#
ACTSZE  026102            4513    4668#
ACTTAL  026516            4532    4756#
```

```
ACTTLP  026746            4539    4808#
ACTTRA  026506            4531    4753#
ADDCC   021104            3561#   4436    4478
ADDC1   021200            3563    3578#
ADR   = 000020 G          1519#
ALCK    027376            1976    4951#
ALCK1   027504            5006    5015#   5061
ALCK2   027550            5016    5025#   5093
ALCK2A  027770            5058    5063#
ALCK3   030014            5028    5065    5068#
ALCK3A  030106            5075    5081#
ALCK3B  030120            5082    5084#
ALCK3C  030114            5079    5083#   5090
ALCK4   030142            5069    5088#
ALCK4A  030150            5087    5091#
ALCK4B  030162            5092    5094#
ALCK5   027434            5005#   5083
ALLTR   027434            4883    4906    4930    5004#
ASSEMB= 000010            1291
ATVMOD= 000027            1654#   2117
BAD     006537            1947#   2909    5169*
BADCHR= 000051            1672#   2212
BASM1   014571            2665#   3505
BASM2   014562            2663#   3524
BASM3   014553            2661#   3516
BCC   = 000400            1608#   5626    5629    5823    5841    5868
BCCW    011412            2286#   5843
BDCLK   013310            2526#   4080
BIT0  = 000001 G          1492#   1566    1596    1703
BIT00 = 000001 G          1481#   1492
BIT01 = 000002 G          1480#   1491
BIT02 = 000004 G          1479#   1490
BIT03 = 000010 G          1478#   1489
BIT04 = 000020 G          1477#   1488
BIT05 = 000040 G          1476#   1487
BIT06 = 0001C0 G          1475#   1486
BIT07 = 000200 G          1474#   1485
BIT08 = 000400 G          1473#   1484
BIT09 = 001000 G          1472#   1483
BIT1  = 000002 G          1491#   1567    1597    1696    1704
BIT10 = 002000 G          1471#   1612    1701
BIT11 = 004000 G          1470#   1614    1702
BIT12 = 010000 G          1469#   1687
BIT13 = 020000 G          1468#   1685
BIT14 = 040000 G          1467#   1689
BIT15 = 100000 G          1466#   1711    1712
BIT2  = 000004 G          1490#   1568    1598    1688    1705
BIT3  = 000010 G          1489#   1569    1599    1706
BIT4  = 000020 G          1488#   1570    1604    1697    1707
BIT5  = 000040 G          1487#   1571    1606    1690    1691    1603    5594    5595    5597
BIT6  = 000100 G          1486#   1600    1699    1708
BIT7  = 000200 G          1485#   1601    1700    4845    4848
BIT8  = 000400 G          1484#   1608    1709
BIT9  = 001000 G          1483#   1610    1636    1710    5504
BLDBEX  021312            3622    3626#
BLDBUF  021202            3604#   4312    4319    4437    4479    4618    4857
```

```
BLDB1   021212            3609#
BLDB2   021254            3617#   3624
BLDB3   021276            3620#   3625
BOE   = 000400 G          1523#
BUFEX   013455            2545#   4409    4450
BUFLIM= 001000            1534#   1891    1892    1893    3562    3574    4406    4447    4611    4853
BYTBIT  006476            1926#   3510    4650*   4654*
CABLE = 000002            1553#   5474
CBLLOP= 000045            1668#   2233
CCURAD  006434            1906#   4308*   4316    4477    4482*   4596*
CHECK = 000003            1634#   2165
CLEAR = 000001            1632#   2103    4399    4555
CLIACT  025130            4366    4496#
CLIALN= 000007            1625#   2210
CLIALP= 000006            1624#   2151    2161    2215
CLIBCR  011716            2361#   4709
CLIBDL  011611            2349#   4821
CLIBIF= 000003            1621#
CLIBR = 000002            1620#   2100    2102    2104    2107    2109    2118    2120    2122    2124    2126    2129    2131
                          2146    2148    2158    2166    2170    2172    2177    2181    2184    2191    2193    2195    2197
                          2199    2201    2203    2208    2211    2218    2220    2225    2232    2234    2236    2238    2243
CLIBRX  011571            2346#   3845
CLIDEC= 000011            1627#   2224    2242
CLIERM  011474            2334#   4372
CLIERR= 000000            1618#   2110    2212
CLIEXI= 000001            1619#   2094    2096    2098    2137    2139    2248
CLINBG  011547            2342#   3888
CLINPS  011653            2355#   4772
CLINUF  011524            2338#   4381
CLINUM= 000005            1623#
CLIOCT= 000010            1626#   2153    2155
CLISEO  011763            2368#   4679
CLISPA= 000004            1622#   2092    2114    2135    2144    2152    2209
CLISTR= 000012            1628#   2095    2097    2099    2101    2103    2106    2108    2115    2117    2119    2121    2123
                          2125    2128    2130    2136    2138    2145    2147    2163    2165    2169    2171    2176    2180
                          2183    2190    2192    2194    2196    2198    2200    2202    2217    2219    2231    2233    2235
                          2237
CLITRE  007672            2088#   4365
CLISPM  011466            2333#   4359
CLKBR   006602            1984#   4065*
CLKCSR  006600            1983#   3090*   3111*   4036    4054*   4055*   4056*   4066*   4196*   4275*
CLKEN   006610            1987#   3111    4044*   4057*   4066    4275
CLKHZ   006606            1986#   3093    3108    3245    4070    4088
CLKINT  017042 G          3088#   4134
CLKSET  017016            3043#   4043    4053
CLKVEC  006604            1985#   4034*   4064*   4135
CLRRTS  033650            5567    5721    5733    6003    6075#
CLRR1   033664            6080#   6081
CMDBUF  002666            1838#   4357    4364
CMODS   011370            2277#   5789*   5790*   5793*   5794    5804
CMPBUF  005132            1893#   4308    4595
CMPPTR  006426            1903#   4303*   4315    4461*   4475*   4476    4480*   4583*   4584    4593*   4594    4832*   5133
CMPSEX  030436            5131    5219#
CMPSR   030162            5080    5130#
CMPS1   030322            5162#   5180
CMPS2   030326            5165#
```

```
CMPS:   030214            5136#   5192
CMPS5   030424            5189#
CMPS5A  030430            5182    5190#
CMPS6   030372            5163    5167    5178#
CMPS7   030310            5151    5160#
CMPTOT  006430            1904#   4320*   4459*   4462    4481*   4586    4590*   4835
CMSG0 = 000020            1647#   2192
CMSG1 = 000021            1648#   2190
CMSG2 = 000022            1649#   2194
CMSG3 = 000023            1650#   2196
CMSG4 = 000024            1651#   2200
CMSG5 = 000025            1652#   2198
CMSG6 = 000026            1653#   2202
CONOTM  006532            1944#   2991
CONTIN  006534            1945#
CPTR    006506            1934#   3607    3611*   4311*   4315*   4434*   4438    4476*   4480    4594*   4607*   4855*   4882*
                          4902*   4927*   4952*   5017    5022*   5034    5084*   5091    5132*   5137    5141*   5380*
CPTRR   006504            1933#   4879*   4905*   4928*   4954*   5007    5012*   5040*   5045    5054*   5067*   5088    5133*
                          5143    5146*   5334*
CR      015622            2783#   3229
CRC   = 000040            1663#
CRCB  = 000020            1570#   4788
CSHEXP= 000006            1637#   2136
CSHTRN= 000007            1638#   2138
CSRADR  033773            6126    6143#
CTOTCC  006432            1905#   4298*   4446    4457    4483*   4591*
CTS   = 020000            1685#   2010    6046
CTSSR   033476            5516    5527    5682    5988    6027#
CTSS3   033546            6034    6042#
CTSS4   033524            6036#   6040
CURADD  006510            1935#   3609    3614    3616    3626*   4310*   4316*   4435*   4440    4477*   4482    4612*   4854*
CURCC   006502            1932#   3561    3573    3576*   3577    3610    3615    3626    4306*   4378*   4614*   4686*   4699*
                          4727*   4730*   4732*   4853*
C$AU  = 000052            1291#   4255
C$AUTO= 000061            1291#   4185
C$BRK = 000022            1291#   5448    5502    5537    5701    5998    6038    6045
C$BSEG= 000004            1291#
C$BSUB= 000002            1291#
C$CLEFG= 000045           1291#
C$CLCK= 000062            1291#   4039    4049
C$CLEA= 000012            1291#   4212
C$CLOS= 000035            1291#
C$CLP1= 000006            1291#
C$CVEC= 000036            1291#
C$DCLN= 000044            1291#
C$DODU= 000051            1291#
C$DRPT= 000024            1291#
C$DU  = 000053            1291#   4233
C$EDIT= 000003            1291#   1355
C$ERDF= 000055            1291#
C$ERHR= 000056            1291#
C$ERRO= 000060            1291#
C$ERSF= 000054            1291#
C$ERSO= 000057            1291#   5154    5172    5185    5228    5459    5496    5560    5713    5834    5859    6059
C$ESCA= 000010            1291#
C$ESEG= 000005            1291#
```

```
C$ESCB= 000003          1291#
C$ETST= 000001          1291#   6091
C$EXIT= 000032          1291#   4161    4204    4345
C$GETB= 000026          1291#
C$GETW= 000027          1291#
C$GMAN= 000043          1291#   4068    4355    5312
C$GPHR= 000042          1291#   4103
C$GPLO= 000030          1291#
C$GPRI= 000040          1291#
C$INIT= 000011          1291#   4169
C$INLP= 000020          1291#
C$MAMI= 000050          1291#   4339
C$MEM = 000031          1291#
C$MSG = 000023          1291#   2920    2933    2947    2961    2981    3001
C$OPEN= 000034          1291#
C$PNTB= 000014          1291#   2916    2929    2943    2957    2977    2997
C$PNTF= 000017          1291#   3232    3240    3508    3519    3527    3571    3848    3891    4083    4288    4330    4375
                        4384    4413    4428    4454    4470    4567    4637    4682    4712    4775    4824    5282    5373
                        5396
C$PNTS= 000016          1291#   3280    3303    3317    3330    3343    3351    3375    3391    3406    3421    3429    3449
                        3469    3671    3702
C$PNTX= 000015          1291#
C$QIO = 000377          1291#
C$RDBU= 000007          1291#   4061
C$REFG= 000047          1291#   4012    4017    4022    4028
C$RESE= 000033          1291#   4201
C$REVI= 000003          1291#   1354
C$RFLA= 000021          1291#
C$RPT = 000025          1291#   3981
C$SEFG= 000046          1291#
C$SPRI= 000041          1291#   4159    4199
C$SVEC= 000037          1291#   4137    4147    4154
C$TPRI= 000013          1291#
DATCKB= 000002          1567#   3680    4782    4901    5037    5086    5130    5306    5368
DCD   = 010000          1687#   2012
DCK   = 000014          1586#   3186
DDE   = 000022          1591#   3194
DER   = 000010          1584#   3172
DEV1    007662          2068#   3336*   3347    3355*   3357*   3652    4332*   4642*
DEV2    007664          2069#   3337*   3346    3356*   3358*   3655    4333*   4643*
DEV3    007666          2070#   3359*   3662    4334*   4644*
DEV4    007670          2071#   3360*   3676    3680    3684    3689    4335*   4645*
DFPTBL  002130 G        1420#
DIAGMC= 000000          1291
DIVN91  031662          5534#   5539
DLE   = 000020          1590#   3190
DLL     030556          1977    5277#
DLLCM   013230          2516#   5279
DLLMOD= 000033          1658#   2125
DMPE  = 000053          1674#   2155
DMPQ  = 000054          1675#   2157
DMPS  = 000052          1673#   2153    4395    4651
DMSGAD  002172          1738#   3618
DMSGCT  002150          1725#   3617
DOW   = 000004          1547#   4750    5478
DPLX    033742          6116    6143#
```

