

RABO-\*\*\*

PDP-11 UDA DRV FMTR  
CZUDEAO

AH-S837A-MC  
FICHE 1 OF 2

OCT 1981  
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IDENTIFICATION

PRODUCT CODE: AC-S836A-MC  
PRODUCT NAME: CZUDEAO PDP-11 UDA DISK DRV FMTR  
PRODUCT DATE: 10-JULY-81  
MAINTAINER: DIAGNOSTIC ENGINEERING

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## 1.0 GENERAL INFORMATION

### 1.1 PROGRAM ABSTRACT

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. THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 2 OF THIS DOCUMENT.

THIS DOCUMENT DESCRIBES THE USAGE OF THE UNIBUS DISK ADAPTER (UDA) DISK FORMATTER FROM THE USER'S VIEWPOINT. THIS DOCUMENT DOES NOT DESCRIBE THE ACTUAL FORMATTING OF THE MEDIA, BUT RATHER THE POSSIBLE INTERACTIONS WITH A HUMAN OPERATOR.

THERE ARE FOUR GENERAL MODES OF FORMATTER OPERATION:

O BUILD - THIS MODE IS GENERALLY USED BY MANUFACTURING PERSONAL TO INITIALLY FORMAT A NEW MEDIA. IT USES DATA STORED ON THE MEDIA, FROM A LOCATION WHICH IS NORMALLY INACCESSABLE, TO LOCATE AND REVECTOR THE BAD BLOCKS ON THE MEDIA.

O REFORMAT - THIS MODE IS USED TO FORMAT A MEDIA WHICH HAS BEEN PREVIOUSLY FORMATTED, AND IS BEING REFORMATTED TO CLEAR EXISTING DATA OR TO CHANGE THE MODE OF THE MEDIA (512/576 BYTES PER SECTOR). IT IS ASSUMED THAT THE FACTORY CONTROL TABLE (FCT) IS STILL IN TACT.

O RESTORE - THIS MODE WILL ONLY BE RUN BY DIGITAL FIELD CIRCUS PERSONAL. IT PROVIDES AN EXTERNAL COPY OF THE FCT, PRODUCED AT BUILD TIME AND STORED OFFLINE BY DIGITAL, TO THE UDA FORMATTER.

O RECONSTRUCT - THIS MODE IS USED WHEN NONE OF THE OTHER MODES ARE POSSIBLE. IT DETECTS BAD BLOCKS BY PREFORMING REPETATIVE READ CHECKS OF EACH SECTOR. FOR THIS REASON, A RECONSTRUCT RUN TAKES CONSIDERABLY LONGER THAN THE OTHER MODES.

### 1.2 SYSTEM REQUIREMENTS

PDP-11 PROCESSOR  
28K MEMORY  
TERMINAL  
PROGRAM LOAD DEVICE  
UDA50 CONTROLLER  
1 OR MORE SDI COMPATIBLE DISK DRIVE

### 1.3 RELATED DOCUMENTS AND STANDARDS

DEC STD 166

## 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 'DDDD'.

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:DDDD	EXECUTE DDDDD PASSES (DDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3.
/EOP:DDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDD = 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
IBR*	INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT)
IXR*	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
LOT	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

THE DM PROGRAM (CURRENTLY KDUBAO.PAK) AND THE HOST PORTION OF THE FORMATTER (CURRENTLY ZDUBAO.BIN) MUST EXIST ON THE BOOT DEVICE. THE FORMATTER IS STARTED BY ENTERING:

RUN ZDUBAO

WHEN THE HOST PORTION HAS BEEN LOADED, SEVERAL UNINFORMATIVE STATEMENTS WILL BE PRINTED, AND THEN THE FOLLOWING PROMPT WILL APPEAR:

DR>

RESPOND WITH:

START/PASS:1

THE NEXT QUESTION LOGGED WILL BE AN OPTION TO CHANGE THE DEFAULT RUN PARAMETERS OF THE FORMATTER. THE QUESTION IS

CHANGE HW (L)?

THE CURRENT DEFAULTS ARE FOR ONE UDA AT ADDRESS 172150, FORMAT THE DRIVE WITH A UNIT PLUG NUMBER OF 0 USING THE EXISTING FCT, AND STOP IF THAT FCT IS BAD. IF THESE DEFAULTS ARE ACCEPTABLE ENTER 'N' AND THE FORMAT WILL BEGIN. IF YOU ENTER 'Y' THEN YOU WILL HAVE TO ANSWER THE FOLLOWING QUESTIONS

UNITS (D)?

THE ANSWER TO THIS QUESTION DEFINES HOW MANY UDAS ARE TO RUN FORMATTERS CONCURRENTLY. A VALID RESPONSE IS A DECIMAL NUMBER FROM 1 TO 64 (MEMORY AVAILABILITY PERMITTING). THE FOLLOWING BLOCK OF QUESTIONS WILL BE REPEATED ONCE FOR EACH UNIT (UDA).

QUESTION 1: UNIBUS ADDRESS OF UDA (A)? XXXXXX

WHERE XXXXXX IS THE CURRENT DEFAULT (INITIALLY 172150). ENTER THE APPROPRIATE EVEN ADDRESS OR ENTER <CR> TO TAKE THE DEFAULT.

QUESTION 2: UNIT NUMBER TO FORMAT (D)? X

X IS THE CURRENT DEFAULT (INITIALLY 0). ENTER THE NUMBER ON THE UNIT PLUG OF THE DRIVE TO BE FORMATTED (DO NOT CONFUSE THE UNIT NUMBER, 0-63, ASSIGNED BY XXDP+ WITH THE UNIT NUMBER OF THE DRIVE).



QUESTION 3: USE RESIDENT FCT (L)? X

X IS THE CURRENT DEFAULT (INITIALLY Y). IF THIS QUESTION IS ANSWERED 'Y' THEN A REFORMAT MODE FORMAT WILL BE PERFORMED AND THE NEXT QUESTION POSED IS NUMBER 4. IF THIS QUESTION IS ANSWERED 'N' THE NEXT QUESTION POSED IS NUMBER 5.

QUESTION 4: STOP IF RESIDENT FCT IS BAD (L)? X

X IS THE CURRENT DEFAULT (INITIALLY Y). IF THIS QUESTION IS ANSWERED 'Y' A REFORMAT MODE FORMAT WILL BE PERFORMED, AND NO FURTHER QUESTIONS WILL BE ASKED. THE FORMAT (OF THIS DRIVE ONLY) WILL BE ABORTED IF THE FCT IS UNUSABLE. IF THIS QUESTION IS ANSWERED 'N' THEN A RECONSTRUCT MODE FORMAT WILL BE PERFORMED EVEN IF THE FCT CAN NOT BE USED. QUESTIONING CONTINUES WITH QUESTION 6.

QUESTION 5: DOWN LINE LOAD FCT (L)? X

X IS THE CURRENT DEFAULT (INITIALLY N). ANSWERING THIS QUESTION 'Y' RESULTS IN A RESTORE MODE FORMAT BEING RUN, AND NO MORE QUESTIONS WILL BE ASKED. ANSWERING 'N' CAUSES QUESTION 6 TO BE ASKED.

QUESTION 6:

SERIAL NUMBER TO BE ASSIGNED (TOTAL 4 WORDS) WORD 1? (D)  
WORD 2? (D)  
WORD 3? (D)  
WORD 4? (D)

THIS IS THE SERIAL NUMBER TO BE ASSIGNED TO THE DISK IF THE FCT WAS NOT USED. THERE IS NO DEFAULT VALUE, A NON-ZERO VALUE SHOULD BE CHOSEN AND IT SHOULD BE UNIQUE WITHIN THE INSTALLATION. NO FURTHER QUESTIONS ARE ASK.

NOTE THAT ONCE THE QUESTIONS HAVE BEEN ANSWERED FOR EACH UNIT, THOSE ANSWERS BECOME THE DEFAULT FOR THAT UNIT.

IF QUESTION 5 WAS ANSWERED 'Y', THEN QUESTION 7 IS ASKED.

QUESTION 7: ENTER FILE NAME FOR DOWN LINE LOAD (A)? XXXXXX.YYY

XXXXXX.YYY IS THE FILE NAME AND EXTENTION OF THE BAD SECTOR FILE IS USED BY THE FORMATTER. IF A NONEXISTENT FILE IS SPECIFIED, THE THE FORMATTER PRINTS A LOOK UP ERROR AND RETURNS TO THE MONITOR.

## 2.5 SOFTWARE QUESTIONS

AFTER YOU HAVE ANSWERED THE HARDWARE QUESTIONS OR AFTER A RESTART OR CONTINUE COMMAND, THE RUNTIME SERVICES WILL ASK FOR SOFTWARE PARAMETERS. THESE PARAMETERS WILL GOVERN SOME DIAGNOSTIC SPECIFIC OPERATION MODES. YOU WILL BE PROMPTED BY 'CHANGE SW (L) ?' IF YOU WISH TO CHANGE ANY PARAMETERS, ANSWER BY TYPING 'Y'. THE SOFTWARE QUESTIONS AND THE DEFAULT VALUES ARE DESCRIBED IN THE NEXT PARAGRAPH(S).

THE FOLLOWING QUESTION MUST BE ANSWERED:

DATE VAX FORMAT (TOTAL 4 WORDS) WORD 1? (D)  
WORD 2? (D)  
WORD 3? (D)  
WORD 4? (D)

THIS IS THE DATE TO BE ASSIGNED TO THE MOST RECENT DATE OF FORMAT  
FACT OF EACH DRIVE FORMATTED. THE DEFAULT IS ZERO.

## 2.6 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

1. BOOT XXDP+
2. GIVE THE DATE AND ANSWER THE LSI AND SCHZ (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 'STAR?'
5. ANSWER THE 'CHANGE HW' QUESTION WITH 'Y'
6. ANSWER / \_ THE HARDWARE QUESTIONS
7. ANSWER THE 'CHANGE SW' QUESTION WITH 'N'

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE  
DEFAULTS FOR FLAGS AND SOFTWARE PARAMETERS. THESE DEFAULTS  
ARE DESCRIBED IN SECTIONS 2.3 AND 2.5.

## 3.0 MESSAGES

### 3.1 ERROR MESSAGES

IF AN ERROR WAS ENCOUNTERED DURING FORMATTING, THE MESSAGE

JDA FORMATTER ERROR OCCURED  
ERROR NUMBER REPORTED WAS XXX  
ERROR CODE WAS YYYYYY DECIMAL  
ERROR NUMBER MEANS:  
EXPLANATION

UNIT X - REMOVED FROM TESTING FOR REMAINDER OF PASS.

IS LOGGED. XXX REPRESENTS THE INTERNAL FORMATTER ERROR NUMBER. IF  
THIS ERROR NUMBER IS KNOWN BY THE HOST PORTION OF THE FORMATTER, THEN  
THE ASCII MESSAGE DESCRIBING THIS ERROR IS ALSO LOGGED. YYYYYY IS AN  
ADDITIONAL ERROR CODE. AN EXPLANATION IS REPORTED WITH EACH ERROR.

### 3.2 OTHER MESSAGES

ONCE THE FORMATTER BEGINS EXECUTING, THIS MESSAGE IS PRINTED.

FORMAT(S) BEGUN

ONCE A CYLINDER HAS BEEN FORMATTED, THIS MESSAGE APPEARS.

UNIT X - CYLINDER YYY COMPLETED

A CAUTIONARY MESSAGE APPEARS IF THE UDA50 HAS NOT COMMUNICATED WITH THE HOST.

THE UDA HAS NOT RESPONDED LATELY

THIS COULD OCCUR IF THE UDA IS DOING A LONG SERIES OF CALCULATIONS OR INDEED IS HUNG.

#### 4.0 PERFORMANCE AND PROGRESS REPORTS

AT THE END OF EACH PASS, THE PASS COUNT IS GIVEN ALONG WITH THE TOTAL NUMBER OF ERRORS REPORTED SINCE THE DIAGNOSTIC WAS STARTED. THE 'EOP' SWITCH CAN BE USED TO CONTROL HOW OFTEN THE END OF PASS MESSAGE IS PRINTED. SECTION 2.2 DESCRIBES SWITCHES.

THE FORMAT HAS BEEN SUCCESSFULLY COMPLETED WHEN THE MESSAGE

FORMAT SUCCESSFULLY COMPLETED

IS LOGGED.

2  
3

2  
3  
4  
5  
6  
7 000000

.TITLE CZUDEAO PDP-11 UDA DISK FORMATTER  
.SBTTL PROGRAM HEADER  
.NLIST CND,LD,BEX

.MCALL SVC  
SVC

; INITIALIZE SUPERVISOR MACROS

000003	C\$REVISION=3	
000003	C\$EDIT=3	
177777	SVCINS=-1	
177777	SVCTST=-1	
177777	SVCSUB=-1	
177777	SVCGBL=-1	
177777	SVCTAG=-1	
000012	.RADIX	10
000000	C\$RESERV=0	
000001	C\$ETST=1	
000002	C\$BSUB=2	
000003	C\$ESUB=3	
000004	C\$BSEG=4	
000005	C\$ESEG=5	
000006	C\$CLP1=6	
000007	C\$RDBU=7	
000010	C\$ESCAPE=8	
000011	C\$INIT=9	
000012	C\$CLEAN=10	
000013	C\$TPRI=11	
000014	C\$PNTB=12	
000015	C\$PNTX=13	
000016	C\$PNTS=14	
000017	C\$PNTF=15	
000020	C\$INLP=16	
000021	C\$RFLA=17	
000022	C\$BRK=18	
000023	C\$MSG=19	
000024	C\$DRPT=20	
000025	C\$RPT=21	
000026	C\$GETB=22	
000027	C\$GETW=23	
000030	C\$GPLO=24	
000031	C\$MEM=25	
000032	C\$EXIT=26	
000033	C\$RESET=27	
000034	C\$OPEN=28	
000035	C\$CLOS=29	
000036	C\$CVEC=30	
000037	C\$SVEC=31	
000040	C\$GPRI=32	
000041	C\$SPRI=33	
000042	C\$GPHRD=34	
000043	C\$GMAN=35	
000044	C\$DCLN=36	
000045	C\$CEFG=37	
000046	C\$SEFG=38	
000047	C\$REFG=39	
000050	C\$MANI=40	
000051	C\$DODU=41	
000052	C\$AU 42	

000053	C\$DU=43
000054	C\$ERSF=44
000055	C\$ERDF=45
000056	C\$ERHRD=46
000057	C\$ERSOFT=47
000060	C\$ERROR=48
000061	C\$AUTO=49
000062	C\$CLCK=50
000377	C\$QIO=255
000010	.RADIX
000035	E\$LOAD=35
002100	E\$END=2100
000000	T\$TESTNUM=0
000000	T\$SUBNUM=0
000000	T\$ERRNUM=0
010000	T\$TAGNUM=10000
010000	T\$LSYM=10000
177777	T\$TAGLEV=-1
177777	T\$NESTLEV=-1
177777	T\$SAVLEV=-1
177777	T\$SEGLEV=-1
177777	T\$TSTMAC=-1
000000	T\$TSTSEQ=0
000000	T\$PTNUM=0
000000	T\$LAST=0
000000	T\$GMANID=0
000000	F\$MOD=0
000001	F\$TEST=1
000002	F\$SUB=2
000003	F\$SEG=3
000004	F\$HARD=4
000005	F\$SOFT=5
000006	F\$INIT=6
000007	F\$CLEAN=7
000010	F\$SRV=10
000011	F\$MSG=11
000012	F\$RPT=12
000013	F\$HW=13
000014	F\$SW=14
000015	F\$AU=15
000016	F\$DU=16
000017	F\$PWR=17
000020	F\$AUTO=20
000021	F\$PROT=21
000040	F\$BGN=40
000041	F\$END=41
000050	F\$JMP=50
000041	I\$MOD=F\$END
000041	I\$TST=F\$END
000041	I\$SUB=F\$END
000041	I\$SEG=F\$END
000041	I\$INIT=F\$END
000041	I\$CLN=F\$END
000041	I\$SRV=F\$END
000041	I\$MSG=F\$END
000041	I\$RPT=F\$END
000041	I\$AU=F\$END

8

```

000041 I$DU=F$END
000041 I$PWR=F$END
000041 I$SETUP=F$END
000041 I$PTAB=F$END
000041 I$AUTO=F$END
000041 I$PROT=F$END
000000 G$PRML=0
000001 G$PRMA=1
000002 G$PRMD=2
000003 G$DISP=3
000004 G$XFER=4
000000 G$NO=0*^D8
000010 G$YES=1*^D8
000000 G$RADB=0*^D16
000020 G$RADO=1*^D16
000040 G$RADD=2*^D16
000120 G$RADL=5*^D16
000140 G$RADA=6*^D16
000376 G$OFF SIZE=^D254
000372 G$DELM=^D250
000400 G$OFF SET=1*^D256
000400 X$OFF SET=1*^D256
000200 G$CNTOP=1*^D128
000400 G$EXCP=1*^D256
000001 G$LOLIM=1
000002 G$HILIM=2
000000 X$ALWAYS=0*^D16
000020 X$TRUE=1*^D16
000040 X$FALSE=2*^D16
000000 O$BGNSFT=0
000000 O$BGNRPT=0
000000 O$GNSW=0
000000 O$APTS=0
000000 O$AU=0
000000 O$DU=0
000000 O$ERRTBL=0
000000 O$SETUP=0
000000 O$POINTER=0
010000 S$LSYM=T$LSYM
000167 J$JMP=167
.IIF NDF ASSEMBLY, ASSEMBLY=10
.IIF NDF DIAGMCALLS, DIAGMCALLS=0
.IF EQ DIAGMCALLS
.MCALL MSMCHIGH
MSMCHIGH
.ENDC
.IF EQ ASSEMBLY=10
.MCALL MSMCLOW
MSMCLOW
.ENDC

000000
000000

8
9
10
11
12
13
14 000000 SVCINS- 0 ; INSTRUCTIONS
; CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
; TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS. CHANGE THE
; SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS. YOU MAY
; CHANGE THE SYMBOLS AT ANY POINT IN THIS PROGRAM.

```

```

15      000000      SVCTST= 0      ; TEST TAGS
16      000000      SVCSUB= 0      ; SUBTEST TAGS
17      000000      SVCGBL= 0      ; GLOBAL TAGS
18      000000      SVCTAG= 0      ; OTHER TAGS
19
20
21 000000      .ENABL APS
22      .ENABL AMA
23      002000      = 2000
24
25 002000      BGNMOD
      .MCALL MSGNGBL,M$PUSH
      .IF NE F$END-I$MOD
      .ERROR ;'BGNMOD' IN MOD
      .MEXIT
      .IFF
      000040      I$MOD=F$BGN
      .ENDC
      .IF NB
      MSGNGBL
      .ENDC
      002000      M$PUSH T$NS,T$NESTLEV,F$MOD
      002000      .MCALL M$INCR,M$SETS
      000000      M$INCR T$NESTLEV
      002000      T$NESTLEV=T$NESTLEV+1
      000000      M$SETS T$NS,\T$NESTLEV,F$MOD
      T$NSO=F$MOD
26
27      ;++
28      ; THE PROGRAM HEADER IS THE INTERFACE BETWEEN
29      ; THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
30      ;--
31
32 002000      POINTER BGNRPT,BGNSW,BGNSFT,ERRTBL,BGNSETUP
      .IRP PX,<BGNRPT,BGNSW,BGNSFT,ERRTBL,BGNSETUP,>
      .IF IDN <ALL>,<PX>
      OS$BGNSFT=1
      OS$BGNRPT=1
      OS$GNSW=1
      OS$APTS=1
      OS$AU=1
      OS$DU=1
      OS$ERRTBL=1
      OS$SETUP=1
      OS$POINTER=1
      .MEXIT
      .ENDC
      .IF IDN <NONE>,<PX>
      OS$BGNSFT=0
      OS$BGNRPT=0
      OS$GNSW=0
      OS$APTS=0
      OS$AU=0
      OS$DU=0
      OS$ERRTBL=0
      OS$SETUP=0
      OS$POINTER=1

```



```
.MEXIT  
.ENDC  
.IF IDN <BGNSFT>,<PX>  
O$BGNSFT=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNRPT>,<PX>  
O$BGNRPT=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNSW>,<PX>  
O$GNSW=1  
O$POINTER=1  
.ENDC  
.IF IDN <APTSTAT>,<PX>  
O$APTS=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNAU>,<PX>  
O$AU=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNDU>,<PX>  
O$DU=1  
O$POINTER=1  
.ENDC  
.IF IDN <ERRTBL>,<PX>  
O$ERRTBL=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNSSETUP>,<PX>  
O$SETUP=1  
O$POINTER=1  
.ENDC  
.ENDM  
.IF IDN <ALL>,<BGNRPT>  
O$BGNSFT=1  
O$BGNRPT=1  
O$GNSW=1  
O$APTS=1  
O$AU=1  
O$DU=1  
O$ERRTBL=1  
O$SETUP=1  
O$POINTER=1  
.MEXIT  
.ENDC  
.IF IDN <NONE>,<BGNRPT>  
O$BGNSFT=0  
O$BGNRPT=0  
O$GNSW=0  
O$APTS=0  
O$AU=0  
O$DU=0  
O$ERRTBL=0  
O$SETUP=0  
O$POINTER=1
```

000001  
000001

```
.MEXIT  
.ENDC  
.IF IDN <BGNSFT>,<BGNRPT>  
O$BGNSFT=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNRPT>,<BGNRPT>  
O$BGNRPT=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNSW>,<BGNRPT>  
O$GNSW=1  
O$POINTER=1  
.ENDC  
.IF IDN <APTSTAT>,<BGNRPT>  
O$APTS=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNAU>,<BGNRPT>  
O$AU=1  
O$POINTER-1  
.ENDC  
.IF IDN <BGNDU>,<BGNRPT>  
O$DU=1  
O$POINTER=1  
.ENDC  
.IF IDN <ERRTBL>,<BGNRPT>  
O$ERRTBL=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNSW>,<BGNRPT>  
O$SETUP=1  
O$POINTER=1  
.ENDC  
.IF IDN <ALL>,<BGNSW>  
O$BGNSFT=1  
O$BGNRPT=1  
O$GNSW=1  
O$APTS=1  
O$AU=1  
O$DU=1  
O$ERRTBL=1  
O$SETUP=1  
O$POINTER=1  
.MEXIT  
.ENDC  
.IF IDN <NONE>,<BGNSW>  
O$BGNSFT=0  
O$BGNRPT=0  
O$GNSW=0  
O$APTS=0  
O$AU=0  
O$DU=0  
O$ERRTBL=0  
O$SETUP=0  
O$POINTER=1  
.MEXIT
```

000001  
000001

```
.ENDC
.IF IDN <BGNSFT>,<BGNSW>
O$BGNSFT=1
O$POINTER=1
.ENDC
.IF IDN <BGNRPT>,<BGNSW>
O$BGNRPT=1
O$POINTER=1
.ENDC
.IF IDN <BGNSW>,<BGNSW>
O$GNSW=1
O$POINTER=1
.ENDC
.IF IDN <APTSTAT>,<BGNSW>
O$APTS=1
O$POINTER=1
.ENDC
.IF IDN <BGNAU>,<BGNSW>
O$AU=1
O$POINTER=1
.ENDC
.IF IDN <BGNDU>,<BGNSW>
O$DU=1
O$POINTER=1
.ENDC
.IF IDN <ERRTBL>,<BGNSW>
O$ERRTBL=1
O$POINTER=1
.ENDC
.IF IDN <BGNSSETUP>,<BGNSW>
O$SETUP=1
O$POINTER=1
.ENDC
.IF IDN <ALL>,<BGNSFT>
O$BGNSFT=1
O$BGNRPT=1
O$GNSW=1
O$APTS=1
O$AU=1
O$DU=1
O$ERRTBL=1
O$SETUP=1
O$POINTER=1
.MEXIT
.ENDC
.IF IDN <NONE>,<BGNSFT>
O$BGNSFT=0
O$BGNRPT=0
O$GNSW=0
O$APTS=0
O$AU=0
O$DU=0
O$ERRTBL=0
O$SETUP=0
O$POINTER-1
.MEXIT
.ENDC
```

000001  
000001

```
.IF IDN <BGNSFT>,<BGNSFT>  
O$BGNSFT=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNRPT>,<BGNSFT>  
O$BGNRPT=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNSW>,<BGNSFT>  
O$GNSW=1  
O$POINTER=1  
.ENDC  
.IF IDN <APTSTAT>,<BGNSFT>  
O$APTS=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNAU>,<BGNSFT>  
O$AU=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNDU>,<BGNSFT>  
O$DU=1  
O$POINTER=1  
.ENDC  
.IF IDN <ERRTBL>,<BGNSFT>  
O$ERRTBL=1  
O$POINTER=1  
.ENDC  
.IF IDN <BGNSSETUP>,<BGNSFT>  
O$SETUP=1  
O$POINTER=1  
.ENDC  
.IF IDN <ALL>,<ERRTBL>  
O$BGNSFT=1  
O$BGNRPT=1  
O$GNSW=1  
O$APTS=1  
O$AU=1  
O$DU=1  
O$ERRTBL=1  
O$SETUP=1  
O$POINTER=1  
.MEXIT  
.ENDC  
.IF IDN <NONE>,<ERRTBL>  
O$BGNSFT=0  
O$BGNRPT=0  
O$GNSW=0  
O$APTS=0  
O$AU=0  
O$DU=0  
O$ERRTBL=0  
O$SETUP=0  
O$POINTER=1  
.MEXIT  
.ENDC  
.IF IDN <BGNSFT>,<ERRTBL>
```

000001  
000001

```
O$BGNSFT=1
O$POINTER=1
.ENDC
.IF IDN <BGNRPT>,<ERRTBL>
O$BGNRPT=1
O$POINTER=1
.ENDC
.IF IDN <BGNSW>,<ERRTBL>
O$GNSW=1
O$POINTER=1
.ENDC
.IF IDN <APTSTAT>,<ERRTBL>
O$APTS=1
O$POINTER=1
.ENDC
.IF IDN <BGNAU>,<ERRTBL>
O$AU=1
O$POINTER=1
.ENDC
.IF IDN <BGNDU>,<ERRTBL>
O$DU=1
O$POINTER=1
.ENDC
.IF IDN <ERRTBL>,<ERRTBL>
O$ERRTBL=1
O$POINTER=1
.ENDC
.IF IDN <BGNSETUP>,<ERRTBL>
O$SETUP=1
O$POINTER=1
.ENDC
.IF IDN <ALL>,<BGNSETUP>
O$BGNSFT=1
O$BGNRPT=1
O$GNSW=1
O$APTS=1
O$AU=1
O$DU=1
O$ERRTBL=1
O$SETUP=1
O$POINTER=1
.MEXIT
.ENDC
.IF IDN <NONE>,<BGNSETUP>
O$BGNSFT=0
O$BGNRPT=0
O$GNSW=0
O$APTS=0
O$AU=0
O$DU=0
O$ERRTBL=0
O$SETUP=0
O$POINTER=1
.MEXIT
.ENDC
.IF IDN <BGNSFT>,<BGNSETUP>
O$BGNSFT=1
```

000001  
000001

```
O$POINTER=1
.ENDC
.IF IDN <BGNRPT>,<BGNSETUP>
O$BGNRPT=1
O$POINTER=1
.ENDC
.IF IDN <BGNSW>,<BGNSETUP>
O$GNSW=1
O$POINTER=1
.ENDC
.IF IDN <APTSTAT>,<BGNSETUP>
O$APTS=1
O$POINTER=1
.ENDC
.IF IDN <BGNAU>,<BGNSETUP>
O$AU=1
O$POINTER=1
.ENDC
.IF IDN <BGNDU>,<BGNSETUP>
O$DU=1
O$POINTER=1
.ENDC
.IF IDN <ERRTBL>,<BGNSETUP>
O$ERRTBL=1
O$POINTER=1
.ENDC
.IF IDN <BGNSETUP>,<BGNSETUP>
O$SETUP=1
O$POINTER=1
.ENDC
.IF IDN <ALL>,<>
O$BGNSFT=1
O$BGNRPT=1
O$GNSW=1
O$APTS=1
O$AU=1
O$DU=1
O$ERRTBL=1
O$SETUP=1
O$POINTER=1
.MEXIT
.ENDC
.IF IDN <NONE>,<>
O$BGNSFT=0
O$BGNRPT=0
O$GNSW=0
O$APTS=0
O$AU=0
O$DU=0
O$ERRTBL=0
O$SETUP=0
O$POINTER=1
.MEXIT
.ENDC
.IF IDN <BGNSFT>,<>
O$BGNSFT=1
O$POINTER=1
```

```
.ENDC
  .IF IDN <BGNRPT>,<>
  OSBGNRPT=1
  OSPOINTER=1
  .ENDC
  .IF IDN <BGNSW>,<>
  OSGNSW=1
  OSPOINTER=1
  .ENDC
  .IF IDN <APTSTAT>,<>
  OSAPTS=1
  OSPOINTER=1
  .ENDC
  .IF IDN <BGNAU>,<>
  OSAU=1
  OSPOINTER=1
  .ENDC
  .IF IDN <BGNDU>,<>
  OSDU=1
  OSPOINTER=1
  .ENDC
  .IF IDN <ERRTBL>,<>
  OSERRTBL=1
  OSPOINTER=1
  .ENDC
  .IF IDN <BGNSETUP>,<>
  OSSETUP=1
  OSPOINTER=1
  .ENDC
  .IF IDN <ALL>,<>
  OSBGNSFT=1
  OSBGNRPT=1
  OSGNSW=1
  OSAPTS=1
  OSAU=1
  OSDU=1
  OSERRTBL=1
  OSSETUP=1
  OSPOINTER=1
  .MEXIT
  .ENDC
  .IF IDN <NONE>,<>
  OSBGNSFT=0
  OSBGNRPT=0
  OSGNSW=0
  OSAPTS=0
  OSAU=0
  OSDU=0
  OSERRTBL=0
  OSSETUP=0
  OSPOINTER=1
  .MEXIT
  .ENDC
  .IF IDN <BGNSFT>,<>
  OSBGNSFT=1
  OSPOINTER=1
  .ENDC
```

```
.IF IDN <BGNRPT>,<>
O$BGNRPT=1
O$POINTER=1
.ENDC
.IF IDN <BGNSW>,<>
O$GNSW=1
O$POINTER=1
.ENDC
.IF IDN <APTSTAT>,<>
O$APTS=1
O$POINTER=1
.ENDC
.IF IDN <BGNAU>,<>
O$AU=1
O$POINTER=1
.ENDC
.IF IDN <BGNDU>,<>
O$DU=1
O$POINTER=1
.ENDC
.IF IDN <ERRTBL>,<>
O$ERRTBL=1
O$POINTER=1
.ENDC
.IF IDN <BGNSSETUP>,<>
O$SETUP=1
O$POINTER=1
.ENDC
.IF IDN <ALL>,<>
O$BGNSFT=1
O$BGNRPT=1
O$GNSW=1
O$APTS=1
O$AU=1
O$DU=1
O$ERRTBL=1
O$SETUP=1
O$POINTER=1
.MEXIT
.ENDC
.IF IDN <NONE>,<>
O$BGNSFT=0
O$BGNRPT=0
O$GNSW=0
O$APTS=0
O$AU=0
O$DU=0
O$ERRTBL=0
O$SETUP=0
O$POINTER=1
.MEXIT
.ENDC
.IF IDN <BGNSFT>,<>
O$BGNSFT=1
O$POINTER=1
.ENDC
.IF IDN <BGNRPT>,<>
```



```
O$BGNRPT=1
O$POINTER=1
.ENDC
.IF IDN <BGNSW>,<>
O$GNSW=1
O$POINTER=1
.ENDC
.IF IDN <APTSTAT>,<>
O$APTS=1
O$POINTER=1
.ENDC
.IF IDN <BGNAU>,<>
O$AU=1
O$POINTER=1
.ENDC
.IF IDN <BGNDU>,<>
O$DU=1
O$POINTER=1
.ENDC
.IF IDN <ERRTBL>,<>
O$ERRTBL=1
O$POINTER=1
.ENDC
.IF IDN <BGNSETUP>,<>
O$SETUP=1
O$POINTER=1
.ENDC
.IF IDN <ALL>,<>
O$BGNST=1
O$BGNRPT=1
O$GNSW=1
O$APTS=1
O$AU=1
O$DU=1
O$ERRTBL=1
O$SETUP=1
O$POINTER=1
.MEXIT
.ENDC
.IF IDN <NONE>,<>
O$BGNST=0
O$BGNRPT=0
O$GNSW=0
O$APTS=0
O$AU=0
O$DU=0
O$ERRTBL=0
O$SETUP=0
O$POINTER=1
.MEXIT
.ENDC
.IF IDN <BGNST>,<>
O$BGNST=1
O$POINTER=1
.ENDC
.IF IDN <BGNRPT>,<>
O$BGNRPT 1
```

```
O$POINTER=1
.ENDC
.IF IDN <BGNSW>,<>
O$GNSW=1
O$POINTER=1
.ENDC
.IF IDN <APTSTAT>,<>
O$APTS=1
O$POINTER=1
.ENDC
.IF IDN <BGNAU>,<>
O$AU=1
O$POINTER=1
.ENDC
.IF IDN <BGNDU>,<>
O$DU=1
O$POINTER=1
.ENDC
.IF IDN <ERRTBL>,<>
O$ERRTBL=1
O$POINTER=1
.ENDC
.IF IDN <BGNSETUP>,<>
O$SETUP=1
O$POINTER=1
.ENDC
.IF EQ O$POINTER
.ERROR :ILL. ARGS. ON 'POINTER'
.ENDC
```

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48

```
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
: IF ANY OPTIONAL POINTERS ARE NOT TO BE USED IN THE 'HEADER', CHANGE
: 'POINTER' TO CONTAIN THE CORRECT ARGUMENTS. IF NO OPTIONAL
: POINTERS ARE TO BE USED, CHANGE 'POINTER' TO BE 'POINTER NONE'.
: ARGUMENT      OPTION
: -----      -
: BGNRPT        REPORT CODE
: BGNSW         SOFTWARE TABLE
: BGNSFT        SOFTWARE TABLE QUESTIONS
: BGNAU         ADD CODE
: BGNDU         DROP CODE
: ERRTBL        ERROR TABLE
: BGNSETUP      ASSEMBLED P-TABLES
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

49 002000  
002000  
002000

```
HEADER ZUDFA0,B,0,1800.,1,PRI07
.MCALL M$HAPT,M$HNAP
M$HAPT ZUDFA0,B,0,1800.,1,PRI07
.MCALL M$GNGBL,M$GNINS,M$BYTE,M$DATA
.IF B ZUDFA0
.ERROR : MISSING DIAG. NAME
.MEXIT
.ENDC
MSGNGBL L$NAME,<<;DIAGNOSTIC NAME>>
.MCALL M$GEN
.IF NB,L$NAME
.IF NB,<;DIAGNOSTIC NAME>
```

PROGRAM HEADER

002000

```

MSGEN L$NAME,.,SVCGBL,<;DIAGNOSTIC NAME>
  .IF LE SVCGBL
002000 L$NAME:: ;DIAGNOSTIC NAME
  .MEXIT
  .ENDC
  .LIST

```

L\$NAME::

000007

```

  .NLIST
  .ENDC
  .IF B,<;DIAGNOSTIC NAME>
MSGEN L$NAME,.,SVCGBL,< >
  .ENDC
  .ENDC
T$ARGCNT=^D7
  .IRPC CHAR,<ZUDFAO>
MSGNINS <.ASCII /CHAR/>
T$ARGCNT=T$ARGCNT-1
  .IF LT T$ARGCNT
  .ERROR ;PROG NAME TOO BIG
  .MEXIT
  .ENDC
  .ENDM
002000 MSGNINS <.ASCII /Z/>
  .IF LT SVCINS
  .ASCII /Z/
  .MEXIT
  .ENDC
  .IF EQ SVCINS
002000 132 .ASCII /Z/
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST

```

.ASCII /Z/

000006

```

  .NLIST
  .ENDC
T$ARGCNT=T$ARGCNT-1
  .IF LT T$ARGCNT
  .ERROR ;PROG NAME TOO BIG
  .MEXIT
  .ENDC
002001 MSGNINS <.ASCII /U/>
  .IF LT SVCINS
  .ASCII /U/
  .MEXIT
  .ENDC
  .IF EQ SVCINS
002001 125 .ASCII /U/
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST

```

.ASCII /U/

000005

```

  .NLIST
  .ENDC
T$ARGCNT-T$ARGCNT-1
  .IF LT T$ARGCNT

```

```
002002      .ERROR ;PROG NAME TOO BIG
            .MEXIT
            .ENDC
            MSGNINS <.ASCII /D/>
            .IF LT SVCINS
            .ASCII /D/
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .ASCII /D/
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
            .NLIST
            .ASCII /D/
            .ENDC
000004      TSARGCNT=TSARGCNT-1
            .IF LT TSARGCNT
            .ERROR ;PROG NAME TOO BIG
            .MEXIT
            .ENDC
002003      MSGNINS <.ASCII /F/>
            .IF LT SVCINS
            .ASCII /F/
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .ASCII /F/
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
            .NLIST
            .ASCII /F/
            .ENDC
000003      TSARGCNT=TSARGCNT-1
            .IF LT TSARGCNT
            .ERROR ;PROG NAME TOO BIG
            .MEXIT
            .ENDC
002004      MSGNINS <.ASCII /A/>
            .IF LT SVCINS
            .ASCII /A/
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .ASCII /A/
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
            .NLIST
            .ASCII /A/
            .ENDC
000002      TSARGCNT=TSARGCNT-1
            .IF LT TSARGCNT
```

```
002005      .ERROR ;PROG NAME TOO BIG  
            .MEXIT  
            .ENDC  
            MSGNINS <.ASCII /0/>  
            .IF LT SVCINS  
            .ASCII /0/  
            .MEXIT  
            .ENDC  
002005      .IF EQ SVCINS  
            .ASCII /0/  
            .MEXIT  
            .ENDC  
            .IF GT SVCINS  
            .LIST
```

.ASCII /0/

```
            .NLIST  
000001      .ENDC  
            T$ARGCNT=T$ARGCNT-1  
            .IF LT T$ARGCNT  
            .ERROR ;PROG NAME TOO BIG  
            .MEXIT  
            .ENDC  
000001      .REPT T$ARGCNT  
            M$BYTE 0  
            .ENDR  
002006      M$BYTE 0  
            .MCALL M$GNINS  
            .IRP N,<0>  
            MSGNINS <.BYTE N>  
            .ENDM  
002006      MSGNINS <.BYTE 0>  
            .IF LT SVCINS  
            .BYTE 0  
            .MEXIT  
            .ENDC  
002006      .IF EQ SVCINS  
            .BYTE 0  
            .MEXIT  
            .ENDC  
            .IF GT SVCINS  
            .LIST
```

.BYTE 0

```
            .NLIST  
002007      .ENDC  
            M$BYTE 0  
            .MCALL M$GNINS  
            .IRP N,<0>  
            MSGNINS <.BYTE N>  
            .ENDM  
002007      MSGNINS <.BYTE 0>  
            .IF LT SVCINS  
            .BYTE 0  
            .MEXIT  
            .ENDC  
002007      .IF EQ SVCINS  
            .BYTE 0  
            .MEXIT
```