```
DPV    = 000000            1576#
DPVP1    011366            2267#   4845*   4848*   5506
DSITEN= 000040            1698#   5639    5984
DSR    = 001000            1686#   2011
DTR    = 000002            1696#   5482
DUMEX    021102            3530    3536#
DUMPSR   020746            3501#   4397
DUM1     021040            3511    3522#
DUM2     021062            3521    3529#
DUM3     020776            3510#   3534
DUM4     020752            3502#   3533
DVEM0    016035            2819#   5453    5461
DVEM1    016114            2828#   6053    6061
DVEM2    016176            2837#   5707    5715
DVEM3    016273            2848#   5830    5836
DVEM4    016333            2855#   5853    5861
DVEM5    016377            2862#   5554    5562
DVEM6    016463            2872#   5490    5498
DVI    = 000012            1585#   3177
DVINEX   032020            5480    5508    5510    5535    5547    5567#
DVINIT   031232            4851    5440#   5463    5565
DVIN1    031314            5446    5467#
DVIN3    031350            5470    5474#
DVIN3A   031374            5479    5482#   5500
DVIN31   033346            5518    5543    5978#
DVIN32   033376            5988#   6005
DVIN34   033474            6000    6006#
DVIN35   033440            5997#   6002
DVIN37   031502            5472    5475    5506#
DVIN38   031410            5485#   5505
DVIN39   031462            5486    5501#
DVIN4    031572            5522#
DVIN41   031552            5517#   5525
DVIN8    031704            5523    5542#   5550
DVIN81   031746            5520    5540    5545    5554#
DVIN9    031612            5527#   5549
DVMEX    032074            5596    5598#
DVMODS   032042            3209    5593#
DVRCC    006454            1916#   5011*   5030    5377*   5388    5390*   5391*   5632*   5871*
DVRCT    006456            1917#   4880*   4953*   5039*   5043*   5063*   5064    5134*   5191*
DVREX    032204            5624    5640#
DVRXA    006452            1915#   5009*   5029    5375*   5387    5390    5630    5869
DVRXI    032472  G         4144    5781#
DVRXQ    032104            5013    5382    5622#
DVRX2    032162            5628    5637#
DVRX3    032176            5633    5639#
DVTCC    006440            1909#   5021*   5071    5331*   5339    5687    5693    5941
DVTCT    006442            1910#   4903*   4926*   4951*   5073*   5078    5081
DVTREX   032470            5723    5729    5734#
DVTR1    032262            5684    5691#
DVTR2    032312            5688    5695#
DVTR3    032326            5680    5698#   5717
DVTR4    032434            5720    5725#
DVTR5    033700            6078    6084#
DVTR8    032334            5700#   5726    5732
DVTXA    006436            1908#   5019*   5070    5328*   5338    5686    5940
```

```
DVTX1   033166 G          4151    5918#
DVTXRX  032206            5025    5336    5385    5679#
DVTXR1  033446            6047    6064#
DVTXR2  033562            6044#   6049
DVTXR3  033506            6033#   6063
DVTXR9  033646            6029    6065#
ECHO  = 000037            1662#   2171
ECHOB = 000004            1568#   3684    4758    4768    4778    5032
EDDCK   014345            2038    2633#
EDDDE   014460            2041    2647#   5174    5187
EDDER   014330            2036    2630#
EDDLE   014423            2040    2642#   5156
EDDVI   014375            2037    2638#
EDEOP   014513            2042    2652#
EDMOS   014527            2039    2655#
EDRXC   014302            2035    2626#
EDRXQ   014255            2034    2622#
EDTXC   014226            2033    2618#
EDTXQ   014202            2032    2614#
EFM11   014002            2587#   2940
EFM13   014131            2603#   2954
EFM2    013705            2576#   2926
EF.CON= 000036 G          1499#   4021
EF.NEW= 000035 G          1500#   4027
EF.PWR= 000034 G          1501#
EF.RES= 000037 G          1498#   4016
EF.STA= 000040 G          1497#   4011
EMSG0   002215            1726    1750#
EMSG1   002216            1727    1752#
EMSG2   002217            1728    1754#
EMSG3   002220            1729    1756#
EMSG4   002320            1730    1770#
EMSG5   002412            1731    1784#
EMSG6   002513            1732    1798#
EMSGB   002643            1734    1812#
ENADD   006474            1925#   3529    4655*
ENDEVT  020624            3282    3292    3296    3436#
ENDIT   023442            4025    4131#
ENDPS   030476            5222    5252#
ENDQO = 000017            1646#   2207
EOP   = 000024            1592#   3198
ERRCNT  006470            1923#   3208    3211    4841*   5152*   5170*   5183*   5226*   5256    5457*   5494*   5558*   5711*
                          5832*   5857*   6057*
ERR1    016550 G          2906#   5175
ERR10   016640 G          2936#   5157
ERR13   016722 G          2970#   5462    5499    5563    5716    5837    5862    6062
ERR14   016754 G          2989#
ERR2    016612 G          2923#   5188
ERR4    016670 G          2950#   5231
ERX   = 000100            1600#   4881    4929    4955    5059    5077    5379    5722
ETX   = 000200            1601#   4904    4955    5060    5076    5333    5345    5728
EVL   = 000004 G          1517#
EVMCTS  015564            2021    2765#
EVMDCD  015574            2023    2769#
EVMDSR  015570            2022    2767#
EVMOCG  015444            2745#   3426
```

```
EVMOHD  015467          2753#   3446
EVMOST  015547          2762#   3466
EVMRI   015604          2025    2773#
EVMRTS  015600          2024    2771#
EVMSQD  015610          2026    2775#
EVMTM   015614          2027    2777#
EVTADD  007626          2049#   3321*   3326    3365*   3371    3381*   3387    3396*   3402
EVTBCT  007630          2050#   3322*   3325    3366*   3370    3382*   3386    3397*   3401
EVTEND  007532          2000#   3253    3289    4092
EVTF0   014632          2672#   3300
EVTF1   014730          2683#   3314
EVTF2   014757          2687#   3327
EVTF3   015031          2695#   3340    3418
EVTF3C  015043          2697#   2974    3348
EVTF3D  015060          2700#   2994
EVTF4   015102          2703#   3388
EVTF4A  015204          2714#   3403
EVTF4B  015302          2726#   3372
EVTF5A  015361          2735#   2913
EVTLOG  006630          1998    1999#   3257    3274    3287    4089
EVTLST  007572          2032#   3310
EVTMIN  007622          2047#   3308*   3313
EVTPTR  006626          1998#   3243    3258*   3273    3294    4090*
EVTSEC  007620          2046#   3307*   3312
EVTTCK  007624          2048#   3306*   3311
EVTTMP  007632          2051#   3335*   3339    3367*   3369    3383*   3385    3398*   3400    3415*   3417
ESEND =  002100         1291#
ESLOAD=  000035         1291#   1378
FHDPLX  006552          1960#   4108*   5509    6077
FIRST =  004000         1614#   6033    6041
FLAG    006560          1970#   4838*   4881*   4904*   4929*   4955*   5005    5015    5027    5059*   5060*   5066*   5068
                        5076*   5077*   5085*   5333*   5345*   5379*   5467*   5514*   5528*   5534    5568*   5569*   5623
                        5626*   5629*   5679    5681*   5685*   5719    5722    5725    5728    5731    5785    5823    5841*
                        5865    5867*   5868*   5874*   5925    5929*   5937    5939*   5943*   5978*   5989*   6001    6004
                        6033    6041*
FSAU  -  000015         1291#   4243    4254
FSAUTO=  000020         1291#   4180    4184
FSBGN =  000040         1291#   1293    2906    2923    2936    2950    2970    2989    3006    3088    3970    3990    4006
                        4161    4180    4194    4204    4221    4227    4243    4249    4270    4345    5781    5918    6090
                        6108    6180
FSCLEA=  000007         1291#   4194    4211
FSDU  =  000016         1291#   4221    4232
FSEND =  000041         1291#   1293    2921    2934    2948    2962    2982    3002    3004    3115    3982    4161    4170
                        4186    4204    4213    4225    4234    4247    4256    4270    4345    5882    5949    6090    6092
                        6142    6180
FSHARD=  000004         1291#   6108    6140
FSHW  =  000013         1291#   1418    1446
FSINIT=  000006         1291#   4006    4168
FSJMP =  000050         1291#   3004    4161    4204    4225    4247    4345
FSMOD =  000000         1291#   1293    6180
FSMSG =  000011         1291#   2906    2919    2923    2932    2936    2946    2950    2960    2970    2980    2989    3000
FSPROT=  000021         1291#   3990    3997
FSPWR =  000017         1291#
FSRPT =  000012         1291#   3970    3980
FSSEG =  000003         1291#
FSSOFT=  000005         1291#
```

```
F$SRV  = 000010  1291#  3088  3113  5781  5880  5918  5947
F$SUB  = 000002  1291#
F$SW   = 000014  1291#
F$TEST= 000001  1291#  4271  6090
GETCL   024206  4341  4352#  4377  4386  4389  4391  4398  4400  4402  4415  4430  4444  4456
                4472  4486
GETPRM  023256  4031  4097#  4106
GLINC   032620  5797  5801#
GLMSG   015757  2807#  5802
GOOD    006536  1946#  2911  5168*
GTRA2   023626  4278#
GTRA3   023670  4281  4291#
GTRA4   023676  4296#
GTRA5   024122  4292  4332#  5264  5284
GTREX   027104  4838#
GTRX2   027202  4853#  5263  5347  5403
GTR9    027054  4348  4394  4831#
GTXRXB  023626  4277#
G$CNTO= 000200  1291#
G$DELM= 000372  1291#
G$DISP= 000003  1291#
G$EXCP= 000400  1291#
G$HILI= 000002  1291#
G$LOLI= 000001  1291#
G$NO   = 000000  1291#  4358  5315
G$OFFS= 000400  1291#  4071  4358  5315  6115  6125  6130  6135
G$OFSI= 000376  1291#  4071  4358  5315  6115  6125  6130  6135
G$PRMA= 000001  1291#  6125  6130
G$PRMD= 000002  1291#  4071  4358  5315
G$PRML= 000000  1291#  6115  6135
G$RADA= 000140  1291#  4358  5315
G$RADB= 000000  1291#
G$RADD= 000040  1291#  4071
G$RADL= 000120  1291#  6115  6135
G$RADO= 000020  1291#  6125  6130
G$XFER= 000004  1291#
G$YES  = 000010  1291#  4071  6115  6125  6130  6135
HDMC    002654  1826#  5531  5638  5694  5981  5991
HDMCC   002646  1820#  5517*  5529*  5542*  5556  5693*
HDMSG   002644  1818#  5513*  5530  5691*  5692  5990
HELP   = 000000  1#  1291  1305  1396  1408  1422  1450  1454  1461  2290  2313  2327  2887
                 2889  2904  3015  3972  3976  3978  3998  4008  4164  4182  4196  4207  4223
                 4228  4245  4250  4267  4268  4272  6086  6093  6111  6146  6160  6165  6173
HELPDC= 000000  1#  1307  1431  1449  1575  1588  1603  1679  1693  2249  2291  2306  2515
                 2726  2804  2818  2884  2964  3202  3270  3413  4110  4142  5276  5408  5413
                 5575  5603  5644  5738  5743  5883  6120  6143
HLP    = 000005  1636#  2093  2095  4388  4571
HLPEND  003034  1850#  4569
HLPF    012072  2381#  4564
HLPTAB  003016  1843#  4561
HLPO    012014  2373#  4327
HLP1    012077  1843  2382#
HLP2    012112  1844  2384#
HLP3    012220  1845  2397#
HLP4    012305  1846  2406#
HLP4A   012364  1847  2414#
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HLP5    012442            1848    2422#
HLP6    012532            1849    2432#
HOE   = 100000 G          1530#
HRDMSG  016005            2811#   5799
HSMSE   002653            1824#
IBE   = 010000 G          1527#
IDU   = 000040 G          1520#
IER   = 020000 G          1528#
ININT = 000001            1596#
INOVR = 002000            1612#   5569    5785
INTPRI  011362            2264#   4128*
INVEC   011356            2262#   4125*   4145
IRDSR   011374            2279#   5810*   5817    5825    5828    5854
IRXCSR  011372            2278#   5503*   5504    5782*   5787    5789    5808    5811    5829    5848    5855
ISR   = 000100 G          1521#
IXE   = 004000 G          1526#
I$AU  = 000041            1291#   4243#   4256#
I$AUTO= 000041            1291#   4180#   4186#
I$CLN = 000041            1291#   4194#   4204    4213#
I$DU  = 000041            1291#   4221#   4234#
I$HRD = 000041            6108#   6142#
I$INIT= 000041            1291#   4006#   4161    4170#
I$MOD = 000041            1291#   1293#   6180#
I$MSG = 000041            1291#   2906#   2921#   2923#   2934#   2936#   2948#   2950#   2962#   2970#   2982#   2989#   3002#
I$PROT= 000040            1291#   3990#
I$PTAB= 000041            1291#
I$PWR = 000041            1291#
I$RPT = 000041            1291#   3970#   3982#
I$SEG = 000041            1291#   4270
I$SETU= 000041            1291#
I$SRV = 000041            1291#   3088#   3115#   5781#   5882#   5918#   5949#
I$SUB = 000041            1291#   4270
I$TST = 000041            1291#   4270#   4345    6090#   6092#
J$JMP = 000167            1291#   3004    4225    4247
KEYWD1  003010            1839#   4388    4390    4392    4395    4399    4401    4403    4555*   4558*   4571*   4574*   4578*
                          4588    4602    4651*   4661*   4664*
LCLKEN= 000100            1560#   4044
LGDVE   017246            3170#   5456    5493    5557    5710    5831    5856    6056
LIS   = 000006            1549#   4747    5346
LISCK   031022            1979    5368#
LISCKA  031050            5375#   5399    5401
LISMOD= 000032            1657#   2123
LISP    013154            2499#   5370
LMDLOP= 000046            1669#   2235
LNCNT   006462            1920#   3224    3226*   3235*
LOE   = 040000 G          1529#
LOGCMD  017366            3192#   5189
LOGCML  017350            3188#   5158
LOGCMP  017332            3184#   5148
LOGDVI  017264            3175#   4850
LOGEOP  017404            3196#   5257
LOGEX   017674            3213    3260#
LOGMSC  017422            3202#   5803
LOGRXC  017236            3167#   5031    5389
LOGRXQ  017220            3162#   5014    5383
LOGS1   017440            3155    3160    3165    3169    3208#
```

```
LOGS2   017666            3254    3258#
LOGS3   017472            3173    3182    3187    3191    3195    3199    3205    3217#
LOGS4   017546            3225    3234#
LOGS5   017572            3219    3221    3242#
LOGTXC  017202            3157#   5072    5340
LOGTXQ  017164            3152#   5023    5332
LOGUNT  006540            1951#   4095*   4097*   4098    4102
LOOPS   003102            1872#   3661
LOT   = 000010 G          1518#
LP0     013036            1872    2475#   3660
LP00    013037            2476#   3657
LP1     013046            1873    2478#
LP2     013057            1874    2480#
LP3     013065            1875    2482#
LP4     013100            1876    2484#
L$ACP   002110 G          1385#
L$APT   002036 G          1343#
L$AU    023612 G          1370    4243#
L$AUT   002070 G          1369#
L$AUTO  023560 G          1386    4180#
L$CCP   002106 G          1383#
L$CLEA  023562 G          1384    4194#
L$CO    002032 G          1339#
L$DEPO  002011 G          1321#
L$DESC  011432 G          1376    2318#
L$DESP  002076 G          1375#
L$DEVP  002060 G          1361#
L$DISP  002124 G          1346    1405#
L$DLY   002116 G          1391#
L$DTP   002040 G          1345#
L$DTYP  002034 G          1341#
L$DU    023604 G          1372    4221#
L$DUT   002072 G          1371#
L$DVTY  011422 G          1362    2308#
L$EF    002052 G          1356#
L$ENVI  002044 G          1349#
L$ETP   002102 G          1379#
L$EXP1  002046 G          1351#
L$EXP4  002064 G          1365#
L$EXP5  002066 G          1367#
L$HARD  033706 G          1328    6108    6109#
L$HIME  002120 G          1393#
L$HPCP  002016 G          1327#
L$HPTP  002022 G          1331#
L$HW    002130 G          1332    1418    1419#
L$ICP   002104 G          1381#
L$INIT  022734 G          1382    4006#
L$LADP  002026 G          1335#
L$LAST  034164 G          1336    6178#
L$LOAD  002100 G          1377#
L$LUN   002074 G          1373#
L$MREV  002050 G          1353#
L$NAME  002000 G          1310#
L$PRIO  002042 G          1347#
L$PROT  022726 G          1388    3990#
L$PRT   002112 G          1387#
```

```
L$REPP  002062 G        1363#
L$REV   002010 G        1319#
L$RPT   022720 G        1364    3970#
L$SPC   002056 G        1359#
L$SPCP  002020 G        1329#
L$SPTP  002024 G        1333#
L$STA   002030 G        1337#
L$TEST  002114 G        1389#
L$TIML  002014 G        1325#
L$UNIT  002012 G        1323#   4098
L10000  002150          1418    1446#
L10001  016610          2919#
L10002  016636          2932#
L10003  016666          2946#
L10004  016720          2960#
L10005  016752          2980#
L10006  017010          3000#   3005
L10007  017162          3113#
L10010  022724          3980#
L10012  023556          4162    4168#
L10013  023560          4184#
L10014  023602          4205    4211#
L10015  023610          4226    4232#
L10016  023616          4248    4254#
L10017  033702          4346    6090#
L10020  033164          5880#
L10021  033344          5947#
L10022  033742          6108    6141#
L5060   013172          2502#   4072
MCREP   030452          5220    5226#
MGLCNT  011414          2287#   2952    4842*   5219    5232*   5801*
MHRCNT  011416          2288#   2953    4843*   5221    5233*   5798*
MLTYP   006550          1957#   3179    4322*   4333    4347*   4643    4741*   4760*   4806*   4808*   4810*   4812*   4814*
                        4819*   5469    5474    6027
MOBITE  007554          2017#   3463
MOBITS  007536          2010#   3451
MOCHK = 000010          1569#   3689    4791    5783
MODE    006562          1973#   4860
MODES   003064          1864#   3654
MODLOC= 000003          1554#
MODREM= 000004          1555#
MODS    007534          2004#   3215    5593*   5594*   5597*   5598*   5795    5804*
MODTYP  006546          1954#   3178    4321*   4332    4642    4736*   4739*   4744*   4747*   4750*   4753*   4756*   4769
                        4816    4858    5041    5057    5074    5346*   5402*   5478
MOMSGS  007554          2021#   3452
MOP   = 000043          1556#   1666#
MOSC  = 000056          1677#   2180
MO0     012745          1864    2461#
MO1     012755          1865    2463#
MO2     012766          1866    2465#
MO3     012776          1867    2467#
MO4     013005          1868    2469#
MO5     013022          1869    2472#
MO6     013027          1870    2473#
MSC   = 000016          1588#   3204
MSCMS   014057          2595#   5230
```