```

                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
                                .IF NB B
002010   MSDATA  L$REV,.ASCII,</B/>,<<;REVISION LEVEL>>
                                .MCALL  MSGNGBL,MSGNINS
002010   .IF NB <;REVISION LEVEL>
                                MSGNGBL L$REV,<<;REVISION LEVEL>>
                                .MCALL  M$GEN
                                .IF NB,L$REV
002010   .IF NB,<;REVISION LEVEL>
                                M$GEN  L$REV,.,SVCGBL,<;REVISION LEVEL>
002010   .IF LE SVCGBL
                                L$REV:;
                                ;REVISION LEVEL
                                .MEXIT
                                .ENDC
                                .LIST
                                .NLIST
                                .ENDC
                                .IF B,<;REVISION LEVEL>
                                M$GEN  L$REV,.,SVCGBL,< >
                                .ENDC
                                .ENDC
                                .ENDC
                                .IF B <;REVISION LEVEL>
                                MSGNGBL L$REV
002010   .ENDC
                                MSGNINS <.ASCII /B/>
                                .IF LT SVCINS
                                .ASCII /B/
                                .MEXIT
                                .ENDC
002010   .IF EQ SVCINS
                                .ASCII /B/
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
                                .IFF
                                .ERROR ; MISSING REV. LEVEL
                                MSDATA L$REV,.ASCII,</?/>,<<;REVISION LEVEL>>
                                .ENDC
                                .IF NB 0
002011   MSDATA  L$DEPO,.ASCII,</0/>,<<;0>>
                                .MCALL  MSGNGBL,MSGNINS
002011   .IF NB <;0>
                                MSGNGBL L$DEPO,<<;0>>
                                .MCALL  M$GEN
                                .IF NB,L$DEPO
                                .IF NB,<;0>
                                .ASCII /B/
                                .BYTE 0
                                L$REV:;

```

PROGRAM HEADER

002011

```

MSGEN L$DEPO,.,SVCGBL,<;0>
  .IF LE SVCGBL
002011 L$DEPO:: ;0
  .MEXIT
  .ENDC
  .LIST

```

L\$DEPO::

```

  .NLIST
  .ENDC
  .IF B,<;0>
MSGEN L$DEPO,.,SVCGBL,< >
  .ENDC
  .ENDC
  .ENDC

```

002011

```

  .IF B <;0>
MSGNGBL L$DEPO
  .ENDC
MSGNINS <.ASCII /0/>
  .IF LT SVCINS
  .ASCII /0/
  .MEXIT
  .ENDC

```

002011

060

```

  .IF EQ SVCINS
  .ASCII /0/
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST

```

.ASCII /0/

```

  .NLIST
  .ENDC
  .IFF
  .ERROR ; MISSING DEPO.
MSGDATA L$DEPO,.ASCII,</?/;>,<<;0>>
  .ENDC
  .IF EQ OS$SETUP
MSGDATA L$UNIT,.WORD,0,<<;NUMBER OF UNITS>>
  .IFF

```

002012

```

MSGDATA L$UNIT,.WORD,T$PTHV,<<;NUMBER OF UNITS>>
  .MCALL MSGNGBL;MSGNINS
  .IF NB <;NUMBER OF UNITS>
002012 MSGNGBL L$UNIT,<<;NUMBER OF UNITS>>
  .MCALL MSGEN
  .IF NB,L$UNIT
  .IF NB,<;NUMBER OF UNITS>
002012 MSGEN L$UNIT,.,SVCGBL,<;NUMBER OF UNITS>
  .IF LE SVCGBL
002012 L$UNIT:: ;NUMBER OF UNITS
  .MEXIT
  .ENDC
  .LIST

```

L\$UNIT::

```

  .NLIST
  .ENDC
  .IF B,<;NUMBER OF UNITS>
MSGEN L$UNIT,.,SVCGBL,< >
  .ENDC

```

```
002012 .ENDC
        .ENDC
        .IF B <;NUMBER OF UNITS>
        MSGNGBL L$UNIT
        .ENDC
        MSGNINS <.WORD T$PTHV>
        .IF LT SVCINS
        .WORD T$PTHV
        .MEXIT
        .ENDC
002012 000001 .IF EQ SVCINS
        .WORD T$PTHV
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                .WORD T$PTHV
        .ENDC
        .ENDC
        .IF B 1800.
        .ERROR ; LONGEST TEST TIME MISSING
        MS$DATA L$TIML, .WORD, 0, <<;LONGEST TEST TIME>>
        .IFF
002014 MS$DATA L$TIML, .WORD, 1800., <<;LONGEST TEST TIME>>
        .MCALL MSGNGBL, MSGNINS
002014 .IF NB <;LONGEST TEST TIME>
        MSGNGBL L$TIML, <<;LONGEST TEST TIME>>
        .MCALL M$GEN
        .IF NB, L$TIML
002014 .IF NB, <;LONGEST TEST TIME>
        M$GEN L$TIML, :, SVCGBL, <;LONGEST TEST TIME>
002014 .IF LE SVCGBL
        L$TIML:: ;LONGEST TEST TIME
        .MEXIT
        .ENDC
        .LIST
                                L$TIML::
                                .NLIST
        .ENDC
        .IF B, <;LONGEST TEST TIME>
        M$GEN L$TIML, :, SVCGBL, < >
        .ENDC
        .ENDC
        .ENDC
        .IF B <;LONGEST TEST TIME>
002014 MSGNGBL L$TIML
        .ENDC
        MSGNINS <.WORD 1800.>
        .IF LT SVCINS
        .WORD 1800.
        .MEXIT
        .ENDC
002014 003410 .IF EQ SVCINS
        .WORD 1800.
        .MEXIT
        .ENDC
```



```
.IF GT SVCINS
.LIST
                                .WORD 1800.
                                .NLIST
.ENDC
.ENDC
002016 M$DATA L$HPCP,.WORD,L$HARD,<<;POINTER TO H.W. QUES.>>
.MCALL MSGNGBL,MSGNINS
002016 .IF NB <;POINTER TO H.W. QUES.>
MSGNGBL L$HPCP,<<;POINTER TO H.W. QUES.>>
.MCALL MSGEN
002016 .IF NB,L$HPCP
002016 .IF NB,<;POINTER TO H.W. QUES.>
MSGEN L$HPCP,.,SVCGBL,<;POINTER TO H.W. QUES.>
002016 .IF LE SVCGBL
L$HPCP:: ;POINTER TO H.W. QUES.
.MEXIT
.ENDC
.LIST
                                L$HPCP::
                                .NLIST
.ENDC
002016 .IF B,<;POINTER TO H.W. QUES.>
MSGEN L$HPCP,.,SVCGBL,< >
.ENDC
.ENDC
.ENDC
002016 .IF B <;POINTER TO H.W. QUES.>
MSGNGBL L$HPCP
.ENDC
MSGNINS <.WORD L$HARD>
002016 .IF LT SVCINS
.WORD L$HARD
.MEXIT
.ENDC
002016 014734 .IF EQ SVCINS
.WORD L$HARD
.MEXIT
.ENDC
002016 .IF GT SVCINS
.LIST
                                .WORD L$HARD
                                .NLIST
.ENDC
002020 .IF EQ OSBGNSFT
M$DATA L$SPCP,.WORD,0,<<;POINTER TO S.W. QUES.>>
.IFF
002020 M$DATA L$SPCP,.WORD,L$SOFT,<<;POINTER TO S.W. QUES.>>
.MCALL MSGNGBL,MSGNINS
002020 .IF NB <;POINTER TO S.W. QUES.>
MSGNGBL L$SPCP,<<;POINTER TO S.W. QUES.>>
.MCALL MSGEN
002020 .IF NB,L$SPCP
002020 .IF NB,<;POINTER TO S.W. QUES.>
MSGEN L$SPCP,.,SVCGBL,<;POINTER TO S.W. QUES.>
002020 .IF LE SVCGBL
L$SPCP:: ;POINTER TO S.W. QUES.
```

```
.MEXIT
.ENDC
.LIST

                                L$SPCP::

                                .NLIST
.ENDC
.IF B,<;PTR. TO DEF. H.W. PTABLE>
MSGEN L$SPCP,::,SVCGBL,< >
.ENDC
.ENDC
.ENDC
.IF B <;PTR. TO DEF. H.W. PTABLE>
MSGNGBL L$SPCP
.ENDC
002020 MSGNINS <.WORD L$SOFT>
.IF LT SVCINS
.WORD L$SOFT
.MEXIT
.ENDC
002020 015350 .IF EQ SVCINS
.WORD L$SOFT
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

                                .NLIST
                                .WORD L$SOFT
.ENDC
.ENDC
002022 M$DATA L$HPTP,.WORD,L$HW,<<;PTR. TO DEF. H.W. PTABLE>>
.MCALL MSGNGBL,MSGNINS
002022 .IF NB <;PTR. TO DEF. H.W. PTABLE>
MSGNGBL L$HPTP,<<;PTR. TO DEF. H.W. PTABLE>>
.MCALL MSGEN
.IF NB,L$HPTP
.IF NB,<;PTR. TO DEF. H.W. PTABLE>
002022 MSGEN L$HPTP,::,SVCGBL,<;PTR. TO DEF. H.W. PTABLE>
002022 .IF LE SVCGBL
L$HPTP:: ;PTR. TO DEF. H.W. PTABLE
.MEXIT
.ENDC
.LIST

                                L$HPTP::

                                .NLIST
.ENDC
.IF B,<;PTR. TO DEF. H.W. PTABLE>
MSGEN L$HPTP,::,SVCGBL,< >
.ENDC
.ENDC
.ENDC
.IF B <;PTR. TO DEF. H.W. PTABLE>
MSGNGBL L$HPTP
.ENDC
002022 MSGNINS <.WORD L$HW>
.IF LT SVCINS
.WORD L$HW
.MEXIT
```

```
002022 002130 .ENDC
                .IF EQ SVCINS
                .WORD L$HW
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                .NLIST
                .ENDC
                .IF EQ O$GNSW
                .MSDATA L$SPTP, .WORD, 0, <<;PTR. TO S.W. PTABLE>>
                .IFF
002024 .MSDATA L$SPTP, .WORD, L$SW, <<;PTR. TO S.W. PTABLE>>
                .MCALL MSGNGBL, MSGNINS
002024 .IF NB <;PTR. TO S.W. PTABLE>
                MSGNGBL L$SPTP, <<;PTR. TO S.W. PTABLE>>
                .MCALL MSGEN
                .IF NB, L$SPTP
002024 .IF NB, <;PTR. TO S.W. PTABLE>
                MSGEN L$SPTP, :, SVCGBL, <;PTR. TO S.W. PTABLE>
002024 .IF LE SVCGBL
                L$SPTP:: :PTR. TO S.W. PTABLE
                .MEXIT
                .ENDC
                .LIST
                .NLIST
                .ENDC
                .IF B, <;PTR. TO S.W. PTABLE>
                MSGEN L$SPTP, :, SVCGBL, < >
                .ENDC
                .ENDC
                .ENDC
                .IF B <;PTR. TO S.W. PTABLE>
002024 MSGNGBL L$SPTP
                .ENDC
                MSGNINS <.WORD L$SW>
                .IF LT SVCINS
                .WORD L$SW
                .MEXIT
                .ENDC
002024 .IF EQ SVCINS
                .WORD L$SW
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                .NLIST
                .ENDC
                .ENDC
002026 .MSDATA L$LADP, .WORD, L$LAST, <<;DIAG. END ADDRESS>>
                .MCALL MSGNGBL, MSGNINS
002026 .IF NB <;DIAG. END ADDRESS>
                MSGNGBL L$LADP, <<;DIAG. END ADDRESS>>
                .MCALL MSGEN
```

```
002026 .IF NB,L$LADP  
002026 .IF NB,<;DIAG. END ADDRESS>  
MSGEN L$LADP,.,SVCGBL,<;DIAG. END ADDRESS>  
.IF LE SVCGBL  
L$LADP:: :DIAG. END ADDRESS  
.MEXIT  
.ENDC  
.LIST
```

L\$LADP::

```
.NLIST  
.ENDC  
.IF B,<;DIAG. END ADDRESS>  
MSGEN L$LADP,.,SVCGBL,< >  
.ENDC  
.ENDC  
.ENDC  
.IF B <;DIAG. END ADDRESS>  
MSGNGBL L$LADP  
.ENDC  
002026 MSGNINS <.WORD L$LAST>  
.IF LT SVCINS  
.WORD L$LAST  
.MEXIT  
.ENDC  
002026 015560 .IF EQ SVCINS  
.WORD L$LAST  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST
```

.WORD L\$LAST

```
.NLIST  
.ENDC  
002030 .IF EQ OSAPTS  
MSDATA L$STA,.WORD,0,<<;RESERVED FOR APT STA'S>>  
002030 .MCALL MSGNGBL,MSGNINS  
MSGNGBL L$STA,<<;RESERVED FOR APT STA'S>>  
.MCALL MSGEN  
.IF NB,L$STA  
002030 .IF NB,<;RESERVED FOR APT STA'S>  
MSGEN L$STA,.,SVCGBL,<;RESERVED FOR APT STA'S>  
002030 .IF LE SVCGBL  
L$STA:: :RESERVED FOR APT STA'S  
.MEXIT  
.ENDC  
.LIST
```

L\$STA::

```
.NLIST  
.ENDC  
.IF B,<;RESERVED FOR APT STA'S>  
MSGEN L$STA,.,SVCGBL,< >  
.ENDC  
.ENDC  
.ENDC  
.IF B <;RESERVED FOR APT STA'S>  
MSGNGBL L$STA
```

```
002030      .ENDC
            MSGNINS <.WORD 0>
            .IF LT SVCINS
            .WORD 0
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD 0
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD 0
                                                    .NLIST
            .ENDC
            .IFF
            MS$DATA L$STA,.WORD,0,<<;RESERVED FOR APT STATS>>
            .ENDC
002032      MS$DATA L$CO,.WORD,0
            .MCALL MSGNGBL,MSGNINS
            .IF NB
            MSGNGBL L$CO,<>
            .ENDC
            .IF B
002032      MSGNGBL L$CO
            .MCALL MSGEN
            .IF NB,L$CO
            .IF NB,
            MSGEN L$CO,.,SVCGBL,
            .ENDC
            .IF B,
002032      MSGEN L$CO,.,SVCGBL,< >
002032      .IF LE SVCGBL
            L$CO:
            .MEXIT
            .ENDC
            .LIST
                                                    L$CO:
                                                    .NLIST
            .ENDC
            .ENDC
            .ENDC
002032      MSGNINS <.WORD 0>
            .IF LT SVCINS
            .WORD 0
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD 0
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD 0
                                                    .NLIST
            .ENDC
            .IF B 1
```

```
.ERROR ; MISSING DIAG. TYPE
MSDATA LSDTYP,.WORD,0,<<;DIAGNOSTIC TYPE>>
.IFF
.IF IDN 0,1
MSDATA LSDTYP,.WORD,1,<<;DIAGNOSTIC TYPE>>
.IFF
.IF IDN 1,1
002034 MSDATA LSDTYP,.WORD,1,<<;DIAGNOSTIC TYPE>>
.MCALL MSGNGBL,MSGNINS
002034 .IF NB <,DIAGNOSTIC TYPE>
MSGNGBL LSDTYP,<<;DIAGNOSTIC TYPE>>
.MCALL MSGEN
.IF NB,LSDTYP
.IF NB,<;DIAGNOSTIC TYPE>
002034 MSGEN LSDTYP,.,SVCGBL,<;DIAGNOSTIC TYPE>
.IF LE SVCGBL
002034 LSDTYP:: ;DIAGNOSTIC TYPE
.MEXIT
.ENDC
.LIST

.NLIST

.ENDC
.IF B,<;DIAGNOSTIC TYPE>
MSGEN LSDTYP,.,SVCGBL,< >
.ENDC
.ENDC
.ENDC
.IF B <;DIAGNOSTIC TYPE>
002034 MSGNGBL LSDTYP
.ENDC
MSGNINS <.WORD 1>
.IF LT SVCINS
.WORD 1
.MEXIT
.ENDC
002034 000001 .IF EQ SVCINS
.WORD 1
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

.NLIST

.ENDC
.IFF
MSDATA LSDTYP,.WORD,0,<<;DIAGNOSTIC TYPE>>
.ERROR ; INVALID DIAG. TYPE (0=DIAG, 1=EXERCISER)
.ENDC
.ENDC
002036 MSDATA LSAPT,.WORD,0,<<;APT EXPANSION>>
.MCALL MSGNGBL,MSGNINS
002036 .IF NB <;APT EXPANSION>
MSGNGBL LSAPT,<<;APT EXPANSION>>
.MCALL MSGEN
.IF NB,LSAPT
```

LSDTYP::

.WORD 1

```
002036      .IF NB,<;APT EXPANSION>
MSGEN      L$APT,::,SVCGBL,<;APT EXPANSION>
002036      .IF LE SVCGBL
L$APT:::      ;APT EXPANSION
.MEXIT
.ENDC
.LIST

.NLIST
.ENDC
002036      .IF B,<;APT EXPANSION>
MSGEN      L$APT,::,SVCGBL,< >
.ENDC
.ENDC
.ENDC
002036      .IF B <;APT EXPANSION>
MSGNGBL L$APT
.ENDC
MSGNINS <.WORD 0>
002036      .IF LT SVCINS
.WORD 0
.MEXIT
.ENDC
002036      .IF EQ SVCINS
.WORD 0
.MEXIT
.ENDC
002036      .IF GT SVCINS
.LIST

.NLIST
.ENDC
002040      .ENDC
MSGDATA L$DTP,.WORD,L$DISPATCH,<<;PTR. TO DISPATCH TABLE>>
002040      .MCALL MSGNGBL,MSGNINS
002040      .IF NB <;PTR. TO DISPATCH TABLE>
MSGNGBL L$DTP,<<;PTR. TO DISPATCH TABLE>>
.MCALL MSGEN
002040      .IF NB,L$DTP
002040      .IF NB,<;PTR. TO DISPATCH TABLE>
MSGEN L$DTP,::,SVCGBL,<;PTR. TO DISPATCH TABLE>
002040      .IF LE SVCGBL
L$DTP:::      ;PTR. TO DISPATCH TABLE
.MEXIT
.ENDC
.LIST

.NLIST
.ENDC
002040      .IF B,<;PTR. TO DISPATCH TABLE>
MSGEN L$DTP,::,SVCGBL,< >
.ENDC
.ENDC
.ENDC
002040      .IF B <;PTR. TO DISPATCH TABLE>
MSGNGBL L$DTP
.ENDC
MSGNINS <.WORD L$DISPATCH>
```





```

002044      MS$DATA L$ENVI,.WORD,0,<<;FLAGS DESCRIBE HOW IT WAS SETUP>>
           .MCALL MSGNGBL,MSGNINS
           .IF NB <;FLAGS DESCRIBE HOW IT WAS SETUP>
002044      MSGNGBL L$ENVI,<<;FLAGS DESCRIBE HOW IT WAS SETUP>>
           .MCALL MSGEN
           .IF NB,L$ENVI
           .IF NB,<;FLAGS DESCRIBE HOW IT WAS SETUP>
002044      MSGEN L$ENVI,.,SVCGBL,<;FLAGS DESCRIBE HOW IT WAS SETUP>
           .IF LE SVCGBL
002044      L$ENVI::          ;FLAGs DESCRIBE HOW IT WAS SETUP
           .MEXIT
           .ENDC
           .LIST

```

L\$ENVI::

```

           .NLIST
           .ENDC
           .IF B,<;FLAGS DESCRIBE HOW IT WAS SETUP>
           MSGEN L$ENVI,.,SVCGBL,< >
           .ENDC
           .ENDC
           .ENDC
           .IF B <;FLAGS DESCRIBE HOW IT WAS SETUP>
           MSGNGBL L$ENVI
           .ENDC
002044      MSGNINS <.WORD 0>
           .IF LT SVCINS
           .WORD 0
           .MEXIT
           .ENDC
           .IF EQ SVCINS
           .WORD 0
002044      000000
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST

```

.WORD 0

```

           .NLIST
           .ENDC
002046      MS$DATA L$EXP1,.WORD,0,<<;EXPANSION WORD>>
           .MCALL MSGNGBL,MSGNINS
           .IF NB <;EXPANSION WORD>
002046      MSGNGBL L$EXP1,<<;EXPANSION WORD>>
           .MCALL MSGEN
           .IF NB,L$EXP1
           .IF NB,<;EXPANSION WORD>
002046      MSGEN L$EXP1,.,SVCGBL,<;EXPANSION WORD>
           .IF LE SVCGBL
002046      L$EXP1::          ;EXPANSION WORD
           .MEXIT
           .ENDC
           .LIST

```

L\$EXP1::

```

           .NLIST
           .ENDC
           .IF B,<;EXPANSION WORD>
           MSGEN L$EXP1,.,SVCGBL,< >
           .ENDC

```

```
.ENDC
.ENDC
  .IF B <;EXPANSION WORD>
MSGNGBL L$EXP1
.ENDC
002046 MSGNINS <.WORD 0>
  .IF LT SVCINS
  .WORD 0
  .MEXIT
.ENDC
002046 000000 .IF EQ SVCINS
  .WORD 0
  .MEXIT
.ENDC
  .IF GT SVCINS
  .LIST
  .WORD 0
  .NLIST
.ENDC
002050 M$DATA L$MREV,.BYTE,C$REVISION,<<;SVC REV AND EDIT #>>
  .MCALL MSGNGBL,MSGNINS
002050 .IF NB <;SVC REV AND EDIT #>
MSGNGBL L$MREV,<<;SVC REV AND EDIT #>>
  .MCALL M$GEN
  .IF NB,L$MREV
002050 .IF NB,<;SVC REV AND EDIT #>
M$GEN L$MREV,.,SVCGBL,<;SVC REV AND EDIT #>
  .IF LE SVCGBL
002050 L$MREV:: ;SVC REV AND EDIT #
  .MEXIT
  .ENDC
  .LIST
  L$MREV::
  .NLIST
.ENDC
  .IF B,<;SVC REV AND EDIT #>
M$GEN L$MREV,.,SVCGBL,< >
  .ENDC
  .ENDC
  .ENDC
  .IF B <;SVC REV AND EDIT #>
MSGNGBL L$MREV
.ENDC
002050 MSGNINS <.BYTE C$REVISION>
  .IF LT SVCINS
  .BYTE C$REVISION
  .MEXIT
.ENDC
002050 003 .IF EQ SVCINS
  .BYTE C$REVISION
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST
  .BYTE C$REVISION
  .NLIST
.ENDC
```

```
002051          MSGNINS <.BYTE C$EDIT>
                .IF LT SVCINS
                .BYTE C$EDIT
                .MEXIT
                .ENDC
002051 003      .IF EQ SVCINS
                .BYTE C$EDIT
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .NLIST
                                .ENDC
002052          M$DATA L$EF,.WORD,0 ,<<;DIAG. EVENT FLAGS>>
                .MCALL MSGNGBL,MSGNINS
002052          .IF NB <;DIAG. EVENT FLAGS>
                MSGNGBL L$EF,<<;DIAG. EVENT FLAGS>>
                .MCALL M$GEN
                .IF NB,L$EF
002052          .IF NB,<;DIAG. EVENT FLAGS>
                M$GEN L$EF,::,SVCGBL,<;DIAG. EVENT FLAGS>
002052          .IF LE SVCGBL
                L$EF:: ;DIAG. EVENT FLAGS
                .MEXIT
                .ENDC
                .LIST
                                .NLIST
                                .ENDC
                .IF B,<;DIAG. EVENT FLAGS>
                M$GEN L$EF,::,SVCGBL,< >
                .ENDC
                .ENDC
                .ENDC
                .IF B <;DIAG. EVENT FLAGS>
                MSGNGBL L$EF
002052          .ENDC
                MSGNINS <.WORD 0>
                .IF LT SVCINS
                .WORD 0
                .MEXIT
                .ENDC
002052 000000  .IF EQ SVCINS
                .WORD 0
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .NLIST
                                .ENDC
002054          M$WORD 0
                .MCALL MSGNINS
                .IRP N,<0>
                MSGNINS <.WORD N>
                .ENDM
                                .NLIST
                                .ENDC
                                .BYTE C$EDIT
                                L$EF::
                                .WORD 0
```

```
002054 MSGNINS <.WORD 0>
      .IF LT SVCINS
      .WORD 0
      .MEXIT
      .ENDC
002054 000000 .IF EQ SVCINS
      .WORD 0
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .WORD 0
      .ENDC
002056 M$DATA L$SPC, .WORD, 0
      .MCALL MSGNGBL, MSGNINS
      .IF NB
      MSGNGBL L$SPC, <>
      .ENDC
      .IF B
002056 MSGNGBL L$SPC
      .MCALL MSGEN
      .IF NB, L$SPC
      .IF NB,
      MSGEN L$SPC, :, SVCGBL,
      .ENDC
      .IF B,
002056 MSGEN L$SPC, :, SVCGBL, < >
002056 .IF LE SVCGBL
      L$SPC::
      .MEXIT
      .ENDC
      .LIST
      .NLIST
      .ENDC
      .ENDC
      .ENDC
002056 MSGNINS <.WORD 0>
      .IF LT SVCINS
      .WORD 0
      .MEXIT
      .ENDC
002056 000000 .IF EQ SVCINS
      .WORD 0
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .WORD 0
      .ENDC
002060 M$DATA L$DEVP, .WORD, L$DVTYP
      .MCALL MSGNGBL, MSGNINS
      .IF NB <: POINTER TO DEVICE TYPE LIST>
002060 MSGNGBL L$DEVP, <<: POINTER TO DEVICE TYPE LIST>>
      .MCALL MSGEN
```

<<: POINTER TO DEVICE TYPE LIST>>

L\$SPC::

```
002060 .IF NB,L$DEVP
002060 .IF NB,<; POINTER TO DEVICE TYPE LIST>
MSGEN L$DEVP,.,SVCGBL,<; POINTER TO DEVICE TYPE LIST>
002060 .IF LE SVCGBL
L$DEVP:: ; POINTER TO DEVICE TYPE LIST
.MEXIT
.ENDC
.LIST

.NLIST
.ENDC
002060 .IF B,<; POINTER TO DEVICE TYPE LIST>
MSGEN L$DEVP,.,SVCGBL,< >
.ENDC
.ENDC
.ENDC
002060 .IF B <; POINTER TO DEVICE TYPE LIST>
MSGNGBL L$DEVP
.ENDC
MSGNINS <.WORD L$DVTYP>
002060 .IF LT SVCINS
.WORD L$DVTYP
.MEXIT
.ENDC
002060 002224 .IF EQ SVCINS
.WORD L$DVTYP
.MEXIT
.ENDC
002060 .IF GT SVCINS
.LIST

.NLIST
.ENDC
002062 .IF EQ OS$BGNRPT
MS$DATA L$REPP,.,WORD,0,<<;PTR. TO REPORT CODE>>
.IFF
002062 MS$DATA L$REPP,.,WORD,L$RPT,<<;PTR. TO REPORT CODE>>
.MCALL MSGNGBL,MSGNINS
002062 .IF NB <;PTR. TO REPORT CODE>
MSGNGBL L$REPP,<<;PTR. TO REPORT CODE>>
.MCALL MSGEN
002062 .IF NB,L$REPP
002062 .IF NB,<;PTR. TO REPORT CODE>
MSGEN L$REPP,.,SVCGBL,<;PTR. TO REPORT CODE>
002062 .IF LE SVCGBL
L$REPP:: ;PTR. TO REPORT CODE
.MEXIT
.ENDC
.LIST

.NLIST
.ENDC
002062 .IF B,<;PTR. TO REPORT CODE>
MSGEN L$REPP,.,SVCGBL,< >
.ENDC
.ENDC
.ENDC
```

```
                                .IF B <:PTR. TO REPORT CODE>
                                MSGNGBL L$REPP
                                .ENDC
002062                          .IF LT SVCINS
                                .WORD L$RPT
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS
                                .WORD L$RPT
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
                                .ENDC
002064                          M$DATA L$EXP4, .WORD, 0
                                .MCALL MSGNGBL, MSGNINS
                                .IF NB
                                MSGNGBL L$EXP4, <>
                                .ENDC
                                .IF B
                                MSGNGBL L$EXP4
                                .MCALL M$GEN
                                .IF NB, L$EXP4
                                .IF NB,
                                M$GEN L$EXP4, :, SVCGBL,
                                .ENDC
                                .IF B,
                                M$GEN L$EXP4, :, SVCGBL, < >
                                .IF LE SVCGBL
                                L$EXP4::
                                .MEXIT
                                .ENDC
                                .LIST
                                .NLIST
                                .ENDC
                                .ENDC
                                .ENDC
002064                          MSGNINS <.WORD 0>
                                .IF LT SVCINS
                                .WORD 0
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS
                                .WORD 0
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
                                .ENDC
002066                          M$DATA L$EXP5, .WORD, 0
```

.WORD L\$RPT

L\$EXP4::

.WORD 0

```

      .MCALL MSGNGBL,MSGNINS
      .IF NB
MSGNGBL L$EXP5,<>
      .ENDC
      .IF B
002066 MSGNGBL L$EXP5
      .MCALL MSGEN
      .IF NB,L$EXP5
      .IF NB,
MSGEN L$EXP5,::,SVCGBL,
      .ENDC
      .IF B,
002066 MSGEN L$EXP5,::,SVCGBL,< >
002066 .IF LE SVCGBL
L$EXP5::
      .MEXIT
      .ENDC
      .LIST
      .NLIST
      .ENDC
      .ENDC
      .ENDC
002066 MSGNINS <.WORD 0>
      .IF LT SVCINS
      .WORD 0
      .MEXIT
      .ENDC
      .IF EQ SVCINS
002066 000000 .WORD 0
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IF EQ O$AU
002070 M$DATA L$AUT,.WORD,0,<<;PTR. TO ADD UNIT CODE>>
      .MCALL MSGNGBL,MSGNINS
002070 .IF NB <;PTR. TO ADD UNIT CODE>
MSGNGBL L$AUT,<<;PTR. TO ADD UNIT CODE>>
      .MCALL MSGEN
      .IF NB,L$AUT
      .IF NB,<;PTR. TO ADD UNIT CODE>
002070 MSGEN L$AUT,::,SVCGBL,<;PTR. TO ADD UNIT CODE>
      .IF LE SVCGBL
002070 L$AUT:: ;PTR. TO ADD UNIT CODE
      .MEXIT
      .ENDC
      .LIST
      .NLIST
      .ENDC
      .IF B,<;PTR. TO ADD UNIT CODE>
MSGEN L$AUT,::,SVCGBL,< >
      .ENDC
```

L\$EXP5::

.WORD 0

L\$AUT::

```

                                .ENDC
                                .ENDC
                                .IF B <;PTR. TO ADD UNIT CODE>
MSGNGBL L$AUT
                                .ENDC
002070 MSGNINS <.WORD 0>
                                .IF LT SVCINS
                                .WORD 0
                                .MEXIT
                                .ENDC
002070 000000 .IF EQ SVCINS
                                .WORD 0
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD 0
                                                                .NLIST
                                .ENDC
                                .IFF
MSDATA L$AUT, .WORD, L$AU, <<;PTR. TO ADD UNIT CODE>>
                                .ENDC
002072 .IF EQ OSDU
MSDATA L$DUT, .WORD, 0, <<;PTR. TO DROP UNIT CODE>>
                                .MCALL MSGNGBL, MSGNINS
002072 .IF NB <;PTR. TO DROP UNIT CODE>
MSGNGBL L$DUT, <<;PTR. TO DROP UNIT CODE>>
                                .MCALL MSGEN
                                .IF NB, L$DUT
002072 .IF NB, <;PTR. TO DROP UNIT CODE>
MSGEN L$DUT, :, SVCGBL, <;PTR. TO DROP UNIT CODE>
002072 .IF LE SVCGBL
L$DUT:: ;PTR. TO DROP UNIT CODE
                                .MEXIT
                                .ENDC
                                .LIST
                                                                LSDUT::
                                                                .NLIST
                                .ENDC
                                .IF B, <;PTR. TO DROP UNIT CODE>
MSGEN L$DUT, :, SVCGBL, < >
                                .ENDC
                                .ENDC
                                .ENDC
                                .IF B <;PTR. TO DROP UNIT CODE>
MSGNGBL L$DUT
                                .ENDC
002072 MSGNINS <.WORD 0>
                                .IF LT SVCINS
                                .WORD 0
                                .MEXIT
                                .ENDC
002072 000000 .IF EQ SVCINS
                                .WORD 0
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
```



```
.LIST
                                .WORD 0
                                .NLIST
.ENDC
.IFF
MSDATA LSDUT,.WORD,LSDU,<<;PTR. TO DROP UNIT CODE>>
.ENDC
002074 MSDATA L$LUN,.WORD,0 ,<<;LUN FOR EXERCISERS TO FILL>>
.MCALL MSGNGBL,MSGNINS
.IF NB <;LUN FOR EXERCISERS TO FILL>
002074 MSGNGBL L$LUN,<<;LUN FOR EXERCISERS TO FILL>>
.MCALL MSGEN
.IF NB,L$LUN
.IF NB,<;LUN FOR EXERCISERS TO FILL>
002074 MSGEN L$LUN,;,SVCGBL,<;LUN FOR EXERCISERS TO FILL>
.IF LE SVCGBL
002074 L$LUN:: ;LUN FOR EXERCISERS TO FILL
.MEXIT
.ENDC
.LIST
                                L$LUN::
                                .NLIST
.ENDC
.IF B,<;LUN FOR EXERCISERS TO FILL>
MSGEN L$LUN,;,SVCGBL,< >
.ENDC
.ENDC
.ENDC
.IF B <;LUN FOR EXERCISERS TO FILL>
002074 MSGNGBL L$LUN
.ENDC
MSGNINS <.WORD 0>
.IF LT SVCINS
.WORD 0
.MEXIT
.ENDC
002074 000000 .IF EQ SVCINS .WORD 0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .WORD 0
                                .NLIST
.ENDC
002076 MSDATA L$DESP,.WORD,L$DESC ,<<;POINTER TO DIAG. DESCRIPTION>>
.MCALL MSGNGBL,MSGNINS
.IF NB <;POINTER TO DIAG. DESCRIPTION>
002076 MSGNGBL L$DESP,<<;POINTER TO DIAG. DESCRIPTION>>
.MCALL MSGEN
.IF NB,L$DESP
.IF NB,<;POINTER TO DIAG. DESCRIPTION>
002076 MSGEN L$DESP,;,SVCGBL,<;POINTER TO DIAG. DESCRIPTION>
.IF LE SVCGBL
002076 L$DESP:: ;POINTER TO DIAG. DESCRIPTION
.MEXIT
.ENDC
```

```
.LIST
                                L$DESP::
                                .NLIST
                                .ENDC
                                .IF B,<;POINTER TO DIAG. DESCRIPTION>
MSGEN L$DESP,.,SVCGBL,< >
                                .ENDC
                                .ENDC
                                .ENDC
                                .IF B <;POINTER TO DIAG. DESCRIPTION>
MSGNGBL L$DESP
                                .ENDC
002076 MSGNINS <.WORD L$DESC>
                                .IF LT SVCINS
                                .WORD L$DESC
                                .MEXIT
                                .ENDC
002076 002260 .IF EQ SVCINS
                                .WORD L$DESC
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
                                .M$DATA L$LOAD,EMT,E$LOAD ,<<;GENERATE SPECIAL AUTOLOAD EMT>>
                                .M$CALL MSGNGBL,MSGNINS
                                .IF NB <;GENERATE SPECIAL AUTOLOAD EMT>
002100 MSGNGBL L$LOAD,<<;GENERATE SPECIAL AUTOLOAD EMT>>
                                .M$CALL MSGEN
                                .IF NB,L$LOAD
                                .IF NB,<;GENERATE SPECIAL AUTOLOAD EMT>
002100 MSGEN L$LOAD,.,SVCGBL,<;GENERATE SPECIAL AUTOLOAD EMT>
                                .IF LE SVCGBL
002100 L$LOAD:: ;GENERATE SPECIAL AUTOLOAD EMT
                                .MEXIT
                                .ENDC
                                .LIST
                                .NLIST
                                .ENDC
                                .IF B,<;GENERATE SPECIAL AUTOLOAD EMT>
MSGEN L$LOAD,.,SVCGBL,< >
                                .ENDC
                                .ENDC
                                .ENDC
                                .IF B <;GENERATE SPECIAL AUTOLOAD EMT>
MSGNGBL L$LOAD
                                .ENDC
002100 MSGNINS <EMT E$LOAD>
                                .IF LT SVCINS
                                EMT E$LOAD
                                .MEXIT
                                .ENDC
002100 104035 .IF EQ SVCINS
                                EMT E$LOAD
```

```

.MEXIT
.ENDC
.IF GT SVCINS
.LIST

                                .NLIST
                                EMT      E$LOAD

.ENDC
.IF EQ 0$ERRTBL
MSDATA L$ETP,.WORD,0,<<;POINTER TO ERRTBL>>
.IFF
002102 MSDATA L$ETP,.WORD,L$ERRTBL,<<;POINTER TO ERRTBL>>
.MCALL MSGNGBL,MSGNINS
002102 .IF NB <<;POINTER TO ERRTBL>
MSGNGBL L$ETP,<<;POINTER TO ERRTBL>>
.MCALL MSGEN
.IF NB,L$ETP
002102 .IF NB,<<;POINTER TO ERRTBL>
MSGEN L$ETP,.,SVCGBL,<<;POINTER TO ERRTBL>
.IF LE SVCGBL
002102 L$ETP:; :POINTER TO ERRTBL
.MEXIT
.ENDC
.LIST

                                L$ETP:;

                                .NLIST

.ENDC
.IF B,<<;POINTER TO ERRTBL>
MSGEN L$ETP,.,SVCGBL,< >
.ENDC
.ENDC
.ENDC
.IF B <<;POINTER TO ERRTBL>
MSGNGBL L$ETP
002102 .ENDC
MSGNINS <.WORD L$ERRTBL>
.IF LT SVCINS
.WORD L$ERRTBL
.MEXIT
.ENDC
002102 002160 .IF EQ SVCINS
.WORD L$ERRTBL
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

                                .NLIST
                                .WORD  L$ERRTBL

.ENDC
.ENDC
002104 MSDATA L$ICP,.WORD,L$INIT,<<;PTR. TO INIT CODE>>
.MCALL MSGNGBL,MSGNINS
002104 .IF NB <<;PTR. TO INIT CODE>
MSGNGBL L$ICP,<<;PTR. TO INIT CODE>>
.MCALL MSGEN:
.IF NB,L$ICP
002104 .IF NB,<<;PTR. TO INIT CODE>
MSGEN L$ICP,.,SVCGBL,<<;PTR. TO INIT CODE>

```

```
002104      .IF LE SVCGBL
            L$ICP::          ;PTR. TO INIT CODE
            .MEXIT
            .ENDC
            .LIST
                                L$ICP::