```
MSGCC   011400           2281#   5531*   5687*   5694*   5934*   5941*   5991*
MSGLIM= 000017           1536#   1894    1895    1896    4421    4463
MSGPTR  011376           2280#   5530*   5686*   5692*   5931    5933*   5940*   5990*
MSGTRN  013473           2548#   4410    4425    4451    4467
MSGTRU  013524           2553#   3568
MSGTYP  006500           1930#   3612    4305*   4317*   4613*   4692*   4716*   4718*   4720*   4722*   4724*   4726*   4729*
                         4856*
MSG0    002214           1726    1739    1749#
MSG0C   002150           1726#
MSG1    002215           1727    1740    1751#
MSG1C   002152           1727#
MSG2    002216           1728    1741    1753#
MSG2C   002154           1728#
MSG3    002217           1729    1742    1755#
MSG3C   002156           1729#
MSG4    002220           1730    1743    1757#
MSG4C   002160           1730#
MSG5    002320           1731    1744    1771#
MSG5C   002162           1731#   4306    4318    4614    4727
MSG6    002412           1732    1745    1785#
MSG6C   002164           1732#   4730
MSG8    002642           1734    1747    1811#
MSG8C   002170           1734#
NEW     023250           4030    4095#   4099
NO    = 000036           1661#   2163    4763    4766    4797
NOCLK   013334           2530#   4285
NOD0    007672           2092#
NOD1    007676           2093#
NOD10   007752           2100#
NOD100  010610           2172#
NOD101  010614           2176#
NOD102  010630           2177#
NOD103  010634           2180#
NOD104  010650           2181#
NOD105  010654           2183#
NOD106  010670           2184#
NOD107  010674           2187#
NOD11   007756           2101#
NOD110  010700           2190#
NOD111  010714           2191#
NOD112  010720           2192#
NOD113  010736           2193#
NOD114  010742           2194#
NOD115  010756           2195#
NOD116  010762           2196#
NOD117  010776           2197#
NOD12   007772           2102#
NOD120  011002           2198#
NOD121  011016           2199#
NOD122  011022           2200#
NOD123  011036           2201#
NOD124  011042           2202#
NOD125  011056           2203#
NOD126  011062           2206#
NOD127  011066           2207#
NOD13   007776           2103#
```

NOD130	011072	2208#
NOD131	011076	2209#
NOD132	011102	2210#
NOD133	011106	2211#
NOD134	011112	2212#
NOD135	011114	2215#
NOD136	011120	2216#
NOD137	011124	2217#
NOD14	010012	2104#
NOD140	011140	2218#
NOD141	011144	2219#
NOD142	011160	2220#
NOD143	011164	2223#
NOD144	011170	2224#
NOD145	011174	2225#
NOD146	011200	2228#
NOD147	011204	2231#
NOD15	010016	2105#
NOD150	011226	2232#
NOD151	011232	2233#
NOD152	011246	2234#
NOD153	011252	2235#
NOD154	011274	2236#
NOD155	011300	2237#
NOD156	011322	2238#
NOD157	011326	2241#
NOD16	010022	2106#
NOD160	011332	2242#
NOD161	011336	2243#
NOD162	011342	2248#
NOD17	010034	2107#
NOD2	007702	2094#
NOD20	010040	2108#
NOD21	010052	2109#
NOD22	010056	2110#
NOD23	010060	2114#
NOD24	010064	2115#
NOD25	010100	2116#
NOD26	010104	2117#
NOD27	010122	2118#
NOD3	007704	2095#
NOD30	010126	2119#
NOD31	010144	2120#
NOD32	010150	2121#
NOD33	010166	2122#
NOD34	010172	2123#
NOD35	010210	2124#
NOD36	010214	2125#
NOD37	010240	2126#
NOD4	007720	2096#
NOD40	010244	2127#
NOD41	010250	2128#
NOD42	010266	2129#
NOD43	010272	2130#
NOD44	010304	2131#
NOD45	010310	2135#

```
NOD46   010314          2136#
NOD47   010336          2137#
NOD5    007722          2097#
NOD50   010340          2138#
NOD51   010364          2139#
NOD52   010366          2144#
NOD53   010372          2145#
NOD54   010412          2146#
NOD55   010416          2147#
NOD56   010440          2148#
NOD57   010444          2151#
NOD6    007736          2098#
NOD60   010450          2152#
NOD61   010454          2153#
NOD62   010460          2154#
NOD63   010464          2155#
NOD64   010470          2156#
NOD65   010474          2157#
NOD66   010500          2158#
NOD67   010504          2161#
NOD7    007740          2099#
NOD70   010510          2162#
NOD71   010514          2163#
NOD72   010526          2164#
NOD73   010532          2165#
NOD74   010546          2166#
NOD75   010552          2169#
NOD76   010570          2170#
NOD77   010574          2171#
NONE  = 000000          1551#
NOTNUF= 000050          1671#   2101    2104    2105    2115    2154    2156    2162    2216
NULEVT  014577          2667#   3277
NULL  = 000000          1631#
NUM   = 000014          1643#   2224
N10$    007676          2092#
N100$   010310          2104    2107    2134#
N102$   010314          2135#
N104$   010340          2136    2137#
N110$   010366          2109    2143#
N111$   010372          2144#
N112$   010416          2145    2146#
N114$   010510          2161#
N115$   010504          2118    2120    2122    2124    2126    2129    2131    2160#   2166    2170    2172    2181    2232
                        2234    2236    2238    2243
N116$   010526          2163#
N117$   010552          2164    2165    2168#
N118$   010574          2169    2170#
N120$   010674          2146    2148    2186#
N121$   011114          2191    2193    2195    2197    2199    2201    2203    2208    2214#   2225
N122$   011144          2217    2218#
N123$   011120          2215#
N125$   011342          2154    2156    2158    2162    2216    2247#
N126$   011164          2218    2220    2222#
N130$   010614          2171    2175#
N131$   010654          2180    2182#
N132$   010654          2176    2179#
```

```
N140$   011200          2184    2227#
N141$   011204          2230#
N142$   011232          2231    2232#
N143$   011252          2233    2234#
N144$   011300          2235    2236#
N150$   011326          2177    2240#
N20$    010016          2103    2104#
N25$    010040          2106    2107#
N30$    010056          2105    2108    2109#   2114    2115    2116    2127    2130    2135    2138    2144    2147    2153
                        2155    2157    2183    2187    2206    2219    2223    2224    2228    2237    2241    2242
N40$    007776          2101    2102#
N42$    007704          2093    2094#
N43$    007722          2095    2096#
N45$    007740          2097    2098#
N46$    007756          2099    2100#
N50$    010444          2102    2150#
N51$    010450          2151#
N52$    010454          2152#
N60$    010700          2189#
N61$    010720          2190    2191#
N62$    010742          2192    2193#
N63$    010762          2194    2195#
N64$    011002          2196    2197#
N65$    011022          2198    2199#
N66$    011042          2200    2201#
N67$    011062          2202    2205#
N70$    011066          2206#   2211
N71$    011076          2207    2208#
N72$    011102          2209#
N73$    011112          2210    2211#
N80$    010060          2100    2113#
N81$    010064          2114#
N82$    010126          2117    2118#
N83$    010150          2119    2120#
N84$    010172          2121    2122#
N85$    010214          2123    2124#
N86$    010244          2125    2126#
N87$    010272          2128    2129#
OFSET   006514          1937#   2912    5161*   5178*
OPBFPT  002514          1804#   5393
OPBUF   002520          1746    1805#   4702    5307    5314    5322    5328    5329    5341    5343    5375    5376    5398
                        5400
OPCNT   002166          1733#   4700*   5326*   5330    5331
OPEND   002642          1806#   5309
OPRMM   013165          2501#   5316
OPRMSG= 000015          1644#   2206
OPTYP   011364          2265#   4129*
OPVAR   006464          1921#   4839*   5254    5564*
OTINT = 000002          1597#
OUTVEC  011360          2263#   4126*   4127*   4152
O$APTS= 000000          1291#   1337
O$AU  = 000001          1291#   1304#   1369
O$BGNR= 000001          1291#   1304#   1363
O$BGNS= 000000          1291#   1329
O$DU  = 000001          1291#   1304#   1371
O$ERRT= 000000          1291#   1379
```

```
O$GNSW= 000000            1291#   1333
O$POIN= 000001            1291#   1304#   1395
O$SETU= 000000            1291#   1323    6176
PAD    = 001000           1610#   5528    5681    5925    5943    5989
PARAM   006554            1961#   3181    3220    4324*   4335    4645    4758*   4768*   4778*   4796*   4799*   4901*   5032
                          5037    5086    5130    5306*   5368*   5783
PAS    = 000002           1545#   4739    4769    5057    5074
PASC   = 000042           1665#   2242
PASMOD= 000030            1655#   2119
PCADD   006542            1952#
PCK     013127            2490#   3679
PCLKCT= 001600            1562#   4055
PCLKEN= 000111            1561#   4057
PCPM    013750            2582#
PCSAR   011346            2256#   4116*   4117*   5506*
PEC     013137            2493#   3683
PLCK    027342            1975    4925#
PLCK2   027342            4926#
PLCK3   027356            4928#
PMS     013146            2495#   3688
PNCK    013125            2489#   3682
PNEC    013135            2492#   3686
PNMS    013144            2494#   3691
PNST    013114            2486#   3678
PNT    = 001000 G         1524#
PRI    = 002000 G         1525#
PRI00  = 000000 G         1513#   4158
PRI01  = 000040 G         1512#
PRI02  = 000100 G         1511#
PRI03  = 000140 G         1510#
PRI04  = 000200 G         1509#   4143    4150
PRI05  = 000240 G         1508#
PRI06  = 000300 G         1507#
PRI07  = 000340 G         1348    1506#   4198
PRNT   = 000055           1676#   2097    4390    4574
PROTO  = 000041           1664#
PROTOB= 000040            1571#   4794
PSCNT   006466            1922#   4840*   5252*   5255
PS1     013116            2487#   3675
PTREND  006416            1897#
PTRTAB  006132            1894#   4299    4419    4599    4606    4831
PTR13   006226            1895#   4303    4461    4583    4593    4832
PTR23   006322            1896#   4833
P$ACT   003120            1882#   3771    4366*
P$BUFA  003114            1880#   3726    4364*
P$CNT   003122            1883#   3868*   3875    3937*   3944*   3949
P$EXIT  021746            3729    3764#   3788    3793
P$GDBD  003131            1887#   3786*   3791*   3799    3850*   3893*   4352*   4369    4684*   4777*   4818*
P$NNUF  003130            1886#   4353*   4378    4552*   4579*   4587*   4601*   4656*   4733*   4740*   4759*   4826*
P$NUM   003124            1834#   3863*   3866*   3868    3869*   3871*   3875*   3877*   3883*   4649    4655    4676    4686
                          4688    4803
P$RADX  003126            1885#   3823*   3826*   3833*   3840    3873    3881
P$TREE  003116            1881#   3727    4365*
P$TRV   021630            3725#   4368
P$TR5   021640            3728#   3737    3757    3762
QCOPY  = 000013           1642#   2219    4671
```