                                .NLIST
            .ENDC
            .IF B,<;PTR. TO INIT CODE>
            MSGEN L$ICP,.,SVCGBL,< >
            .ENDC
            .ENDC
            .ENDC
            .IF B <;PTR. TO INIT CODE>
            MSGNGBL L$ICP
            .ENDC
002104      MSGNINS <.WORD L$INIT>
            .IF LT SVCINS
            .WORD L$INIT
            .MEXIT
            .ENDC
002104 013672 .IF EQ SVCINS
            .WORD L$INIT
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .WORD L$INIT

                                .NLIST
            .ENDC
002106      MSDATA L$CCP,.WORD,L$CLEAN,<<;PTR. TO CLEAN-UP CODE>>
            .MCALL MSGNGBL,MSGNINS
002106      .IF NB <;PTR. TO CLEAN-UP CODE>
            MSGNGBL L$CCP,<<;PTR. TO CLEAN-UP CODE>>
            .MCALL MSGEN
            .IF NB,L$CCP
            .IF NB,<;PTR. TO CLEAN-UP CODE>
002106      MSGEN L$CCP,.,SVCGBL,<;PTR. TO CLEAN-UP CODE>
002106      .IF LE SVCGBL
            L$CCP::          ;PTR. TO CLEAN-UP CODE
            .MEXIT
            .ENDC
            .LIST
                                L$CCP::

                                .NLIST
            .ENDC
            .IF B,<;PTR. TO CLEAN-UP CODE>
            MSGEN L$CCP,.,SVCGBL,< >
            .ENDC
            .ENDC
            .ENDC
            .IF B <;PTR. TO CLEAN-UP CODE>
            MSGNGBL L$CCP
            .ENDC
002106      MSGNINS <.WORD L$CLEAN>
            .IF LT SVCINS
            .WORD L$CLEAN
```

```
002106 014526 .MEXIT
                .ENDC
                .IF EQ SVCINS
                    .WORD L$CLEAN
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .WORD L$CLEAN
                                .NLIST
                .ENDC
002110 MS$DATA L$ACP,.WORD,L$AUTO,<<;PTR. TO AUTO CODE>>
                .MCALL MSGNGBL,MSGNINS
002110 .IF NB <;PTR. TO AUTO CODE>
                MSGNGBL L$ACP,<<;PTR. TO AUTO CODE>>
                .MCALL MSGEN
                .IF NB,L$ACP
002110 .IF NB,<;PTR. TO AUTO CODE>
                MSGEN L$ACP,.,SVCGBL,<;PTR. TO AUTO CODE>
002110 .IF LE SVCGBL
                L$ACP:;PTR. TO AUTO CODE
                .MEXIT
                .ENDC
                .LIST
                                L$ACP:;
                                .NLIST
                .ENDC
                .IF B,<;PTR. TO AUTO CODE>
                MSGEN L$ACP,.,SVCGBL,< >
                .ENDC
                .ENDC
                .ENDC
                .IF B <;PTR. TO AUTO CODE>
                MSGNGBL L$ACP
002110 .ENDC
                MSGNINS <.WORD L$AUTO>
                .IF LT SVCINS
                .WORD L$AUTO
                .MEXIT
                .ENDC
002110 014524 .IF EQ SVCINS
                    .WORD L$AUTO
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .WORD L$AUTO
                                .NLIST
                .ENDC
002112 MS$DATA L$PRT,.WORD,L$PROT,<<;PTR. TO PROTECT TABLE>>
                .MCALL MSGNGBL,MSGNINS
002112 .IF NB <;PTR. TO PROTECT TABLE>
                MSGNGBL L$PRT,<<;PTR. TO PROTECT TABLE>>
                .MCALL MSGEN
                .IF NB,L$PRT
002112 .IF NB,<;PTR. TO PROTECT TABLE>
                MSGEN L$PRT,.,SVCGBL,<;PTR. TO PROTECT TABLE>
```

002112 .IF LE SVCGBL  
L\$PRT:: ;PTR. TO PROTECT TABLE  
.MEXIT  
.ENDC  
.LIST

L\$PRT::

.NLIST  
.ENDC  
.IF B, <;PTR. TO PROTECT TABLE>  
MSGEN L\$PRT, :, SVCGBL, < >  
.ENDC  
.ENDC  
.ENDC  
.IF B <;PTR. TO PROTECT TABLE>  
MSGNGBL L\$PRT  
.ENDC

002112 MSGNINS <.WORD L\$PROT>  
.IF LT SVCINS  
.WORD L\$PROT  
.MEXIT  
.ENDC

002112 013664 .IF EQ SVCINS  
.WORD L\$PROT  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST

.WORD L\$PROT

.NLIST  
.ENDC  
002114 M\$DATA L\$TEST, .WORD, 0, <<;TEST NUMBER>>  
002114 .MCALL MSGNGBL, MSGNINS  
- .IF NB <;TEST NUMBER>  
MSGNGBL L\$TEST, <<;TEST NUMBER>>  
.MCALL MSGEN

002114 .IF NB, L\$TEST  
002114 .IF NB, <;TEST NUMBER>  
MSGEN L\$TEST, :, SVCGBL, <;TEST NUMBER>  
002114 .IF LE SVCGBL

L\$TEST:: ;TEST NUMBER  
.MEXIT  
.ENDC  
.LIST

L\$TEST::

.NLIST  
.ENDC  
002114 .IF B, <;TEST NUMBER>  
MSGEN L\$TEST, :, SVCGBL, < >  
.ENDC  
.ENDC  
.ENDC  
.IF B <;TEST NUMBER>  
MSGNGBL L\$TEST  
.ENDC  
MSGNINS <.WORD 0>  
.IF LT SVCINS  
.WORD 0

```
002114 000000 .MEXIT
                .ENDC
                .IF EQ SVCINS
                .WORD 0
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                .NLIST
                .ENDC
002116 MS$DATA L$DLY,.WORD,0,<<;DELAY COUNT>>
                .MCALL MSGNGBL,MSGNINS
002116 .IF NB <;DELAY COUNT>
                MSGNGBL L$DLY,<<;DELAY COUNT>>
                .MCALL MSGEN
                .IF NB,L$DLY
002116 .IF NB,<;DELAY COUNT>
                MSGEN L$DLY,.,SVCGBL,<;DELAY COUNT>
002116 .IF LE SVCGBL
                L$DLY::;DELAY COUNT
                .MEXIT
                .ENDC
                .LIST
                .NLIST
                .ENDC
                .IF B,<;DELAY COUNT>
                MSGEN L$DLY,.,SVCGBL,< >
                .ENDC
                .ENDC
                .ENDC
                .IF B <;DELAY COUNT>
002116 MSGNGBL L$DLY
                .ENDC
                MSGNINS <.WORD 0>
                .IF LT SVCINS
                .WORD 0
                .MEXIT
                .ENDC
002116 000000 .IF EQ SVCINS
                .WORD 0
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                .NLIST
                .ENDC
002120 MS$DATA L$HIME,.WORD,0,<<;PTR. TO HIGH MEM>>
                .MCALL MSGNGBL,MSGNINS
002120 .IF NB <;PTR. TO HIGH MEM>
                MSGNGBL L$HIME,<<;PTR. TO HIGH MEM>>
                .MCALL MSGEN
                .IF NB,L$HIME
002120 .IF NB,<;PTR. TO HIGH MEM>
                MSGEN L$HIME,.,SVCGBL,<;PTR. TO HIGH MEM>
```

002120 .IF LE SVCGBL  
LSHIME:: ;PTR. TO HIGH MEM  
.MEXIT  
.ENDC  
.LIST

LSHIME::

.NLIST  
.ENDC  
.IF B, <;PTR. TO HIGH MEM>  
MSGEN LSHIME, :, SVCGBL, < >  
.ENDC  
.ENDC  
.ENDC  
.IF B <;PTR. TO HIGH MEM>  
MSGNGBL LSHIME

002120 .ENDC  
MSGNINS <.WORD 0>  
.IF LT SVCINS  
.WORD 0  
.MEXIT  
.ENDC

002120 000000 .IF EQ SVCINS  
.WORD 0  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST

.WORD 0

.NLIST  
.ENDC  
.IF EQ OS\$POINTER  
.ERROR ;'POINTER' IST PRECEDE 'HEADER'  
.ENDC





002124 .MCALL MSGNINS  
.IRP N,<T1>  
MSGNINS <.WORD N>  
.ENDM  
MSGNINS <.WORD T1>  
.IF LT SVCINS  
.WORD T1  
.MEXIT  
.ENDC

002124 014534 .IF EQ SVCINS  
.WORD T1  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST

9 000002  
000010

.NLIST  
.ENDC  
T\$TEMP-T\$TEMP + 1  
.RADIX 8

.WORD T1

1  
2  
3  
4  
5  
6  
7  
8  
9

.SBTTL DEFAULT HARDWARE P-TABLE

;++  
: THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF  
: THE TEST-DFVICE 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.  
:--

```
10 002126          BGNHW  DFPTBL
          .MCALL  MSPUSH,M$INCR,M$GNINS,M$GNGBL
002126          MSPUSH  T$NS,T$NESTLEV,F$HW
          .MCALL  M$INCR,M$SETS
002126          M$INCR  T$NESTLEV
          000001    T$NESTLEV=T$NESTLEV+1
002126          M$SETS  T$NS,\T$NESTLEV,F$HW
          000013    T$NS1=F$HW
          010000    T$SHW=T$TAGNUM
002126          M$INCR  T$TAGNUM
          010001    T$TAGNUM=T$TAGNUM+1
          .IRP    N,<\T$SHW>
002126          M$GNINS <.WORD  L'N-L$HW/2>
          .ENDM
          M$GNINS <.WORD  L10000-L$HW/2>
          .IF LT SVCINS
          .WORD  L10000-L$HW/2
          .MEXIT
          .ENDC
002126          .IF EQ SVCINS
          .WORD  L10000-L$HW/2
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .WORD  L10000-L$HW/2
          .NLIST
002130          .ENDC
          M$GNGBL L$HW
          .MCALL  M$GEN
          .IF NB,L$HW
          .IF NB,
          M$GEN  L$HW,.,SVCGBL,
          .ENDC
          .IF B,
002130          M$GEN  L$HW,.,SVCGBL,< >
          .IF LE SVCGBL
002130          L$HW:
          .MEXIT
          .ENDC
          .LIST
          .NLIST
          L$HW:
002130          .ENDC
          .ENDC
          M$GNGBL DFPTBL
          .MCALL  M$GEN
          .IF NB,DFPTBL
```

```

        .IF NB,
        MSGEN DFPTBL,.,SVCGBL,
        .ENDC
002130 .IF B,
        MSGEN DFPTBL,.,SVCGBL,< >
002130 .IF LE SVCGBL
        DFPTBL::
        .MEXIT
        .ENDC
        .LIST
                                DFPTBL::

                                .NLIST
                                .ENDC
                                .ENDC
11
12 002130 172150 .WORD 172150 : UDAIP ADDRESS
13 002132 000000 .WORD 0 : UNIT NUMBER
14 002134 000003 .WORD USERES+STPBAD : STARTUP FLAGS
15 002136 000000 000000 000000 .WORD 0,0,0,0 : SERIAL NUMBER
16
17 002146 ENDHW
        .MCALL M$POP,M$GNTAG,M$ENDERR
002146 M$POP T$NS,T$NESTLEV,T$TEMP
        .MCALL M$GETS,M$DECR
        .IF LT T$NESTLEV
        .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
        .MEXIT
        .ENDC
002146 M$GETS T$NS,\T$NESTLEV,T$TEMP
000013 T$TEMP=T$NS1
002146 M$DECR T$NESTLEV
000000 T$NESTLEV=T$NESTLEV-1
        .IF EQ F$HW-T$TEMP
002146 M$GNTAG L,T$$HW
        .MCALL M$GEN
002146 M$GEN L,\T$$HW,SVCTAG
        .IF LE SVCTAG
002146 L10000:
        .MEXIT
        .ENDC
        .LIST
                                L10000:

                                .NLIST
                                S$LSYM=T$LSYM
                                .IFF
                                M$ENDERR ENDHW,T$TEMP
                                .ENDC
18
19 002146 BGNSW SFTBL
        .MCALL M$PUSH,M$INCR,M$GNINS,M$GNGBL
002146 M$PUSH T$NS,T$NESTLEV,F$SW
        .MCALL M$INCR,M$SETS
002146 M$INCR T$NESTLEV
000001 T$NESTLEV=T$NESTLEV+1
002146 M$SETS T$NS,\T$NESTLEV,F$SW
000014 T$NS1=F$SW
010001 T$$SW-T$AGNUM
    
```



```
002160      .MCALL MSGETS,MSDECR
002160      .IF LT T$NESTLEV
000014      .ERROR T$NESTLEV      ; MACRO T$NS UNDERFLOW
000000      .MEXIT
002160      .ENDC
002160      MSGETS T$NS,\T$NESTLEV,T$TEMP
002160      T$TEMP=T$NS1
002160      MSDECR T$NESTLEV
002160      T$NESTLEV=T$NESTLEV-1
002160      .IF EQ F$SW-T$TEMP
002160      MSGNTAG L,T$SSW
002160      .MCALL MSGEN
002160      MSGEN L,\T$SSW,SVCTAG
002160      .IF LE SVCTAG
002160      L10001:
002160      .MEXIT
002160      .ENDC
002160      .LIST

010000      .NLIST
010000      S$LSYM-T$LSYM
010000      .IFF
010000      M$ENDERR      ENDSW,T$TEMP
010000      .ENDC

22
23 002160      ENDMOD
000041      .MCALL M$POP,M$ENDERR
000041      .IF EQ F$BGN-I$MOD
000041      I$MOD-F$END
000041      .IFF
000041      .ERROR ; MISSING 'BGNMOD'
000041      .MEXIT
000041      .ENDC
002160      M$POP T$NS,T$NESTLEV,T$TEMP
002160      .MCALL MSGETS,MSDECR
002160      .IF LT T$NESTLEV
002160      .ERROR T$NESTLEV      ; MACRO T$NS UNDERFLOW
002160      .MEXIT
002160      .ENDC
002160      MSGETS T$NS,\T$NESTLEV,T$TEMP
002160      T$TEMP-T$NS0
002160      MSDECR T$NESTLEV
002160      T$NESTLEV=T$NESTLEV-1
002160      .IF NE F$MOD-T$TEMP
002160      M$ENDERR      ENDMOD,T$TEMP
002160      .ENDC

L10001:
```

```

1      ; .TITLE GLOBAL AREAS
2      ; .SBTTL GLOBAL EQUATES SECTION
3
4      ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5      ; NOTE: THE ASSEMBLER DIRECTIVE '.GLOBL' SHOULD NOT BE USED ANYWHERE IN
6      ; YOUR DIAGNOSTIC PROGRAM. INSTEAD, USE THE DOUBLE-EQUATE (==) OR
7      ; DOUBLE-COLON (::) TO DEFINE GLOBAL VALUES. HELP-MESSAGES GIVEN
8      ; BELOW EXPLAIN WHERE TO USE THE DOUBLE-EQUATE AND DOUBLE-COLON
9      ; DIRECTIVES.
10     ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
11
12 002160      BGNMOD
      .MCALL MSGNGBL,MSPUSH
      .IF NE F$END-1$MOD
      .ERROR ;'BGNMOD' IN MOD
      .EXIT
      .IFF
      00004U      1$MOD=F$BGN
      .ENDC
      .IF NB
      MSGNGBL
      .ENDC
      002160      MSPUSH T$NS,T$NESTLEV,F$MOD
      002160      .MCALL M$INCR,M$SETS
      M$INCR T$NESTLEV
      002160      T$NESTLEV=T$NESTLEV+1
      M$SETS T$NS,\T$NESTLEV,F$MOD
      T$NSO=F$MOD
13
14
15      ;++
16      ; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
17      ; ARE USED IN MORE THAN ONE TEST.
18      ;--
19
20      ;
21      ; EQUATES THAT ARE ADDED TO THIS SECTION MUST BE DEFINED WITH A
22      ; DOUBLE-EQUATE (--); THIS WILL MAKE THEM GLOBAL EQUATES.
23      ; FOR EXAMPLE, AN ERROR STATUS BIT COULD BE DEFINED AS ERR==BIT15.
24      ;
25 002160      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 SUPERVISOR 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
.
. PRIORITY LEVEL DEFINITIONS
.
000340      PRI07== 340
000300      PRI06== 300
000240      PRI05== 240
000200      PRI04== 200
000140      PRI03== 140
000100      PRI02== 100
000040      PRI01== 40
000000      PRI00== 0
.
. OPERATOR FLAG BITS
.
000004      EVL==      4
000010      LOT==     10
000020      ADR==     20
000040      IDU==     40
000100      ISR==    100
000200      UAM==    200
000400      BOE==    400
001000      PNT==   1000
002000      PRI==   2000
004000      IXE==   4000
010000      IBE==  10000
020000      IER==  20000
040000      LOE==  40000
100000      HOE== 100000
    
```



```
1          ;UDA BIT DEFINITIONS
2
3          ;UDASA REGISTER UNIVERSAL READ BITS
4
5          004000 SA.S1= 004000          ;STEP 1 STATUS BIT
6          010000 SA.S2= 010000          ;STEP 2 STATUS BIT
7          020000 SA.S3= 020000          ;STEP 3 STATUS BIT
8          040000 SA.S4= 040000          ;STEP 4 STATUS BIT
9          100000 SA.ERR= 100000         ;ERROR INDICATOR
10
11         ;UDASA REGISTER ERROR STATUS BITS
12
13         003777 SA.ERC= 003777         ;ERROR CODE
14
15         ;UDASA REGISTER READ MASK/READ RESPONSE/WRITE VALUES
16
17         000004 RNGLEN = 4             ; NUMBER OF WORDS IN COMMAND..
18                                     ; ...AND RESPONSE RING COMBINED
19         003777 IN.MS1 = 003777        ; MASK FOR RESPONSE 1
20         004000 IN.RS1 = 004000        ; EXPECTED RESPONSE 1 (AFTER MASKING)
21         100000 IN.WT1 = 100000        ; WRITE 1
22
23         003500 IN.MS2 = 003500
24         010200 IN.RS2 = 010200
25         ;                               ; WRITE 2 IS THE RING ADDRESS
26
27         002000 IN.MS3 = 002000
28         020000 IN.RS3 = 020000
29         000000 IN.WT3 = 000000        ; HIGH ORDER RING ADDR - UNUSED
30
31         003777 IN.MS4 = 003777
32         040000 IN.RS4 = 040000
33         000001 SA.GO= 000001         ;GO BIT TO START UDA FIRMWARE
```

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1      ;COMMAND/MESSAGE DESCRIPTOR BIT DEFINITIONS
2
3      100000      RG.OWN= 100000      ;SET WHEN UDA OWNS RING
4      040000      RG.FLG= 040000      ;FLAG BIT
5
6      ;OFFSETS INTO HOST COMMUNICATIONS AREA WITH ONE DESCRIPTOR TO EACH RING
7      ;AND TWO PACKET AND BUFFER AREAS.
8
9      000004      HC.RSZ= 4.          ;SIZE OF RING IN BYTES
10     000060      HC.PSZ= 48.         ;SIZE OF COMMAND AND MESSAGE PACKETS
11     000032      HC.BSZ= 26.         ;SIZE OF BUFFER
12
13     000010      HC.RESZ = 8.         ; SIZE OF RING ENVELOPE
14
15     ;*****
16     ;
17     ;           OFFSETS FROM C.RING(R5) WHERE R5 -> CONTROLLER TABLE
18     ;
19     ;*****
20
21     000000      HC.MSG= 0             ; MESSAGE RING START
22     000002      HC.MCT= HC.MSG+2.    ; MESSAGE RING CONTROL WORD
23     000004      HC.CMD= HC.MSG+HC.RSZ ; COMMAND RING START
24     000006      HC.CCT=HC.CMD+2     ; COMMAND RING CONTROL WORDS
25     000010      HC.MEV= HC.CMD+HC.RSZ ; MESSAGE ENVELOPE
26     000012      HC.VC = HC.MEV+2    ; VIRTUAL CIRCUIT + CREDIT FIELD
27     000014      HC.MPK= HC.VC+2     ; MESSAGE PACKET START
28     000074      HC.CEV= HC.MPK+HC.PSZ ; START OF COMMANDD PACKET ENVELOPE
29     000100      HC.CPK= HC.CEV+4    ; COMMAND PACKET START
30     000160      HC.BF1= HC.CPK+HC.PSZ ; FIRST BUFFER
31     000212      HC.BF2= HC.BF1+HC.BSZ ; SECOND BUFFFR
32
33     000254      HC.SIZ= HC.BF2+HC.BSZ+HC.RESZ ;TOTAL SIZE OF HOST COMM AREA
34     ; INCLUDING THE RING ENVELOPE HEADER
35
36     001001      DUP.VC = 1001        ; VIRTUAL CIRCUIT + CREDIT FIELD FOR DUP

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		RING ENVELOPE HEADER	HC.RESZ BYTES
HC.MSG HC.MCT		MESSAGE RING	HC.RSZ BYTES
HC.CMD HC.CCT		COMMAND RING	HC.RSZ BYTES
HC.MEV		MESSAGE ENVELOPE HEADER	4 BYTES
HC.MPK		MESSAGE PACKET	HC.PSZ BYTES
HC.CEV		COMMAND ENVELOPE HEADER	4 BYTES
HC.CPK		COMMAND PACKET	HC.PSZ BYTES
HC.BF1		BUFFER # 1 (DATA SENT TO DM)	HC.BSZ BYTES
HC.BF2		BUFFER # 2 (DATA RECEIVED FROM DM)	HC.BSZ BYTES

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;COMMAND PACKET OPCODES

000200	;OP.MWR=31	;MAINTENANCE WRITE COMMAND
000002	OP.END= 200	;END PACKET FLAG
000004	OP.DLE= 2	; DOWN LINE LOAD AND EXECUTE DUP PROGRAM
000005	OP.SND=4	; SEND DATA
	OP.RCV=5	; RECEIVE DATA

;NOTE: END PACKET OPCODES (ALSO CALLED ENDCODES) ARE FORMED BY ADDING THE END  
;PACKET FLAG TO THE COMMAND OPCODE. THE UNKNOWN COMMAND END PACKET CONTAINS  
;JUST THE END PACKET FLAG IN ITS OPCODE FIELD.

```
1          ;COMMAND MODIFIERS
2
3          020000 MD.CMP= 020000          ;COMPARE
4          100000 MD.EXP= 100000          ;EXPRESS REQUEST
5          040000 MD.ERR= 040000          ;FORCE ERROR
6          004000 MD.SFT= 004000          ;SOFTWARE WORDS SUPPLIED
7          002000 MD.SCH= 002000          ;SUPPRESS CACHING (HIGH SPEED)
8          001000 MD.SCL= 001000          ;SUPPRESS CACHING (LOW SPEED)
9          000100 MD.SEC= 000100          ;SUPPRESS ERROR CORRECTION
10         000020 MD.SER= 000020          ;SUPPRESS ERROR RECOVERY
11         000010 MD.SSH= 000010          ;SUPPRESS SHADOWING
12         000400 MD.WBN= 000400          ;WRITE-BACK (NON-VOLATILE)
13         000200 MD.WBV= 000200          ;WRITE BACK (VOLATILE)
14         000040 MD.ORD= 000040          ;WRITE SHOW SET IN ORDER
15         000001 MD.SPD= 000001          ;SPIN-DOWN
16         000002 MD.FEU= 000002          ;FLUSH ENTIRE UNIT
17         000003 MD.VOL= 000003          ;VOLATILE ONLY
18         010000 MD.NXU= 010000          ;NEXT UNIT
19
20         ;END PACKET FLAGS
21
22         000200 EF.BBR= 000200          ;BAD BLOCK REPORTED
23         000100 EF.BBU= 000100          ;BAD BLOCK UNREPORTED
24         000040 EF.SHE= 000040          ;SHADOW SET ERROR
25         000017 EF.SDF= 000017          ;SOFTWARE WORDS DIFFERENT:
26         000010 EF.SD3= 000010          ; SOFTWARE WORDS BYTE 3 DIFFERENT
27         000004 EF.SD2= 000004          ; SOFTWARE WORDS BYTE 2 DIFFERENT
28         000002 EF.SD1= 000002          ; SOFTWARE WORDS BYTE 1 DIFFERENT
29         000001 EF.SD0= 000001          ; SOFTWARE WORDS BYTE 0 DIFFERENT
30
31
32         ;UNIT FLAGS
33
34         000001 UF.AVL= 000001          ;AVAILABLE PENDING
35         020000 UF.CMR= 020000          ;COMPARE READS
36         010000 UF.CMW= 010000          ;COMPARE WRITES
37         004000 UF.RPL= 004000          ;HOST INITIATED BAD BLOCK REPLACEMENT
38         100000 UF.INA= 100000          ;INACTIVE SHADOW SET UNIT
39         000006 UF.MLT= 000006          ;MULTI-UNIT DRIVE (TWO BIT FIELD):
40         000002 UF.FRS= 000002          ; FIRST UNIT
41         000004 UF.LST= 000004          ; LAST UNIT
42         000006 UF.MDL= 000006          ; MIDDLE UNIT
43         000100 UF.RMV= 000100          ;REMOVEABLE MEDIA
44         002000 UF.SCH= 002000          ;SUPPRESS CACHING (HIGH SPEED)
45         001000 UF.SCL= 001000          ;SUPPRESS CACHING (LOW SPEED)
46         000400 UF.WBN= 000400          ;WRITE-BACK (NON-VOLATILE)
47         040000 UF.WPR= 040000          ;WRITE PROTECT
48         000010 UF.576= 000010          ;576 BYTE SECTORS
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1          ;CONTROLLER FLAGS
2
3          000001      CF.RPL= 000001      ;CONTROLLER INITIATED BAD BLOCK REPLACEMENT
4          100000      CF.AVL= 100000      ;ENABLE AVAILABLE ATTENTION MESSAGES
5          040000      CF.MSC= 040000      ;ENABLE MISCELLANEOUS ERROR LOG MESSAGES
6          020000      CF.OTH= 020000      ;ENABLE OTHER HOST'S ERROR LOG MESSAGES
7          010000      CF.THS= 010000      ;ENABLE THIS HOST'S ERROR LOG MESSAGES
8          000002      CF.SHD= 000002      ;SHADOWING
9          000004      CF.576= 000004      ;576 BYTE SECTORS
10
11         ;COMMAND PACKET OFFSETS
12
13         ;
14         000000      P.CRF= 0.           ;COMMAND REFERENCE NUMBER
15         000004      P.UNIT= 4.          ;UNIT NUMBER
16         000010      P.OPCD= 8.          ;OPCODE
17         000012      P.MOD= 10.          ;MODIFIERS
18         000014      P.BCNT= 12.         ;BYTE COUNT
19         000020      P.BUFF= 16.         ;BUFFER DESCRIPTOR
20         000020      P.UADR= P.BUFF      ;UNIBUS ADDRESS OF BUFFER DESCRIPTOR
21         000034      P.LBN= 28.          ;LOGICAL BLOCK NUMBER
22         000040      P.SFTW= 32.         ;SOFTWARE WORDS
23
24         ;
25         000014      P.OTRF= 12.         ;ABORT AND GET COMMAND STATUS COMMAND PACKET OFFSETS:
26                                     ;OUTSTANDING REFERENCE NUMBER
27
28         ;
29         000014      P.UNFL= 12.         ;ONLINE AND SET UNIT CHARACTERISTICS COMMAND PACKET OFFSETS:
30         000016      P.SHUN= 14.         ;UNIT FLAGS
31         000020      P.UNTI= 16.         ;SHADOW UNIT
32         000030      P.HSTI= 24.         ;UNIT IDENTIFIER
33         000034      P.ELGF= 28.         ;HOST IDENTIFIER
34                                     ;ERROR LOG FLAGS
35
36         ;
37         000014      P.RBN= 12.          ;REPLACE COMMAND PACKET OFFSETS:
38                                     ;REPLACEMENT BLOCK NUMBER
39
40         ;
41         000014      P.CNTF= 12.         ;SET CONTROLLER CHARACTERISTICS COMMAND PACKET OFFSETS:
42         000016      P.HTMO= 14.         ;CONTROLLER FLAGS
43         000020      P.USEF= 16.         ;HOST TIMEOUT
44         000024      P.TIME= 20.        ;USE FRACTION
45                                     ;QUAD-WORD TIME AND DATE
46
47         ;
48         000034      P.RGID= 28.         ;MAINTENANCE READ AND MAINTENANCE WRITE COMMAND PACKET OFFSETS:
49         000040      P.RGOF= 32.         ;REGION ID
50                                     ;REGION OFFSET
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1      ;END PACKET OFFSETS
2
3      ;
4      000000      P.CRF= 0.      ;COMMAND REFERENCE NUMBER
5      000004      P.UNIT= 4.      ;UNIT NUMBER
6      000010      P.OPCD= 8.      ;OPCODE (ALSO CALLED ENDCODE)
7      000011      P.FLGS= 9.      ;END PACKET FLAGS
8      000012      P.STS= 10.     ;MODIFIERS
9      000014      P.BCNT= 12.    ;BYTE COUNT
10     000034      P.FBBK= 28.    ;FIRST BAD BLOCK
11     000040      P.SFTW= 32.    ;SOFTWARE WORDS
12
13     ;
14     000014      P.OTRF= 12.    ;OUTSTANDING REFERENCE NUMBER
15     000020      P.CMST= 16.    ;COMMAND STATUS
16
17     ;
18     000014      P.UNFL= 12.    ;UNIT FLAGS
19     000016      P.SHUN= 14.    ;SHADOW UNIT
20     000020      P.SHST= 16.    ;SHADOW STATUS
21     000022      P.CYL= 18.    ;CYLINDER SIZE
22     000024      P.GRP= 20.    ;GROUP SIZE
23     000026      P.TRCK= 22.    ;TRACK SIZE
24     000030      P.RCTS= 24.    ;RCT TABLE SIZE
25     000032      P.RCTP= 26.    ;RCT PAD SIZE
26     000034      P.RBNS= 28.    ;RBN / TRACK
27     000035      P.RCTC= 29.    ;RCT COPIES
28
29     ;
30     000014      P.UNFL= 12.    ;UNIT FLAGS
31     000016      P.SHUN= 14.    ;SHADOW UNIT
32     000020      P.UNTI= 16.    ;UNIT IDENTIFIER
33     000030      P.HSTI= 24.    ;HOST IDENTIFIER
34     000034      P.UNCL= 28.    ;UNIT COMMAND LIMIT
35     000040      P.UNSZ= 32.    ;UNIT SIZE
36     000044      P.VSER= 36.    ;VOLUME SERIAL NUMBER
37
38     ;
39     000014      P.CWTF= 12.    ;CONTROLLER FLAGS
40     000016      P.CTMO= 14.    ;CONTROLLER TIMEOUT
41     000020      P.CNCL= 16.    ;CONTROLLER COMMAND LIMIT
42     000024      P.CNTI= 20.    ;CONTROLLER ID
43
44     ;ERROR LOG ATTENTION MESSAGE PACKET OFFSETS
45
46     000000      P.CRF= 0.      ;COMMAND REFERENCE NUMBER
47     000004      P.UNIT= 4.      ;UNIT NUMBER
48     000006      P.CNT= 6.      ;COUNT
49     000010      P.OPCD= 8.      ;OPCODE
50     000011      P.FLGS= 9.      ;ERROR LOG FLAGS
51     000012      P.SZOF= 10.    ;SIZE OR OFFSET
52     000014      P.LGDT= 12.    ;START OF ERROR LOG DATA
    
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1          ;ERROR LOG FLAGS
2
3          000200      EF.FRS= 000200      ;FIRST PACKET
4          000100      EF.LST= 000100      ;LAST PACKET
5          000001      EF.MIS= 000001      ;MESSAGE MISSING
6
7          ;ERROR LOG MESSAGE OFFSETS
8
9          000000      L.EVNT= 0.          ;EVENT CODE
10         000002      L.SLOT= 2.          ;SLOT NUMBER
11         000004      L.CNTI= 4.          ;CONTROLLER IDENTIFIER
12         000014      L.CNTI= 12.         ;CONTROLLER SOFTWARE REVISION
13         000015      L.CHVR= 13.         ;CONTROLLER HARDWARE REVISION
14         000016      L.UNTI= 14.         ;UNIT IDENTIFIER
15         000026      L.USVR= 22.         ;UNIT SOFTWARE REVISION
16         000027      L.UHVR= 23.         ;UNIT HARDWARE REVISION
17         000030      L.ERLC= 24.         ;ERROR LOCATION
18         000034      L.CYL= 28.          ;CYLINDER
19         000040      L.GRP= 32.          ;GROUP
20         000041      L.TRCK= 33.         ;TRACK
21         000042      L.SCTR= 34.         ;SECTOR
22         000044      L.VSER= 36.         ;VOLUME SERIAL NUMBER
23         000050      L.DATA= 40.         ;EVENT DEPENDENT DATA
24
25         ;STATUS AND EVENT CODE DEFINITIONS
26
27         000037      ST.MSK= 37          ;STATUS / EVENT CODE MASK
28         000040      ST.SUB= 40          ;SUB-CODE MULTIPLIER
29         000000      ST.SUC= 0           ;SUCCESS
30         000001      ST.CMD= 1           ;INVALID COMMAND
31         000002      ST.ABO= 2           ;COMMAND ABORTED
32         000003      ST.SHE= 3           ;SHADOW SET ERROR
33         000004      ST.OFL= 4           ;UNIT-OFFLINE
34         000005      ST.AVL= 5           ;UNIT-AVAILABLE
35         000006      ST.WPR= 6           ;WRITE PROTECTED
36         000007      ST.CMP= 7           ;COMPARE ERROR
37         000010      ST.DAT= 10          ;DATA ERROR
38         000011      ST.HST= 11          ;HOST BUFFER ACCESS ERROR
39         000012      ST.CNT= 12          ;CONTROLLER ERROR
40         000013      ST.DRV= 13          ;DRIVE ERROR
41         000037      ST.DIA= 37          ;MESSAGE FROM AN INTERNAL DIAGNOSTIC
    
```



```

1      ;CONTROLLER TABLE DEFINITIONS
2
3      ;ONE TABLE WILL BE SET UP BY INITIALIZE SECTION FOR EACH UDA SELECTED
4      ;FOR TESTING. TABLES ARE LINKED, A NULL (ZERO) LINK IS THE END OF THE TABLE.
5
6      ;THE FIRST TABLE IS POINTED TO BY THE CONTENTS OF TSTTAB.
7      ;THE NUMBER OF TABLES IS CONTAINED IN CTRLRS.
8
9      000000      C.NEXT= 0      ; ADDR OF NEXT CONTROLLER TABLE
10     000002      C.UADR= C.NEXT+2      ; UNIBUS ADDRESS OF UDAIP REGISTER
11     000004      C.UNIT= C.UADR+2
12     000177      CT.UNT= 000177      ; LOGICAL UNIT NUMBER (FIRST)
13     100000      CT.AVL= BIT15      ; SET WHEN NOT AVAILABLE FOR TESTING
14     000006      C.VEC= C.UNIT+2
15     000777      CT.VEC= 000777      ; VECTOR ADDRESS
16     007000      CT.BRL= 007000      ; BR LEVEL
17     000010      C.RING= C.VEC+2      ; RING BUFFER ADDRESS
18     000012      C.TO= C.RING+2      ; TIMEOUT COUNTER
19     000014      C.FLG= C.TO+2      ; FLAGS
20     000001      CT.LD= BIT0      ; DM PROGRAM LOADED
21     000002      CT.RN= BIT1      ; DM PROGRAM RUNNING
22     000004      CT.CMD= BIT2      ; COMMAND ISSUED, WAITING FOR RESPONSE
23     000010      CT.MSG= BIT3      ; MESSAGE RESPONSE RECEIVED
24
25     000020      CT.REQ= BIT4      ; WHENEVER THIS BIT IS SET, CT.CMD IS CLEARED
26
27
28     000016      C.REF= C.FLG+2      ; BUFFER HAS BEEN GIVEN TO UDA FOR REQUEST
29     000020      C.UNUM= C.REF+2      ; SET WHENEVER MAINTENANCE READ COMMAND
30     000022      C.DFLG= C.UNUM+2      ; GIVEN TO UDA
31     000024      C.FBUF= C.DFLG+2      ; COMMAND REFERENCE NUMBER
32     000026      C.FBLK= C.FBUF+2      ; DRIVE UNIT NUMBER
33
34     000030      C.SNUM= C.FBLK+2      ; DOWN LINE LOAD FLAGS (USER SUPPLIED)
35     000040      C.CNT = C.SNUM+8.      ; ADDRESS OF FCT DLL BUFFER
36
37     000020      C.INIT= 20      ; BLOCK # OF BLOCK CURRENTLY IN C.FBUF
38     000044      C.SIZE= C.CNT+4      ; -1 INDICATES FILE IS CLOSED
39

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```
;USEFUL INSTRUCTION DEFINITIONS

.MACRO AND ARG,ADR                ;LOGICAL AND INSTRUCTION
BIC #C<ARG>,ADR
.ENDM

.MACRO OR ARG,ADR                 ;LOGICAL OR INSTRUCTION
BIS #ARG,ADR
.ENDM

.MACRO PUSH ARG                   ;PUSH INSTRUCTION
.IRP X,<ARG>
MOV X,-(SP)
.ENDM
.ENDM

.MACRO POP ARG                     ;POP INSTRUCTION
.IRP X,<ARG>
MOV (SP)+,X
.ENDM
.ENDM

.MACRO SOB ARG,LABEL
DEC ARG
BNE LABEL
.ENDM

.MACRO ASSUME ARG1,FUNCTION,ARG2
.IF FUNCTION,<ARG1>=<ARG2>
.IFF
.ERROR ASSUMPTION VIOLATED
.ENDC
.ENDM
```

```

1          .SBTTL GLOBAL DATA SECTION
2
3          :
4          : THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
5          : IN MORE THAN ONE TEST.
6          :
7
8 002160          ERRTABL
          .MCALL MSGNGBL
          MSGNGBL L$ERRTABL
          .MCALL MSGEN
          .IF NB,L$ERRTABL
          .IF NB,
          MSGEN L$ERRTABL,.,SVCGBL,
          .ENDC
          .IF B,
          MSGEN L$ERRTABL,.,SVCGBL,< >
          .IF LE SVCGBL
          L$ERRTABL::
          .MEXIT
          .ENDC
          .LIST
          L$ERRTABL::

          .NLIST
          .ENDC
          .ENDC
          002160 000000 ERRTP:: .WORD 0
          002162 000000 ERRNBR:: .WORD 0
          002164 000000 ERRMSG:: .WORD 0
          002166 000000 ERRBLK:: .WORD 0
9
10 002170          FFREE:: .BLKW 1 ; FIRST FREE WORD IN MEMORY
11 002172          FSIZE:: .BLKW 1 ; SIZE OF FREE MEMORY IN WORDS
12 002174          FMEM: .BLKW 1 ; COPY OF FFREE AT END OF INIT SECTION
13 002176          FMEMS: .BLKW 1 ; COPY OF FSIZE AT END OF INIT SECTION
14 002200          CTRLRS: .BLKW 1 ; COUNT OF UDA CONTROLLERS IN PTABLES
15 002202          TSTTAB: .BLKW 1 ; POINTER TO FIRST CONTROLLER TABLE
16 002204          DMPROG: .BLKW 1 ; ADDR OF DM PROGRAM IN HOST MEMORY
17 002206          DMOVRL: .BLKW 1 ; ADDR OF DM OVERLAYS IN HOST MEMORY
18 002210          DMTRLN: .BLKW 1 ; TRANSFER LENGTH FOR DM MAIN PROGRAM IN BYTES
19 002212          RDLOW: .BLKW 1 ; LOW BOUND FOR DM PROGRAM READ
20 002214          RDHIGH: .BLKW 1 ; HIGH ...
21 002216          RD.AT: .BLKW 1 ; HOST ADDR FOR DM PROGRAM READ
22 002220          URNING: .BLKW 1 ; NUMBER OF UNITS STILL RUNNING
23
24 002222          IFLAGS::.BLKB 1 ; FLAGS FROM INIT CODE
25          000001 ISTART==BIT0 ; START EVENT FLAG
26          000002 ICONT ==BIT1 ; CONTINUE EVENT FLAG
27          .EVEN
    
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002260

```
.SBTTL GLOBAL TEXT SECTION

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

:
: NAMES OF DEVICES SUPPORTED BY PROGRAM
:
:      DEVTYP <UNIBUS DISK ADAPTER (JDA50)>
.MCALL MS$DATA,MSGNINS
MS$DATA LSDVTYP,ASCIZ,</UNIBUS DISK ADAPTER (UDA50)/>
.MCALL MSGNGBL,MSGNINS
:IF NB
MSGNGBL LSDVTYP,<>
.ENDC
:IF B
MSGNGBL LSDVTYP
.MCALL MSGEN
:IF NB,LSDVTYP
:IF NB,
MSGEN LSDVTYP,::,SVCGBL,
.ENDC
:IF B,
MSGEN LSDVTYP,::,SVCGBL,< >
:IF LE SVCGBL
LSDVTYP::
.MEXIT
.ENDC
.LIST

.NLIST

.ENDC
.ENDC
.ENDC
MSGNINS <.ASCIZ /UNIBUS DISK ADAPTER (UDA50)/>
:IF LT SVCINS
.ASCIZ /UNIBUS DISK ADAPTER (UDA50)/
.MEXIT
.ENDC
:IF EQ SVCINS
.ASCIZ /UNIBUS DISK ADAPTER (UDA50)/
.MEXIT
.ENDC
:IF GT SVCINS
.LIST

.NLIST

.ENDC
MSGNINS .EVEN
:IF LT SVCINS
.EVEN
.MEXIT
.ENDC
:IF EQ SVCINS
```

LSDVTYP::

.ASCIZ /UNIBUS DISK ADAPTER



```
.IF EQ SVCINS  
    .EVEN  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST
```

```
.NLIST
```

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.EVEN
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```
.ENDC  
    .EVEN
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.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.  
:--

10 002310

BGNMSG  
 .MCALL MSPUSH,MSINCR,MSGNGBL  
 I\$MSG=F\$BGN  
 MSPUSH T\$NS,T\$NESTLEV,F\$MSG  
 .MCALL MSINCR,M\$SETS  
 MSINCR T\$NESTLEV  
 T\$NESTLEV=T\$NESTLEV+1  
 M\$SETS T\$NS,\T\$NESTLEV,F\$MSG  
 T\$NS1=F\$MSG  
 T\$\$MSG=T\$TAGNUM  
 MSINCR T\$TAGNUM  
 T\$TAGNUM=T\$TAGNUM+1  
 MSGNGBL

000040

002310

002310

000001

002310

000011

010002

002310

010003

002310

.MCALL M\$GEN  
 .IF NB,  
 .IF NB,  
 M\$GEN ,:,SVCGBL,  
 .ENDC  
 .IF B,  
 M\$GEN ,:,SVCGBL,< >  
 .ENDC  
 .ENDC

11 002310

FMERR: ERRSF 1,FMERRM  
 .MCALL M\$ERRINS  
 M\$ERRINS 1,FMERRM,C\$ERSF  
 .MCALL M\$GNINS,MSWORD,M\$TSTLAB  
 M\$SVC C\$ERSF  
 .MCALL M\$GNINS,M\$TSTLAB  
 M\$TSTLAB

002310

002310

002310

.MCALL M\$TLABEL,MSINCR  
 .IIF LT T\$TSTMAC, .MEXIT  
 .RADIX 10  
 M\$TLABEL \T\$TESTNUM,\T\$TSTSEQ  
 .RADIX 8  
 MSINCR T\$TSTSEQ  
 M\$GNINS <TRAP C\$ERSF>  
 .IF LT SVCINS  
 TRAP C\$ERSF  
 .MEXIT  
 .ENDC

002310

002310 104454

.IF EQ SVCINS  
 TRAP C\$ERSF  
 .MEXIT  
 .ENDC  
 .IF GT SVCINS  
 .LIST

.NLIST

TRAP C\$ERSF



```
000012      .ENDC
000001      .RADIX 10
           .IF NB 1
           \TSERRNUM=1
           .IFF
           .ERROR ;MISSING ERROR-NR
           .ENDC
002312      M$WORD \TSERRNUM
           .MCALL M$GNINS
           .IRP N,<1>
           M$GNINS <.WORD N>
           .ENDM
002312      M$GNINS <.WORD 1>
           .IF LT SVCINS
           .WORD 1
           .MEXIT
           .ENDC
002312 000001 .IF EQ SVCINS
           .WORD 1
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
                                           .NLIS
                                           .WORD 1
000010      .ENDC
002314      .RADIX 8
           .IF NB FMERRM
           M$WORD FMERRM
           .MCALL M$GNINS
           .IRP N,<FMERRM>
           M$GNINS <.WORD N>
           .ENDM
002314      M$GNINS <.WORD FMERRM>
           .IF LT SVCINS
           .WORD FMERRM
           .MEXIT
           .ENDC
002314 002330 .IF EQ SVCINS
           .WORD FMERRM
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
                                           .NLIS
                                           .WORD FMERRM
           .ENDC
           .IFF
           M$WORD 0
           .ENDC
           .IF NB
           M$WORD
           .IFF
           M$WORD 0
           .MCALL M$GNINS
           .IRP N,<0>
           M$GNINS <.WORD N>
```

```
002316      .ENDM
            MSGNINS <.WORD 0>
            .IF LT SVCINS
            .WORD 0
            .MEXIT
            .ENDC
002316 000000      .IF EQ SVCINS
                  .WORD 0
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                     .WORD 0
                                     .NLIST
            .ENDC
            .ENDC
12 002320      RDERR:  ERRSF  222, RDERRM
            .MCALL  MSERRINS
002320      MSERRINS  222, RDERRM, C$ERSF
            .MCALL  MSGNINS, MSWORD, MSTSTLAB
002320      MSSVC  C$ERSF
            .MCALL  MSGNINS, MSTSTLAB
002320      MSTSTLAB
            .MCALL  MSTLABEL, MSINCR
            .IIF LT T$STMAC, .MEXIT
            .RADIX 10
            MSTLABEL  \T$TESTNUM, \T$STSEQ
            .RADIX 8
            MSINCR  T$STSEQ
002320      MSGNINS <TRAP C$ERSF>
            .IF LT SVCINS
            TRAP  C$ERSF
            .MEXIT
            .ENDC
002320 104454      .IF EQ SVCINS
                  TRAP  C$ERSF
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                     TRAP  C$ERSF
                                     .NLIST
            .ENDC
            .RADIX 10
            .IF NB 222
            T$ERRNUM=222
            .IFF
            .ERROR ;MISSING ERROR-NR
            .ENDC
            MSWORD  \T$ERRNUM
002322      .MCALL  MSGNINS
            .IRP  N, <222>
            MSGNINS <.WORD N>
            .ENDM
002322      MSGNINS <.WORD 222>
            .IF LT SVCINS
            .WORD 222
```



```

        .ENDC
13
14 002330      116      117      124 FMERRM: .ASCIZ \NOT ENOUGH MEMORY. SELECT FEWER UNITS TO FORMAT.\
15 002411      122      105      101 RDERRM: .ASCIZ \READ ERROR WHILE ATTEMPTING TO LOAD DM PROGRAM.\
16
17
18 002472
        .EVEN
        ENDMSG
        .MCALL M$POP,M$GNTAG,M$SVC,M$ENDERR
        M$POP T$NS,T$NESTLEV,T$TEMP
        .MCALL M$GETS,M$DECR
        .IF LT T$NESTLEV
        .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
        .MEXIT
        .ENDC
002472      M$GETS T$NS,\T$NESTLEV,T$TEMP
000011      T$TEMP=T$NS1
002472      M$DECR T$NESTLEV
000000      T$NESTLEV=T$NESTLEV-1
        .IF EQ F$MSG-T$TEMP
002472      MSGNTAG L,T$$MSG
        .MCALL M$GEN
002472      M$GEN L,\T$$MSG,SVCTAG
        .IF LE SVCTAG
002472      L10002:
        .MEXIT
        .ENDC
        .LIST
                                                    L10002:

        .NLIST
002472      010000      S$LSYM-T$LSYM
        M$SVC C$MSG
        .MCALL M$GNINS,M$STSTLAB
002472      M$STSTLAB
        .MCALL M$TLABEL,M$INCR
        .IF LT T$STSTMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUN,\T$STSEQ
        .RADIX 8
        M$INCR T$STSEQ
002472      M$GNINS <TRAP C$MSG>
        .IF LT SVCINS
        TRAP C$MSG
        .MEXIT
        .ENDC
        .IF EQ SVCINS
002472      104423      TRAP C$MSG
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                                    TRAP C$MSG

        .NLIST
        .ENDC
000041      I$MSG=F$END
        .IFF
        M$ENDERR ENDMSG,T$TEMP
        .ENDC
    
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.SBTTL GLOBAL SUBROUTINES SECTION

```

:ALOCM
:ALLOCATE A BLOCK OF FREE MEMORY. REPORT ERROR IF MEMORY EXHAUSTED.
:INPUTS:
:   R1 - NUMBER OF WORDS TO ALLOCATE
:   FFREE - FIRST FREE WORD IN MEMORY
:   FSIZE - SIZE OF FREE MEMORY AVAILABLE IN WORDS
:OUTPUTS:
:   R1 - ADDRESS OF FIRST WORD OF ALLOCATED MEMORY
:   FFREE - NEW FIRST FREE WORD IN MEMORY
:   FSIZE - SIZE OF FREE MEMORY LEFT AFTER ALLOCATION
:SYSTEM FATAL ERROR WILL BE REPORTED IF NOT ENOUGH MEMORY AVAILABLE
:AND ENTIRE PROGRAM WILL BE STOPPED.
    
```

002474

```

ALOCM: PUSH    FFREE                ;SAVE FFREE AT ENTRY
      .IRP X,<FFREE>
      MOV X,-(SP)
      .ENDM
      MOV FFREE,-(SP)
      SUB    R1,FSIZE                ;REDUCE SIZE OF FREE MEMORY
      BLT    FMERR                    ;REPORT ERROR IF NOT ENOUGH MEMORY
      ADD    R1,R1                    ;CHANGE WORDS TO BYTES
      ADD    R1,FFREE                 ;CALCULATE NEW START OF FREE MEMORY
      POP    R1                       ;GET START OF ALLOCATED MEMORY
      .IRP X,<R1>
      MOV (SP)+,X
      .ENDM
      MOV (SP)+,R1
      RETURN
    
```

002474 013746 002170  
 19 002500 160137 002172  
 20 002504 002701  
 21 002506 060101  
 22 002510 060137 002170  
 23 002514

002514 012601  
 24 002516 000207

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```

:BLDCMD
:BUILD A COMMAND IN COMMAND PACKET
:INPUTS:
:   R5 - CONTROLLER TABLE ADDRESS
:   R0 - COMMAND CODE
:OUTPUTS:
:   R4 - ADDRESS OF HOST COMM AREA
:   COMMAND PACKET CONTAINING REF NUMBER AND OPCODE. ALL OTHER FIELDS CLEARED.
:   CMD REFERENCE NUMBER IN CONTROLLER TABLE INCREMENTED AND RESULT
:   IN COMMAND PACKET.
:   R0 - CONTENTS DESTROYED
    
```

002520

```

BLDCMD: PUSH <R0,R1>
        .IRP X,<R0,R1>
        MOV X,-(SP)
        .ENDM
        MOV R0,-(SP)
        MOV R1,-(SP)
        MCV C.RING(R5),R4           ;GET ADDRESS OF HOST COMM AREA
        MOV R4,R1
        ADD #HC.MPK,R1             ;COMPUTE START OF MESSAGE PACKET
        MOV R1,HC.MSG(R4)         ;PLACE IN RING
        ADD #<HC.CPK-HC.MPK>,R1   ;COMPUTE START OF COMMAND PACKET
        MOV R1,HC.CMD(R4)        ;PLACE IN RING
        MOV R4,R0                 ;COPY TO R0
        ADD #HC.CPK,R0            ;COMPUTE ADDRESS OF COMMAND PACKET
        MOV #<HC.PSZ>/2,R1        ;GET WORDS TO CLEAR
        BLDC1: CLR (R0)+          ;CLEAR PACKET
        DEC R1
        BNE BLDC1
        INC C.REF(R5)             ;INCREMENT CMD REFERENCE NUMBER
        MOV C.REF(R5),HC.CPK+P.CRF(R4) ;PUT IN PACKET
        POP R1                    ;RESTORE R1
        .IRP X,<R1>
        MOV (SP)+,X
        .ENDM
        MOV (SP)+,R1
        POP HC.CPK+P.OPCD(R4)     ;PUT OPCODE IN PACKET
        .IRP X,<HC.CPK+P.OPCD(R4)>
        MOV (SP)+,X
        .ENDM
        MOV (SP)+,HC.CPK+P.OPCD(R4)
        RETURN
    
```

```

002520 010046
002522 010146
16 002524 016504 000010
17 002530 010401
18 002532 062701 000014
19 002536 010164 000000
20 002542 062701 000064
21 002546 010164 000004
22 002552 010400
23 002554 062700 000100
24 002560 012701 000030
25 002564 005020
26 002566 005301
27 002570 001375
28 002572 005265 000016
29 002576 016564 000016 000100
30 002604
002604 012601
31 002606
002606 012664 000110
32 002612 000207
    
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```

:CLRBUF
:
: CLEAR THE SPECIFIED DATA BUFFER IN THE MOST COMM AREA
: AND LOAD BUFFER DESCRIPTOR IN COMMAND PACKET TO THE BUFFER
:
: INPUTS:
:   R5 - CONTROLLER TABLE ADDRESS
:   R4 - ADDRESS OF MOST COMM AREA
:   R0 - OFFSET INTO MOST COMM AREA TO DATA BUFFER
:
: OUTPUTS:
:   DATA BUFFER CLEARED
:   COMMAND PACKET POINTING TO BUFFER
:   COMMAND ENVELOPE HEADER INITIALIZED
:   BYTE COUNT SET TO SIZE OF BUFFER
:   R4 - ADDRESS OF DATA BUFFER
:

```

17 002614

```

CLRBUF: PUSH <R0,R1>
        .IRP X,<R0,R1>
        MOV X,-(SP)
        .ENDM
        MOV R0,-(SP)
        MOV R1,-(SP)
        ADD R4,R0
        MOV R0,MC.(PK+P.UA/R(R4))
        MOV #MC.BSZ,MC.(PK+P.BCNT(R4))
        MOV R0,R4
        MOV #MC.BSZ/2,R1
(LRBF1: CLR (R0)+
        DEC R1
        BNE CLRBF1
        POP <R1,R0>
        .IRP X,<R1,R0>
        MOV (SP)+,X
        .ENDM
        MOV (SP)+,R1
        MOV (SP)+,R0
        RETURN

```

```

:ADD START OF MOST COMM AREA TO OFFSET
:PUT BUFFER ADDRESS IN COMMAND PACKET
:PUT SIZE OF BUFFER IN COMMAND PACKET
:PUT BUFFER ADDRESS IN R4
:GET SIZE OF BUFFER IN WORDS
:CLEAR ALL THE WORDS

```

```

002614 010046
002616 010146
18 002620 060400
19 002622 010064 000120
20 002626 012764 000032 000114
21 002634 010004
22 002636 012701 000015
23 002642 005020
24 002644 005301
25 002646 001375
26 002650
002650 012601
002652 012600
27 002654 000207

```

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16 002656
002656 010046
002660 010346
17 002662 020165 000026
18 002666 002004
19 002670
002670
002670
002670
002670 104435
002670
20 002672 012765 177777 000026
21 002700
22 002700 005765 000026
23 002704 002003
24 002706
002706

GETBLK - GET FCT BLOCK
:
: INPUT
: R1 - BLOCK NUMBER REQUESTED
: R5 - CONTROLLER TABLE ADDRESS
: IMPLICIT INPUT
: C.FBLK(R5) - CURRENT FCT BLOCK #
: C.FBUF(R5) - ADDRESS OF FCT BUFFER
: OUTPUT
: R2 - 1 IF SUCCESSFUL
: 0 IF EOF
: -1 IF ATTEMPT TO READ PAST EOF
: C.FBLK(R5) - NEW FCT BLOCK # (-1 IF FILE CLOSED AT EOF)
: C.FBUF(R5) - BUFFER CONTAINS NEW DATA
GETBLK: PUSH <R0,R3>
.IRP X,<R0,R3>
MOV X,-(SP)
.ENDM
MOV R0,-(SP)
MOV R3,-(SP)
CMP R1,C.FBLK(R5) ; REQ BLK # <= CUR BLK?
BGE 5$ ; YES
CLOSE ; NO - 'REWIND' THE FILE
.MCALL MSSVC
MSSVC C$CLOS
.MCALL MSGNINS,M$TSTLAB
M$TSTLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$TSTMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUM,\T$TSTSEQ
.RADIX 8
M$INCR T$TSTSEQ
MSGNINS <TRAP C$CLOS>
.IF LT SVCINS
TRAP C$CLOS
.MEXIT
.ENDC
.IF EQ SVCINS
TRAP C$CLOS
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.ENDC
MOV #-1,C.FBLK(R5) ; FLAG FILE AS CLOSED
5$:
TST C.FBLK(R5) ; FILE OPEN?
BGE 10$ ; YES
OPEN #FCTFIL ; OPEN FILE
.MCALL M$LDRO,MSSVC
M$LDRO #FCTFIL,OPEN
.MCALL MSGNINS
.IF NB #FCTFIL
TRAP C$CLOS
```



```

002706      .IF DIF RO,#FCTFIL
            MSGNINS <MOV #FCTFIL,RO>
            .IF LT SVCINS
            MOV #FCTFIL,RO
            .MEXIT
            .ENDC
002706 012700 014410      .IF EQ SVCINS
                        MOV #FCTFIL,RO
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                MOV #FCTFIL,RO
            .ENDC
            .ENDC
            .IFF
            .ERROR ;MISSING ARG. ON 'OPEN'
            .ENDC
002712      MSSVC C$OPEN
002712      .MCALL MSGNINS,M$TSTLAB
            M$TSTLAB
            .MCALL M$TLABEL,M$INCR
            .IIF LT T$TSTMAC, .MEXIT
            .RADIX 10
            M$TLABEL \T$TESTNUN,\T$TSTSEQ
            .RADIX 8
            M$INCR T$TSTSEQ
002712      MSGNINS <TRAP C$OPEN>
            .IF LT SVCINS
            TRAP C$OPEN
            .MEXIT
            .ENDC
002712 104434      .IF EQ SVCINS
                        TRAP C$OPEN
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                TRAP C$OPEN
            .ENDC
25 002714      10$:
26 002714 020165 000026      CMP R1,C.FBLK(R5) ; IS THE CUR BLK THE RIGHT ONE?
27 002720 001414      BEQ BLKFND ; YES
28
29 002722 005265 000026      INC C.FBLK(R5) ; SHOW NEW BLOCK NUMBER
30 002726 012703 000400      MOV #256,R3 ; GET NEXT 256 WORDS
31 002732 016502 000024      MOV C.FBUF(R5),R2 ; POINT TO THE BUFFER
32 002736      15$:
            GETWORD R0 ; GET NEXT WORD
            .MCALL MSSVC,M$RNRO
            MSSVC C$GETW
            .MCALL MSGNINS,M$TSTLAB
            M$TSTLAB
            .MCALL M$TLABEL,M$INCR
            .IIF LT T$TSTMAC, .MEXIT
            .RADIX 10
002736
002736
    
```

```

M$TLABEL          \T$TESTINUN,\T$TSTSEQ
.RADIX 8
M$INCR T$TSTSEQ
002736 MSGNINS <TRAP C$GETW>
      .IF LT SVCINS
      TRAP C$GETW
      .MEXIT
      .ENDC
002736 104427 .IF EQ SVCINS
      TRAP C$GETW
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
                                                    TRAP C$GETW
                                                    .NLIST
002740 .ENDC
M$RNRO RO,GETWORD
.MCALL M$GNINS
      .IF NB RO
      .IF DIF RO,RO
M$GNINS <MOV RO,RO>
      .ENDC
      .IFF
      .ERROR ;MISSING ARG. ON 'GETWORD'
      .ENDC
33 002740 BNCOMPLETE GETEOF ; CHECK FOR END OF FILE
002740 .MCALL M$GNINS
M$GNINS <BCC GETEOF>
      .IF LT SVCINS
      BCC GETEOF
      .MEXIT
      .ENDC
002740 103011 .IF EQ SVCINS
      BCC GETEOF
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
                                                    BCC GETEOF
                                                    .NLIST
34 002742 010022 .ENDC
35 002744 MOV RO,(R2)+ ; STORE DATA IN BUFFER
      SOB R3,15$ ; GET A WHOLE SECTOR
      DEC R3
      BNE 15$
36
37 002750 BR 10$ ; SEE IF THE RIGHT BLOCK NOW
38
39 002752 012702 000001 BLKFND: MOV #1,R2 ; SHOW SUCCESSFUL RETURN
40 002756 POP <R3,R0>
      .IRP X,<R3,R0>
      MOV (SP)+,X
      .ENDM
      MOV (SP)+,R3
      MOV (SP)+,R0
      RETURN
002756 012603
002760 012600
41 002762 000207
    
```

```

42
43 002764      GETEOF:
44             ;;      CMP      R3,#256.           ; MAKE SURE EOF AT FRONT OF BUFFER
45             ;;      BNE      EOFMID           ; NOT AT FRONT - ERROR
46 002764 005002      CLR      R2                ; FLAG END OF FILE
47 002766 020165 000026  CMP      R1,C.FBLK(R5)       ; EOF BLK = REQ BLK?
48 002772 001401      BEQ      10$              ; YES - ALL OK
49 002774 005302      DEC      R2                ; NO - FLAG ERROR
50 002776
51 002776 012765 177777 000026 10$:
52 003004      MOV      #-1,C.FBLK(R5)         ; FLAG FILE CLOSED
                                           ; CLOSE FILE
                                           .MCALL  MSSVC
003004      MSSVC  C$CLOS
                                           .MCALL  MSGNINS,M$TSTLAB
003004      M$TSTLAB
                                           .MCALL  M$TLABEL,M$INCR
                                           .IIF LT T$TSTMAC, .MEXIT
                                           .RADIX 10
M$TLABEL          \T$TESTNUM,\T$TSTSEQ
                                           .RADIX 8
003004      M$INCR T$TSTSEQ
M$GNINS <TRAP C$CLOS>
                                           .IF LT SVCINS
TRAP C$CLOS
                                           .MEXIT
                                           .ENDC
003004 104435      .IF EQ SVCINS
TRAP C$CLOS
                                           .MEXIT
                                           .ENDC
                                           .IF GT SVCINS
                                           .LIST
                                           .NLIST
                                           TRAP C$CLOS
                                           .ENDC
53 003006      POP      <R3,R0>
                                           .IRP X,<R3,R0>
MOV (SP)+,X
                                           .ENDM
003006 012603      MOV (SP)+,R3
003010 012600      MOV (SP)+,R0
54 003012 000207      RETURN
55
56             ;; EOFMID:  ERRHRD 6,MIDERR           ; LOG HARD ERROR
57             ;;      POP      <R3,R0>
58             ;;      TST      (SP)+           ; CLEAR RETURN
59             ;;      JMP      RSPDRP         ; DROP CURRENT UDA
60
61 003014      105      116      104  MIDERR: .ASCIZ  \END OF FILE ENCOUNTERED IN MIDDLE OF SECTOR ON FCT DLL FILE\
    
```

1	003110			GETDMR:		
2	003110	012700	000005	MOV	#OP.RCV,R0	;BUILD A RECEIVE DATA COMMAND PACKET
3	003114	004737	002520	CALL	BLDCMD	
4	003120	012700	000212	MOV	#HC.BF2,R0	;POINT TO BUFFER IN PACKET,
5	003124	004737	002614	CALL	CLRBUF	; AND CLEAR BUFFER
6	003130	004737	012010	CALL	SNDCMD	
7	003134	052765	000020	BIS	#CT.REQ,C.FLG(R5)	;SET RESPONSE FLAG
8	003142	000207		RETURN		

```

1      :HCOMM
2      :
3      :ALLOCATES MEMORY FOR HOST COMM AREA AND PACKET BUFFERS WITH ONE
4      :DESCRIPTOR IN EACH RING. TO BE CALLED AFTER INITIALIZING
5      :A CONTROLLER TABLE.
6      :
7      :INPUTS:
8      :      R5 - ADDRESS OF CONTROLLER TABLE
9      :
10     :OUTPUTS:
11     :      CONTROLLER TABLE POINTING TO HOST COMM AREA
12     :      RING POINTERS TO PACKETS
13     :      R4 - ADDRESS OF RING BUFFER
14 003144 012701 000126      HCOMM:  MOV    #HC.SIZ/2,R1      ;GET SIZE OF AREA TO ALLOCATE
15 003150 004737 002474      CALL   ALOCM      ;ALLOCATE THE MEMORY
16 003154 010104              MOV    R1,R4      ;GET ADDRESS OF HOST COMM AREA
17 003156 062704 000010      ADD    #HC.RESZ,R4 ;POINT TO RING BUFFER
18 003162 010465 000010      MOV    R4,C.RING(R5) ;PLACE IN CONTROLLER TABLE
19 003166 000207              RETURN

```

```

1          :ISCAN
2          :
3          :TEMPORARY INTERRUPT SERVICE SCANNER.
4          :SETS CT.MSG AND CLEARS CT.CMD IF MESSAGE PACKET RECEIVED.
5          :
6          :INPUTS:
7          :
8          :      R5 - CONTROLLER TABLE ADDRESS
9          :      R4 - HOST COMM AREA ADDRESS
10         003170 032765 000004 000014  ISCAN: BIT #CT.CMD,C.FLG(R5)      :LOOK AT CT.CMD BIT
11         003176 001412                   BEQ ISCANX                      :EXIT IF CLEAR
12         003200 032764 100000 000002  BIT #RG.OWN,HC.MCT(R4)         :LOOK AT OWN BIT
13         003206 001006                   BNE ISCANX                      :EXIT IF STILL SET
14         003210 042765 000004 000014  BIC #CT.CMD,C.FLG(R5)         :CLEAR CT.CMD
15         003216 052765 000010 000014  BIS #CT.MSG,C.FLG(R5)         :SET CT.MSG
16         003224 000207                   ISCANX: RETURN

```

```

1      ;LOAD
2
3      ;ISSUE DOWNLINE LOAD AND EXECUTE COMMAND TO UDA. CHECK THAT LOAD
4      ;HAPPENS WITHOUT ERROR.
5
6      ;INPUTS:
7      ;   R5 - CONTROLLER TABLE ADDRESS
8      ;OUTPUTS:
9      ;   Z CLEAR IF NO ERROR
10     ;   Z SET IF ERROR AND ERROR REPORTED
11
12 003226 LOAD:  PUSH <R0,R3,R4>
                .IRP X,<R0,R3,R4>
                MOV X,-(SP)
                .ENDM
                MOV R0,-(SP)
                MOV R3,-(SP)
                MOV R4,-(SP)
                MOV #OP.DLE,R0                ;GET DOWNLINE LOAD COMMAND
                CALL BLDCMD                    ;BUILD COMMAND PACKET
                MOV DMTRLN,HC.CPK+P.TRLN(R4) ; SET TRANSFER LENGTH
                MOV DMPROG,HC.CPK+P.MAIN(R4) ; SET HOST ADDRESS OF MAIN PROGRAM
                MOV DMOVRL,HC.CPK+P.OVRL(R4) ; SET HOST ADDRESS OF OVERLAYS
                CALL SNDCMD                    ;SEND COMMAND TO UDA
                CALL WAITMS                    ;WAIT FOR MESSAGE RESPONSE
                BIT #ST.MSK,HC.MPK+P.STS(R4)  ;LOOK FOR ANY ERROR
                BNE LOADE1
                BIC #CT.CMD,C.FLG(R5)        ;CLEAR COMMAND ISSUED
                POP <R4,R3,R0>
                .IRP X,<R4,R3,R0>
                MOV (SP)+,X
                .ENDM
                MOV (SP)+,R4
                MOV (SP)+,R3
                MOV (SP)+,R0
                CLZ                            ;CLEAR Z TO INDICATE NO ERROR
                RETURN
    003226 010046
    003230 010346
    003232 010446
13 003234 012700 000002
14 003240 004737 002520
15 003244 013764 002210 000114
16 003252 013764 002204 000120
17 003260 013764 002206 000134
18 003266 004737 012010
19 003272 004737 013644
20 003276 032764 000037 000026
21 003304 001010
22 003306 042765 000004 000014
23 003314
    003314 012604
    003316 012603
    003320 012600
24 003322 000244
25 003324 000207
    
```

```

1          ;UDA FAILED TO DOWNLINE LOAD DM PROGRAM
2
3 003326 016537 000004 002074 LOADE1: MOV C.UNIT(R5),L$LUN          ;TELL DRS WHICH UNIT
4 003334      ERRHRD 7,LOADM1
      .MCALL MSERRINS
003334      MSERRINS 7,LOADM1,,C$ERHRD
      .MCALL MSGNINS,MSWORD,MS$STLAB
003334      MS$SVC C$ERHRD
      .MCALL MSGNINS,MS$STLAB
003334      MS$STLAB
      .MCALL MS$TLABEL,MS$INCR
      .IF LT T$STSTMAC, .MEXIT
      .RADIX 10
      MS$TLABEL \T$TESTNUM,\T$STSEQ
      .RADIX 8
      MS$INCR T$STSEQ
003334      MSGNINS <TRAP C$ERHRD>
      .IF LT SVCINS
      TRAP C$ERHRD
      .MEXIT
      .ENDC
003334 104456      .IF EQ SVCINS
      TRAP C$ERHRD
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      TRAP C$ERHRD
      .ENDC
      .RADIX 10
      .IF NB 7
      T$ERRNUM=7
      .IFF
      .ERROR ;MISSING ERROR-NR
      .ENDC
003336      MSWORD \T$ERRNUM
      .MCALL MSGNINS
      .IRP N,<7>
      MSGNINS <.WORD N>
      .ENDM
003336      MSGNINS <.WORD 7>
      .IF LT SVCINS
      .WORD 7
      .MEXIT
      .ENDC
003336 000007      .IF EQ SVCINS
      .WORD 7
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .WORD 7
      .ENDC
      .RADIX 8
      .IF NB LOADM1
    
```



```

003340          M$WORD  LOADM1
                .MCALL  M$GNINS
                .IRP    N,<LOADM1>
M$GNINS <.WORD  N>
                .ENDM
003340          M$GNINS <.WORD  LOADM1>
                .IF LT  SVCINS
                .WORD  LOADM1
                .MEXIT
                .ENDC
003340 003356   .IF EQ  SVCINS
                .WORD  LOADM1
                .MEXIT
                .ENDC
                .IF GT  SVCINS
                .LIST
                                .WORD  LOADM1
                                .NLIST
                .ENDC
                .IFF
M$WORD  0
                .ENDC
                .IF NB
M$WORD
                .IFF
003342          M$WORD  0
                .MCALL  M$GNINS
                .IRP    N,<0>
M$GNINS <.WORD  N>
                .ENDM
003342          M$GNINS <.WORD  0>
                .IF LT  SVCINS
                .WORD  0
                .MEXIT
                .ENDC
003342 000000   .IF EQ  SVCINS
                .WORD  0
                .MEXIT
                .ENDC
                .IF GT  SVCINS
                .LIST
                                .WORD  0
                                .NLIST
                .ENDC
                .ENDC
5 003344          POP    <R4,R3,R0>
                .IRP X,<R4,R3,R0>
                MOV (SP)+,X
                .ENDM
                MOV (SP)+,R4
                MOV (SP)+,R3
                MOV (SP)+,R0
                SEZ
                RETURN
                                ;SET Z TO INDICATE ERROR OCCURRED
003344 012604
003346 012603
003350 012600
6 003352 000264
7 003354 000207
8
9 003356      125      104      101  LOADM1: .ASCIZ\UDA RETURNED ERROR TO DOWNLINE LOAD & EXECUTE COMMAND\
10          .EVEN
    
```

```

1          ;LOADDM
2          ;
3          ;LOAD A DM PROGRAM INTO A CONTROLLER
4          ;
5          ;INPUTS:
6          ;   R5 - CONTROLLER TABLE ADDRESS
7          ;IMPLICIT INPUTS:
8          ;   DMPROG - POINTER TO START OF DM PROGRAM IN MEMORY
9          ;
10         ;OUTPUTS:
11         ;   IF LOAD SUCCEEDS - Z CLEAR
12         ;   CONTROLLER TABLE MARKED LOADED
13         ;   IF ERROR - Z SET
14
15 003444 004737 012110   LOADDM: CALL   UDAINIT           ; RING BUFFER AND INTERRUPTS DISABLED
16 003450 001406         BEQ    LOADER           ;BRANCH IF AN ERROR
17 003452 004737 003226   CALL   LOAD           ;LOAD INTO UDA
18 003456 001403         BEQ    LOADER           ;GET OUT IF LOAD ERROR
19 003460 052765 000001 000014  LOADEX: BIS    #CT.LD,C.FLG(R5) ;SET DM LOADED IN CONTROLLER TABLE
20 003466 000207         LOADER: RETURN

```

```

1 003470          OPENLF: OPEN #FNAME          ;OPEN FILE TO READ
                  .MCALL M$LDRO,M$SVC
003470          M$LDRO #FNAME,OPEN
                  .MCALL M$GNINS
                  .IF NB #FNAME
003470          .IF DIF RO,#FNAME
M$GNINS <MOV #FNAME,RO>
                  .IF LT SVCINS
MOV #FNAME,RO
                  .MEXIT
                  .ENDC
003470 012700 004422 .IF EQ SVCINS
                  MOV #FNAME,RO
                  .MEXIT
                  .ENDC
                  .IF GT SVCINS
                  .LIST
                                                    MOV #FNAME,RO
                                                    .NLIST
                  .ENDC
                  .ENDC
                  .IF#
003474          .ERROR ;MISSING ARG. ON 'OPEN'
                  .ENDC
003474          M$SVC C$OPEN
                  .MCALL M$GNINS,M$TSTLAB
M$TSTLAB
                  .MCALL M$TLABEL,M$INCR
                  .IF LT T$TSTMAC, .MEXIT
                  .RADIX 10
M$TLABEL \T$TESTNUM,\T$TSTSEQ
                  .RADIX 8
M$INCR T$TSTSEQ
003474          M$GNINS <TRAP C$OPEN>
                  .IF LT SVCINS
TRAP C$OPEN
                  .MEXIT
                  .ENDC
003474 104434          .IF EQ SVCINS
                  TRAP C$OPEN
                  .MEXIT
                  .ENDC
                  .IF GT SVCINS
                  .LIST
                                                    TRAP C$OPEN
                                                    .NLIST
                  .ENDC
2 003476 000207          RETURN
    
```

```

1 003500          RDREC: GETBYTE RO          ;GET A BYTE
                  .MCALL MSSVC,MSRBRO
003500          MSSVC CSGETB
003500          .MCALL MSGNINS,MSTSTLAB
                  MSTSTLAB
                  .MCALL MSTLABEL,MSINCR
                  .IIF LT TSTSTMAC, .MEXIT
                  .RADIX 10
003500          MSTLABEL          \TSTESTNUM,\TSTSTSEQ
                  .RADIX 8
                  MSINCR TSTSTSEQ
                  MSGNINS <TRAP CSGETB>
                  .IF LT SVCINS
                  TRAP CSGETB
                  .MEXIT
                  .ENDC
003500 104426    .IF EQ SVCINS
                  TRAP CSGETB
                  .MEXIT
                  .ENDC
                  .IF GT SVCINS
                  .LIST
                  .NLIST
                  .ENDC
003500          MSRBRO RO,GETBYTE
                  .MCALL MSGNINS
                  .IF NB RO
                  .IF DIF RO,RO
                  MSGNINS <MOVB RO,RO>
                  .ENDC
                  .IFF
                  .ERROR ;MISSING ARG. ON 'GETBYTE'
                  .FNDC
2 003502 005700          TST RO          ;IF ZERO
3 003504 001775          BEQ RDREC        ;KEEP READING
4 003506 005300          DEC RO          ;WHEN NOT ZERO
5 003510 001067          BNE RWRDE1     ;IT BETTER BE A ONE
6 003512          GETBYTE RO          ;AND THE NEXT BYTE
003512          .MCALL MSSVC,MSRBRO
                  MSSVC CSGETB
003512          .MCALL MSGNINS,MSTSTLAB
                  MSTSTLAB
                  .MCALL MSTLABEL,MSINCR
                  .IIF LT TSTSTMAC, .MEXIT
                  .RADIX 10
003512          MSTLABEL          \TSTESTNUM,\TSTSTSEQ
                  .RADIX 8
                  MSINCR TSTSTSEQ
                  MSGNINS <TRAP CSGETB>
                  .IF LT SVCINS
                  TRAP CSGETB
                  .MEXIT
                  .ENDC
003512 104426    .IF EQ SVCINS
                  TRAP CSGETB
                  .MEXIT
    
```

TRAP CSGETB

```

        .ENDC
        .IF GT SVCINS
        .LIST

                                .NLIST
                                TRAP C$GETB

003514 .ENDC
        M$RBRO RO,GETBYTE
        .MCALL M$GNINS
        .IF NB RO
        .IF DIF RO,RO
        M$GNINS <MOVB RO,RO>
        .ENDC
        .IFF
        .ERROR ;MISSING ARG. ON 'GETBYTE'
        .ENDC