```
QRX    = 000004  1598# 4881  4929  4955  5005  5027  5059  5066  5077  5379  5623  5626  5725
                 5874  5978  6004
QTX    = 000010  1599# 4904  4955  5015  5060  5068  5076  5085  5333  5345  5528  5534  5679
                 5681  5719  5731  5929  5989  6001
QUALFG  003012  1841# 4367* 4668* 4671* 4674  4763* 4766  4779* 4797  4800*
QUALVL  003014  1842# 4442* 4484* 4665* 4688* 4689*
RDATRY= 000200  1700# 5808  5811
RDSR    011350  2257# 4118* 4119* 5810
REC    = 000000  1543#
RECMOD= 000031  1656# 2121
REPORT  017676  3266# 3973  4575
RERR   = 100000  1712# 5825
RESET  = 000001  1703# 5443
RESFLG  006544  1953# 4009* 4033* 4291
RESTRT  023210  4019  4045  4058  4077  4086#
RHDMCC  002660  1830# 5522  5524  5546  5548  5555  5870  5871
RHDMSG  002656  1828# 5637  5980
RI     = 040000  1689# 2014
RINTEN= 000100  1699# 5639  5876  5984
RMDLOP= 000047  1670# 2237
RMSGCC  011410  2285# 5631* 5638* 5821* 5842* 5870* 5981*
RMSGPT  011406  2284# 5630* 5637* 5816  5818* 5843* 5869* 5980*
RNODE   011420  2289# 4130* 4846  550.  5627  5683
RNODM   034054  6136  6143#
RPASS   006556  1969# 3180  4323* 4334  4342  4580* 4644  4803* 5259  5261*
RPT     017744  3284# 3333  3353  3364  3378  3393  3409  3433
RPTAA   020014  3299#
RPTDCK  020460  2061  3396#
RPTDDE  020404  2064  3381#
RPTDER  020170  2059  3335#
RPTDLE  020460  2063  3395#
RPTDSP  007634  2055# 3319
RPTDVI  020264  2060  3355#
RPTEOP  020330  2065  3365#
RPTMSB  020634  3332  3424  3432  3445#
RPTMSC  020534  2062  3415#
RPTMSE  020620  3433#
RPTTXQ  020116  2055  2056  2057  2058  3321#
RP10    020010  3275  3291  3295  3298#
RPT1    017776  3288  3294#
RSTARY= 002000  1701# 5808  5848
RTS    = 000004  1688# 2013  6042  6083
RUN    = 000004  1635# 2099  4392  4578
RXACT  = 004000  1702#
RXBUF   004132  1892# 4854
RXC    = 000006  1583# 3168  3218
RXCSR   011344  2255# 4113* 5445  5454  5482* 5491  5503  5593  5639* 5708  5782  5876* 5984*
                 6042* 6046  6054  6083*
RXENA  = 000020  1697# 5639  5876  5984
RXINEX  033164  5809  5822  5844  5849  5872  5878#
RXIN1   032632  5800  5803#
RXIN2   032560  5792  5794#
RXIN21  032644  5784  5786  5788  5808#
RXIN3   033024  5812  5848#
RXIN4   032672  5816#
RXIN5   033100  5824  5865#
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RXINE   033000            5827    5841#
RXIN7   033150            5863    5866    5874#
RXIN8   033156            5839    5876#
RXM    = 000040           1606#   5514    5626    5629    5865    5867
RXMTOT  006460            1918#   4835*   4880    4953    5134
RXONLY  027250            1973    4878#
RXON2   027250            4879#
RXPTR   006422            1901#   4301*   4833*   4855    4879    4928    4954    5040    5132
RXQ    = 000004           1582#   3164
SCM     015671            2792#   3185
SCMD    015724            2798#   3193
SCML    015713            2796#   3189
SDVE    015660            2790#   3171
SDVI    015702            2794#   3176
SEOP    015735            2800#   3197
SETEXP= 000010            1639#   2145    4403    4661
SETTRN= 000011            1640#   2147    4664
SHF0    013607            2562#   3668
SHF1    013645            2569#   3699
SHMSG   012631            2445#   4634
SHOW   = 000002           1633#   2106    4401    4558    4588    4602
SHTAB   003054            1858#   4622    4628
SHTEND  003063            1861#   4625
SHTYP0  012665            1851    2450#
SHTYP1  012674            1851    2452#
SHTYP2  012701            1851    2453#
SHTYP3  012706            1851    2454#
SHTYP4  012713            1851    2455#
SHTYP5  012721            1851    2457#
SHTYP6  012726            1851    2458#
SHTYP7  012734            1851    2459#
SHTYTB  003034            1851#   4633
SHWOP   021326            3362    3652#   4336    4646
SIZE   = 000012           1641#   2217    4668    4674
SMSC    015746            2804#   3203
SQD    = 000040           1690#   2015
SRXQ    015647            2788#   3163
STADD   006472            1924#   3501    4649*
START   023010            4014    4033#
STATB  = 000001           1566#   3220    3676    4785
STATUS= 000016            1645#   2169
STXC    015636            2786#   3158
STXQ    015625            2784#   3153
SVCGBL= 000000            1291#   1310    1319    1321    1323    1325    1327    1329    1331    1333    1335    1337    1339
                          1341    1343    1345    1347    1349    1351    1353    1356    1359    1361    1363    1365    1367
                          1369    1371    1373    1375    1377    1379    1381    1383    1385    1387    1389    1391    1393
                          1405    1419    1420    2308    2318    2906    2923    2936    2950    2970    2989    3088    3970
                          3990    4006    4180    4194    4221    4243    5781    5918    6109    6178#   6179
SVCINS= 000001            1291#   1311    1312    1313    1314    1315    1316    1317    1318    1320    1322    1324    1326
                          1328    1330    1332    1334    1336    1338    1340    1342    1344    1346    1348    1350    1352
                          1354    1355    1357    1358    1360    1362    1364    1366    1368    1370    1372    1374    1376
                          1378    1380    1382    1384    1386    1388    1390    1392    1394    1404    1406    1418    2309
                          2311    2319    2324    2908    2909    2910    2911    2912    2913    2914    2915    2916    2917
                          2920    2925    2926    2927    2928    2929    2930    2933    2938    2939    2940    2941    2942
                          2943    2944    2947    2952    2953    2954    2955    2956    2957    2958    2961    2972    2973
                          2974    2975    2976    2977    2978    2981    2991    2992    2993    2994    2995    2996    2997
```

```
                    2998  3001  3004  3005  3114  3229  3230  3231  3232  3233  3237  3238  3239
                    3240  3241  3277  3278  3279  3280  3281  3300  3301  3302  3303  3304  3310
                    3311  3312  3313  3314  3315  3316  3317  3318  3325  3326  3327  3328  3329
                    3330  3331  3339  3340  3341  3342  3343  3344  3346  3347  3348  3349  3350
                    3351  3352  3369  3370  3371  3372  3373  3374  3375  3376  3385  3386  3387
                    3388  3389  3390  3391  3392  3400  3401  3402  3403  3404  3405  3406  3407
                    3417  3418  3419  3420  3421  3422  3426  3427  3428  3429  3430  3446  3447
                    3448  3449  3450  3466  3467  3468  3469  3470  3504  3505  3506  3507  3508
                    3509  3514  3515  3516  3517  3518  3519  3520  3523  3524  3525  3526  3527
                    3528  3568  3569  3570  3571  3572  3664  3665  3666  3667  3668  3669  3670
                    3671  3672  3695  3696  3697  3698  3699  3700  3701  3702  3703  3845  3846
                    3847  3848  3849  3888  3889  3890  3891  3892  3981  4011  4012  4014  4016
                    4017  4019  4021  4022  4024  4027  4028  4030  4038  4039  4040  4042  4048
                    4049  4050  4052  4061  4063  4068  4069  4070  4071  4072  4073  4074  4075
                    4080  4081  4082  4083  4084  4102  4103  4104  4106  4133  4134  4135  4136
                    4137  4138  4143  4144  4145  4146  4147  4148  4150  4151  4152  4153  4154
                    4155  4158  4159  4161  4162  4169  4185  4198  4199  4201  4204  4205  4212
                    4225  4226  4233  4247  4248  4255  4285  4286  4287  4288  4289  4327  4328
                    4329  4330  4331  4339  4341  4345  4346  4355  4356  4357  4358  4359  4360
                    4361  4362  4372  4373  4374  4375  4376  4381  4382  4383  4384  4385  4409
                    4410  4411  4412  4413  4414  4424  4425  4426  4427  4428  4429  4450  4451
                    4452  4453  4454  4455  4466  4467  4468  4469  4470  4471  4563  4564  4565
                    4566  4567  4568  4632  4633  4634  4635  4636  4637  4638  4679  4680  4681
                    4682  4683  4709  4710  4711  4712  4713  4772  4773  4774  4775  4776  4821
                    4822  4823  4824  4825  5154  5155  5156  5157  5172  5173  5174  5175  5185
                    5186  5187  5188  5228  5229  5230  5231  5279  5280  5281  5282  5283  5312
                    5313  5314  5315  5316  5317  5318  5319  5370  5371  5372  5373  5374  5393
                    5394  5395  5396  5397  5448  5459  5460  5461  5462  5496  5497  5498  5499
                    5502  5537  5560  5561  5562  5563  5701  5713  5714  5715  5716  5834  5835
                    5836  5837  5859  5860  5861  5862  5881  5948  5998  6038  6045  6059  6060
                    6061  6062  6091  6108  6115  6116  6117  6125  6126  6127  6128  6130  6131
                    6132  6133  6135  6136  6137  6140  6175  6176  6177