7 003514 005700 TST RO ; SHOULD BE A ZERO
8 003516 001064 BNE RWRDE1
9 003520 012704 000001 MOV #1,R4 ; SET INITIAL CHECKSUM TO INCLUDE THE ONE READ
10 003524 004737 003646 CALL FWORD ; READ BYTE COUNT
11 003530 013703 004436 MOV FDATA,R3 ; SAVE IN R3
12 003534 004737 003646 CALL FWORD ; READ LOAD ADDRESS
13 003540 162703 000006 SUB #6,R3 ; SUBTRACT BYTES ALREADY READ FROM BYTE COUNT
14 003544 001431 BEQ RWORDT ; IF RESULT IS ZERO, THIS IS A
15 ; TRANSFER BLOCK
16 003546 013705 004436 MOV FDATA,R5 ; LOAD ADDRESS
17 003552 010502 MOV R5,R2
18 003554 163702 002212 SUB RDLOW,R2 ; COMPUTE OFFSET
19 003560 063702 002216 ADD RD.AT,R2 ; REAL LOAD ADDRESS
20
21 003564 020537 002212 1$: CMP R5,RDLOW ; CHECK BOUNDS
22 003570 103447 BLO RDERR1
23 003572 020537 00 214 CMP R5,RDHIGH
24 003576 101044 BHI RDERR1
25
26 003600 GETBYTE RO ; GET NEXT DATA BYTE
        .MCALL M$SVC,M$RBRO
        M$SVC C$GETB
        .MCALL M$GNINS,M$TSTLAB
        M$TSTLAB
        .MCALL M$TLABEL,M$INCR
        .IF LT T$TSTMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUN,\T$TSTSEQ
        .RADIX 8
        M$INCR T$TSTSEQ
003600 M$GNINS <TRAP C$GETB>
        .IF LT SVCINS
        TRAP C$GETB
        .MEXIT
        .ENDC
003600 104426 .IF EQ SVCINS
        TRAP C$GETB
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST

                                TRAP C$GETB
    
```

```

                                .NLIST
003602      .ENDC
            M$RBRO  RO,GETBYTE
            .MCALL  M$GNINS
            .IF NB  RO
            .IF DIF RO,RO
            M$GNINS <MOVB  RO,RO>
            .ENDC
            .IFF
            .ERROR ;MISSING ARG. ON 'GETBYTE'
            .ENDC

27 003602  060004      ADD      RO,R4      ; UPDATE CHECKSUM
28 003604  110022      MOVNB   RO,(R2)+    ; STORE IN REAL MEMORY
29 003606  105725      TSTB   (R5)+      ; BUMP FAKE MEM ADDR
30
31 003610          SOB      R3,1$      ; PROCESS REMAINDER OF RECORD
    003610  005303      DEC      R3
    003612  001364      BNE     1$

32
33 003614          GETBYTE RO      ;GET CHECKSUM BYTE
            .MCALL  M$SVC,M$RBRO
    003614      M$SVC   C$GETB
            .MCALL  M$GNINS,M$TSTLAB
    003614      M$TSTLAB
            .MCALL  M$TLABEL,M$INCR
            .IF LT T$TSTMAC, .MEXIT
            .RADIX 10
            M$TLABEL   \T$TESTNUN,\T$TSTSEQ
            .RADIX 8
            M$INCR   T$TSTSEQ
    003614      M$GNINS <TRAP  C$GETB>
            .IF LT SVCINS
            TRAP   C$GETB
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            TRAP   C$GETB
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                TRAP   C$GETB
                                .NLIST
003616      .ENDC
            M$RBRO  RO,GETBYTE
            .MCALL  M$GNINS
            .IF NB  RO
            .IF DIF RO,RO
            M$GNINS <MOVB  RO,RO>
            .ENDC
            .IFF
            .ERROR ;MISSING ARG. ON 'GETBYTE'
            .ENDC

34 003616  060004      ADD      RO,R4      ;ADD TO COMPUTED CHECKSUM
35 003620  105704      TSTB   R4          ;CHECK LOW BYTE OF SUM
36 003622  001026      BNE     RWRDE3     ;BRANCH IF CHECKSUM ERROR
37 003624  000264      SEZ
            ;RETURN WITH Z SET TO INDICATE
    
```

```

38 003626 000207          RETURN          ; RECORD OK
39
40 003630          RWORDT: GETBYTE R0      ;READ CHECKSUM BYTE
          .MCALL MSSVC,M$RBRO
          MSSVC C$GETB
          .MCALL MSGNINS,M$TSTLAB
          M$TSTLAB
          .MCALL M$TLABEL,M$INCR
          .IIF LT T$TSTMAC, .MEXIT
          .RADIX 10
          M$TLABEL          \T$TESTNUN,\T$TSTSEQ
          .RADIX 8
          M$INCR T$TSTSEQ
003630  MSGNINS <TRAP C$GETB>
          .IF LT SVCINS
          TRAP C$GETB
          .MEXIT
          .ENDC
          .IF EQ SVCINS
          TRAP C$GETB
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .NLIST
          .ENDC
003632  M$RBRO R0,GETBYTE
          .MCALL MSGNINS
          .IF NB R0
          .IF DIF R0,R0
          MSGNINS <MOV8 R0,R0>
          .ENDC
          .IFF
          .ERROR ;MISSING ARG. ON "GETBYTE"
          .ENDC

41 003632 060004          ADD R0,R4          ;ADD TO COMPUTED CHECKSUM
42 003634 105704          TSTB R4          ;CHECK LOW BYTE OF SUM
43 003636 001020          BNE RWRDE3      ;BRANCH IF CHECKSUM ERROR
44 003640          CLOSE          ;CLOSE FILE
          .MCALL MSSVC
          MSSVC C$CLOS
          .MCALL MSGNINS,M$TSTLAB
          M$TSTLAB
          .MCALL M$TLABEL,M$INCR
          .IIF LT T$TSTMAC, .MEXIT
          .RADIX 10
          M$TLABEL          \T$TESTNUN,\T$TSTSEQ
          .RADIX 8
          M$INCR T$TSTSEQ
003640  MSGNINS <TRAP C$CLOS>
          .IF LT SVCINS
          TRAP C$CLOS
          .MEXIT
          .ENDC
          .IF EQ SVCINS
          TRAP C$CLOS
003640 104435
    
```





```

003656          MSGNINS <TRAP   C$GETB>
                .IF LT SVCINS
                TRAP   C$GETB
                .MEXIT
                .ENDC
003656 104426   .IF EQ SVCINS
                TRAP   C$GETB
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .NLIST
                                TRAP   C$GETB
003660          .ENDC
                MSRBRO RO,GETBYTE
                .MCALL MSGNINS
                .IF NB RO
                .IF DIF RO,RO
                MSGNINS <MOVB  RO,RO>
                .ENDC
                .IFF
                .ERROR ;MISSING ARG. ON 'GETB
                .ENDC
52 003660 060004
53 003662 110037 004437
54 003666 000207
                ADD    RO,R4           ;UPDATE CHECKSUM
                MOVB   RO,FDATA+1     ;COMPLETE WORD
                RETURN
    
```

```

1 003670      RWRDE1: ERRSF 30001,RWRDEM,RWRDM1      ;START FRAME NOT FOUND
              .MCALL MSERRINS
003670      MSERRINS      30001,RWRDEM,RWRDM1,C$ERSF
              .MCALL MSGNINS,MSWORD,MSSTLAB
003670      MSSVC      C$ERSF
              .MCALL MSGNINS,MSSTLAB
003670      MSSTLAB
              .MCALL MSTLABEL,MSINCR
              .IF LT T$STMAC, .MEXIT
              .RADIX 10
              MSTLABEL      \T$TESTNUM,\T$STSEQ
              .RADIX 8
003670      MSINCR      T$STSEQ
              MSGNINS <TRAP C$ERSF>
              .IF LT SVCINS
              TRAP      C$ERSF
              .MEXIT
              .ENDC
003670 104454  .IF EQ SVCINS
              TRAP      C$ERSF
              .MEXIT
              .ENDC
              .IF GT SVCINS
              .LIST
                                TRAP      C$ERSF
                                .NLIST
              .ENDC
              .RADIX 10
              .IF NB 30001
              T$ERRNUM=30001
              .IFF
              .ERROR ;MISSING ERROR-NR
              .ENDC
003672      MSWORD      \T$ERRNUM
              .MCALL MSGNINS
              .IRP      N,<30001>
              MSGNINS <.WORD N>
              .ENDM
003672      MSGNINS <.WORD 30001>
              .IF LT SVCINS
              .WORD      30001
              .MEXIT
              .ENDC
003672 072461 .IF EQ SVCINS
              .WORD      30001
              .MEXIT
              .ENDC
              .IF GT SVCINS
              .LIST
                                .WORD      30001
                                .NLIST
              .ENDC
              .RADIX 8
              .IF NB RWRDEM
003674      MSWORD      RWRDEM
              .MCALL MSGNINS
              .IRP      N,<RWRDEM>
    
```

```
003674 MSGNINS <.WORD N>
.ENDM
MSGNINS <.WORD RWRDEM>
.IF LT SVCINS
.WORD RWRDEM
.MEXIT
.ENDC
003674 004112 .IF EQ SVCINS
.WORD RWRDEM
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.WORD RWRDEM
.ENDC
.IFF
MSWORD 0
.ENDC
003676 .IF NB RWRDM1
MSWORD RWRDM1
.MCALL MSGNINS
.IRP N,<RWRDM1>
MSGNINS <.WORD N>
.ENDM
003676 MSGNINS <.WORD RWRDM1>
.IF LT SVCINS
.WORD RWRDM1
.MEXIT
.ENDC
003676 003720 .IF EQ SVCINS
.WORD RWRDM1
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.WORD RWRDM1
.ENDC
.IFF
MSWORD 0
.ENDC
2 003700 RWRDE3: ERRSF 30003,RWRDEM,RWRDM3 ;CHECKSUM ERROR
003700 .MCALL MSERRINS
MSERRINS 30003,RWRDEM,RWRDM3,C$ERSF
003700 .MCALL MSGNINS,MSWORD,M$TSTLAB
003700 M$SVC C$ERSF
.MCALL MSGNINS,M$TSTLAB
003700 M$TSTLAB
.MCALL M$TLABEL,M$INCR
.IF LT T$TSTMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUN,\T$TSTSEQ
.RADIX 8
M$INCR T$TSTSEQ
003700 MSGNINS <TRAP C$ERSF>
.IF LT SVCINS
```

```

                                TRAP    C$ERSF
                                .MEXIT
                                .ENDC
003700 104454                  .IF EQ  SVCINS
                                TRAP    C$ERSF
                                .MEXIT
                                .ENDC
                                .IF GT  SVCINS
                                .LIST
                                .NLIST
                                TRAP    C$ERSF
                                .ENDC
                                .RADIX  10
                                .IF NB  30003
000012                        T$ERRNUM=30003
072463                        .IFF
                                .ERROR  ;MISSING ERROR-NR
                                .ENDC
003702                        M$WORD  \T$ERRNUM
                                .MCALL  M$GNINS
                                .IRP    N,<30003>
                                M$GNINS <.WORD N>
003702                        .ENDM
                                M$GNINS <.WORD 30003>
                                .IF LT  SVCINS
                                .WORD  30003
                                .MEXIT
                                .ENDC
003702 072463                .IF EQ  SVCINS
                                .WORD  30003
                                .MEXIT
                                .ENDC
                                .IF GT  SVCINS
                                .LIST
                                .NLIST
                                .WORD  30003
                                .ENDC
                                .RADIX  8
                                .IF NB  RWRDEM
003704                        M$WORD  RWRDEM
                                .MCALL  M$GNINS
                                .IRP    N,<RWRDEM>
                                M$GNINS <.WORD N>
003704                        .ENDM
                                M$GNINS <.WORD RWRDEM>
                                .IF LT  SVCINS
                                .WORD  RWRDEM
                                .MEXIT
                                .ENDC
003704 004112                .IF EQ  SVCINS
                                .WORD  RWRDEM
                                .MEXIT
                                .ENDC
                                .IF GT  SVCINS
                                .LIST
                                .NLIST
                                .WORD  RWRDEM
    
```

```

                                .ENDC
                                .IFF
                                M$WORD 0
                                .ENDC
003706                          .IF NB RWRDM3
                                M$WORD RWRDM3
                                .MCALL M$GNINS
                                .IRP N,<RWRDM3>
                                M$GNINS <.WORD N>
                                .ENDM
003706                          M$GNINS <.WORD RWRDM3>
                                .IF LT SVCINS
                                .WORD RWRDM3
                                .MEXIT
                                .ENDC
003706 004044                  .IF EQ SVCINS
                                .WORD RWRDM3
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD RWRDM3
                                                                .NLIST
                                .ENDC
                                .IFF
                                M$WORD 0
                                .ENDC
3 003710                      RDERR1: ERRSF 30002,RWRDEM,RWRDM2
                                .MCALL M$ERRINS
003710                          M$ERRINS 30002,RWRDEM,RWRDM2,C$ERSF
003710                          .MCALL M$GNINS,M$WORD,M$TSTLAB
003710                          M$SVC C$ERSF
                                .MCALL M$GNINS,M$TSTLAB
003710                          M$TSTLAB
                                .MCALL M$TLABEL,M$INCR
                                .IF LT T$TSTMAC, .MEXIT
                                .RADIX 10
                                M$TLABEL \T$TESTNUN,\T$TSTSEQ
                                .RADIX 8
                                M$INCR T$TSTSEQ
003710                          M$GNINS <TRAP C$ERSF>
                                .IF LT SVCINS
                                TRAP C$ERSF
                                .MEXIT
                                .ENDC
003710 104454                  .IF EQ SVCINS
                                TRAP C$ERSF
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                TRAP C$ERSF
                                                                .NLIST
                                .ENDC
                                .RADIX 10
                                .IF NB 30002
                                T$ERRNUM-30002
                                000012
                                072462
```

```
003712      .IFF
            .ERROR ;MISSING ERROR-NR
            .ENDC
            M$WORD \T$ERRNUM
            .MCALL M$GNINS
            .IRP   N,<30002>
            M$GNINS <.WORD N>
            .ENDM
003712      M$GNINS <.WORD 30002>
            .IF LT SVCINS
            .WORD 30002
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD 30002
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD 30002
                                                    .NLIST
            .ENDC
000010
003714      .RADIX 8
            .IF NB RWRDEM
            M$WORD RWRDEM
            .MCALL M$GNINS
            .IRP   N,<RWRDEM>
            M$GNINS <.WORD N>
            .ENDM
003714      M$GNINS <.WORD RWRDEM>
            .IF LT SVCINS
            .WORD RWRDEM
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD RWRDEM
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD RWRDEM
                                                    .NLIST
            .ENDC
            .IFF
            M$WORD 0
            .ENDC
            .IF NB RWRDM2
            M$WORD RWRDM2
            .MCALL M$GNINS
            .IRP   N,<RWRDM2>
            M$GNINS <.WORD N>
            .ENDM
003716      M$GNINS <.WORD RWRDM2>
            .IF LT SVCINS
            .WORD RWRDM2
            .MEXIT
            .ENDC
```

```

003716 003766      .IF EQ SVCINS
                   .WORD   RWRDM2
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST
                                     .WORD   RWRDM2
                                     .NLIST
                   .ENDC
                   .IFF
MSWORD 0
                   .ENDC

4
5 003720      BGNMSG RWRDM1
                   .MCALL MSPUSH,MSINCR,MSGNGBL
                   I$MSG=F$BGN
003720 000040      MSPUSH T$NS,T$NESTLEV,F$MSG
                   .MCALL MSINCR,M$SETS
003720      MSINCR T$NESTLEV
003720 000001      T$NESTLEV=T$NESTLEV+1
                   M$SETS T$NS,\T$NESTLEV,F$MSG
003720 000011      T$NS1=F$MSG
003720 010003      T$$MSG=T$TAGNUM
                   MSINCR T$TAGNUM
003720 010004      T$TAGNUM=T$TAGNUM+1
                   MSGNGBL RWRDM1
                   .MCALL M$GEN
                   .IF NB,RWRDM1
                   .IF NB,
MSGEN RWRDM1,::,SVCGBL,
                   .ENDC
003720      .IF B,
MSGEN RWRDM1,::,SVCGBL,< >
003720      .IF LE SVCGBL
RWRDM1::
                   .MEXIT
                   .ENDC
                   .LIST
                                     RWRDM1::
                                     .NLIST
                   .ENDC
                   .ENDC

6 003720      PRINTB #RWRDF1,#FNAME
                   .MCALL M$PRINT
                   .IF B #RWRDF1
                   .ERROR ;MISSING FORMAT
                   .MEXIT
                   .ENDC
                   .IF B <#FNAME>
MSPRINT C$PNTB,#RWRDF1
                   .MEXIT
                   .ENDC
003720      .IF B <>
MSPRINT C$PNTB,#RWRDF1,<#FNAME>
                   .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
003720 000001      T$ARGCNT=1
                   M$COUNT T$ARGCNT,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
    
```

```

        .IF NB <>
        M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
        .ENDC
000002    .IF NB <#FNAME>
        T$ARGCNT=T$ARGCNT+1
        .ENDC
        .IRP    N,<\T$ARGCNT>
003720    M$PUT    #N,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
        .ENDM
003720    M$PUT    #2,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
        .MCALL    M$PUT1
        .IF NB    <#RWRDF1>
003720    M$PUT    <#RWRDF1>,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
        .MCALL    M$PUT1
003720    .IF NB    <#FNAME>
        M$PUT    <#FNAME>,<>,<>,<>,<>,<>,<>,<>,<>
        .MCALL    M$PUT1
        .IF NB    <>
        M$PUT    <>,<>,<>,<>,<>,<>,<>,<>,<>
        .ENDC
003720    .IF NB    <#FNAME>
        M$PUT?   #FNAME
        .MCALL    M$GNINS
003720    .IF B
        M$GNINS <MOV    #FNAME,-(SP)>
        .IF LT SVCINS
        MOV    #FNAME,-(SP)
        .MEXIT
        .ENDC
003720 012746 004422 .IF EQ SVCINS
        MOV    #FNAME,-(SP)
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV    #FNAME,-(SP)
        .ENDC
        .IFF
        .IF DIF B,<#FNAME>
        .ERROR ;ILL. ARG. '#FNAME' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
        M$GNINS <CLR    -(SP)>
        M$GNINS <BISB  ,(SP)>
        .ENDC
        .ENDC
        .ENDC
003724    .IF NB    <#RWRDF1>
        M$PUT1   #RWRDF1
        .MCALL    M$GNINS
003724    .IF B
        M$GNINS <MOV    #RWRDF1,-(SP)>
        .IF LT SVCINS
        MOV    #RWRDF1,-(SP)
        .MEXIT
        .ENDC
    
```



```
003724 012746 004172      .IF EQ SVCINS
                          MOV      #RWRDF1,-(SP)
                          .MEXIT
                          .ENDC
                          .IF GT SVCINS
                          .LIST
                          .NLIST
                          .ENDC
                          .IFF
                          .IF DIF B,<#RWRDF1>
                          .ERROR ;ILL. ARG. '#RWRDF1' ONLY 'B' IS ALLOWED.
                          .MEXIT
                          .ENDC
                          MSGNINS <CLR      -(SP)>
                          MSGNINS <BISB    ,(SP)>
                          .ENDC
                          .ENDC
                          .ENDC
003730      .IF NB <#2>
MSPUT1 #2
.MCALL MSGNINS
003730      .IF B
MSGNINS <MOV      #2,-(SP)>
                          .IF LT SVCINS
                          MOV      #2,-(SP)
                          .MEXIT
                          .ENDC
003730 012746 000002      .IF EQ SVCINS
                          MOV      #2,-(SP)
                          .MEXIT
                          .ENDC
                          .IF GT SVCINS
                          .LIST
                          .NLIST
                          .ENDC
                          .IFF
                          .IF DIF B,<#2>
                          .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
                          .MEXIT
                          .ENDC
                          MSGNINS <CLR      -(SP)>
                          MSGNINS <BISB    ,(SP)>
                          .ENDC
                          .ENDC
003734      MSGNINS <MOV      SP,R0>
                          .IF LT SVCINS
                          MOV      SP,R0
                          .MEXIT
                          .ENDC
003734 010600      .IF EQ SVCINS
                          MOV      SP,R0
                          .MEXIT
                          .ENDC
                          .IF GT SVCINS
                          .LIST
```

```

                                .NLIST
                                MOV     SP,R0
003736      .ENDC
            M$SVC     C$PNTB
003736      .MCALL   MSGNINS,M$TSTLAB
            M$TSTLAB
            .MCALL   M$TLABEL,M$INCR
            .IIF LT T$TSTMAC, .MEXIT
            .RADIX  10
            M$TLABEL \T$TESTNUN,\T$TSTSEQ
            .RADIX  8
            M$INCR   T$TSTSEQ
003736      M$GNINS <TRAP C$PNTB>
            .IF LT SVCINS
            TRAP     C$PNTB
            .MEXIT
            .ENDC
003736 104414 .IF EQ SVCINS
            TRAP     C$PNTB
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                TRAP     C$PNTB
            .ENDC
            .IRP     N,<\T$ARGCNT*2+2>
            M$GNINS <ADD #N,SP>
            .ENDM
003740      M$GNINS <ADD #6,SP>
            .IF LT SVCINS
            ADD     #6,SP
            .MEXIT
            .ENDC
003740 062706 000006 .IF EQ SVCINS
            ADD     #6,SP
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                ADD     #6,SP
            .ENDC
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>
            .MEXIT
            .ENDC
    
```

```

        .IF B <>
        M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>,<>
        .MEXIT
        .ENDC
7 003744 M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
        PRINTB #RWRDF2
        .MCALL M$PRINT
        .IF B #RWRDF2
        .ERROR ;MISSING FORMAT
        .MEXIT
        .ENDC
        .IF B <>
003744 M$PRINT C$PNTB,#RWRDF2
        .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
003744 000001 T$ARGCNT=1
        M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
        .IF NB <>
        M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
        .ENDC
        .IF NB <>
        T$ARGCNT=T$ARGCNT+1
        .ENDC
        .IRP N,<\T$ARGCNT>
003744 M$PUT #N,#RWRDF2,<>,<>,<>,<>,<>,<>,<>,<>
        .ENDM
        M$PUT #1,#RWRDF2,<>,<>,<>,<>,<>,<>,<>,<>
        .MCALL M$PUT1
003744 .IF NB <#RWRDF2>
        M$PUT <#RWRDF2>,<>,<>,<>,<>,<>,<>,<>,<>
        .MCALL M$PUT1
        .IF NB <>
        M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
        .ENDC
        .IF NB <#RWRDF2>
003744 M$PUT1 #RWRDF2
        .MCALL M$GNINS
        .IF B
003744 M$GNINS <MOV #RWRDF2,-(SP)>
        .IF LT SVCINS
        MOV #RWRDF2,-(SP)
        .MEXIT
        .ENDC
        .IF EQ SVCINS
003744 012746 004230 MOV #RWRDF2,-(SP)
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
    
```

MOV #RWRDF2,-(SP)

```
                                .NLIST
                                .ENDC
                                .IFF
                                .IF DIF B,<#RWRDF2>
                                .ERROR ;ILL. ARG. '#RWRDF2' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
                                MSGNINS <CLR -(SP)>
                                MSGNINS <BISB ,(SP)>
                                .ENDC
                                .ENDC
                                .ENDC
                                .IF NB <#1>
003750 M$PUT1 #1
                                .MCALL M$GNINS
                                .IF B
003750 : MSGNINS <MOV #1,-(SP)>
                                .IF LT SVCINS
                                MOV #1,-(SP)
                                .MEXIT
                                .ENDC
003750 012746 000001 .IF EQ SVCINS
                                MOV #1,-(SP)
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                MOV #1,-(SP)
                                .NLIST
                                .ENDC
                                .IFF
                                .IF DIF B,<#1>
                                .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
                                MSGNINS <CLR -(SP)>
                                MSGNINS <BISB ,(SP)>
                                .ENDC
                                .ENDC
003754 MSGNINS <MOV SP,R0>
                                .IF LT SVCINS
                                MOV SP,R0
                                .MEXIT
                                .ENDC
003754 010600 .IF EQ SVCINS
                                MOV SP,R0
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                MOV SP,R0
                                .NLIST
                                .ENDC
003756 M$SVC C$PNTB
003756 .MCALL M$GNINS,M$TSTLAB
                                M$TSTLAB
                                .MCALL M$TLABEL,M$INCR
```

```

003756 .IIF LT TSTSTMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUN,\T$TSTSEQ
        .RADIX 8
        M$INCR TSTSTSEQ
        M$GNINS <TRAP C$PNTB>
        .IF LT SVCINS
        TRAP C$PNTB
        .MEXIT
        .ENDC
    
```

```

003756 104414 .IF EQ SVCINS
              TRAP C$PNTB
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
    
```

TRAP C\$PNTB

```

        .NLIST
        .ENDC
        .IRP N,<\T$ARGCNT*2+2>
        M$GNINS <ADD #N,SP>
        .ENDM
        M$GNINS <ADD #4,SP>
        .IF LT SVCINS
        ADD #4,SP
        .MEXIT
        .ENDC
    
```

```

003760 062706 000004 .IF EQ SVCINS
                    ADD #4,SP
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
    
```

ADD #4,SP

```

        .NLIST
        .ENDC
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF2,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF2,<>,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF2,<>,<>,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF2,<>,<>,<>,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF2,<>,<>,<>,<>,<>
        .MEXIT
    
```

```

        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF2,<>,<>,<>,<>,<>,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF2,<>,<>,<>,<>,<>,<>,<>
        .MEXIT
        .ENDC
        M$PRINT C$PNTB,#RWRDF2,<>,<>,<>,<>,<>,<>,<>,<>
8 003764      ENDMSG
        .MCALL M$POP,M$GNTAG,M$SVC,M$ENDERR
003764      M$POP T$NS,T$NESTLEV,T$TEMP
        .MCALL M$GETS,M$DECR
        .IF LT T$NESTLEV
        .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
        .MEXIT
        .ENDC
003764      M$GETS T$NS,\T$NESTLEV,T$TEMP
000011      T$TEMP=T$NS1
003764      M$DECR T$NESTLEV
000000      T$NESTLEV=T$NESTLEV-1
        .IF EQ F$MSG-T$TEMP
003764      M$GNTAG L,T$$MSG
        .MCALL M$GEN
003764      M$GEN L,\T$$MSG,SVCTAG
        .IF LE SVCTAG
003764      L10003:
        .MEXIT
        .ENDC
        .LIST

                                L10003:
                                .NLIST
003764      010000      S$LSYM=T$LSYM
                                M$SVC C$MSG
003764      .MCALL M$GNINS,M$STSTLAB
                                M$STSTLAB
        .MCALL M$TLABEL,M$INCR
        .IF LT T$STMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUN,\T$STSEQ
        .RADIX 8
003764      M$INCR T$STSEQ
        M$GNINS <TRAP C$MSG>
        .IF LT SVCINS
        TRAP C$MSG
        .MEXIT
        .ENDC
003764      104423      .IF EQ SVCINS
                                TRAP C$MSG
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST

                                .NLIST
        .ENDC
    
```

TRAP C\$MSG

```

000041      I$MSG=F$END
            .IFF
            M$ENDERR      ENDMSG,T$TEMP
            .ENDC

9
10 003766      BGNMSG RWRDM2
            .MCALL M$PUSH,M$INCR,M$GNGBL
            I$MSG=F$BGN
            M$PUSH T$NS,T$NESTLEV,F$MSG
            .MCALL M$INCR,M$SETS
            M$INCR T$NESTLEV
            T$NESTLEV=T$NESTLEV+1
            M$SETS T$NS,\I$NESTLEV,F$MSG
            T$NS1=F$MSG
            T$$MSG=T$TAGNUM
            M$INCR T$TAGNUM
            T$TAGNUM=T$TAGNUM+1
            M$GNGBL RWRDM2
            .MCALL M$GEN
            .IF NB,RWRDM2
            .IF NB,
            M$GEN RWRDM2,.,SVCGBL,
            .ENDC
            .IF B,
            M$GEN RWRDM2,.,SVCGBL,< >
            .IF LE SVCGBL
            RWRDM2::
            .MEXIT
            .ENDC
            .LIST

            .NLIST
            .ENDC
            .ENDC

11 003766      PRINTB #RWRDF1,#FNAME
            .MCALL M$PRINT
            .IF B #RWRDF1
            .ERROR ;MISSING FORMAT
            .MEXIT
            .ENDC
            .IF B <#FNAME>
            M$PRINT C$PNTB,#RWRDF1
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#RWRDF1,<#FNAME>
            .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
            T$ARGCNT=1
            M$COUNT T$ARGCNT,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
            .IF NB <>
            M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
            .ENDC
            .IF NB <#FNAME>
            T$ARGCNT-T$ARGCNT+1
            .ENDC
            .IRP N,<\T$ARGCNT>
            M$PUT #N,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>,<>
    
```

RWRDM2::

```

003766      .ENDM
            M$PUT      #2,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
            .M$CALL   M$PUT1
            .IF NB    <#RWRDF1>
003766      M$PUT      <#RWRDF1>,<#FNAME>,<>,<>,<>,<>,<>,<>
            .M$CALL   M$PUT1
            .IF NB    <#FNAME>
003766      M$PUT      <#FNAME>,<>,<>,<>,<>,<>,<>,<>
            .M$CALL   M$PUT1
            .IF NB    <>
            M$PUT      <>,<>,<>,<>,<>,<>,<>,<>
            .ENDC
            .IF NB    <#FNAME>
003766      M$PUT1     #FNAME
            .M$CALL   M$GNINS
            .IF B
003766      M$GNINS    <MOV      #FNAME,-(SP)>
            .IF LT    SVCINS
            MOV        #FNAME,-(SP)
            .MEXIT
            .ENDC
            .IF EQ    SVCINS
            MOV        #FNAME,-(SP)
            .MEXIT
            .ENDC
            .IF GT    SVCINS
            .LIST
                                MOV        #FNAME,-(SP)
                                .NLIST
            .ENDC
            .IFF
            .IF DIF B,<#FNAME>
            .ERROR    ;ILL. ARG. '#FNAME' ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
            M$GNINS    <CLR      -(SP)>
            M$GNINS    <BISB    ,(SP)>
            .ENDC
            .ENDC
            .ENDC
            .IF NB    <#RWRDF1>
003772      M$PUT1     #RWRDF1
            .M$CALL   M$GNINS
            .IF B
003772      M$GNINS    <MOV      #RWRDF1,-(SP)>
            .IF LT    SVCINS
            MOV        #RWRDF1,-(SP)
            .MEXIT
            .ENDC
            .IF EQ    SVCINS
            MOV        #RWRDF1,-(SP)
            .MEXIT
            .ENDC
            .IF GT    SVCINS
            .LIST
                                MOV        #RWRDF1,-(SP)
                                .NLIST

```



```

        .ENDC
        .IFF
        .IF DIF B,<#RWRDF1>
        .ERROR ;ILL. ARG. '#RWRDF1' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
        MSGNINS <CLR    -(SP)>
        MSGNINS <BISB  ,(SP)>
        .ENDC
        .ENDC
        .ENDC
003776  .IF NB <#2>
        M$PUT1 #2
        .MCALL  MSGNINS
003776  .IF B
        MSGNINS <MOV   #2,-(SP)>
        .IF LT SVCINS
        MOV    #2,-(SP)
        .MEXIT
        .ENDC
003776 012746 000092 .IF EQ SVCINS
        MOV    #2,-(SP)
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV    #2,-(SP)
        .ENDC
        .IFF
        .IF DIF B,<#2>
        .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
        MSGNINS <CLR    -(SP)>
        MSGNINS <BISB  ,(SP)>
        .ENDC
        .ENDC
004002  MSGNINS <MOV   SP,R0>
        .IF LT SVCINS
        MOV    SP,R0
        .MEXIT
        .ENDC
004002 010600 .IF EQ SVCINS
        MOV    SP,R0
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV    SP,R0
        .ENDC
004004  M$SVC  C$PNTB
004004  .MCALL  MSGNINS,M$STSLAB
        M$STSLAB
        .MCALL  M$TLABEL,M$INCR
        .IF LT T$STMAC, .MEXIT

```

004004

```

.RADIX 10
M$TLABEL \T$TESTNUN,\T$TSTSEQ
.RADIX 8
M$INCR T$TSTSEQ
M$GNINS <TRAP C$PNTB>
  .IF LT SVCINS
  TRAP C$PNTB
  .MEXIT
  .ENDC

```

004004 '044'4

```

  .IF EQ SVCINS
  TRAP C$PNTB
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST

```

TRAP C\$PNTB

004006

```

.NLIST
.ENDC
.IRP N,<\T$ARGCNT*2+2>
M$GNINS <ADD #N,SP>
.ENDM
M$GNINS <ADD #6,SP>
  .IF LT SVCINS
  ADD #6,SP
  .MEXIT
  .ENDC

```

004006 062706 000006

```

  .IF EQ SVCINS
  ADD #6,SP
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST

```

ADD #6,SP

```

.NLIST
.ENDC
.MEXIT
.ENDC
  .IF B <>
M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>
  .MEXIT
  .ENDC
  .IF B <>
M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>
  .MEXIT
  .ENDC

```

12 004012

```
.IF B <>
M$PRINT ( $PNTB, #RWRDF1, <#FNAME>, <>, <>, <>, <>, <>, <>
.MEXIT
.ENDC
M$PRINT ( $PNTB, #RWRDF1, <#FNAME>, <>, <>, <>, <>, <>, <>, <>
PRINTB #RWRDF3, RDLOW, RDHIGH
.MCALL M$PRINT
.IF B #RWRDF3
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
.IF B <RDLOW>
M$PRINT ( $PNTB, #RWRDF3
.MEXIT
.ENDC
.IF B <RDHIGH>
M$PRINT ( $PNTB, #RWRDF3, <RDLOW>
.MEXIT
.ENDC
.IF B <>
M$PRINT ( $PNTB, #RWRDF3, <RDLOW>, <RDHIGH>
.MCALL M$COUNT, M$PUT, M$GNINS, M$SVC
TSARGCNT=1
M$COUNT TSARGCNT, <RDLOW>, <RDHIGH>, <>, <>, <>, <>, <>, <>
.IF NB <RDHIGH>
M$COUNT TSARGCNT, <RDHIGH>, <>, <>, <>, <>, <>, <>, <>
.IF NB <>
M$COUNT TSARGCNT, <>, <>, <>, <>, <>, <>, <>, <>
.ENDC
.IF NB <RDHIGH>
TSARGCNT=TSARGCNT+1
.ENDC
.ENDC
.IF NB <RDLOW>
TSARGCNT=TSARGCNT+1
.ENDC
.IRP N, <\TSARGCNT>
M$PUT #N, #RWRDF3, <RDLOW>, <RDHIGH>, <>, <>, <>, <>, <>, <>
.ENDM
M$PUT #3, #RWRDF3, <RDLOW>, <RDHIGH>, <>, <>, <>, <>, <>, <>
.MCALL M$PUT1
.IF NB <#RWRDF3>
M$PUT <#RWRDF3>, <RDLOW>, <RDHIGH>, <>, <>, <>, <>, <>, <>
.MCALL M$PUT1
.IF NB <RDLOW>
M$PUT <RDLOW>, <RDHIGH>, <>, <>, <>, <>, <>, <>, <>
.MCALL M$PUT1
.IF NB <RDHIGH>
M$PUT <RDHIGH>, <>, <>, <>, <>, <>, <>, <>, <>
.MCALL M$PUT1
.IF NB <>
M$PUT <>, <>, <>, <>, <>, <>, <>, <>, <>
.ENDC
.IF NB <RDHIGH>
M$PUT1 RDHIGH
.MCALL M$GNINS
.IF B
```

004012

000001

004012

004012

000002

000003

004012

004012

004012

004012

004012

```

004012      MSGNINS <MOV   RDHIGH,-(SP)>
           .IF LT SVCINS
           MOV     RDHIGH,-(SP)
           .MEXIT
           .ENDC
           .IF EQ SVCINS
004012 013746 002214      MOV     RDHIGH,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
                                     .NLIST
                                     MOV     RDHIGH,-(SP)
           .ENDC
           .IFF
           .IF DIF B,<RDHIGH>
           .ERROR ;ILL. ARG. 'RDHIGH' ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
           MSGNINS <CLR   -(SP)>
           MSGNINS <BISB ,(SP)>
           .ENDC
           .ENDC
           .ENDC
004016      .IF NB <RDLOW>
           M$PUT1 RDLOW
           .MCALL MSGNINS
004016      .IF B
           MSGNINS <MOV   RDLOW,-(SP)>
           .IF LT SVCINS
           MOV     RDLOW,-(SP)
           .MEXIT
           .ENDC
           .IF EQ SVCINS
004016 013746 002212      MOV     RDLOW,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
                                     .NLIST
                                     MOV     RDLOW,-(SP)
           .ENDC
           .IFF
           .IF DIF B,<RDLOW>
           .ERROR ;ILL. ARG. 'RDLOW' ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
           MSGNINS <CLR   -(SP)>
           MSGNINS <BISB ,(SP)>
           .ENDC
           .ENDC
           .ENDC
004022      .IF NB <#RWRDF3>
           M$PUT1 #RWRDF3
           .MCALL MSGNINS
004022      .IF B
           MSGNINS <MOV   #RWRDF3,-(SP)>

```

```

      .IF LT SVCINS
      MOV      #RWRDF3,-(SP)
      .MEXIT
      .ENDC
004022  012746  004316  .IF EQ SVCINS
                          MOV      #RWRDF3,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
                                          .NLIST
                                          MOV      #RWRDF3,-(SP)
      .ENDC
      .IFF
      .IF DIF B,<#RWRDF3>
      .ERROR ;ILL. ARG. '#RWRDF3' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
      .IF NB <#3>
004026  M$PUT1 #3
      .MCALL MSGNINS
      .IF B
004026  MSGNINS <MOV    #3,-(SP)>
      .IF LT SVCINS
      MOV    #3,-(SP)
      .MEXIT
      .ENDC
004026  012746  000003  .IF EQ SVCINS
                          MOV    #3,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
                                          .NLIST
                                          MOV    #3,-(SP)
      .ENDC
      .IFF
      .IF DIF B,<#3>
      .ERROR ;ILL. ARG. '#3' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
004032  MSGNINS <MOV    SP,R0>
      .IF LT SVCINS
      MOV    SP,R0
      .MEXIT
      .ENDC
004032  010600  .IF EQ SVCINS
                          MOV    SP,R0

```

```

        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV      SP,R0
        .ENDC
004034  MSSVC  C$PNTB
004034  .MCALL MSGNINS,MSTSTLAB
        MSTSTLAB
        .MCALL MSTLABEL,MSINCR
        .IF LT T$STMAC, .MEXIT
        .RADIX 10
        MSTLABEL      \T$TESTNUN,\T$STSEQ
        .RADIX 8
        MSINCR T$STSEQ
004034  MSGNINS <TRAP C$PNTB>
        .IF LT SVCINS
        TRAP C$PNTB
        .MEXIT
        .ENDC
004034  .IF EQ SVCINS
        TRAP C$PNTB
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                TRAP   C$PNTB
        .ENDC
        .IRP  N,<\T$ARGCNT*2+2>
        MSGNINS <ADD #N,SP>
        .ENDM
004036  MSGNINS <ADD #10,SP>
        .IF LT SVCINS
        ADD #10,SP
        .MEXIT
        .ENDC
004036  .IF EQ SVCINS
        ADD #10,SP
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                ADD    #10,SP
        .ENDC
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF3,<RDLOW>,<RDHIGH>,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTB,#RWRDF3,<RDLOW>,<RDHIGH>,<>,<>
        .MEXIT
        .ENDC
    
```

```

      .IF B <>
      M$PRINT C$PNTB,#RWRDF3,<RDLOW>,<RDHIGH>,<>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTB,#RWRDF3,<RDLOW>,<RDHIGH>,<>,<>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTB,#RWRDF3,<RDLOW>,<RDHIGH>,<>,<>,<>,<>,<>
      .MEXIT
      .ENDC
      M$PRINT C$PNTB,#RWRDF3,<RDLOW>,<RDHIGH>,<>,<>,<>,<>,<>,<>
      .ENDMSG
      .MCALL M$POP,MSGNTAG,M$SVC,M$SENDERR
      M$POP TSNS,TSNESTLEV,T$TEMP
      .MCALL M$GETS,M$DECR
      .IF LT TSNESTLEV
      .ERROR TSNESTLEV ; MACRO TSNS UNDERFLOW
      .MEXIT
      .ENDC
      M$GETS TSNS,\TSNESTLEV,T$TEMP
      T$TEMP=TSNS1
      M$DECR TSNESTLEV
      TSNESTLEV=TSNESTLEV-1
      .IF EQ F$MSG-T$TEMP
      MSGNTAG L,T$MSG
      .MCALL M$GEN
      M$GEN L,\T$MSG,SVCTAG
      .IF LE SVCTAG
      L10004:
      .MEXIT
      .ENDC
      .LIST
      .NLIST
      S$LSYM-T$LSYM
      M$SVC C$MSG
      .MCALL M$GNINS,M$STSLAB
      M$STSLAB
      .MCALL M$TLABEL,M$INCR
      .IF LT T$STMAC, .MEXIT
      .RADIX 10
      M$TLABEL \T$TESTNUM,\T$STSEQ
      .RADIX 8
      M$INCR T$STSEQ
      M$GNINS <TRAP C$MSG>
      .IF LT SVCINS
      TRAP C$MSG
      .MEXIT
      .ENDC
      .IF EQ SVCINS
      TRAP C$MSG
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST

```

L10004:

TRAP (MSG

```
                                .NLIST
                                .ENDC
00004'  I$MSG=F$END
                                .IFF
                                M$ENDERR      ENDMSG,T$TEMP
                                .ENDC

14
15 004044      BGNMSG RWRDM3
                                .MCALL MSPUSH,M$INCR,M$GNGBL
                                I$MSG=F$BGN
004044      000040  MSPUSH T$NS,T$NESTLEV,F$MSG
                                .MCALL M$INCR,M$SETS
004044      000001  M$INCR T$NESTLEV
                                T$NESTLEV=T$NESTLEV+1
004044      000011  M$SETS T$NS,\T$NESTLEV,F$MSG
                                T$NS1=F$MSG
                                T$$MSG=T$TAGNUM
004044      010005  M$INCR T$TAGNUM
                                T$TAGNUM=T$TAGNUM+1
004044      010006  MSGNGR_ RWRDM3
                                .MCALL M$GEN
                                .IF NB,RWRDM3
                                .IF NB,
                                M$GEN RWRDM3,.,SVCGBL,
                                .ENDC
                                .IF B,
004044      MSGEN RWRDM3,.,SVCGBL,< >
                                .IF LE SVCGBL
004044      RWRDM3::
                                .MEXIT
                                .ENDC
                                .LIST

                                .NLIST
                                .ENDC
                                .ENDC
16 004044      PRINTB #RWRDF1,#FNAME
                                .MCALL M$PRINT
                                .IF B #RWRDF1
                                .ERROR ;MISSING FORMAT
                                .MEXIT
                                .ENDC
                                .IF B <#FNAME>
004044      M$PRINT C$PNTB,#RWRDF1
                                .MEXIT
                                .ENDC
                                .IF B <>
004044      M$PRINT C$PNTB,#RWRDF1,<#FNAME>
                                .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
004044      000001  T$ARGCNT=1
                                M$COUNT T$ARGCNT,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
                                .IF NB <>
                                M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
                                .ENDC
                                .IF NB <#FNAME>
004044      000002  T$ARGCNT=T$ARGCNT+1
```

RWRDM3::



```

.ENDC
.IRP N,<\TSARGCNT>
M$PUT #N,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
.ENDM
004044 M$PUT #2,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#RWRDF1>
004044 M$PUT <#RWRDF1>,<#FNAME>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#FNAME>
004044 M$PUT <#FNAME>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <>
M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <#FNAME>
004044 M$PUT1 #FNAME
.MCALL MSGNINS
.IF B
004044 MSGNINS <MOV #FNAME,-(SP)>
.IF LT SVCINS
MOV #FNAME,-(SP)
.MEXIT
.ENDC
.IF EQ SVCINS
004044 012746 004422 MOV #FNAME,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.MOV #FNAME,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#FNAME>
.ERROR ;ILL. ARG. '#FNAME' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.IF NB <#RWRDF1>
004050 M$PUT1 #RWRDF1
.MCALL MSGNINS
.IF B
004050 MSGNINS <MOV #RWRDF1,-(SP)>
.IF LT SVCINS
MOV #RWRDF1,-(SP)
.MEXIT
.ENDC
.IF EQ SVCINS
004050 012746 004172 MOV #RWRDF1,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS

```

```
.LIST
                                .NLIST
                                MOV      #RWRDF1,-(SP)
.ENDC
.IFF
.IF DIF B,<#RWRDF1>
.ERROR ;ILL. ARG. '#RWRDF1' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
.ENDC
.IF NB <#2>
004054 M$PUT1 #2
.MCALL M$GNINS
.IF B
004054 MSGNINS <MOV      #2,-(SP)>
.IF LT SVCINS
MOV      #2,-(SP)
.MEXIT
.ENDC
004054 012746 000002 .IF EQ SVCINS
MOV      #2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .NLIST
                                MOV      #2,-(SP)
.ENDC
.IFF
.IF DIF B,<#2>
.ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
004060 MSGNINS <MOV      SP,R0>
.IF LT SVCINS
MOV      SP,R0
.MEXIT
.ENDC
004060 010600 .IF EQ SVCINS
MOV      SP,R0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .NLIST
                                MOV      SP,R0
.ENDC
004062 M$SVC C$PNTB
.MCALL M$GNINS,M$STLAB
```

004062

```

M$STLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$STMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUM,\T$STSEQ

```

004062

```

.RADIX 8
M$INCR T$STSEQ
M$GNINS <TRAP C$PNTB>
.IF LT SVCINS
TRAP C$PNTB
.MEXIT
.ENDC

```

004062 104414

```

.IF EQ SVCINS
TRAP C$PNTB
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

TRAP C\$PNTB

004064

```

.ENDC
.NLIST
.IRP N,<\T$ARGCNT*2+2>
M$GNINS <ADD #N,SP>
.ENDM
M$GNINS <ADD #6,SP>
.IF LT SVCINS
ADD #6,SP
.MEXIT
.ENDC

```

004064 062706 000006

```

.IF EQ SVCINS
ADD #6,SP
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

ADD #6,SP

```

.ENDC
.NLIST
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>

```

```

MSPRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
17 004070 M$PRINT C$PNTB,#RWRDF1,<#FNAME>,<>,<>,<>,<>,<>,<>
PRINTB #RWRDF4
.MCALL M$PRINT
.IF B #RWRDF4
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
.IF B <>
004070 M$PRINT C$PNTB,#RWRDF4
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
004070 000001 T$ARGCNT-1
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <>
T$ARGCNT=T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#RWRDF4,<>,<>,<>,<>,<>,<>,<>
.ENDM
004070 M$PUT #1,#RWRDF4,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#RWRDF4>
004070 M$PUT <#RWRDF4>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <>
M$PUT <>,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <#RWRDF4>
004070 M$PUT1 #RWRDF4
.MCALL M$GNINS
.IF B
004070 M$GNINS <MOV #RWRDF4,-(SP)>
.IF LT SVCINS
MOV #RWRDF4,-(SP)
.MEXIT
.ENDC
.IF EQ SVCINS
MOV #RWRDF4,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
004070 012746 004376 .LIST
.NLIST
.ENDC
.IFF
.IF DIF B,<#RWRDF4>
.ERROR ;ILL. ARG. '#RWRDF4' ONLY 'B' IS ALLOWED.
MOV #RWRDF4,-(SP)
    
```

```
.MEXIT
.ENDC
MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
.ENDC
004074 .IF NB <#1>
M$PUT1 #1
.MCALL MSGNINS
004074 .IF B
MSGNINS <MOV     #1,-(SP)>
.IF LT SVCINS
MOV     #1,-(SP)
.MEXIT
.ENDC
004074 012746 000001 .IF EQ SVCINS
MOV     #1,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV     #1,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#1>
.ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
004100 MSGNINS <MOV     SP,R0>
.IF LT SVCINS
MOV     SP,R0
.MEXIT
.ENDC
004100 010600 .IF EQ SVCINS
MOV     SP,R0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV     SP,R0
.NLIST
.ENDC
004102 M$SVC C$PNTB
004102 .MCALL MSGNINS,M$STSLAB
M$STSLAB
.MCALL M$TLABEL,M$INCR
.IF LT T$STSMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUM,\T$STSEQ
.RADIX 8
M$INCR T$STSEQ
```

004102

```
MSGNINS <TRAP C$PNTB>  
.IF LT SVCINS  
TRAP C$PNTB  
.MEXIT  
.ENDC
```

004102 104414

```
.IF EQ SVCINS  
TRAP C$PNTB  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST
```

TRAP C\$PNTB

004104

```
.NLIST  
.ENDC  
.IRP N,<\T$ARGCNT*2+2>  
MSGNINS <ADD #N,SP>  
.ENDM  
MSGNINS <ADD #4,SP>  
.IF LT SVCINS  
ADD #4,SP  
.MEXIT  
.ENDC
```

004104 062706 000004

```
.IF EQ SVCINS  
ADD #4,SP  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST
```

ADD #4,SP

```
.NLIST  
.ENDC  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT C$PNTB,#RWRDF4,<>  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT C$PNTB,#RWRDF4,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT C$PNTB,#RWRDF4,<>,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT C$PNTB,#RWRDF4,<>,<>,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT C$PNTB,#RWRDF4,<>,<>,<>,<>,<>  
.MEXIT  
.ENDC
```

```

        .IF B <>
        M$PRINT C$PNTB,#RWRDF4,<>,<>,<>,<>,<>,<>,<>
        .MEXIT
        .ENDC
18 004110 M$PRINT C$PNTB,#RWRDF4,<>,<>,<>,<>,<>,<>,<>
        .ENDMSG
        .MCALL M$POP,M$GNTAG,M$SVC,M$ENDERR
        004110 M$POP T$NS,T$NESTLEV,T$TEMP
        .MCALL M$GETS,M$DECR
        .IF LT T$NESTLEV
        .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
        .MEXIT
        .ENDC
        004110 M$GETS T$NS,\T$NESTLEV,T$TEMP
        000011 T$TEMP=T$NS1
        004110 M$DECR T$NESTLEV
        000000 T$NESTLEV=T$NESTLEV-1
        .IF EQ F$MSG-T$TEMP
        004110 M$GNTAG L,T$$MSG
        .MCALL M$GEN
        004110 M$GEN L,\T$$MSG,SVCTAG
        .IF LE SVCTAG
        004110 L10005:
        .MEXIT
        .ENDC
        .LIST

        .NLIST
        004110 010000 S$LSYM=T$LSYM
        M$SVC C$MSG
        .MCALL M$GNINS,M$STLAB
        004110 M$STLAB
        .MCALL M$TLABEL,M$INCR
        .IF LT T$STMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUN,\T$STSEQ
        .RADIX 8
        M$INCR T$STSEQ
        004110 M$GNINS <TRAP C$MSG>
        .IF LT SVCINS
        TRAP C$MSG
        .MEXIT
        .ENDC
        .IF EQ SVCINS
        004110 104423 TRAP C$MSG
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST

        .NLIST

        .ENDC
        000041 I$MSG-F$END
        .IFF
        M$ENDERR ENDMSG,T$TEMP
        .ENDC
    
```

L10005:

TRAP C\$MSG

```

20 004112      105      122      122  RWRDEM: .ASCIZ \ERROR READING 'DIAGNOSTIC MACHINE' PROGRAM FILE\
21 004172      045      101      106  RWRDF1: .ASCIZ \%FILE BEING READ IS '%T%A'%N\
22 004230      045      101      104  RWRDF2: .ASCIZ \%ADID NOT FIND START AND NULL FRAMES WHERE EXPECTED%N\
23 004316      045      101      104  RWRDF3: .ASCIZ \%ADATA NOT WITHIN EXPECTED BOUNDS %06%A - %06%N\
24 004376      045      101      103  RWRDF4: .ASCIZ \%CHECKSUM ERROR%N\
25                                     .EVEN
26 004422      132      125      104  FNAME:  .ASCIZ \ZUDFA0.???\
27                                     .EVEN
28 004436      000000    FDATA:  .WORD 0
29
30 004440                                     ENDMOD
                                     .MCALL  MSPOP,MSSENDERR
                                     .IF EQ  F$BGN-$SMOD
                                     $SMOD=F$SEND
                                     .IFF
                                     .ERROR  ; MISSING 'BGNMOD'
                                     .MEXIT
                                     .ENDC
004440                                     MSPOP  TSNS,TSNESTLEV,TSTEMP
                                     .MCALL  MSGETS,MSDECR
                                     .IF LT  TSNESTLEV
                                     .ERROR  TSNESTLEV          ; MACRO TSNS UNDERFLOW
                                     .MEXIT
                                     .ENDC
004440                                     MSGETS  TSNS,\TSNESTLEV,TSTEMP
004440      000000    TSTEMP=TSNS0
004440      177777    MSDECR  TSNESTLEV
                                     TSNESTLEV-TSNESTLEV-1
                                     .IF NE  F$MOD-T$TEMP
MSSENDERR          ENDMOD,TSTEMP
                                     .ENDC

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```

:READDM
:READ A DM PROGRAM INTO FREE MEMORY
:INPUTS:
      NONE
:OUTPUTS:
      DMTRLN - TRANSFER LENGTH OF MAIN DM PROGRAM IN BYTES
      DMPROG - POINTER TO START OF DM PROGRAM IN MEMORY
      DMOVRL - POINTER TO START OF DM OVERLAYS
:ALL REGISTERS ARE USED AND PREVIOUS CONTENTS DESTROYED

READDM:
CALL   OPENLF           ;OPEN LOAD FILE
MOV    #1000,RDLOW      ; SETUP BOUNDS FOR READ
MOV    #1000+RD.SZ,RDHIGH ; THIS SHOULD READ < 56 WORDS
MOV    #RD.SZ/2,R1      ; INITIAL BUFFER SIZE FOR READ
CALL   ALOCM            ; ALLOCATE MEMORY FOR DM PROG
MOV    R1,DMPROG        ; START OF BUFFER TO HOLD DM PROGRAM
MOV    R1,DMOVRL        ; START OF BUFFER TO HOLD OVERLAYS...
      ;... VALUE UPDATED BELOW
MOV    R1,RD.AT         ; BUFFER ADDRESS FOR RDREC ROUTINE
CALL   RDREC            ; READ FIRST RECORD - THIS SHOULD...
      ;... GET THE DUP HEADER INTO MEMORY
      ;... FROM WHICH WE NEED THE MAIN AND
      ;... OVERLAY SIZE
MOV    DMPROG,R2
MOV    HDR.MN(R2),R1    ; SIZE OF MAIN CODE
MOV    R1,DMTRLN        ; SET INITIAL TRANSFER LENGTH
ADD    R1,DMOVRL        ; SET STARTING ADDRESS OF OVERLAYS
ADD    HDR.OV(R2),R1    ; CALC TOTAL BUFFER SPACE NEEDED
MOV    R1,RDHIGH        ; RESET THE UPPER LIMIT
ADD    #1000,RDHIGH     ; ADD BEGINNING PROGRAM OFFSET
      ;...CONVERT TO WORD COUNT
CLC
ROR    R1
CALL   ALOCM

READWD: CALL   RDREC      ; READ NEXT LOADER RECORD
      BEQ    READWD     ;GO BACK FOR NEXT
      RETURN

RD.SZ  -      100      ; INITIAL (FIRST) BUFFER SIZE TO READ
      ; THIS VALUE MUST BE LARGER THAN THE
      ; FIRST LDA FORMATED RECORD IN THE DOWN
      ; LINE LOADED DM FORMATTER FILE

```

```

004440
004440 004737 003470
004444 012737 001000 002212
004452 012737 001100 002214
004460 012701 000040
004464 004737 002474
004470 010137 002204
004474 010137 002206
004500 010137 002216
004504 004737 003500
004510 013702 002204
004514 016201 000000
004520 010137 002210
004524 060137 002206
004530 066201 000004
004534 010137 002214
004540 062737 001000 002214
004546 000241
004550 006001
004552 004737 002474
004556 004737 003500
004562 001775
004564 000207
000100

```

GLOBAL SUBROUTINES SECTION

```

1          :RESPDM
2          :
3          :           ASSUMES AT LEAST 1 DM IS RUNNING
4          :
5          :RESPOND TO DM REQUESTS. RETURN WHEN ALL DM PROGRAMS
6          :HAVE TERMINATED.
7
8 004566 013705 002202      RESPDM: MOV      TSTTAB,R5          ;GET CONTROLLER TABLE ADDRESS
9 004572 016504 000010      RESPCT: MOV      C.RING(R5),R4        ;GET HOST COMM AREA ADDRESS
10 004576 032765 000002 000014  BIT      #CT.RN,C.FLG(R5)    ;CHECK IF PROGRAM RUNNING
11 004604 001435              BEQ      R,PNXT          ;IF NOT, LOOK AT NEXT
12 004606 004737 003170      CALL     ISCAN          ;SEE IF INTERRUPT WOULD HAVE COME
13 004612 016537 000004 002074  MOV      C.UNIT(R5),L$LUN    ;STORE UNIT NUMBER UNDER TEST
14 004620 032765 000010 000014  BIT      #CT.MSG,C.FLG(R5)    ;SEE IF INTERRUPT RECEIVED
15 004626 001051              BNE     RSP;N          ;IF SO, LOOK AT PACKET
16 004630 005365 000040      DEC      C.CNT(R5)          ;COUNT ALL 'NO SHOWS'
17 004634 001020              BNE     1$              ;HAVE WE TRIED 'A LOT'?
18 004636 005365 000042      DEC      C.CNT+2(R5)
19 004642 001015              BNE     1$
20 004644 012765 000020 000042  MOV      #C.INIT,C.CNT+2(R5)  ;RESET COUNTER
21 004652              PRINTB  #NORESP,L$LUN      ;LOG NO RESPONSE

.MCALL    MSPRINT
.IF B    #NORESP
.ERROR   :MISSING FORMAT
.MEXIT
.ENDC
.IF B    <L$LUN>
MSPRINT (SPNTB,#NORESP
.MEXIT
.ENDC
.IF B    <>
MSPRINT (SPNTB,#NOF"SP,<L$LUN>
.MCALL  MSCOUNT,MSPUT,MSGNINS,MSSVC
TSARGCNT=1
MSCOUNT TSARGCNT,<L$LUN> <>,<>,<>,<>,<>,<>,<>
.IF NB <>
MSCOUNT TSARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <L$LUN>
TSARGCNT=TSARGCNT+1
.ENDC
.IRP    N,<\TSARGCNT>
MSPUT  #N,#NORESP,<L$LUN>,<>,<>,<>,<>,<>,<>,<>
.ENDM
MSPUT  #2,#NORESP,<L$LUN>,<>,<>,<>,<>,<>,<>,<>
.MCALL  MSPUT1
.IF NB <#NORESP>
MSPUT  <#NORESP>,<L$LUN>,<>,<>,<>,<>,<>,<>,<>
.MCALL  MSPUT1
.IF NB <L$LUN>
MSPUT  <L$LUN>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL  MSPUT1
.IF NB <>
MSPUT  <>,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <L$LUN>
MSPUT1 L$LUN

```

```

004652      .MCALL MSGNINS
           .IF B
MSGNINS <MOV  L$LUN,-(SP)>
           .IF LT SVCINS
MOV      L$LUN,-(SP)
           .MEXIT
           .ENDC

```

```

004652 013746 002074 .IF EQ SVCINS
           MOV      L$LUN,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST

```

MOV L\$LUN,-(SP)

```

           .NLIST
           .ENDC
           .IFF
           .IF DIF B,<L$LUN>
           .ERROR ;ILL. ARG. 'L$LUN' ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
MSGNINS <CLR  -(SP)>
MSGNINS <BISB ,(SP)>
           .ENDC
           .ENDC
           .ENDC

```

```

004656      .IF NB <#NORESP>
M$PUT1 #NORESP
           .MCALL MSGNINS

```

```

004656      .IF B
MSGNINS <MOV  #NORESP,-(SP)>
           .IF LT SVCINS
MOV      #NORESP,-(SP)
           .MEXIT
           .ENDC

```

```

004656 012746 006132 .IF EQ SVCINS
           MOV      #NORESP,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST

```

MOV #NORESP,-(SP)

```

           .NLIST
           .ENDC
           .IFF
           .IF DIF B,<#NORESP>
           .ERROR ;ILL. ARG. '#NORESP' ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
MSGNINS <CLR  -(SP)>
MSGNINS <BISB ,(SP)>
           .ENDC
           .ENDC
           .ENDC

```

```

004662      .IF NB <#2>
M$PUT1 #2
           .MCALL MSGNINS

```

```

004662      .IF B
            MSGNINS <MOV #2,-(SP)>
            .IF LT SVCINS
            MOV #2,-(SP)
            .MEXIT
            .ENDC
004662 012746 000002      .IF EQ SVCINS
                        MOV #2,-(SP)
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                MOV #2,-(SP)
                                .NLIST
            .ENDC
            .IFF
            .IF DIF B,<#2>
            .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
            MSGNINS <CLR -(SP)>
            MSGNINS <BISB ,(SP)>
            .ENDC
            .ENDC
004666      MSGNINS <MOV SP,R0>
            .IF LT SVCINS
            MOV SP,R0
            .MEXIT
            .ENDC
004666 010600      .IF EQ SVCINS
                        MOV SP,R0
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                MOV SP,R0
                                .NLIST
            .ENDC
004670      MS$VC C$PNTB
004670      .MCALL MSGNINS,MS$STLAB
            MS$STLAB
            .MCALL MS$TLABEL,MS$INCR
            .IF LT T$STMAC, .MEXIT
            .RADIX 10
            MS$TLABEL \T$TESTNUM,\T$STSEQ
            .RADIX 8
            MS$INCR T$STSEQ
004670      MSGNINS <TRAP C$PNTB>
            .IF LT SVCINS
            TRAP C$PNTB
            .MEXIT
            .ENDC
004670 104414      .IF EQ SVCINS
                        TRAP C$PNTB
            .MEXIT
            .ENDC
            .IF GT SVCINS

```

```
.LIST
                                .NLIST
                                TRAP    C$PNTB
                                .ENDC
                                .IRP    N,<\T$ARGCNT*2+2>
                                M$GNINS <ADD    #N,SP>
004672 .ENDM
                                M$GNINS <ADD    #6,SP>
                                .IF LT SVCINS
                                ADD    #6,SP
                                .MEXIT
                                .ENDC
004672 062706 000006 .IF EQ SVCINS
                                ADD    #6,SP
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
                                .MEXIT
                                .ENDC
                                .IF B <>
                                M$PRINT C$PNTB,#NORESP,<L$LUN>,<>
                                .MEXIT
                                .ENDC
                                .IF B <>
                                M$PRINT C$PNTB,#NORESP,<L$LUN>,<>,<>
                                .MEXIT
                                .ENDC
                                .IF B <>
                                M$PRINT C$PNTB,#NORESP,<L$LUN>,<>,<>,<>
                                .MEXIT
                                .ENDC
                                .IF B <>
                                M$PRINT C$PNTB,#NORESP,<L$LUN>,<>,<>,<>,<>
                                .MEXIT
                                .ENDC
                                .IF B <>
                                M$PRINT C$PNTB,#NORESP,<L$LUN>,<>,<>,<>,<>,<>
                                .MEXIT
                                .ENDC
                                .IF B <>
                                M$PRINT C$PNTB,#NORESP,<L$LUN>,<>,<>,<>,<>,<>,<>
                                .MEXIT
                                .ENDC
                                M$PRINT C$PNTB,#NORESP,<L$LUN>,<>,<>,<>,<>,<>,<>,<>
                                1$:
                                BREAK ;ALLOW DRS TO SEE TERMINAL INPUT
                                .MCALL M$SVC
                                M$SVC C$BRK
                                .MCALL M$GNINS,M$STSLAB
                                M$STSLAB
                                .MCALL M$TLABEL,M$INCR
                                .IF LT T$STMAC, .MEXIT
                                .RADIX 10
```

```

M$TLABEL          \T$TESTNUN,\T$STSEQ
.RADIX 8
M$INCR T$STSEQ
004676 M$GNINS <TRAP C$BRK>
      .IF LT SVCINS
      TRAP C$BRK
      .MEXIT
      .ENDC
004676 104422 .IF EQ SVCINS
      TRAP C$BRK
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      TRAP C$BRK
24
25 004700 016505 000000 RSPNXT: MOV C.NEXT(R5),R5 ;MOVE TO NEXT TABLE
26 004704 001332 BNE RESPECT ;LOOK AT NEXT CONTROLLER - IF ANY
27 004706 000727 BR RESPDM ;LOOK AT FIRST CONTROLLER AGAIN
28
29 ;REMOVE A CONTROLLER FROM TESTING
30
31 004710 RSPDRP: PRINTB #REMMSG,L$LUN ; LOG REMOVAL
      .MCALL M$PRINT
      .IF B #REMMSG
      .ERROR ;MISSING FORMAT
      .MEXIT
      .ENDC
      .IF B <L$LUN>
      M$PRINT C$PNTB,#REMMSG
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTB,#REMMSG,<L$LUN>
      .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
      T$ARGCNT=1
      M$COUNT T$ARGCNT,<L$LUN>,<>,<>,<>,<>,<>,<>,<>
      .IF NB <>
      M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
      .ENDC
      .IF NB <L$LUN>
      T$ARGCNT=T$ARGCNT+1
      .ENDC
      .IRP N,<\T$ARGCNT>
      M$PUT #N,#REMMSG,<L$LUN>,<>,<>,<>,<>,<>,<>
      .ENDM
004710 M$PUT #2,#REMMSG,<L$LUN>,<>,<>,<>,<>,<>,<>
      .MCALL M$PUT1
004710 .IF NB <#REMMSG>
      M$PUT <#REMMSG>,<L$LUN>,<>,<>,<>,<>,<>,<>
      .MCALL M$PUT1
004710 .IF NB <L$LUN>
      M$PUT <L$LUN>,<>,<>,<>,<>,<>,<>,<>
      .MCALL M$PUT1
      .IF NB <>
    
```

```

M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC
004710 .IF NB <L$LUN>
M$PUT1 L$LUN
.MCALL M$GNINS
004710 .IF B
M$GNINS <MOV L$LUN,-(SP)>
.IF LT SVCINS
MOV L$LUN,-(SP)
.MEXIT
.ENDC
004710 013746 002074 .IF EQ SVCINS
MOV L$LUN,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
MOV L$LUN,-(SP)
.ENDC
.IFF
.IF DIF B,<L$LUN>
.ERROR ;ILL. ARG. 'L$LUN' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
M$GNINS <CLR -(SP)>
M$GNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
004714 .IF NB <#REMMSG>
M$PUT1 #REMMSG
.MCALL M$GNINS
004714 .IF B
M$GNINS <MOV #REMMSG,-(SP)>
.IF LT SVCINS
MOV #REMMSG,-(SP)
.MEXIT
.ENDC
004714 012746 006202 .IF EQ SVCINS
MOV #REMMSG,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
MOV #REMMSG,-(SP)
.ENDC
.IFF
.IF DIF B,<#REMMSG>
.ERROR ;ILL. ARG. '#REMMSG' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
M$GNINS <CLR -(SP)>
M$GNINS <BISB ,(SP)>
.ENDC
.ENDC

```

```

    004720      .ENDC
                .IF NB <#2>
                M$PUT1 #2
                .MCALL M$GNINS
    004720      .IF B
                M$GNINS <MOV #2,-(SP)>
                .IF LT SVCINS
                MOV #2,-(SP)
                .MEXIT
                .ENDC
    004720 012746 000002      .IF EQ SVCINS
                                MOV #2,-(SP)
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .NLIST
                                MOV #2,-(SP)
                .FNDC
                .IFF
                .IF DIF B,<#2>
                .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
                .MEXIT
                .ENDC
                M$GNINS <CLR -(SP)>
                M$GNINS <BISB ,(SP)>
                .ENDC
    004724      .ENDC
                M$GNINS <MOV SP,R0>
                .IF LT SVCINS
                MOV SP,R0
                .MEXIT
                .ENDC
    004724 010600      .IF EQ SVCINS
                                MOV SP,R0
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .NLIST
                                MOV SP,R0
                .ENDC
    004726      M$SVC C$PNTB
    004726      .MCALL M$GNINS,M$TSTLAB
                M$TSTLAB
                .MCALL M$TLABEL,M$INCR
                .IFF LT T$TSTMAC, .MEXIT
                .RADIX 10
                M$TLABEL \T$TESTNUN,\T$TSTSEQ
                .RADIX 8
                M$INCR T$TSTSEQ
    004726      M$GNINS <TRAP C$PNTB>
                .IF LT SVCINS
                TRAP C$PNTB
                .MEXIT
                .ENDC
                .IF EQ SVCINS
    
```



004726 104414

TRAP C\$PNTB

.MEXIT  
 .ENDC  
 .IF GT SVCINS  
 .LIST

TRAP C\$PNTB

.NLIST

.ENDC  
 .IRP N,<\T\$ARGCNT\*2+2>  
 MSGNINS <ADD #N,SP>

004730

.ENDM  
 MSGNINS <ADD #6,SP>  
 .IF LT SVCINS  
 ADD #6,SP

004730 062706 000006

.MEXIT  
 .ENDC  
 .IF EQ SVCINS  
 ADD #6,SP

ADD #6,SP

.MEXIT  
 .ENDC  
 .IF GT SVCINS  
 .LIST

.NLIST

.ENDC  
 .MEXIT  
 .ENDC  
 .IF B <>  
 M\$PRINT C\$PNTB,#REMMSG,<L\$LUN>,<>

.MEXIT  
 .ENDC  
 .IF B <>  
 M\$PRINT C\$PNTB,#REMMSG,<L\$LUN>,<>,<>

.MEXIT  
 .ENDC  
 .IF B <>  
 M\$PRINT C\$PNTB,#REMMSG,<L\$LUN>,<>,<>,<>

.MEXIT  
 .ENDC  
 .IF B <>  
 M\$PRINT C\$PNTB,#REMMSG,<L\$LUN>,<>,<>,<>,<>

.MEXIT  
 .ENDC  
 .IF B <>  
 M\$PRINT C\$PNTB,#REMMSG,<L\$LUN>,<>,<>,<>,<>,<>

.MEXIT  
 .ENDC  
 .IF B <>  
 M\$PRINT C\$PNTB,#REMMSG,<L\$LUN>,<>,<>,<>,<>,<>,<>

.MEXIT  
 .ENDC  
 M\$PRINT C\$PNTB,#REMMSG,<L\$LUN>,<>,<>,<>,<>,<>,<>,<>

32 004734  
 33 004734 042765 000002 000014  
 34 004742 005337 002220  
 35 004746 001354  
 36 004750 000207

RSPDNE:  
 BIC #CT.RN,C.FLG(R5) ;CLEAR PROGRAM RUNNING  
 DEC URNING ;REDUCE RUNNING CONTROLLERS COUNT  
 BNE RSPNXT ;IF ANY STILL RUNNING, LOOK AT THEM  
 RETURN ;ELSE RETURN TO TEST SECTION

```

1          ;CONTROLLER HAS RESPONDED, LOOK AT MESSAGE PACKET
2
3 004752 042765 000010 000014 RSPIN: BIC #CT.MSG,C.FLG(R5)          ;CLEAR MESSAGE INTERRUPT RECEIVED
4 004760 005065 000040          CLR      C.CNT(R5)          ; RESET COUNTER
5 004764 012765 000020 000042          MOV      #C.INIT,C.CNT+2(R5)
6
7          ;CHECK FOR PROPER OPCODE IN END PACKET
8
9 004772 012700 000204          MOV #OP.END+OP.SND,R0          ;GET SEND DATA END PACKET OPCODE
10 004776 032765 000020 000014        BIT #CT.REQ,C.FLG(R5)        ;LOOK IF MAINTENANCE READ OR WRITE SENT
11 005004 001402          BEQ RSPMWR
12 005006 012700 000205          MOV #OP.END+OP.RCV,R0        ;CHANGE TO RECEIVE END PACKET OPCODE
13 005012 120064 000024        RSPMWR: CMPB R0,HC.MPK+P.OPCD(R4) ;COMPARE TO OPCODE IN END PACKET
14 005016 001405          BEQ RSPSTS
15 005020          ERRHRD 1,RSPPKC          ;REPORT OPCODE ERROR IN RESPONSE PACKET
          .MCALL MSERRINS
005020          MSERRINS 1,RSPPKC,C$ERHRD
          .MCALL MSGNINS,MSWORD,MS$STLAB
005020          MSSVC C$ERHRD
          .MCALL MSGNINS,MS$STLAB
005020          MS$STLAB
          .MCALL MS$TLABEL,MS$INCR
          .IF LT T$STMAC, .MEXIT
          .RADIX 10
          MS$TLABEL \T$TESTNUM,\T$STSEQ
          .RADIX 8
          MS$INCR T$STSEQ
005020          MSGNINS <TRAP C$ERHRD>
          .IF LT SVCINS
          TRAP C$ERHRD
          .MEXIT
          .ENDC
005020 104456          .IF EQ SVCINS
          TRAP C$ERHRD
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .NLIST
          TRAP C$ERHRD
          .ENDC
          .RADIX 10
          .IF NB 1
          T$ERRNUM=1
          .IFF
          .ERROR ;MISSING ERROR-NR
          .ENDC
005022          MSWORD \T$ERRNUM
          .MCALL MSGNINS
          .IRP N,<1>
          MSGNINS <.WORD N>
          .ENDM
005022          MSGNINS <.WORD 1>
          .IF LT SVCINS
          .WORD 1
          .MEXIT
          .ENDC

```

```
005022 000001      .IF EQ SVCINS
                   .WORD 1
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST
                                     .NLIST
                                     .WORD 1
                   .ENDC
000010
005024      .RADIX 8
                   .IF NB RSPPK
MSWORD RSPPK
                   .MCALL MSGNINS
                   .IRP N,<RSPPK>
MSGNINS <.WORD N>
                   .ENDM
005024      MSGNINS <.WORD RSPPK>
                   .IF LT SVCINS
                   .WORD RSPPK
                   .MEXIT
                   .ENDC
005024 006276      .IF EQ SVCINS
                   .WORD RSPPK
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST
                                     .NLIST
                                     .WORD RSPPK
                   .ENDC
                   .IFF
MSWORD 0
                   .ENDC
                   .IF NB
MSWORD
                   .IFF
MSWORD 0
                   .MCALL MSGNINS
                   .IRP N,<0>
MSGNINS <.WORD N>
                   .ENDM
005026      MSGNINS <.WORD 0>
                   .IF LT SVCINS
                   .WORD 0
                   .MEXIT
                   .ENDC
005026 000000      .IF EQ SVCINS
                   .WORD 0
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST
                                     .NLIST
                                     .WORD 0
                   .ENDC
16 005030 000727      .ENDC
                   .ENDC
BR RSPDRP
;DROP UNIT FROM TESTING
```



```

000010      .RADIX 8
005046      .IF NB RSPSTE
            M$WORD RSPSTE
            .M$CALL M$GNINS
            .IRP N,<RSPSTE>
            M$GNINS <.WORD N>
            .ENDM
005046      M$GNINS <.WORD RSPSTE>
            .IF LT SVCINS
            .WORD RSPSTE
            .MEXIT
            .ENDC
005046 006514 .IF EQ SVCINS
            .WORD RSPSTE
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .WORD RSPSTE
                                .NLIST
            .ENDC
            .IFF
            M$WORD 0
            .ENDC
            .IF NB
            M$WORD
            .IFF
            M$WORD 0
            .M$CALL M$GNINS
            .IRP N,<0>
            M$GNINS <.WORD N>
            .ENDM
005050      M$GNINS <.WORD 0>
            .IF LT SVCINS
            .WORD 0
            .MEXIT
            .ENDC
005050 000000 .IF EQ SVCINS
            .WORD 0
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .WORD 0
                                .NLIST
            .ENDC
            .ENDC
23 005052 000716      BR RSPDRP ;DROP UNIT FROM TESTING
24
25 ;CHECK FOR EXPECTED REFERENCE NUMBER
26
27 005054 026564 000016 000014 RSPREF: CMP (R5),HC.MPK+P.CRF(R4) ;CHECK IF CORRECT REF NUMBER
28 005062 001405      BEQ RSPPTW
29 005064      ERRHRD 3,RSPPRE
            .M$CALL M$ERRINS
            M$ERRINS 3,RSPPRE,C$ERRHRD
            .M$CALL M$GNINS,M$WORD,M$ISTLAB

```

```

005064      MSSVC  C$ERHRD
005064      .MCALL MSGNINS,MSTSTLAB
005064      MSTSTLAB
005064      .MCALL MSTLABEL,MSINCR
005064      .IF LT TSTSTMAC, .MEXIT
005064      .RADIX 10
005064      MSTLABEL      \TSTESTNUN,\TSTSTSEQ
005064      .RADIX 8
005064      MSINCR TSTSTSEQ
005064      MSGNINS <TRAP  C$ERHRD>
005064      .IF LT SVCINS
005064      TRAP  C$ERHRD
005064      .MEXIT
005064      .ENDC
005064 104456 .IF EQ SVCINS
005064      TRAP  C$ERHRD
005064      .MEXIT
005064      .ENDC
005064      .IF GT SVCINS
005064      .LIST
005064      .NLIST
005064      .ENDC
000012 .RADIX 10
000003 .IF NB 3
000003 I$ERRNUM=3
000003 .IFF
000003 .ERROR ;MISSING ERROR-NR
000003 .ENDC
005066 MSWORD \T$ERRNUM
005066 .MCALL MSGNINS
005066 .IRP  N,<3>
005066 MSGNINS <.WORD N>
005066 .FNDM
005066 MSGNINS <.WORD 3>
005066 .IF LT SVCINS
005066 .WORD 3
005066 .MEXIT
005066 .ENDC
005066 000003 .IF EQ SVCINS
005066      .WORD 3
005066      .MEXIT
005066      .ENDC
005066      .IF GT SVCINS
005066      .LIST
005066      .NLIST
005066      .WORD 3
000010 .ENDC
005070 .RADIX 8
005070 .IF NB R$PPRE
005070 MSWORD R$PPRE
005070 .MCALL MSGNINS
005070 .IRP  N,<R$PPRE>
005070 MSGNINS <.WORD N>
005070 .ENDM
005070 MSGNINS <.WORD R$PPRE>
005070 .IF LT SVCINS

```