SVCSUB=  000001      1291#
SVCTAG=  000001      1291#  1446  2919  2932  2946  2960  2980  3000  3113  3980  4076  4168  4184
                     4211   4232  4254  4363  5320  5880  5947  6090  6141
SVCTST=  000001      1291#  4270
SYN   =  000226      1713#
SYNCC    011402      2282#  5532*  5695*  5919  5922*  5992*
SYNCW    011404      2283#  4844*  4849*  5921
S$LSYM=  010000      1291#  1447#  2920#  2933#  2947#  2961#  2981#  3001#  3114#  3981#  4069  4076  4077#
                     4169#  4185#  4212#  4233#  4255#  4356   4363   4364#  5313   5320   5321#  5881#  5948#
                     6091#  6142#
S1       022776      4024   4026#
S2       023052      4042   4047#
S3       023122      4052   4060#
S4       023170      4063   4079#
TABEX    013415      2539#  4424   4466
TAL   =  000005      1548#  4756   5402
TALCK    030602      1978   5305#  5342   5344
TALMOD=  000035      1660#  2130
TBMT  =  000004      1705#
TCJRAD   006450      1913#  4307*  4310   4435   4440*  4609*
TDSR     011354      2259#  4122*  4123*  5921*  5924*  5927*  5932*  5936*
TEMP     006516      1938#  3154*  3159*  3164*  3168*  3172*  3177*  3186*  3190*  3194*  3198*  3204*  3218
                     3244   3245*  3246*  3247   3512*  3515   3574*  3575*  3576   3614*  3615*  3621   3654*
                     3667   3675*  3678*  3698   4630*  4632   4693*  4694*  4698   4701   5046*  5047*  5051
```

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                    6035* 6036* 6039
TEMP1   006520      1939# 3153* 3158* 3163* 3171* 3176* 3185* 3189* 3193* 3197* 3203* 3237  3661*
                    3665  3679* 3682* 3697
TEMP2   006522      1940# 3178* 3179* 3250  3617* 3619* 3623  3662* 3664  3683* 3686* 3696  5008*
                    5018* 5029* 5035  5049* 5050  5070* 5138* 5255* 5329* 5338* 5376* 5387* 5453*
                    5490* 5554* 5707* 5799* 5802* 5830* 5853* 6053* 6079* 6080*
TEMP3   006524      1941# 2938  2973  2993  3180* 3251  3657* 3660* 3666  5010* 5020* 5030* 5036
                    5047  5048  5049  5071* 5140* 5150  5256* 5330* 5339* 5378* 5388* 5454* 5491*
                    5555* 5708* 5794* 5796  5828* 5854* 6054*
TEMP4   006526      1942# 2925  2972  2992  3181* 3215* 3252  5147* 5160* 5165* 5166  5181  5254*
                    5455* 5492* 5556* 5709* 5795* 5796  5829* 5855* 6055*
TEMP5   006530      1943# 3688* 3691* 3695
TEOM  = 001000      1710# 5924  5936
TERR  = 100000      1711#
TIMERS  006624      1995# 3106  3110* 5515* 5519  5538  5544  5698* 5702  5999
TIMER1  006620      1993# 3100  3102* 4279* 4280  5484* 5485  6043* 6048
TIMER2  006622      1994# 3103  3105*
TIMMIN  006612      1989# 3097* 3249  4086*
TIMSEC  006614      1990# 3094* 3095  3098* 3248  4087*
TIMTCK  006616      1991# 3091* 3093* 3108  3246  4088*
TINTEN= 000100      1708# 5533  5696  5928  5993
TM    = 000040      1691# 2016  5791  5793
TOINOT  032410      5703  5719#
TOTCC   006512      1936# 3561* 3562  3573* 3575  3577* 4296* 4405* 4406  4439  4446* 4447  4483
TRA   = 000001      1544# 4753
TRAMOD= 000034      1659# 2128
TRVACT  021750      3758  3769# 3785  3790  3795  3798  3818  3884  3907  3928  3952
TRVALN  022542      3747  3911#
TRVALP  022476      3746  3897#
TRVBIF  022054      3743  3798#
TRVBR   022044      3742  3795#
TRVBRC  021770      3756  3776# 3796  3801  3820  3894  3909  3930  3956
TRVDEC  022150      3749  3823#
TRVERR  022006      3740  3785#
TRVEXI  022026      3741  3790#
TRVNMA  022170      3824  3827#
TRVNOB  022000      3781# 3802  3819  3885  3908  3929
TRVNUM  022162      3745  3826#
TRVOCT  022162      3748  3825#
TRVSPA  022076      3744  3804#
TRVSTR  022630      3750  3934#
TSOM  = 000400      1709# 5924
TTL   = 000001      1552# 4347  5469
TTLL  = 000010      1706# 5468  5471
TTLLOP= 000044      1667# 2231
TTOTCC  006446      1912# 4297* 4405  4416  4439* 4605*
TXACT = 000002      1704#
TXBUF   003132      1891# 4307  4608
TXC   = 000002      1581# 3159
TXCSR   011352      2258# 4120* 4121* 5443* 5455  5468* 5471* 5492  5533* 5595  5696* 5709  5791
                    5928* 5993* 6055
TXENA = 000020      1707# 5533  5696  5993
TXINEX  033344      5923  5930  5935  5942  5945#
TXIN1   033210      5920  5924#
TXIN2   033252      5926  5931#
TXIN3   033336      5938  5943#
```

```
TXM    = 000020  1604#  5514   5681   5685   5937   5939
TXMTOT   006444  1911#  4313*  4418*  4420   4441*  4600   4604*  4903   4926   4951
TXONLY   027302  1974   4901#
TXON2    027310  4902#
TXPTR    006424  1902#  4300*  4311   4419*  4433*  4434   4438*  4606*  4607   4831*  4902   4927   4952
TXQ    = 000000  1580#  3154
T$ARGC- 000001   1311#  1312#  1313#  1314#  1315#  1316#  2908#  2917   2925#  2930   2938#  2944   2952#
                 2958   2972#  2978   2991#  2998   3229#  3233   3237#  3241   3277#  3281   3300#  3304
                 3310#  3318   3325#  3331   3339#  3344   3346#  3352   3369#  3376   3385#  3392   3400#
                 3407   3417#  3422   3426#  3430   3446#  3450   3466#  3470   3504#  3509   3514#  3520
                 3523#  3528   3568#  3572   3664#  3672   3695#  3703   3845#  3849   3888#  3892   4080#
                 4084   4285#  4289   4327#  4331   4372#  4376   4381#  4385   4409#  4414   4424#  4429
                 4450#  4455   4466#  4471   4563#  4568   4632#  4638   4679#  4683   4709#  4713   4772#
                 4776   4821#  4825   5279#  5283   5370#  5374   5393#  5397
T$CODE= 006130   4071#  4358#  5315#  6115#  6125#  6130#  6135#
T$ERRN= 000006   1291#  5155#  5173#  5186#  5229#  5460#  5497#  5561#  5714#  5835#  5860#  6060#
T$EXCP= 000000   4071#  4076   4358#  4363   5315#  5320   6125#  6129   6130#  6134
T$FLAG= 000040   3004#  3006   4161#  4204#  4225#  4227   4247#  4249   4345#
T$GMAN= 000000   1291#  4068#  4077#  4355#  4358   4364#  5312#  5315   5321#
T$HILI= 000776   4071#  4075   4358#  4362   5315#  5319   6125#  6128   6130#  6133
T$LAST= 000001   1291#  6176#
T$LOLI= 000300   4071#  4074   4358#  4361   5315#  5318   6125#  6127   6130#  6132
T$LSYM= 010000   1291#  1447   2920   2933   2947   2961   2981   3001   3114   3981   4169   4185   4212
                 4233   4255   5881   5948   6091   6142
T$LTNO= 000001   6179#
T$NEST- 177777   1291#  1293#  1418#  1446#  2906#  2919#  2923#  2932#  2936#  2946#  2950#  2960#  2970#
                 2980#  2989#  3000#  3088#  3113#  3970#  3980#  3990#  3997#  4006#  4168#  4180#  4184#
                 4194#  4211#  4221#  4232#  4243#  4254#  4271#  5781#  5880#  5918#  5947#  6090#  6108#
                 6140#  6180#
T$NS0  = 000000  1293#  6180
T$NS1  = 000004  1418#  1446   2906#  2919   2923#  2932   2936#  2946   2950#  2960   2970#  2980   2989#
                 3000   3088#  3113   3970#  3980   3990#  3997   4006#  4168   4180#  4184   4194#  4211
                 4221#  4232   4243#  4254   4271#  6090   6108#  6140
T$NS2  = 000010  5781#  5880   5918#  5947
T$PTNU= 000000   1291#
T$SAVL= 177777   1291#
T$SEGL= 177777   1291#
T$SUBN= 000000   1291#  4270#
T$TAGL= 177777   1291#
T$TAGN= 010023   1291#  1418#  2906#  2923#  2936#  2950#  2970#  2989#  3088#  3970#  3990#  4006#  4180#
                 4194#  4221#  4243#  4271#  5781#  5918#  6108#
T$TEMP= 000000   1406#  1407#  1446#  2919#  2932#  2946#  2960#  2980#  3000#  3004#  3005   3113#  3980#
                 3997#  4071#  4161#  4162   4168#  4184#  4204#  4205   4211#  4225#  4226   4232#  4247#
                 4248   4254#  4345#  4346   4358#  5315#  5880#  5947#  6090#  6115#  6125#  6130#  6135#
                 6140#  6180#
T$TEST= 000001   1291#  4270#  6179
T$TSTM= 177777   1291#  2916   2920   2929   2933   2943   2947   2957   2961   2977   2981   2997   3001
                 3232   3240   3280   3303   3317   3330   3343   3351   3375   3391   3406   3421   3429
                 3449   3469   3508   3519   3527   3571   3671   3702   3848   3891   3981   4012   4017
                 4022   4028   4039   4049   4061   4068   4083   4103   4137   4147   4154   4159   4161
                 4169   4185   4199   4201   4204   4212   4233   4255   4288   4330   4339   4345   4355
                 4375   4384   4413   4428   4454   4470   4567   4637   4682   4712   4775   4824   5154
                 5172   5185   5228   5282   5312   5373   5396   5448   5459   5496   5502   5537   5560
                 5701   5713   5834   5859   5998   6038   6045   6059   6091
T$TSTS= 000001   1291#  4271#
T$$AU - 010016   4243#  4247   4254
```