```

                                .WORD   RSPPRE
                                .MEXIT
                                .ENDC
005070 006346                .IF EQ  SVCINS
                                .WORD   RSPPRE
                                .MEXIT
                                .ENDC
                                .IF GT  SVCINS
                                .LIST
                                .NLIST
                                .WORD   RSPPRE
                                .ENDC
                                .IFF
                                MSWORD  0
                                .ENDC
                                .IF NB
                                MSWORD
                                .IFF
005072                MSWORD  0
                                .MCALL  MSGNINS
                                .IRP    N,<0>
                                MSGNINS <.WORD N>
                                .ENDM
005072                MSGNINS <.WORD 0>
                                .IF LT  SVCINS
                                .WORD   0
                                .MEXIT
                                .ENDC
005072 000000                .IF EQ  SVCINS
                                .WORD   0
                                .MEXIT
                                .ENDC
                                .IF GT  SVCINS
                                .LIST
                                .NLIST
                                .WORD   0
                                .ENDC
                                .ENDC
30 005074 000705                BR RSPDRP                ;DROP UNIT FROM TESTING
31
32                                ;CHECK IF RESPONSE FROM MAINTENANCE READ OR WRITE
33
34 005076 032765 000020 000014 RSPPTW: BIT    #CT.REQ,C.FLG(R5)    ; LAST CMD A READ?
35 005104 001004                BNE      RSPPT2                ; YES - PROCESS IT
36
37                                ;SEND MAINTENANCE READ COMMAND TO GET NEXT MESSAGE
38
39 005106 004737 003110                CALL   GETDMR                ; ISSUE MAINT. READ
40 005112 000137 004700                JMP    RSPNXT                ;NOW WAIT FOR END PACKET

```

```

1          ;MAINTENANCE READ END PACKET RECEIVED, LOOK AT REQUEST FROM DM PROGRAM
2
3 005116 042765 000020 000014 RSPPT2: BIC      #CT.REQ,C.FLG(R5)      ; CLEAR REQUEST FLAG
4 005124 016401 000214          MOV      HC.BF2+2(R4),R1      ; GET MESSAGE CODE
5 005130 022701 020103          CMP      #'C',R1          ; CYLINDER COMPLETE?
6 005134 001423          BEQ      CYLCMP
7 005136 022701 020106          CMP      #'F',R1          ; FCT REQUEST?
8 005142 001510          BEQ      GETFCI
9 005144 022701 020104          CMP      #'D',R1          ; FORMAT DONE?
10 005150 001533          BEQ      FMTDNE
11 005152 022701 020123          CMP      #'S',R1          ; ASKING FOR START?
12 005156 001432          BEQ      KRANIZ
13 005160 022701 020105          CMP      #'E',R1          ; ERROR IN FORMAT?
14 005164 001002          BNE      1$              ; NO - ERROR
15 005166 000137 006062          JMP      FMTERR          ; YES
16
17 005172          1$:      ERRHRD 4,RSPNE          ; UNKNOWN MESSAGE
          .MCALL  MSERRINS
          005172      MSERRINS 4,RSPNE,,C$ERHRD
          .MCALL  MSGNINS,MSWORD,MS$STLAB
          005172      MSSVC  C$ERHRD
          .MCALL  MSGNINS,MS$STLAB
          005172      MS$STLAB
          .MCALL  MS$LABEL,MS$INCR
          .IF LT T$STMAC, .MEXIT
          .RADIX 10
          MS$LABEL      \T$TESTNUM,\T$STSEQ
          .RADIX 8
          MS$INCR T$STSEQ
          005172      MSGNINS <TRAP C$ERHRD>
          .IF LT SVCINS
          TRAP C$ERHRD
          .MEXIT
          .FND
          .IF EQ SVCINS
          005172 104456      TRAP C$ERHRD
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .NLIST
          .ENDC
          000012      .RADIX 10
          000004      .IF NB 4
          T$ERRNUM=4
          .IFF
          .ERROR ;MISSING ERROR-NR
          .ENDC
          005174      MSWORD \T$ERRNUM
          .MCALL  MSGNINS
          .IRP   N,<4>
          MSGNINS <.WORD N>
          .ENDM
          005174      MSGNINS <.WORD 4>
          .IF LT SVCINS
          .WORD 4
    
```





```

        .ENDC
18 005202 000642          BR      RSPDRP          ; DROP OFFENDING UDA
19
20 005204          CYLCMP: PRINTX #RM.CMP,L$LUN,HC.BF2+6(R4) ; LOG MESSAGE
        .MCALL M$PRINT
        .IF B #RM.CMP
        .ERROR ;MISSING FORMAT
        .MEXIT
        .ENDC
        .IF B <L$LUN>
        M$PRINT C$PNTX,#RM.CMP
        .MEXIT
        .ENDC
        .IF B <HC.BF2+6(R4)>
        M$PRINT C$PNTX,#RM.CMP,<L$LUN>
        .MEXIT
        .ENDC
        .IF B <>
005204          M$PRINT C$PNTX,#RM.CMP,<L$LUN>,<HC.BF2+6(R4)>
        .MCALL M$COUNT,M$PUT,MSGNINS,M$SVC
005204 000001          T$ARGCNT=1
        M$COUNT T$ARGCNT,<L$LUN>,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>
005204          .IF NB <HC.BF2+6(R4)>
        M$COUNT T$ARGCNT,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>
        .IF NB <>
        M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
        .ENDC
        .IF NB <HC.BF2+6(R4)>
005204 000002          T$ARGCNT=T$ARGCNT+1
        .ENDC
        .ENDC
        .IF NB <L$LUN>
005204 000003          T$ARGCNT-T$ARGCNT+1
        .ENDC
        .IRP N,<\T$ARGCNT>
        M$PUT #N,#RM.CMP,<L$LUN>,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>
        .ENDM
005204          M$PUT #3,#RM.CMP,<L$LUN>,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>
        .MCALL M$PUT1
005204          .IF NB <#RM.CMP>
        M$PUT <#RM.CMP>,<L$LUN>,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>
        .MCALL M$PUT1
005204          .IF NB <L$LUN>
        M$PUT <L$LUN>,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>
        .MCALL M$PUT1
005204          .IF NB <HC.BF2+6(R4)>
        M$PUT <HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>,<>
        .MCALL M$PUT1
        .IF NB <>
        M$PUT <>,<>,<>,<>,<>,<>,<>,<>
        .ENDC
005204          .IF NB <HC.BF2+6(R4)>
        M$PUT1 HC.BF2+6(R4)
        .MCALL MSGNINS
005204          .IF B
        MSGNINS <MOV HC.BF2+6(R4),-(SP)>
        .IF LT SVCINS
    
```

```
MOV      HC.BF2+6(R4),-(SP)
.MEXIT
.ENDC
005204 016446 000220 .IF EQ SVCINS
MOV      HC.BF2+6(R4),-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
MOV      HC.BF2+6(R4),-(SP)
.ENDC
.IFF
.IF DIF B,<HC.BF2+6(R4)>
.ERROR  ;ILL. ARG. 'HC.BF2+6(R4)' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
.ENDC
005210 .IF NB <L$LUN>
M$PUT1  L$LUN
.MCALL  MSGNINS
005210 .IF B
MSGNINS <MOV     L$LUN,-(SP)>
.IF LT SVCINS
MOV     L$LUN,-(SP)
.MEXIT
.ENDC
005210 013746 002074 .IF EQ SVCINS
MOV     L$LUN,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
MOV     L$LUN,-(SP)
.ENDC
.IFF
.IF DIF B,<L$LUN>
.ERROR  ;ILL. ARG. 'L$LUN' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
.ENDC
005214 .IF NB <#RM.CMP>
M$PUT1  #RM.CMP
.MCALL  MSGNINS
005214 .IF B
MSGNINS <MOV     #RM.CMP,-(SP)>
.IF LT SVCINS
MOV     #RM.CMP,-(SP)
```

```

005214 012746 006572      .MEXIT
                          .ENDC
                          .IF EQ SVCINS
                              MOV      #RM.CMP,-(SP)
                          .MEXIT
                          .ENDC
                          .IF GT SVCINS
                              .LIST
                                  .NLIST
                                  MOV      #RM.CMP,-(SP)
                          .ENDC
                          .IFF
                          .IF DIF B,<#RM.CMP>
                          .ERROR ;ILL. ARG. '#RM.CMP' ONLY 'B' IS ALLOWED.
                          .MEXIT
                          .ENDC
                          MSGNINS <CLR      -(SP)>
                          MSGNINS <BISB    ,(SP)>
                          .ENDC
                          .ENDC
                          .ENDC
005220      .IF NB <#3>
                          M$PUT1 #3
                          .MCALL MSGNINS
005220      .IF B
                          MSGNINS <MOV      #3,-(SP)>
                          .IF LT SVCINS
                              MOV      #3,-(SP)
                          .MEXIT
                          .ENDC
005220 012746 000003      .IF EQ SVCINS
                              MOV      #3,-(SP)
                          .MEXIT
                          .ENDC
                          .IF GT SVCINS
                              .LIST
                                  .NLIST
                                  MOV      #3,-(SP)
                          .ENDC
                          .IFF
                          .IF DIF B,<#3>
                          .ERROR ;ILL. ARG. '#3' ONLY 'B' IS ALLOWED.
                          .MEXIT
                          .ENDC
                          MSGNINS <CLR      -(SP)>
                          MSGNINS <BISB    ,(SP)>
                          .ENDC
                          .ENDC
005224      MSGNINS <MOV      SP,R0>
                          .IF LT SVCINS
                              MOV      SP,R0
                          .MEXIT
                          .ENDC
005224 010600      .IF EQ SVCINS
                              MOV      SP,R0
                          .MEXIT
                          .ENDC
    
```

```

        .IF GT SVCINS
        .LIST
                                MOV      SP,R0
                                .NLIST
005226      .ENDC
        MSSVC C$PNTX
005226      .MCALL MSCNINS,M$TSTLAB
        MSTSTLAB
        .MCALL M$TLABEL,M$INCR
        .IF LT T$TSTMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TSTNUN,\T$TSTSEQ
        .RADIX 8
        M$INCR T$TSTSEQ
005226      MSGNINS <TRAP C$PNTX>
        .IF LT SVCINS
        TRAP C$PNTX
        .MEXIT
        .ENDC
005226 104415      .IF EQ SVCINS
        TRAP C$PNTX
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                TRAP    C$PNTX
                                .NLIST
        .ENDC
        .IRP N,<\T$ARGCNT*2+2>
        MSGNINS <ADD #N,SP>
        .ENDM
005230      MSGNINS <ADD #10,SP>
        .IF LT SVCINS
        ADD #10,SP
        .MEXIT
        .ENDC
005230 062706 000010      .IF EQ SVCINS
        ADD #10,SP
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                ADD    #10,SP
                                .NLIST
        .ENDC
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTX,#RM.CMP,<L$LUN>,<HC.BF2+6(R4)>,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTX,#RM.CMP,<L$LUN>,<HC.BF2+6(R4)>,<>,<>
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTX,#RM.CMP,<L$LUN>,<HC.BF2+6(R4)>,<>,<>,<>
    
```

```

.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTX,#RM.CMP,<L$LUN>,<HC.BF2+6(R4)>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTX,#RM.CMP,<L$LUN>,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
M$PRINT C$PNTX,#RM.CMP,<L$LUN>,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>
CALL GETDMR ; ISSUE ANOTHER MAINT. READ TO THIS DM
JMP RSPNXT ; GET NEXT MESSAGE

```

```

21 005234 004737 003110
22 005240 000137 004700

```

1	005244			KRANTZ:		
2	005244	012700	000004	MOV	#OP.SND,R0	:BUILD A SEND DATA COMMAND PACKET
3	005250	004737	002520	CALL	BLDCMD	
4	005254	012700	000160	MOV	#HC.BF1,R0	:POINT TO BUFFER IN PACKET
5	005260	004737	002614	CALL	CLRBUF	: AND CLEAR BUFER
6						
7	005264	012724	020123	MOV	#'S ,(R4)+	: SET START MESSAGE FLAG
8	005270	013700	002204	MOV	DMPROG,R0	: START OF DM PROG IN HOST MEM
9	005274	063700	002210	ADD	DMTRLN,R0	: COMPUTE START OF DM OVERLAYS
10	005300	010024		MOV	R0,(R4)+	: PUT IN BUFF FOR DM
11	005302	005024		CLR	(R4)+	: HI ORDER BITS OF ADDRESS ARE ZEROS
12	005304	016524	000020	MOV	C.UNUM(R5),(R4)+	: UNIT NUMBER TO TEST
13	005310	016524	000022	MOV	C.DFLG(R5),(R4)+	: STARTUP FLAGS
14	005314	016524	000030	MOV	C.SNUM(R5),(R4)+	: MOVE 4 WORD SERIAL NUMBER
15	005320	016524	000032	MOV	C.SNUM+2(R5),(R4)+	
16	005324	016524	000034	MOV	C.SNUM+4(R5),(R4)+	
17	005330	016524	000036	MOV	C.SNUM+6(R5),(R4)+	
18	005334	013724	002150	MOV	DATE,(R4)+	: DATE
19	005340	013724	002152	MOV	DATE+2,(R4)+	
20	005344	013724	002154	MOV	DATE+4,(R4)+	
21	005350	013724	002156	MOV	DATE+6,(R4)+	
22						
23	005354	004737	012010	CALL	SNDCMD	
24	005360	000137	004700	JMP	RSPNXT	
25	005364			GETFCT:		
26	005364	016401	000216	MOV	HC.BF2+4(R4),R1	: GET DESIRED FCT BLOCK NUMBER
27	005370	004737	002656	CALL	GETBLK	: READ DESIRED BLOCK
28						
29	005374	012700	000004	MOV	#OP.SND,R0	: REQUEST A SEND DATA PACKET
30	005400	004737	002520	CALL	BLDCMD	: BUILD THE COMMAND
31	005404	012700	000160	MOV	#HC.BF1,R0	: PLACE DATA IN BUFFER 1
32	005410	004737	002614	CALL	CLRBUF	: CLEAR MESSAGE BUFFER
33						: PUT MESSAGE IN BUFFER
34	005414	012724	020106	MOV	#'F ,(R4)+	: SET MESSAGE CODE
35	005420	010124		MOV	R1,(R4)+	: SET FCT BLOCK NUMBER
36	005422	010224		MOV	R2,(R4)+	: SET SUCCESS/FAILURE (0=SUCCESS,-1=...)
37	005424	016524	000024	MOV	C.FBUF(R5),(R4)+	: SET POINTER TO BUFFER
38						
39	005430	004737	012010	CALL	SNDCMD	: SEND THE MESSAGE
40						
41	005434	000137	004700	JMP	RSPNXT	: CHECK NEXT CONTROLLER

```

1 005440          FMTDNE: PRINTF #RM.DNE,L$LUN          ; LOG UNIT SUCCESSFULLY COMPLETED
                  .MCALL M$PRINT
                  .IF B #RM.DNE
                  .ERROR ;MISSING FORMAT
                  .MEXIT
                  .ENDC
                  .IF B <L$LUN>
005440          M$PRINT C$PNTF,#RM.DNE
005440          .MEXIT
005440          .ENDC
005440          .IF B <>
000001          M$PRINT C$PNTF,#RM.DNE,<L$LUN>
                  .MCALL M$COUNT,M$PUT,MSGNINS,M$SVC
                  T$ARGCNT=1
005440          M$COUNT T$ARGCNT,<L$LUN>,<>,<>,<>,<>,<>,<>,<>
                  .IF NB <>
                  M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
                  .ENDC
000002          .IF NB <L$LUN>
                  T$ARGCNT=T$ARGCNT+1
                  .ENDC
                  .IRP N,<T$ARGCNT>
005440          M$PUT #N,#RM.DNE,<L$LUN>,<>,<>,<>,<>,<>,<>,<>
                  .ENDM
005440          M$PUT #2,#RM.DNE,<L$LUN>,<>,<>,<>,<>,<>,<>,<>
                  .MCALL M$PUT1
005440          .IF NB <#RM.DNE>
                  M$PUT <#RM.DNE>,<L$LUN>,<>,<>,<>,<>,<>,<>
                  .MCALL M$PUT1
005440          .IF NB <L$LUN>
                  M$PUT <L$LUN>,<>,<>,<>,<>,<>,<>,<>
                  .MCALL M$PUT1
                  .IF NB <>
                  M$PUT <>,<>,<>,<>,<>,<>,<>,<>
                  .ENDC
005440          .IF NB <L$LUN>
                  M$PUT1 L$LUN
                  .MCALL MSGNINS
005440          .IF B
                  MSGNINS <MOV L$LUN,-(SP)>
                  .IF LT SVCINS
                  MOV L$LUN,-(SP)
                  .MEXIT
                  .ENDC
005440          .IF EQ SVCINS
                  MOV L$LUN,-(SP)
                  .MEXIT
                  .ENDC
005440          .IF GT SVCINS
                  .LIST
                  .NLIST
                  MOV L$LUN,-(SP)
                  .ENDC
                  .IFF
005440          .IF DIF B,<L$LUN>
                  .ERROR ;ILL. ARG. 'L$LUN' ONLY 'B' IS ALLOWED.
                  .MEXIT
    
```



```

      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
      .ENDC
005444  .IF NB <#RM.DNE>
      M$PUT1 #RM.DNE
      .MCALL MSGNINS
005444  .IF B
      MSGNINS <MOV      #RM.DNE,-(SP)>
      .IF LT SVCINS
      MOV      #RM.DNE,-(SP)
      .MEXIT
      .ENDC
005444 012746 006644 .IF EQ SVCINS
      MOV      #RM.DNE,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      MOV      #RM.DNE,-(SP)
      .ENDC
      .IFF
      .IF DIF B,<#RM.DNE>
      .ERROR ;ILL. ARG. '#RM.DNE' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
      .ENDC
005450  .IF NB <#2>
      M$PUT1 #2
      .MCALL MSGNINS
005450  .IF B
      MSGNINS <MOV      #2,-(SP)>
      .IF LT SVCINS
      MOV      #2,-(SP)
      .MEXIT
      .ENDC
005450 012746 000002 .IF EQ SVCINS
      MOV      #2,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      MOV      #2,-(SP)
      .ENDC
      .IFF
      .IF DIF B,<#2>
      .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC

```

```

MSGNINS <CLR      -(SP)>
MSGNINS <BISB     ,(SP)>
.ENDC
.ENDC
005454 MSGNINS <MOV      SP,RO>
      .IF LT SVCINS
      MOV      SP,RO
      .MEXIT
      .ENDC
005454 010600 .IF EQ SVCINS
      MOV      SP,RO
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      MOV      SP,RO
      .ENDC
005456 M$SVC C$PNTF
005456 .MCALL MSGNINS,M$TSTLAB
      M$TSTLAB
      .MCALL M$TLABEL,M$INCR
      .IF LT T$TSTMAC, .MEXIT
      .RADIX 10
      M$TLABEL \T$TESTNUM,\T$TSTSEQ
      .RADIX 8
      M$INCR T$TSTSEQ
005456 MSGNINS <TRAP C$PNTF>
      .IF LT SVCINS
      TRAP C$PNTF
      .MEXIT
      .ENDC
005456 104417 .IF EQ SVCINS
      TRAP C$PNTF
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      TRAP C$PNTF
      .ENDC
      .IRP N,<\T$ARGCNT*2+2>
      MSGNINS <ADD #N,SP>
      .ENDM
005460 MSGNINS <ADD #6,SP>
      .IF LT SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC
005460 062706 000006 .IF EQ SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      ADD #6,SP

```

```

.ENDC
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTF,#RM.DNE,<L$LUN>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTF,#RM.DNE,<L$LUN>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTF,#RM.DNE,<L$LUN>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTF,#RM.DNE,<L$LUN>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTF,#RM.DNE,<L$LUN>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTF,#RM.DNE,<L$LUN>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
M$PRINT C$PNTF,#RM.DNE,<L$LUN>,<>,<>,<>,<>,<>,<>,<>

```

2  
3 005464 062704 000216  
4 005470 011402  
5 005472 166402 000002  
6  
7 005476

```

ADD #HC.BF2+4,R4 ; POINT TO FIRST DATA WORD
MOV (R4),R2 ; TOTAL # REVECTORED LBNS
SUB 2(R4),R2 ; - SECONDARY REVECS - PRIMARY REVECS

PRINTS #RM.D1T,(R4)+ ; LBN MESSAGES

```

```

.MCALL M$PRINT
.IF B #RM.D1T
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
.IF B <<(R4)+>
M$PRINT C$PNTS,#RM.D1T
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1T,<<(R4)+>
.MCALL M$COUNT,M$PUT,MSGNINS,M$SVC
T$ARGCNT=1
M$COUNT T$ARGCNT,<<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <<(R4)+>
T$ARGCNT-T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#RM.D1T,<<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.ENDM

```

i  
005476  
000001  
005476  
000002

```

005476      M$PUT      #2,#RM.D1T,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
           .M$CALL    M$PUT1
           .IF NB     <#RM.D1T>
005476      M$PUT      <#RM.D1T>,<(R4)+>,<>,<>,<>,<>,<>,<>
           .M$CALL    M$PUT1
           .IF NB     <(R4)+>
005476      M$PUT      <'(R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
           .M$CALL    M$PUT1
           .IF NB     <>
           M$PUT      <>,<>,<>,<>,<>,<>,<>,<>
           .ENDC
           .IF NB     <(R4)+>
005476      M$PUT1     (R4)+
           .M$CALL    M$GNINS
           .IF B
005476      M$GNINS    <MOV      (R4)+,-(SP)>
           .IF LT    SVCINS
           MOV      (R4)+,-(SP)
           .MEXIT
           .ENDC
           .IF EQ    SVCINS
005476 012446      MOV      (R4)+,-(SP)
           .MEXIT
           .ENDC
           .IF GT    SVCINS
           .LIST
                                     .NLIST
                                     MOV      (R4)+,-(SP)
           .ENDC
           .IFF
           .IF DIF    B,<(R4)+>
           .ERROR    ;ILL. ARG. ''(R4)'' ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
           M$GNINS    <CLR      -(SP)>
           M$GNINS    <BISB    ,(SP)>
           .ENDC
           .ENDC
           .ENDC
           .IF NB     <#RM.D1T>
005500      M$PUT1     #RM.D1T
           .M$CALL    M$GNINS
           .IF B
005500      M$GNINS    <MOV      #RM.D1T,-(SP)>
           .IF LT    SVCINS
           MOV      #RM.D1T,-(SP)
           .MEXIT
           .ENDC
           .IF EQ    SVCINS
005500 012746 006723      MOV      #RM.D1T,-(SP)
           .MEXIT
           .ENDC
           .IF GT    SVCINS
           .LIST
                                     .NLIST
                                     MOV      #RM.D1T,-(SP)
           .ENDC

```

```

      .IFF
      .IF DIF B,<#RM.D1T>
      .ERROR ;ILL. ARG. '#RM.D1T' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
      .ENDC
005504  .IF NB <#2>
      M$PUT1 #2
      .MCALL  M$GNINS
005504  .IF B
      MSGNINS <MOV    #2,-(SP)>
      .IF LT SVCINS
      MOV    #2,-(SP)
      .MEXIT
      .ENDC
005504 012746 000002 .IF EQ SVCINS
      MCV    #2,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IFF
      .IF DIF B,<#2>
      .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
005510  MSGNINS <MOV    SP,RO>
      .IF LT SVCINS
      MOV    SP,RO
      .MEXIT
      .ENDC
005510 010600 .IF EQ SVCINS
      MOV    SP,RO
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
005512  M$SVC    (SPNTS
005512  .MCALL  M$GNINS,M$STSLAB
      M$STSLAB
      .MCALL  M$TLABEL,M$INCR
      .IF LT T$STMAC, .MEXIT
      .RADIX 10
      MOV    #2,-(SP)
      MOV    SP,RO

```

```

M$TLABEL          \T$TESTNUN,\T$STSEQ
.RADIX 8
M$INCR T$STSEQ
005512 M$GNINS <TRAP C$PNTS>
      .IF LT SVCINS
      TRAP C$PNTS
      .MEXIT
      .ENDC
005512 104416 .IF EQ SVCINS
      TRAP C$PNTS
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      TRAP C$PNTS
      .NLIST
      .ENDC
      .IRP N,<\T$ARGCNT*2+2>
005514 M$GNINS <ADD #N,SP>
      .ENDM
      M$GNINS <ADD #6,SP>
      .IF LT SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC
005514 062706 000006 .IF EQ SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      ADD #6,SP
      .NLIST
      .ENDC
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTS,#RM.D1T,<(R4)+>,<>)
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTS,#RM.D1T,<(R4)+>,<>,<>)
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTS,#RM.D1T,<(R4)+>,<>,<>,<>,<>)
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTS,#RM.D1T,<(R4)+>,<>,<>,<>,<>,<>,<>)
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTS,#RM.D1T,<(R4)+>,<>,<>,<>,<>,<>,<>,<>)
      .MEXIT
      .ENDC
      .IF B <>

```

8 005520

```

M$PRINT C$PNTS,#RM.D1T,<(R4)>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
M$PRINT C$PNTS,#RM.D1T,<(R4)>,<>,<>,<>,<>,<>,<>
PRINTS #RM.D1P,R2
.MCALL M$PRINT
.IF B #RM.D1P
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
.IF B <R2>
M$PRINT C$PNTS,#RM.D1P
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1P,<R2>
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
T$ARGCNT=1
M$COUNT T$ARGCNT,<R2>,<>,<>,<>,<>,<>,<>
.IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <R2>
T$ARGCNT-T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#RM.D1P,<R2>,<>,<>,<>,<>,<>,<>
.ENDM
M$PUT #2,#RM.D1P,<R2>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#RM.D1P>
M$PUT <#RM.D1P>,<R2>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <R2>
M$PUT <R2>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <>
M$PUT <>,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <R2>
M$PUT1 R2
.MCALL M$GNINS
.IF B
M$GNINS <MOV R2,-(SP)>
.IF LT SVCINS
MOV R2,-(SP)
.MEXIT
.ENDC
.IF EQ SVCINS
MOV R2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.ENDC

```

005520

000001

005520

000002

005520

005520

005520

005520

005520

005520 010246

MOV R2,-(SP)

```
.IFF
  .IF DIF B,<R2>
  .ERROR ;ILL. ARG. 'R2' ONLY 'B' IS ALLOWED.
  .MEXIT
  .ENDC
  MSGNINS <CLR      -(SP)>
  MSGNINS <BISB    ,(SP)>
  .ENDC
  .ENDC
  .ENDC
005522  .IF NB <#RM.D1P>
  M$PUT1 #RM.D1P
  .MCALL MSGNINS
005522  .IF B
  MSGNINS <MOV      #RM.D1P,-(SP)>
  .IF LT SVCINS
  MOV      #RM.D1P,-(SP)
  .MEXIT
  .ENDC
005522 012746 007005 .IF EQ SVCINS
  MOV      #RM.D1P,-(SP)
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST
  .NLIST
  MOV      #RM.D1P,-(SP)
  .ENDC
  .IFF
  .IF DIF B,<#RM.D1P>
  .ERROR ;ILL. ARG. '#RM.D1P' ONLY 'B' IS ALLOWED.
  .MEXIT
  .ENDC
  MSGNINS <CLR      -(SP)>
  MSGNINS <BISB    ,(SP)>
  .ENDC
  .ENDC
  .ENDC
005526  .IF NB <#2>
  M$PUT1 #2
  .MCALL MSGNINS
005526  .IF B
  MSGNINS <MOV      #2,-(SP)>
  .IF LT SVCINS
  MOV      #2,-(SP)
  .MEXIT
  .ENDC
005526 012746 000002 .IF EQ SVCINS
  MOV      #2,-(SP)
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST
  .NLIST
  MOV      #2,-(SP)
  .ENDC
  .IFF
```



```

      .IF DIF B,<#2>
      .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
005532  .ENDC
      MSGNINS <MOV      SP,RO>
      .IF LT SVCINS
      MOV      SP,RO
      .MEXIT
      .ENDC
005532 010600  .IF EQ SVCINS
      MOV      SP,RO
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
005534  MSSVC    CSPNTS
005534  .MCALL   MSGNINS,M$STSLAB
      M$STSLAB
      .MCALL   M$TLABEL,M$INCR
      .IF LT T$STMAC, .MEXIT
      .RADIX  10
      M$TLABEL \T$TESTNUN,\T$STSEQ
      .RADIX  8
005534  M$INCR   T$STSEQ
      MSGNINS <TRAP   CSPNTS>
      .IF LT SVCINS
      TRAP    CSPNTS
      .MEXIT
      .ENDC
005534 104416  .IF EQ SVCINS
      TRAP    CSPNTS
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IRP    N,<\T$ARGCNT*2+2>
005536  MSGNINS <ADD    #N,SP>
      .ENDM
      MSGNINS <ADD    #6,SP>
      .IF LT SVCINS
      ADD     #6,SP
      .MEXIT
      .ENDC
005536 062706 000006  .IF EQ SVCINS
      ADD     #6,SP
      .MEXIT
      .ENDC

```

MOV SP,RO

TRAP CSPNTS

.IF GT SVCINS  
.LIST

.NLIST

ADD #6,SP

```

.ENDC
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1P,<R2>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1P,<R2>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1P,<R2>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1P,<R2>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1P,<R2>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1P,<R2>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1P,<R2>,<>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
M$PRINT C$PNTS,#RM.D1P,<R2>,<>,<>,<>,<>,<>,<>,<>
PRINTS #RM.D1S,(R4)+
.MCALL M$PRINT
.IF B #RM.D1S
.ERROR :MISSING FORMAT
.MEXIT
.ENDC
.IF B <(R4)+>
M$PRINT C$PNTS,#RM.D1S
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1S,<(R4)+>
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
T$ARGCNT=1
M$COUNT T$ARGCNT,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <(R4)+>
T$ARGCNT=T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#RM.D1S,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.ENDM
M$PUT #2,#RM.D1S,<(R4)+>,<>,<>,<>,<>,<>,<>,<>

```

9 005542

005542

000001

005542

000002

005542

```

005542      .MCALL  M$PUT1
           .IF NB  <#RM.D1S>
M$PUT      <#RM.D1S>,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
           .MCALL  M$PUT1
           .IF NB  <(R4)+>
005542      M$PUT  <(R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
           .MCALL  M$PUT1
           .IF NB  <>
M$PUT      <>,<>,<>,<>,<>,<>,<>,<>,<>
           .ENDC
           .IF NB  <(R4)+>
005542      M$PUT1 (R4)+
           .MCALL  M$GNINS
           .IF B
005542      M$GNINS <MOV  (R4)+,-(SP)>
           .IF LT SVCINS
MOV        (R4)+,-(SP)
           .MEXIT
           .ENDC
005542 012446 .IF EQ SVCINS
MOV        (R4)+,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
MOV        (R4)+,-(SP)
           .NLIST
           .ENDC
           .IFF
           .IF DIF B,<(R4)+>
           .ERROR ;ILL. ARG. "'(R4)+' ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
M$GNINS    <CLR  -(SP)>
M$GNINS    <BISB ,(SP)>
           .ENDC
           .ENDC
           .ENDC
005544      .IF NB  <#RM.D1S>
M$PUT1     #RM.D1S
           .MCALL  M$GNINS
           .IF B
005544      M$GNINS <MOV  #RM.D1S,-(SP)>
           .IF LT SVCINS
MOV        #RM.D1S,-(SP)
           .MEXIT
           .ENDC
005544 012746 007067 .IF EQ SVCINS
MOV        #RM.D1S,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
MOV        #RM.D1S,-(SP)
           .NLIST
           .ENDC
           .IFF

```

```

      .IF DIF B,<#RM.D1S>
      .ERROR ;ILL. ARG. '#RM.D1S' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
      .ENDC
005550      .IF NB <#2>
      M$PUT1 #2
      .MCALL MSGNINS
005550      .IF B
      MSGNINS <MOV     #2,-(SP)>
      .IF LT SVCINS
      MOV     #2,-(SP)
      .MEXIT
      .ENDC
005550 012746 000002      .IF EQ SVCINS
      MOV     #2,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IFF
      .IF DIF B,<#2>
      .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
005554      MSGNINS <MOV     SP,R0>
      .IF LT SVCINS
      MOV     SP,R0
      .MEXIT
      .ENDC
005554 010600      .IF EQ SVCINS
      MOV     SP,R0
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
005556      M$SVC CSPNTS
005556      .MCALL MSGNINS,M$STSLAB
      M$STSLAB
      .MCALL M$TLABEL,M$INCR
      .IF LT T$STMAC, .MEXIT
      .RADIX 10
      M$TLABEL \T$TESTNUM,\T$STSEQ

```

005556

```

.RADIX 8
M$INCR T$TSTSEQ
M$GNINS <TRAP C$PNTS>
.IF LT SVCINS
TRAP C$PNTS
.MEXIT
.ENDC
.IF EQ SVCINS
TRAP C$PNTS
.MEXIT
.ENDC
.IF GT SVCINS

```

005556 104416

```

.LIST
.NLIST

```

TRAP C\$PNTS

005560

```

.ENDC
.IRP N,<\T$ARGCNT*2+2>
M$GNINS <ADD #N,SP>
.ENDM
M$GNINS <ADD #6,SP>
.IF LT SVCINS
ADD #6,SP
.MEXIT
.ENDC

```

005560 062706 000006

```

.IF EQ SVCINS
ADD #6,SP
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

ADD #6,SP

```

.NLIST
.ENDC
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1S,<(R4)+>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1S,<(R4)+>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1S,<(R4)+>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1S,<(R4)+>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1S,<(R4)+>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.D1S,<(R4)+>,<>,<>,<>,<>,<>,<>

```

```

    .MEXIT
    .ENDC
10 005564  M$PRINT C$PNTS,#RM.D1S,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
           PRINTS #RM.D2D,(R4)+ ; RCT MESSAGES
    .MCALL M$PRINT
    .IF B #RM.D2D
    .ERROR ;MISSING FORMAT
    .MEXIT
    .ENDC
    .IF B <(R4)+>
    M$PRINT C$PNTS,#RM.D2D
    .MEXIT
    .ENDC
    .IF B <>
005564  M$PRINT C$PNTS,#RM.D2D,<(R4)+>
    .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
005564  000001 T$ARGCNT=1
           M$COUNT T$ARGCNT,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
    .IF NB <>
005564  M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
    .ENDC
           .IF NB <(R4)+>
           T$ARGCNT=T$ARGCNT+1
           .ENDC
           .IRP N,<\T$ARGCNT>
005564  M$PUT #N,#RM.D2D,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
           .ENDM
           M$PUT #2,#RM.D2D,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
005564  .MCALL M$PUT1
           .IF NB <#RM.D2D>
005564  M$PUT <#RM.D2D>,<(R4)+>,<>,<>,<>,<>,<>,<>
           .MCALL M$PUT1
005564  .IF NB <(R4)+>
           M$PUT <(R4)+>,<>,<>,<>,<>,<>,<>,<>
           .MCALL M$PUT1
           .IF NB <>
           M$PUT <>,<>,<>,<>,<>,<>,<>,<>
           .ENDC
           .IF NB <(R4)+>
005564  M$PUT1 (R4)+
           .MCALL M$GNINS
005564  .IF B
           M$GNINS <MOV (R4)+,-(SP)>
           .IF LT SVCINS
           MOV (R4)+,-(SP)
           .MEXIT
           .ENDC
005564  012446 * .IF EQ SVCINS
           MOV (R4)+,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
           .NLIST
           MOV (R4)+,-(SP)
    .ENDC
    .IFF
    
```

```

      .IF DIF B,<(R4)+>
      .ERROR ;ILL. ARG. ''(R4)+' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
      .ENDC
      .IF NB <#RM.D2D>
005566 M$PUT1 #RM.D2D
      .MCALL MSGNINS
      .IF B
005566 MSGNINS <MOV      #RM.D2D,-(SP)>
      .IF LT SVCINS
      MOV      #RM.D2D,-(SP)
      .MEXIT
      .ENDC
005566 012746 007151 .IF EQ SVCINS
      MOV      #RM.D2D,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IFF
      .IF DIF B,<#RM.D2D>
      .ERROR ;ILL. ARG. ''#RM.D2D'' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      MSGNINS <CLR      -(SP)>
      MSGNINS <BISB    ,(SP)>
      .ENDC
      .ENDC
      .ENDC
      .IF NB <#2>
005572 M$PUT1 #2
      .MCALL MSGNINS
      .IF B
005572 MSGNINS <MOV      #2,-(SP)>
      .IF LT SVCINS
      MOV      #2,-(SP)
      .MEXIT
      .ENDC
005572 012746 000002 .IF EQ SVCINS
      MOV      #2,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IFF
      .IF DIF B,<#2>

```

MOV #RM.D2D,-(SP)

MOV #2,-(SP)

```
.ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
005576 MSGNINS <MOV SP,RO>
      .IF LT SVCINS
      MOV SP,RO
      .MEXIT
      .ENDC
005576 010600 .IF EQ SVCINS
      MOV SP,RO
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      MOV SP,RO
      .ENDC
005600 MSSVC C$PNTS
005600 .MCALL MSGNINS,M$STSLAB
      M$STSLAB
      .MCALL M$TLABEL,M$INCR
      .IF LT T$STSMAC, .MEXIT
      .RADIX 10
      M$TLABEL \T$TESTNUM,\T$STSEQ
      .RADIX 8
      M$INCR T$STSEQ
005600 MSGNINS <TRAP C$PNTS>
      .IF LT SVCINS
      TRAP C$PNTS
      .MEXIT
      .ENDC
005600 104416 .IF EQ SVCINS
      TRAP C$PNTS
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      TRAP C$PNTS
      .ENDC
      .IRP N,<\T$ARGCNT*2+2>
      MSGNINS <ADD #N,SP>
      .ENDM
005602 MSGNINS <ADD #6,SP>
      .IF LT SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC
005602 062706 000006 .IF EQ SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC
      .IF GT SVCINS
```



ADD #6,SP

.LIST

.NLIST

```

.ENDC
.MEXIT
.ENDC
.IF B <>
MSPRINT ( $PNTS, #RM.D2D, <(R4)+>, <>
.MEXIT
.ENDC
.IF B <>
MSPRINT ( $PNTS, #RM.D2D, <(R4)+>, <>, <>
.MEXIT
.ENDC
.IF B <>
MSPRINT ( $PNTS, #RM.D2D, <(R4)+>, <>, <>, <>
.MEXIT
.ENDC
.IF B <>
MSPRINT ( $PNTS, #RM.D2D, <(R4)+>, <>, <>, <>, <>
.MEXIT
.ENDC
.IF B <>
MSPRINT ( $PNTS, #RM.D2D, <(R4)+>, <>, <>, <>, <>, <>
.MEXIT
.ENDC
MSPRINT ( $PNTS, #RM.D2D, <(R4)+>, <>, <>, <>, <>, <>, <>, <>
PRINTS #RM.D2H, (R4)+
.MCALL MSPRINT
.IF B #RM.D2H
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
.IF B <(R4)+>
MSPRINT ( $PNTS, #RM.D2H
.MEXIT
.ENDC
.IF B <>
MSPRINT ( $PNTS, #RM.D2H, <(R4)+>
.MCALL MSCOUNT, M$PUT, M$GNINS, M$SV
T$ARGCNT=1
MSCOUNT T$ARGCNT, <(R4)+>, <>, <>, <>, <>, <>, <>, <>
.IF NB <>
MSCOUNT T$ARGCNT, <>, <>, <>, <>, <>, <>, <>, <>
.ENDC
.IF NB <(R4)+>
T$ARGCNT=T$ARGCNT+1
.ENDC
.IRP N, <\T$ARGCNT>
M$PUT #N, #RM.D2H, <(R4)+>, <>, <>, <>, <>, <>, <>, <>
.ENDM
M$PUT #2, #RM.D2H, <(R4)+>, <>, <>, <>, <>, <>, <>, <>
.MCALL M$PUT1