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T$$ALT= 010013            4180#   4184
T$$CLE= 010014            4194#   4204    4211
T$$DU = 010015            4221#   4225    4232
T$$HAR= 010022            6108#   6141
T$$HW = 010000            1418#   1446
T$$INI= 010012            4006#   4161    4168
T$$MSG= 010006            2906#   2919    2923#   2932    2936#   2946    2950#   2960    2970#   2980    2989#   3000    3004
T$$PRO= 010011            3990#
T$$RPT= 010010            3970#   3980
T$$SRV= 010021            3088#   3113    5781#   5880    5918#   5947
T$$TES= 010017            4271#   4345    6090
T1      023620 G          1406    4270#
UAM   = 000200 G          1522#
UPTABL  027604            5032#
UPTA1   027672            5038    5045#
UPTA3   027670            5042    5044#
UPTA4   027630            5033    5037#
UPTEX   027742            5044    5056#
VECTOR  034021            6131    6143#
X$    = 000163            1294#   2092#   2093#   2094#   2095#   2096#   2097#   2098#   2099#   2100#   2101#   2102#   2103#
                          2104#   2105#   2106#   2107#   2108#   2109#   2110#   2114#   2115#   2116#   2117#   2118#   2119#
                          2120#   2121#   2122#   2123#   2124#   2125#   2126#   2127#   2128#   2129#   2130#   2131#   2135#
                          2136#   2137#   2138#   2139#   2144#   2145#   2146#   2147#   2148#   2151#   2152#   2153#   2154#
                          2155#   2156#   2157#   2158#   2161#   2162#   2163#   2164#   2165#   2166#   2169#   2170#   2171#
                          2172#   2176#   2177#   2180#   2181#   2183#   2184#   2187#   2190#   2191#   2192#   2193#   2194#
                          2195#   2196#   2197#   2198#   2199#   2200#   2201#   2202#   2203#   2206#   2207#   2208#   2209#
                          2210#   2211#   2212#   2215#   2216#   2217#   2218#   2219#   2220#   2223#   2224#   2225#   2228#
                          2231#   2232#   2233#   2234#   2235#   2236#   2237#   2238#   2241#   2242#   2243#   2248#
X$ALWA= 000000            1291#
X$FALS= 000040            1291#
X$OFFS= 000400            1291#
X$TRUE= 000020            1291#
$PATCH  034100            6170#
.     = 034164            1291#   1799#   1805#   1813#   1825#   1834#   1838#   1862#   1891#   1892#   1893#   1894#   1895#
                          1896#   1899#   1999#   2000#   2095#   2101#   2108#   2115#   2117#   2123#   2125#   2136#   2138#
                          2163#   2165#   2169#   2171#   2176#   2183#   2190#   2192#   2194#   2196#   2198#   2217#   2219#
                          2235#   2311#   2780#   3005    4162    4205    4226    4248    4346    6171#
```

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BCOMPL      1#   1291#  4013   4018   4029   4340
BERROR      1#   1291#
BGNAU       1#   1291#  4242
BGNAUT      1#   1291#  4179
BGNCLN      1#   1291#  4193
BGNDU       1#   1291#  4220
BGNHRD      1#   1291#  6107
BGNHW       1#   1291#  1417
BGNINI      1#   1291#  4005
BGNMOD      1#   1291#  1292
BGNMSG      1#   1291#  2905   2922   2935   2949   2969   2988
BGNPRO      1#   1291#  3989
BGNPTA      1#   1291#
BGNRPT      1#   1291#  3969
BGNSEG      1#   1291#
BGNSET      1#   1291#
BGNSFT      1#   1291#
BGNSRV      1#   1291#  3087   5780   5917
BGNSUB      1#   1291#
BGNSW       1#   1291#
BGNTST      1#   1291#  4269
BNCOMP      1#   1291#  4023   4041   4051   4062   4105
BNERRO      1#   1291#
BREAK       1#   1291#  5447   5501   5536   5700   5997   6037   6044
BRESET      1#   1291#  4200
CKLOOP      1#   1291#
CLI      1295#   2091   2092   2093   2094   2095   2096   2097   2098   2099   2100   2101   2102   2103   2104
         2105    2106   2107   2108   2109   2113   2114   2115   2116   2117   2118   2119   2120   2121   2122
         2123    2124   2125   2126   2127   2128   2129   2130   2134   2135   2136   2137   2138   2143   2144
         2145    2146   2147   2150   2151   2152   2153   2154   2155   2156   2157   2160   2161   2162   2163
         2164    2165   2168   2169   2170   2171   2175   2176   2179   2180   2182   2183   2186   2189   2190
         2191    2192   2193   2194   2195   2196   2197   2198   2199   2200   2201   2202   2205   2206   2207
         2208    2209   2210   2211   2214   2215   2216   2217   2218   2219   2222   2223   2224   2227   2230
         2231    2232   2233   2234   2235   2236   2237   2240   2241   2242   2247
CLOCK       1#   1291#  4037   4047
CLOSE       1#   1291#
CLRVEC      1#   1291#
COMMEN      1#   1291#
DELAY       1#   1291#
DESCRI      1#   1291#  2317
DEVTYP      1#   1291#  2307
DISPAT      1#   1291#  1403
DISPLA      1#   1291#
DOCLN       1#   1291#
DODU        1#   1291#
DORPT       1#   1291#
ENDAU       1#   1291#  4253
ENDAUT      1#   1291#  4183
ENDCLN      1#   1291#  4210
ENDCOM      1#   1291#
ENDDU       1#   1291#  4231
ENDHRD      1#   1291#  6139
ENDHW       1#   1291#  1445
ENDINI      1#   1291#  4167
ENDMOD      1#   1291#  6179
ENDMSG      1#   1291#  2918   2931   2945   2959   2979   2999
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ENDRPT      1#   1291#   3979
ENDSEG      1#   1291#
ENDSET      1#   1291#
ENDSFT      1#   1291#
ENDSRV      1#   1291#   3112    5879    5946
ENDSUB      1#   1291#
ENDSW       1#   1291#
ENDTST      1#   1291#   6089
EQUALS      1#   1291#   1462
ERRDF       1#   1291#
ERRHRD      1#   1291#
ERROR       1#   1291#
ERRSF       1#   1291#
ERRSOF      1#   1291#   5153    5171    5184    5227    5458    5495    5559    5712    5833    5858    6058
ERRTBL      1#   1291#
ESCAPE      1#   1291#
EXIT        1#   1291#   3003    4160    4203    4224    4246    4344
FEQUAL      1#   1291#
GETBYT      1#   1291#
GETPRI      1#   1291#
GETWOR      1#   1291#
GMANIA      1#   1291#
GMANID      1#   1291#   4067    4354    5311
GMANIL      1#   1291#
GPHARD      1#   1291#   4101
GPRMA       1#   1291#   6124    6129
GPRMD       1#   1291#   4068#   4071    4355#   4358    5312#   5315
GPRML       1#   1291#   6114    6134
HEADER      1#   1291#   1309
INLOOP      1#   1291#
IOSETU      1#   1291#
IOSTAR      1#   1291#
KT11        1#   1291#
LASTAD      1#   1291#   6174
MANUAL      1#   1291#   4338
MEMORY      1#   1291#
MSBYTE      1#   1291#   1310#   1316    1317    1318
MSCHEC      1#   1291#   3004#   4161#   4204#   4225#   4247#   4345#
MSCNTO      1#   1291#   4071#   4358#   5315#   6115#   6125#   6130#   6135#
MSCOUN      1#   1291#   2908#   2925#   2938#   2952#   2972#   2991#   3229#   3237#   3277#   3300#   3310#   3325#   3339#
          3346#  3369#   3385#   3400#   3417#   3426#   3446#   3466#   3504#   3514#   3523#   3568#   3664#   3695#   3845#
          3888#  4080#   4285#   4327#   4372#   4381#   4409#   4424#   4450#   4466#   4563#   4632#   4679#   4709#   4772#
          4821#  5279#   5370#   5393#
MSDATA      1#   1291#   1310#   1319    1321    1323    1325    1327    1329    1331    1333    1335    1337    1339    1341
          1343   1345    1347    1349#   1351    1353    1356    1359    1361    1363    1365    1367    1369    1371    1373
          1375   1377    1379    1381    1383    1385    1387    1389    1391    1393    2308#   2318#
MSDECR      1#   1291#   1446#   2919#   2932#   2946#   2960#   2980#   3000#   3113#   3980#   3997#   4168#   4184#   4211#
          4232#  4254#   5880#   5947#   6090#   6140#   6180#
MSDEFA      1#   1291#   4071#   4358#   5315#   6115#   6125#   6130#   6135#
MSENDE      1#   1291#   1446#   2919#   2932#   2946#   2960#   2980#   3000#   3113#   3980#   4168#   4184#   4211#   4232#
          4254#  5880#   5947#   6090#   6140#   6180#
MSERRI      1#   1291#   5154#   5172#   5185#   5228#   5459#   5496#   5560#   5713#   5834#   5859#   6059#
MSESCA      1#   1291#
MSESCS      1#   1291#
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MSEXSE      1#   1291#  3004#  4161#  4204#  4225#  4247#  4345#
MSEXTJ      1#   1291#  3004#  3005   4161#  4204#  4225#  4226   4247#  4248   4345#
MSGEN       1#   1291#  1310#  1319#  1321#  1323#  1325#  1327#  1329#  1331#  1333#  1335#  1337#  1339#  1341#
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          1375#  1377#  1379#  1381#  1383#  1385#  1387#  1389#  1391#  1393#  1405#  1419#  1420#  1446#  2308#
          2318#  2906#  2919#  2923#  2932#  2936#  2946#  2950#  2960#  2970#  2980#  2989#  3000#  3088#  3113#
          3970#  3980#  3990#  4006#  4076#  4168#  4180#  4184#  4194#  4211#  4221#  4232#  4243#  4254#  4270#
          4363#  5320#  5781#  5880#  5918#  5947#  6090#  6109#  6141#  6178#
MSGENB      1#   1291#  4068#  4069   4355#  4356   5312#  5313
MSGETS      1#   1291#  1446#  2919#  2932#  2946#  2960#  2980#  3000#  3113#  3980#  3997#  4168#  4184#  4211#
          4232#  4254#  5880#  5947#  6090#  6140#  6180#
MSGETT      1#   1291#  3004#  4161#  4204#  4225#  4247#  4345#
MSGNGB      1#   1291#  1293#  1310#  1319#  1321#  1323#  1325#  1327#  1329#  1331#  1333#  1335#  1337#  1339#
          1341#  1343#  1345#  1347#  1349#  1351#  1353#  1356#  1359#  1361#  1363#  1365#  1367#  1369#  1371#
          1373#  1375#  1377#  1379#  1381#  1383#  1385#  1387#  1389#  1391#  1393#  1404#  1405   1418#  1419
          1420   2308#  2318#  2906#  2923#  2936#  2950#  2970#  2989#  3088#  3970#  3990#  4006#  4180#  4194#
          4221#  4243#  5781#  5918#  6108#  6109   6175#  6178
MSGNIN      1#   1291#  1310#  1311   1312   1313   1314   1315   1316#  1317#  1318#  1319#  1320   1321#  1322
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          2977#  2978   2981#  2991#  2992#  2993#  2994#  2995#  2996   2997#  2998   3001#  3004#  3005#  3113#
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          3518   3519#  3520   3523#  3524#  3525#  3526   3527#  3528   3568#  3569#  3570   3571#  3572   3664#
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          4632#  4633#  4634#  4635#  4636   4637#  4638   4679#  4680#  4681   4682#  4683   4709#  4710#  4711
          4712#  4713   4772#  4773#  4774   4775#  4776   4821#  4822#  4823   4824#  4825   5154#  5155#  5156#
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          5281   5282#  5283   5312#  5313#  5314#  5315#  5316   5317   5318   5319   5370#  5371#  5372   5373#
          5374   5393#  5394#  5395   5396#  5397   5448#  5459#  5460#  5461#  5462#  5496#  5497#  5498#  5499#
          5502#  5537#  5560#  5561#  5562#  5563#  5701#  5713#  5714#  5715#  5716#  5834#  5835#  5836#  5837#
          5859#  5860#  5861#  5862#  5880#  5881   5947#  5948   5998#  6038#  6045#  6059#  6060#  6061#  6062#
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```

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M$GNTA     1#   1291#   1446#   2919#   2932#   2946#   2960#   2980#   3000#   3113#   3980#   4168#   4184#   4211#   4232#
        4254#   5880#   5947#   6090#   6140#   6141
M$GNTE     1#   1291#   4270#
M$HAPT     1#   1291#   1310#
M$HNAP     1#   1291#   1310#   1349
M$INCR     1#   1291#   1293#   1418#   2906#   2916#   2920#   2923#   2929#   2933#   2936#   2943#   2947#   2950#   2957#
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        3891#   3970#   3981#   3990#   4006#   4012#   4017#   4022#   4028#   4039#   4049#   4061#   4068#   4077    4083#
        4103#   4137#   4147#   4154#   4159#   4161#   4169#   4180#   4185#   4194#   4199#   4201#   4204#   4212#   4221#
        4233#   4243#   4255#   4270#   4271#   4288#   4330#   4339#   4345#   4355#   4364    4375#   4384#   4413#   4428#
        4454#   4470#   4567#   4637#   4682#   4712#   4775#   4824#   5154#   5172#   5185#   5228#   5282#   5312#   5321
        5373#   5396#   5448#   5459#   5496#   5502#   5537#   5560#   5701#   5713#   5781#   5834#   5859#   5918#   5998#
        6038#   6045#   6059#   6091#   6108#
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M$LDRO     1#   1291#   4011#   4016#   4021#   4027#   4038#   4048#   4102#   4158#   4198#
M$MASK     1#   1291#
M$MCHI     1#   1291#
M$MCLO     1#   1291#
M$MSK1     1#   1291#
M$POP      1#   1291#   1446#   2919#   2932#   2946#   2960#   2980#   3000#   3113#   3980#   3997#   4168#   4184#   4211#
        4232#   4254#   5880#   5947#   6090#   6140#   6180#
M$PRIN     1#   1291#   2908#   2925#   2938#   2952#   2972#   2991#   3229#   3237#   3277#   3300#   3310#   3325#   3339#
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        3888#   4080#   4285#   4327#   4372#   4381#   4409#   4424#   4450#   4466#   4563#   4632#   4709#   4772#
        4821#   5279#   5370#   5393#
M$PUSH     1#   1291#   1293#   1418#   2906#   2923#   2936#   2950#   2970#   2989#   3088#   3970#   3990#   4006#   4180#
        4194#   4221#   4243#   4270#   4271    5781#   5918#   6108#
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        3346#   3369#   3385#   3400#   3417#   3426#   3446#   3466#   3504#   3514#   3523#   3568#   3664#   3695#   3845#
        3888#   4080#   4133#   4143#   4150#   4285#   4327#   4372#   4381#   4409#   4424#   4450#   4466#   4563#   4632#
        4679#   4709#   4772#   4821#   5279#   5370#   5393#
M$PUT1     1#   1291#   2908#   2910    2912    2913    2914    2925#   2926    2927    2938#   2939    2940    2941    2952#
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        3238    3277#   3278    3300#   3301    3310#   3311    3312    3313    3314    3315    3325#   3326    3327    3328
        3339#   3340    3341    3346#   3347    3348    3349    3369#   3370    3371    3372    3373    3385#   3386    3387
        3388    3389    3400#   3401    3402    3403    3404    3417#   3418    3419    3426#   3427    3446#   3447    3466#
        3467    3504#   3505    3506    3514#   3516    3517    3523#   3524    3525    3568#   3569    3664#   3665    3666
        3667    3668    3669    3695#   3696    3697    3698    3699    3700    3845#   3846    3888#   3889    4080#   4081
        4133#   4134    4135    4136    4143#   4144    4145    4146    4150#   4151    4152    4153    4285#   4286    4327#
        4328    4372#   4373    4381#   4382    4409#   4410    4411    4424#   4425    4426    4450#   4451    4452    4466#
        4467    4468    4563#   4564    4565    4632#   4633    4634    4635    4679#   4680    4709#   4710    4772#   4773
        4821#   4822    5279#   5280    5370#   5371    5393#   5394
M$RADI     1#   1291#   4071#   4358#   5315#   6115#   6125#   6130#   6135#
M$RBRO     1#   1291#
M$RNRO     1#   1291#   4038#   4040    4048#   4050    4102#   4104
M$SETS     1#   1291#   1293#   1418#   2906#   2923#   2936#   2950#   2970#   2989#   3088#   3970#   3990#   4006#   4180#
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M$STAR     1#   1291#
M$SVC      1#   1291#   2908#   2916    2919#   2920    2925#   2929    2932#   2933    2938#   2943    2946#   2947    2952#
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        3240    3277#   3280    3300#   3303    3310#   3317    3325#   3330    3339#   3343    3346#   3351    3369#   3375
        3385#   3391    3400#   3406    3417#   3421    3426#   3429    3446#   3449    3466#   3469    3504#   3508    3514#
```

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                4327#   4330    4339#   4345#   4355#   4372#   4375    4381#   4384    4409#   4413    4424#   4428    4450#   4454
                4466#   4470    4563#   4567    4632#   4637    4679#   4682    4709#   4712    4772#   4775    4821#   4824    5154
                5172    5185    5228    5279#   5282    5312#   5370#   5373    5393#   5396    5448#   5459    5496    5502#   5537#
                556C    5701#   5713    5834    5859    5998#   6038#   6045#   6059    6090#   6091
MSTLAB             1#   1291#   2916#   2920#   2929#   2933#   2943#   2947#   2957#   2961#   2977#   2981#   2997#   3001#   3232#
                3240#   3280#   3303#   3317#   3330#   3343#   3351#   3375#   3391#   3406#   3421#   3429#   3449#   3469#   3508#
                3519#   3527#   3571#   3671#   3702#   3848#   3891#   3981#   4012#   4017#   4022#   4028#   4039#   4049#   4061#
                4068#   4083#   4103#   4137#   4147#   4154#   4159#   4161#   4169#   4185#   4199#   4201#   4204#   4212#   4233#
                4255#   4288#   4330#   4339#   4345#   4355#   4375#   4384#   4413#   4428#   4454#   4470#   4567#   4637#   4682#
                4712#   4775#   4824#   5154#   5172#   5185#   5228#   5282#   5312#   5373#   5396#   5448#   5459#   5496#   5502#
                5537#   5560#   5701#   5713#   5834#   5859#   5998#   6038#   6045#   6059#   6091#
MSTSTL             1#   1291#   2916#   2920#   2929#   2933#   2943#   2947#   2957#   2961#   2977#   2981#   2997#   3001#   3232#
                3240#   3280#   3303#   3317#   3330#   3343#   3351#   3375#   3391#   3406#   3421#   3429#   3449#   3469#   3508#
                3519#   3527#   3571#   3671#   3702#   3848#   3891#   3981#   4012#   4017#   4022#   4028#   4039#   4049#   4061#
                4068#   4083#   4103#   4137#   4147#   4154#   4159#   4161#   4169#   4185#   4199#   4201#   4204#   4212#   4233#
                4255#   4288#   4330#   4339#   4345#   4355#   4375#   4384#   4413#   4428#   4454#   4470#   4567#   4637#   4682#
                4712#   4775#   4824#   5154#   5172#   5185#   5228#   5282#   5312#   5373#   5396#   5448#   5459#   5496#   5502#
                5537#   5560#   5701#   5713#   5834#   5859#   5998#   6038#   6045#   6059#   6091#
MSWORD             1#   1291#   1349#   1358    1404#   1406    3004#   4068#   4070    4071#   4161#   4204#   4225#   4247#   4345#
                4355#   4357    4358#   5154#   5155    5156    5157    5172#   5173    5174    5175    5185#   5186    5187    5188
                5228#   5229    5230    5231    5312#   5314    5315#   5459#   5460    5461    5462    5496#   5497    5498    5499
                5560#   5561    5562    5563    5713#   5714    5715    5716    5834#   5835    5836    5837    5859#   5860    5861
                5862    6059#   6060    6061    6062    6115#   6125#   6130#   6135#   6176    6177
MSXFER             1#   1291#
NODCL           1297#   2092    2093    2094    2095    2096    2097    2098    2099    2100    2101    2102    2103    2104    2105
                2106    2107    2108    2109    2110    2114    2115    2116    2117    2118    2119    2120    2121    2122    2123
                2124    2125    2126    2127    2128    2129    2130    2131    2135    2136    2137    2138    2139    2144    2145
                2146    2147    2148    2151    2152    2153    2154    2155    2156    2157    2158    2161    2162    2163    2164
                2165    2166    2169    2170    2171    2172    2176    2177    2180    2181    2183    2184    2187    2190    2191
                2192    2193    2194    2195    2196    2197    2198    2199    2200    2201    2202    2203    2206    2207    2208
                2209    2210    2211    2212    2215    2216    2217    2218    2219    2220    2223    2224    2225    2228    2231
                2232    2233    2234    2235    2236    2237    2238    2241    2242    2243    2248
OPEN               1#   1291#
POINTE             1#   1291#   1303
PRINTB             1#   1291#   2907    2924    2937    2951    2971    2990
PRINTF             1#   1291#   3228    3236    3503    3513    3522    3567    3844    3887    4079    4284    4326    4371    4380
                4408    4423    4449    4465    4562    4631    4678    4708    4771    4820    5278    5369    5392
PRINTS             1#   1291#   3276    3299    3309    3324    3338    3345    3368    3384    3399    3416    3425    3445    3465
                3663    3694
PRINTX             1#   1291#
READBU             1#   1291#   4060
READEF             1#   1291#   4010    4015    4020    4026
RFLAGS             1#   1291#
SETPRI             1#   1291#   4157    4197
SETVEC             1#   1291#   4132    4142    4149
SLASH              1#   1291#
STARS              1#   1291#
SVC                1#   1291#
XFER               1#   1291#   3004#   4161#   4204#   4225#   4247#   4345#
XFERF              1#   1291#
XFERT              1#   1291#
```

. ABS. 034164 000

ERRORS DETECTED: 0

CVCLHA/I,CVCLHA.SEQ/CRF/SOL=SVC34R.MLB,CVCLHA.P11
RUN-TIME: 22 27 3 SECONDS
RUN-TIME RATIO: 95/53=1.8
CORE USED: 19K (37 PAGES)