```

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005606

000001

005606

000002

005606

```

005606 .IF NB <#RM.D2H>
M$PUT <#RM.D2H>,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
005606 .IF NB <(R4)+>
M$PUT <(R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
005606 .IF NB <>
M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC

```

```

005606 .IF NB <(R4)+>
M$PUT1 (R4)+
.MCALL M$GNINS

```

```

005606 .IF B
M$GNINS <MOV (R4)+,-(SP)>
005606 .IF LT SVCINS
MOV (R4)+,-(SP)
.MEXIT
.ENDC

```

```

005606 012446 .IF EQ SVCINS
MOV (R4)+,-(SP)
.MEXIT
.ENDC
005606 .IF GT SVCINS
.LIST

```

MOV (R4)+,-(SP)

```

.NLIST
.ENDC
.IFF
005610 .IF DIF B,<(R4)+>
M$GNINS <CLR -(SP)>
M$GNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC

```

```

005610 .IF NB <#RM.D2H>
M$PUT1 #RM.D2H
.MCALL M$GNINS

```

```

005610 .IF B
M$GNINS <MOV #RM.D2H,-(SP)>
005610 .IF LT SVCINS
MOV #RM.D2H,-(SP)
.MEXIT
.ENDC

```

```

005610 012746 007233 .IF EQ SVCINS
MOV #RM.D2H,-(SP)
.MEXIT
.ENDC
005610 .IF GT SVCINS
.LIST

```

MOV #RM.D2H,-(SP)

```

.NLIST
.ENDC
.IFF
005610 .IF DIF B,<#RM.D2H>

```

```
.ERROR ;ILL. ARG. '#RM.D2H' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
005614 .IF NB <#2>
M$PUT1 #2
.MCALL MSGNINS
005614 .IF B
MSGNINS <MOV #2,-(SP)>
.IF LT SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
005614 012746 000002 .IF EQ SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV #2,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#2>
.ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.FNDC
.ENDC
005620 MSGNINS <MOV SP,R0>
.IF LT SVCINS
MOV SP,R0
.MEXIT
.ENDC
005620 010600 .IF EQ SVCINS
MOV SP,R0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV SP,R0
.NLIST
.ENDC
M$SVC C$PNTS
.MCALL MSGNINS,M$TSTLAB
005622 M$TSTLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$TSTMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUM,\T$TSTSEQ
.RADIX 8
```

```

005622      MSINCR T$TSTSEQ
            MSGNINS <TRAP C$PNTS>
            .IF LT SVCINS
            TRAP C$PNTS
            .MEXIT
            .ENDC
005622 104416 .IF EQ SVCINS
            TRAP C$PNTS
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                TRAP C$PNTS
            .ENDC
            .IRP N,<\T$ARGCNT*2+2>
            MSGNINS <ADD #N,SP>
            .ENDM
005624      MSGNINS <ADD #6,SP>
            .IF LT SVCINS
            ADD #6,SP
            .MEXIT
            .ENDC
005624 062706 000006 .IF EQ SVCINS
            ADD #6,SP
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                ADD #6,SP
            .ENDC
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTS,#RM.D2H,<(R4)+>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTS,#RM.D2H,<(R4)+>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTS,#RM.D2H,<(R4)+>,<>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTS,#RM.D2H,<(R4)+>,<>,<>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTS,#RM.D2H,<(R4)+>,<>,<>,<>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTS,#RM.D2H,<(R4)+>,<>,<>,<>,<>,<>,<>
            .MEXIT
    
```

```

12 005630 .ENDC
          M$PRINT C$PNTS,#RM.D2H,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
          PRINTS #RM.D3D,(R4)+ ; DBN MESSAGES
          .MCALL M$PRINT
          .IF B #RM.D3D
          .ERROR ;MISSING FORMAT
          .MEXIT
          .ENDC
          .IF B <(R4)+>
          M$PRINT C$PNTS,#RM.D3D
          .MEXIT
          .ENDC
          .IF B <>
          M$PRINT C$PNTS,#RM.D3D,<(R4)+>
          .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
          T$ARGCNT=1
          M$COUNT T$ARGCNT,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
          .IF NB <>
          M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
          .ENDC
          .IF NB <(R4)+>
          T$ARGCNT=T$ARGCNT+1
          .ENDC
          .IRP N,<\T$ARGCNT>
          M$PUT #N,#RM.D3D,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
          .ENDM
          M$PUT #2,#RM.D3D,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
          .MCALL M$PUT1
          .IF NB <#RM.D3D>
          M$PUT <#RM.D3D>,<(R4)+>,<>,<>,<>,<>,<>,<>
          .MCALL M$PUT1
          .IF NB <(R4)+>
          M$PUT <(R4)+>,<>,<>,<>,<>,<>,<>,<>
          .MCALL M$PUT1
          .IF NB <>
          M$PUT <>,<>,<>,<>,<>,<>,<>,<>
          .ENDC
          .IF NB <(R4)+>
          M$PUT1 (R4)+
          .MCALL M$GNINS
          .IF B
          M$GNINS <MOV (R4)+,-(SP)>
          .IF LT SVCINS
          MOV (R4)+,-(SP)
          .MEXIT
          .ENDC
          .IF EQ SVCINS
          MOV (R4)+,-(SP)
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .NLIST
          .ENDC
          .IFF
          .IF DIF B,<(R4)+>
          MOV (R4)+,-(SP)

```

```
.ERROR ;ILL. ARG. ''(R4)+'' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
005632 .IF NB <#RM.D3D>
M$PUT1 #RM.D3D
.MCALL MSGNINS
005632 .IF B
MSGNINS <MOV #RM.D3D,-(SP)>
.IF LT SVCINS
MOV #RM.D3D,-(SP)
.MEXIT
.ENDC
005632 012746 007315 .IF EQ SVCINS
MOV #RM.D3D,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
MOV #RM.D3D,-(SP)
.ENDC
.IFF
.IF DIF B,<#RM.D3D>
.ERROR ;ILL. ARG. ''#RM.D3D'' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
005636 .IF NB <#2>
M$PUT1 #2
.MCALL MSGNINS
005636 .IF B
MSGNINS <MOV #2,-(SP)>
.IF LT SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
005636 012746 000002 .IF EQ SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
MOV #2,-(SP)
.ENDC
.IFF
.IF DIF B,<#2>
.ERROR ;ILL. ARG. ''#2'' ONLY 'B' IS ALLOWED.
```

```

.MEXIT
.ENDC
MSGNINS <CLR    -(SP)>
MSGNINS <BISB   ,(SP)>
.ENDC
005642 .ENDC
MSGNINS <MOV    SP,RO>
      .IF LT SVCINS
      MOV      SP,RO
      .MEXIT
      .ENDC
005642 010600 .IF EQ SVCINS
      MOV      SP,RO
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      MOV      SP,RO
      .ENDC
005644 .M$SVC   C$PNTS
005644 .M$CALL  MSGNINS,M$TSTLAB
      M$TSTLAB
      .M$CALL  M$TLABEL,M$INCR
      .IF LT T$TSTMAC, .MEXIT
      .RADIX  10
      M$TLABEL  \T$TESTNUN,\T$TSTSEQ
      .RADIX  8
      M$INCR   T$TSTSEQ
005644 MSGNINS <TRAP  C$PNTS>
      .IF LT SVCINS
      TRAP    C$PNTS
      .MEXIT
      .ENDC
005644 104416 .IF EQ SVCINS
      TRAP    C$PNTS
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IRP    N,<\T$ARGCNT*2+2>
      MSGNINS <ADD   #N,SP>
      .ENDM
005646 MSGNINS <ADD   #6,SP>
      .IF LT SVCINS
      ADD     #6,SP
      .MEXIT
      .ENDC
005646 062706 000006 .IF EQ SVCINS
      ADD     #6,SP
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
    
```





```

005652      M$PUT   <#RM.D3H>,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
           .MCALL  M$PUT1
           .IF NB  <(R4)+>
005652      M$PUT   <(R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
           .MCALL  M$PUT1
           .IF NB  <>
           M$PUT   <>,<>,<>,<>,<>,<>,<>,<>,<>
           .ENDC
           .IF NB  <(R4)+>
005652      M$PUT1  (R4)+
           .MCALL  M$GNINS
           .IF B
005652      M$GNINS <MOV   (R4)+,-(SP)>
           .IF LT SVCINS
           MOV     (R4)+,-(SP)
           .MEXIT
           .ENDC
           .IF EQ SVCINS
005652 012446      MOV     (R4)+,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST

```

MOV (R4)+,-(SP)

```

           .NLIST
           .ENDC
           .IFF
           .IF DIF B,<(R4)+>
           .ERROR ;ILL. ARG. "'(R4)+'" ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
           M$GNINS <CLR   -(SP)>
           M$GNINS <BISB ,(SP)>
           .ENDC
           .ENDC
           .ENDC

```

```

005654      .IF NB  <#RM.D3H>
           M$PUT1  #RM.D3H
           .MCALL  M$GNINS
           .IF B
005654      M$GNINS <MOV   #RM.D3H,-(SP)>
           .IF LT SVCINS
           MOV     #RM.D3H,-(SP)
           .MEXIT
           .ENDC

```

```

005654 012746 007377      .IF EQ SVCINS
           MOV     #RM.D3H,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST

```

MOV #RM.D3H,-(SP)

```

           .NLIST
           .ENDC
           .IFF
           .IF DIF B,<#RM.D3H>
           .ERROR ;ILL. ARG. "'#RM.D3H'" ONLY 'B' IS ALLOWED.

```

```

.MEXIT
.ENDC
MSGNINS <CLR    -(SP)>
MSGNINS <BISB   ,(SP)>
.ENDC
.ENDC
.ENDC
005660 .IF NB <#2>
MSGPUT1 #2
.MCALL MSGNINS
005660 .IF B
MSGNINS <MOV   #2,-(SP)>
.IF LT SVCINS
MOV    #2,-(SP)
.MEXIT
.ENDC
005660 012746 000002 .IF EQ SVCINS
MOV    #2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV    #2,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#2>
.ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
005664 MSGNINS <CLR    -(SP)>
MSGNINS <BISB   ,(SP)>
.ENDC
.ENDC
MSGNINS <MOV   SP,R0>
.IF LT SVCINS
MOV    SP,R0
.MEXIT
.ENDC
005664 010600 .IF EQ SVCINS
MOV    SP,R0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV    SP,R0
.NLIST
.ENDC
005666 M$SVC C$PNTS
005666 .MCALL MSGNINS,M$TSTLAB
M$TSTLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$TSTMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUN,\T$TSTSEQ
.RADIX 8
M$INCR T$TSTSEQ

```



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```

MSPRINT (SPNTS,#ARM.D3H,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
PRINTS #ARM.D4D,(R4)+ ; XBN MESSAGES

```

```

.MCALL MSPRINT
.IF B #ARM.D4D
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC

```

```

.IF B <(R4)+>
MSPRINT (SPNTS,#ARM.D4D
.MEXIT
.ENDC

```

005674

```

.IF B <>
MSPRINT (SPNTS,#ARM.D4D,<(R4)+>
.MCALL MSCOUNT,MSPUT,MSGNINS,MSSVC

```

005674 000001

```

TSARGCNT=1
MSCOUNT TSARGCNT,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
MSCOUNT TSARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC

```

000002

```

.IF NB <(R4)+>
TSARGCNT=TSARGCNT+1
.ENDC

```

```

.IRP N,<\TSARGCNT>
MSPUT #N,#ARM.D4D,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.ENDM

```

005674

```

MSPUT #2,#ARM.D4D,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.MCALL MSPUT1

```

005674

```

.IF NB <#ARM.D4D>
MSPUT <#ARM.D4D>,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.MCALL MSPUT1

```

005674

```

.IF NB <(R4)+>
MSPUT <(R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL MSPUT1

```

```

.IF NB <>
MSPUT <>,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC

```

005674

```

.IF NB <(R4)+>
MSPUT1 (R4)+
.MCALL MSGNINS

```

005674

```

.IF B
MSGNINS <MOV (R4)+,-(SP)>
.IF LT SVCINS
MOV (R4)+,-(SP)

```

```

.MEXIT
.ENDC
.IF EQ SVCINS
MOV (R4)+,-(SP)

```

005674 012446

```

.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

.NLIST

MOV (R4)+,-(SP)

```

.ENDC
.IFF
.IF DIF B,<(R4)+>
.ERROR ;ILL. ARG. '(R4)+' ONLY 'B' IS ALLOWED.

```

```

.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
005676 .IF NB <#RM.D4D>
M$PUT1 #RM.D4D
.MCALL MSGNINS
005676 .IF B
MSGNINS <MOV #RM.D4D,-(SP)>
.IF LT SVCINS
MOV #RM.D4D,-(SP)
.MEXIT
.ENDC
005676 012746 007461 .IF EQ SVCINS
MOV #RM.D4D,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV #RM.D4D,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#RM.D4D>
.ERROR ;ILL. ARG. '#RM.D4D' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.FNDC
005702 .IF NB <#2>
M$PUT1 #2
.MCALL MSGNINS
005702 .IF B
MSGNINS <MOV #2,-(SP)>
.IF LT SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
005702 012746 000002 .IF EQ SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV #2,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#2>
.ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
.MEXIT

```



.NLIST

15 005716

```

.ENDC
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.D4D,<(R4)+>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.D4D,<(R4)+>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.D4D,<(R4)+>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.D4D,<(R4)+>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.D4D,<(R4)+>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.D4D,<(R4)+>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
M$PRINT C$PNTS,#ARM.D4D,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
PRINTS #ARM.D4H,(R4)+

```

```

.MCALL M$PRINT
.IF B #ARM.D4H
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC

```

005716

```

.IF B <(R4)+>
M$PRINT C$PNTS,#ARM.D4H
.MEXIT
.ENDC

```

000001

005716

```

.IF B <>
M$PRINT C$PNTS,#ARM.D4H,<(R4)+>
.MCALL M$COUNT,M$PUT,MSGNINS,M$SVC
T$ARGCNT=1
M$COUNT T$ARGCNT,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC

```

000002

```

.IF NB <(R4)+>
T$ARGCNT=T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#ARM.D4H,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.ENDM

```

005716

```

M$PUT #2,#ARM.D4H,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#ARM.D4H>
M$PUT <#ARM.D4H>,<(R4)+>,<>,<>,<>,<>,<>,<>

```

005716

```

005716      .MCALL  M$PUT1
           .IF NB  <(R4)+>
M$PUT      (R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
           .MCALL  M$PUT1
           .IF NB  <>
M$PUT      <>,<>,<>,<>,<>,<>,<>,<>,<>
           .ENDC
005716      .IF NB  <(R4)+>
M$PUT1     (R4)+
           .MCALL  M$GNINS
005716      .IF B
M$GNINS    <MOV   (R4)+,-(SP)>
           .IF LT SVCINS
MOV        (R4)+,-(SP)
           .MEXIT
           .ENDC
005716 012446 .IF EQ SVCINS
           MOV     (R4)+,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
                                           .NLIST
                                           MOV     (R4)+,-(SP)
           .ENDC
           .IFF
           .IF DIF B,<(R4)+>
           .ERROR ;ILL. ARG. ''(R4)+' ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
M$GNINS    <CLR   -(SP)>
M$GNINS    <BISB  ,(SP)>
           .ENDC
           .ENDC
           .ENDC
005720      .IF NB  <#RM.D4H>
M$PUT1     #RM.D4H
           .MCALL  M$GNINS
005720      .IF B
M$GNINS    <MOV   #RM.D4H,-(SP)>
           .IF LT SVCINS
MOV        #RM.D4H,-(SP)
           .MEXIT
           .ENDC
005720 012746 007543 .IF EQ SVCINS
           MOV     #RM.D4H,-(SP)
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
                                           .NLIST
                                           MOV     #RM.D4H,-(SP)
           .ENDC
           .IFF
           .IF DIF B,<#RM.D4H>
           .ERROR ;ILL. ARG. ''#RM.D4H' ONLY 'B' IS ALLOWED.
           .MEXIT

```



```

        .ENDC
        MSGNINS <CLR      -(SP)>
        MSGNINS <BISB    ,(SP)>
        .ENDC
        .ENDC
        .ENDC
        .IF NB <#2>
005724  M$PUT1 #2
        .MCALL MSGNINS
        .IF B
005724  MSGNINS <MOV      #2,-(SP)>
        .IF LT SVCINS
        MOV      #2,-(SP)
        .MEXIT
        .ENDC
005724  012746  000002  .IF EQ SVCINS
        MOV      #2,-(SP)
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV      #2,-(SP)
        .ENDC
        .IFF
        .IF DIF B,<#2>
        .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
        MSGNINS <CLR      -(SP)>
        MSGNINS <BISB    ,(SP)>
        .ENDC
        .ENDC
005730  MSGNINS <MOV      SP,RO>
        .IF LT SVCINS
        MOV      SP,RO
        .MEXIT
        .ENDC
005730  010600  .IF EQ SVCINS
        MOV      SP,RO
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV      SP,RO
        .ENDC
005732  M$SVC C$PNTS
005732  .MCALL MSGNINS,M$TSTLAB
        M$TSTLAB
        .MCALL M$TLABEL,M$INCR
        .IF LT T$TSTMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUN,\T$TSTSEQ
        .RADIX 8
        M$INCR T$TSTSEQ
005732  MSGNINS <TRAP C$PNTS>
    
```

005732 104416

```

      .IF LT SVCINS
      TRAP C$PNTS
      .MEXIT
      .ENDC
      .IF EQ SVCINS
      TRAP C$PNTS
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST

```

TRAP C\$PNTS

005734

```

      .ENDC
      .IRP N,<\T$ARGCNT*2+2>
      M$GNINS <ADD #N,SP>
      .ENDM
      M$GNINS <ADD #6,SP>
      .IF LT SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC

```

005734 062706 000006

```

      .IF EQ SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST

```

ADD #6,SP

```

      .NLIST
      .ENDC
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.D4H,<(R4)+>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.D4H,<(R4)+>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.D4H,<(R4)+>,<>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.D4H,<(R4)+>,<>,<>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.D4H,<(R4)+>,<>,<>,<>,<>,<>
      .MEXIT
      .ENDC
      M$PRINT C$PNTS,#RM.D4H,<(R4)+>,<>,<>,<>,<>,<>,<>

```

16 005740

```

PRINTS #RM.RET,(R4)+ ; RETRIES MESSAGE
.MCALL M$PRINT
.IF B #RM.RET
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
.IF B <(R4)+>
M$PRINT C$PNTS,#RM.RET
.MEXIT
.ENDC

```

005740

000001

```

.IF B <>
M$PRINT C$PNTS,#RM.RET,<(R4)+>
.MCALL MSCOUNTI,M$PUT,MSGNINS,M$SVC
T$ARGCNT=1
MSCOUNT T$ARGCNT,<(R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
MSCOUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC

```

000002

```

.IF NB <(R4)+>
T$ARGCNT=T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#RM.RET,<(R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
.ENDM

```

005740

```

M$PUT #2,#RM.RET,<(R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1

```

005740

```

.IF NB <#RM.RET>
M$PUT <#RM.RET>,<(R4)+>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1

```

005740

```

.IF NB <(R4)+>
M$PUT <(R4)+>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <>
M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC

```

005740

```

.IF NB <(R4)+>
M$PUT1 (R4)+
.MCALL MSGNINS

```

005740

```

.IF B
MSGNINS <MOV (R4)+,-(SP)>
.IF LT SVCINS
MOV (R4)+,-(SP)
.MEXIT
.ENDC

```

005740 012446

```

.IF EQ SVCINS
MOV (R4)+,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

MOV (R4)+,-(SP)

```

.ENDC
.IFF
.IF DIF B,<(R4)+>
.ERROR ;ILL. ARG. ''(R4)+' ONLY 'B' IS ALLOWED.
.MEXIT
.NLIST

```

```
.ENDC
MSGNINS <CLR  -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
005742 .IF NB <#RM.RET>
M$PUT1 #RM.RET
.MCALL MSGNINS
005742 .IF B
MSGNINS <MOV  #RM.RET,-(SP)>
.IF LT SVCINS
MOV #RM.REI,-(SP)
.MEXIT
.ENDC
005742 012746 007625 .IF EQ SVCINS
MOV #RM.RET,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV #RM.RET,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#RM.RET>
.ERROR ;ILL. ARG. '#RM.RET' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR  -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
005746 .IF NB <#2>
M$PUT1 #2
.MCALL MSGNINS
005746 .IF B
MSGNINS <MOV  #2,-(SP)>
.IF LT SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
005746 012746 000002 .IF EQ SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV #2,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#2>
.ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
```

```

MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
005752  MSGNINS <MOV      SP,RO>
        .IF LT SVCINS
        MOV      SP,RO
        .MEXIT
        .ENDC
005752  010600 .IF EQ SVCINS
        MOV      SP,RO
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                MOV      SP,RO
                                .NLIST
        .ENDC
005754  M$SVC      C$PNTS
005754  .MCALL    MSGNINS,M$TSTLAB
        M$TSTLAB
        .MCALL    M$TLABEL,M$INCR
        .IF LT T$TSTMAC, .MEXIT
        .RADIX   10
        M$TLABEL      \T$TESTNUN,\T$TSTSEQ
        .RADIX   8
        M$INCR      T$TSTSEQ
005754  MSGNINS <TRAP    C$PNTS>
        .IF LT SVCINS
        TRAP    C$PNTS
        .MEXIT
        .ENDC
005754  104416 .IF EQ SVCINS
        TRAP    C$PNTS
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                TRAP    C$PNTS
                                .NLIST
        .ENDC
        .IRP      N,<\T$ARGCNT*2+2>
        M$G$INS <ADD    #N,SP>
        .ENDM
005756  MSGNINS <ADD    #6,SP>
        .IF LT SVCINS
        ADD    #6,SP
        .MEXIT
        .ENDC
005756  062706 000006 .IF EQ SVCINS
        ADD    #6,SP
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                ADD    #6,SP
                                .NLIST

```

```

.ENDC
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.RET,<(R4)+>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.RET,<(R4)+>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.RET,<(R4)+>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.RET,<(R4)+>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.RET,<(R4)+>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#RM.RET,<(R4)+>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
M$PRINT C$PNTS,#RM.RET,<(R4)+>,<>,<>,<>,<>,<>,<>,<>

```

17  
18 005762  
005762 005314  
005764 001011  
19 005766

```

SOB (R4),2$ ; WAS COMPLETION CODE 1?
DEC (R4)
BNE 2$
PRINTS #RM.DC1 ; YES

```

```

.MCALL M$PRINT
.IF B #RM.DC1
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC

```

005766  
005766 000001

```

.IF B <>
M$PRINT C$PNTS,#RM.DC1
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
T$ARGCNT=1
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <>
T$ARGCNT=T$ARGCNT+1
.ENDC

```

005766

```

.IRP N,<\T$ARGCNT>
M$PUT #N,#RM.DC1,<>,<>,<>,<>,<>,<>,<>,<>
.ENDM
M$PUT #1,#RM.DC1,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#RM.DC1>
M$PUT <#RM.DC1>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1

```

005766

```

      .IF NB <>
      M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
      .ENDC
005766 .IF NB <#RM.DC1>
      M$PUT1 #RM.DC1
      .MCALL M$GNINS
005766 .IF B
      M$GNINS <MOV #RM.DC1,-(SP)>
      .IF LT SVCINS
      MOV #RM.DC1,-(SP)
      .MEXIT
      .ENDC
005766 012746 007707 .IF EQ SVCINS
      MOV #RM.DC1,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IFF
      .IF DIF B,<#RM.DC1>
      .ERROR ;ILL. ARG. '#RM.DC1' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      M$GNINS <CLR -(SP)>
      M$GNINS <BISB ,(SP)>
      .ENDC
      .ENDC
      .ENDC
005772 .IF NB <#1>
      M$PUT1 #1
      .MCALL M$GNINS
005772 .IF B
      M$GNINS <MOV #1,-(SP)>
      .IF LT SVCINS
      MOV #1,-(SP)
      .MEXIT
      .ENDC
005772 012746 000001 .IF EQ SVCINS
      MOV #1,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IFF
      .IF DIF B,<#1>
      .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      M$GNINS <CLR -(SP)>
      M$GNINS <BISB ,(SP)>
      .ENDC

```

MOV #RM.DC1,-(SP)

MOV #1,-(SP)

```

005776      .ENDC
            MSGNINS <MOV    SP,RO>
            .IF LT SVCINS
            MOV    SP,RO
            .MEXIT
            .ENDC
005776 010600 .IF EQ SVCINS
            MOV    SP,RO
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                MOV    SP,RO
                                .NLIST
006000      .ENDC
            MSSVC  C$PNTS
            .MCALL MSGNINS,M$TSTLAB
006000      M$TSTLAB
            .MCALL M$TLABEL,M$INCR
            .IF LT T$TSTMAC, .MEXIT
            .RADIX 10
            M$TLABEL \T$TESTNUM,\T$TSTSEQ
            .RADIX 8
            M$INCR T$TSTSEQ
006000      MSGNINS <TRAP  C$PNTS>
            .IF LT SVCINS
            TRAP  C$PNTS
            .MEXIT
            .ENDC
006000 104416 .IF EQ SVCINS
            TRAP  C$PNTS
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                TRAP  C$PNTS
                                .NLIST
006002      .ENDC
            .IRP  N,<\T$ARGCNT*2+2>
            MSGNINS <ADD   #N,SP>
            .ENDM
            MSGNINS <ADD   #4,SP>
            .IF LT SVCINS
            ADD   #4,SP
            .MEXIT
            .ENDC
006002 062706 000004 .IF EQ SVCINS
            ADD   #4,SP
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                ADD   #4,SP
                                .NLIST
            .ENDC
            .MEXIT
            .ENDC

```



```

      .IF B <>
      M$PRINT C$PNTS,#RM.DC1,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.DC1,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.DC1,<>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.DC1,<>,<>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.DC1,<>,<>,<>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTS,#RM.DC1,<>,<>,<>,<>,<>,<>
      .MEXIT
      .ENDC
      M$PRINT C$PNTS,#RM.DC1,<>,<>,<>,<>,<>,<>,<>,<>
      BR      10$

```

20 006006 000423  
 21  
 22 006010  
 006010 005314  
 006012 001011  
 23 006014

```

2$: SOB      (R4),3$           ; WAS COMPLETION CODE 2?
   DEC      (R4)
   BNE      3$
   PRINTS  #RM.DC2           ; YES

```

```

.MCALL M$PRINT
      .IF B #RM.DC2
      .ERROR ;MISSING FORMAT
      .MEXIT
      .ENDC

```

006014

```

      .IF B <>
      M$PRINT C$PNTS,#RM.DC2
      .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
      T$ARGCNT=1
      M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
      .IF NB <>
      M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
      .ENDC

```

000001

006014

```

      .IF NB <>
      T$ARGCNT=T$ARGCNT+1
      .ENDC
      .IRP N,<\T$ARGCNT>
      M$PUT #N,#RM.DC2,<>,<>,<>,<>,<>,<>,<>,<>
      .ENDM
      M$PUT #1,#RM.DC2,<>,<>,<>,<>,<>,<>,<>,<>
      .MCALL M$PUT1
      .IF NB <#RM.DC2>

```

006014

```

006014      M$PUT  <#RM.DC2>,<>,<>,<>,<>,<>,<>,<>,<>
           .MCALL  M$PUT1
           .IF NB  <>
           M$PUT  <>,<>,<>,<>,<>,<>,<>,<>,<>
           .ENDC

```

```

006014      .IF NB  <#RM.DC2>
           M$PUT1  #RM.DC2
           .MCALL  M$GNINS
           .IF B

```

```

006014      M$GNINS <MOV  #RM.DC2,-(SP)>
           .IF LT  SVCINS
           MOV  #RM.DC2,-(SP)
           .MEXIT
           .ENDC

```

```

006014 012746 007755 .IF EQ  SVCINS
           MOV  #RM.DC2,-(SP)
           .MEXIT
           .ENDC
           .IF GT  SVCINS
           .LIST

```

MOV #RM.DC2,-(SP)

```

           .NLIST
           .ENDC
           .IFF
           .IF DIF B,<#RM.DC2>
           .ERROR ;ILL. ARG. '#RM.DC2' ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
           M$GNINS <CLR  -(SP)>
           M$GNINS <BISB ,(SP)>
           .ENDC
           .ENDC
           .ENDC

```

```

006020      .IF NB  <#1>
           M$PUT1  #1
           .MCALL  M$GNINS
           .IF B

```

```

006020      M$GNINS <MOV  #1,-(SP)>
           .IF LT  SVCINS
           MOV  #1,-(SP)
           .MEXIT
           .ENDC

```

```

006020 012746 000001 .IF EQ  SVCINS
           MOV  #1,-(SP)
           .MEXIT
           .ENDC
           .IF GT  SVCINS
           .LIST

```

MOV #1,-(SP)

```

           .NLIST
           .ENDC
           .IFF
           .IF DIF B,<#1>
           .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
           .MEXIT
           .ENDC
           M$GNINS <CLR  -(SP)>

```

```

                                MSGNINS <BISB  ,(SP)>
                                .ENDC
006024                          .ENDC
                                MSGNINS <MOV   SP,R0>
                                .IF LT SVCINS
                                MOV    SP,R0
                                .MEXIT
                                .ENDC
006024 010600                  .IF EQ SVCINS
                                MOV    SP,R0
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                MOV    SP,R0
                                                                .NLIST
006026                          .ENDC
006026                          M$SVC   C$PNTS
                                .MCALL  MSGNINS,M$TSTLAB
                                M$TSTLAB
                                .MCALL  M$TLABEL,M$INCR
                                .IIF LT T$TSTMAC, .MEXIT
                                .RADIX  10
                                M$TLABEL \T$TESTNUN,\T$TSTSEQ
                                .RADIX  8
                                M$INCR  T$TSTSEQ
006026                          MSGNINS <TRAP  C$PNTS>
                                .IF LT SVCINS
                                TRAP   C$PNTS
                                .MEXIT
                                .ENDC
006026 104416                  .IF EQ SVCINS
                                TRAP   C$PNTS
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                TRAP   C$PNTS
                                                                .NLIST
                                .ENDC
                                .IRP   N,<\T$ARGCNT*2+2>
                                MSGNINS <ADD   #N,SP>
                                .ENDM
006030                          MSGNINS <ADD   #4,SP>
                                .IF LT SVCINS
                                ADD    #4,SP
                                .MEXIT
                                .ENDC
006030 062706 000004          .IF EQ SVCINS
                                ADD    #4,SP
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                ADD    #4,SP
                                                                .NLIST
                                .ENDC

```

24 006034 000410  
25  
26 006036

```

.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.DC2,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.DC2,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.DC2,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.DC2,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.DC2,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.DC2,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTS,#ARM.DC2,<>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
M$PRINT C$PNTS,#ARM.DC2,<>,<>,<>,<>,<>,<>,<>,<>
BR 10$

```

3\$: PRINTB #ARM.DCX ; UNKNOWN COMPLETION CODE

```

.MCALL M$PRINT
.IF B #ARM.DCX
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#ARM.DCX
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
T$ARGCNT=1
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <>
T$ARGCNT=T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#ARM.DCX,<>,<>,<>,<>,<>,<>,<>
.ENDM
M$PUT #1,#ARM.DCX,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#ARM.DCX>
M$PUT <#ARM.DCX>,<>,<>,<>,<>,<>,<>,<>,<>

```

006036  
006036 000001  
006036  
006036

```

        .MCALL M$PUT1
        .IF NB <>
M$PUT1 <>,<>,<>,<>,<>,<>,<>,<>,<>
        .ENDC
006036 .IF NB <#RM.DCX>
M$PUT1 #RM.DCX
        .MCALL M$GNINS
006036 .IF B
M$GNINS <MOV #RM.DCX,-(SP)>
        .IF LT SVCINS
MOV #RM.DCX,-(SP)
        .MEXIT
        .ENDC
006036 012746 010027 .IF EQ SVCINS
MOV #RM.DCX,-(SP)
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV #RM.DCX,-(SP)
        .ENDC
        .IFF
        .IF DIF B,<#RM.DCX>
        .ERROR ;ILL. ARG. '#RM.DCX' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
M$GNINS <CLR -(SP)>
M$GNINS <BISB (SP)>
        .ENDC
        .ENDC
        .ENDC
006042 .IF NB <#1>
M$PUT1 #1
        .MCALL M$GNINS
006042 .IF B
M$GNINS <MOV #1,-(SP)>
        .IF LT SVCINS
MOV #1,-(SP)
        .MEXIT
        .ENDC
006042 012746 000001 .IF EQ SVCINS
MOV #1,-(SP)
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV #1,-(SP)
        .ENDC
        .IFF
        .IF DIF B,<#1>
        .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
M$GNINS <CLR -(SP)>
M$GNINS <BISB ,(SP)>
    
```

```

006046      .ENDC
            .ENDC
            MSGNINS <MOV      SP,R0>
            .IF LT SVCINS
            MOV      SP,R0
            .MEXIT
            .ENDC
006046 010600 .IF EQ SVCINS
            MOV      SP,R0
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                MOV      SP,R0

006050      .ENDC
            M$SVC   C$PNTB
            .MCALL  MSGNINS,M$TSTLAB
006050      M$TSTLAB
            .MCALL  M$TLABEL,M$INCR
            .IF LT T$TSTMAC, .MEXIT
            .RADIX 10
            M$TLABEL \T$TESTNUN,\T$TSTSEQ
            .RADIX 8
            M$INCR  T$TSTSEQ
006050      MSGNINS <TRAP   C$PNTB>
            .IF LT SVCINS
            TRAP   C$PNTB
            .MEXIT
            .ENDC
006050 104414 .IF EQ SVCINS
            TRAP   C$PNTB
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                TRAP   C$PNTB

            .ENDC
            .IRP   N,<\T$ARGCNT*2+2>
            MSGNINS <ADD    #N,SP>
            .ENDM
006052      MSGNINS <ADD    #4,SP>
            .IF LT SVCINS
            ADD    #4,SP
            .MEXIT
            .ENDC
006052 062706 000004 .IF EQ SVCINS
            ADD    #4,SP
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                ADD    #4,SP

            .ENDC
            .MEXIT
                                .NLIST
            .ENDC
            .MEXIT
    
```

```

.ENDC
  .IF B <>
M$PRINT C$PNTB,#RM.DCX,<>
  .MEXIT
  .ENDC
  .IF B <>
M$PRINT C$PNTB,#RM.DCX,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
M$PRINT C$PNTB,#RM.DCX,<>,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
M$PRINT C$PNTB,#RM.DCX,<>,<>,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
M$PRINT C$PNTB,#RM.DCX,<>,<>,<>,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
M$PRINT C$PNTB,#RM.DCX,<>,<>,<>,<>,<>,<>
  .MEXIT
  .ENDC
M$PRINT C$PNTB,#RM.DCX,<>,<>,<>,<>,<>,<>,<>

```

27  
28 006056 000137 004734

10\$: JMP RSPDNE ; REMOVE UNIT FROM TESTING

```

1 006062 016403 000216      FMTERR: MOV      HC.BF2+4(R4),R3      ; GET ERROR #
2
3 006066 012702 010627      MOV      #M.ERO,R2      ; POINTER TO DEFAULT ERR MSG
4 006072 005703              TST      R3              ; CHECK ERROR # FOR RANGE
5 006074 003410              BLE      1$              ; BAD VALUE
6 006076 020327 000026      CMP      R2,#MAXERR     ; CHECK HIGH VALUE
7 006102 003005              BGT      1$              ; BAD VALUE
8 006104 060303              ADD      R3,R3          ; MAKE BYTE OFFSET
9 006106 016303 011572      MOV      TBLERR(R3),R3  ; GET POINTER TO ERROR MESSAGE
10 006112 001401              BEQ      1$              ; IF NULL ENTRY - USE DEFAULT
11 006114 010302              MOV      R3,R2          ; POINT TO ACTUAL ERROR MESSAGE
12 006116
13 006116      1$:
ERRHRD 5, RM.ER1, RM.ER2      ; LOG ERR MESS
.MCALL MSERRINS
006116      MSERRINS 5, RM.ER1, RM.ER2, C$ERHRD
.MCALL MSGNINS, MSWORD, MSTSTLAB
006116      MSSVC C$ERHRD
.MCALL MSGNINS, MSTSTLAB
006116      MSTSTLAB
.MCALL MSTLABEL, MSINCR
.IIF LT T$STMAC, .MEXIT
.RADIX 10
MSTLABEL \T$TESTNUM, \T$STSEQ
.RADIX 8
MSINCR T$STSEQ
006116      MSGNINS <TRAP C$ERHRD>
.IF LT SVCINS
TRAP C$ERHRD
.MEXIT
.ENDC
006116 104456      .IF EQ SVCINS
TRAP C$ERHRD
.MEXIT
.FNDC
.IF GT SVCINS
.LIST
TRAP C$ERHRD
.NLIST
.ENDC
000012      .RADIX 10
000005      .IF NB 5
T$ERRNUM=5
.IFF
.ERROR ;MISSING ERROR-NR
.ENDC
006120      MSWORD \T$ERRNUM
.MCALL MSGNINS
.IRP N,<5>
MSGNINS <.WORD N>
.ENDM
006120      MSGNINS <.WORD 5>
.IF LT SVCINS
.WORD 5
.MEXIT
.ENDC
006120 000005      .IF EQ SVCINS
.WORD 5
    
```



```

        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                .WORD 5
000010
        .ENDC
006122  .RADIX 8
        .IF NB RM.ER1
        M$WORD RM.ER1
        .MCALL M$GNINS
        .IRP N,<RM.ER1>
        M$GNINS <.WORD N>
        .ENDM
006122  M$GNINS <.WORD RM.ER1>
        .IF LT SVCINS
        .WORD RM.ER1
        .MEXIT
        .ENDC
006122 010270 .IF EQ SVCINS
        .WORD RM.ER1
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                .WORD RM.ER1
        .ENDC
        .IFF
        M$WORD 0
        .ENDC
006124 .IF NB RM.ER2
        M$WORD RM.ER2
        .MCALL M$GNINS
        .IRP N,<RM.ER2>
        M$GNINS <.WORD N>
        .ENDM
006124  M$GNINS <.WORD RM.ER2>
        .IF LT SVCINS
        .WORD RM.ER2
        .MEXIT
        .ENDC
006124 010324 .IF EQ SVCINS
        .WORD RM.ER2
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                .WORD RM.ER2
        .ENDC
        .IFF
        M$WORD 0
        .ENDC
14
15 006126 000137 004710 JMP RSPDRP ; REMOVE UNIT FROM TESTING
16
    
```

```

1          ;RESPONSE ERROR MESSAGES
2
3 006132    045    116    045  NORFSP: .ASCIZ  \ZN%AUNIT %D2%A HAS NOT RESPONDED LATELY\
4 006202    045    116    045  REMMSG: .ASCIZ  \ZN%AUNIT %D2%A - REMOVED FROM TESTING FOR REMAINDER OF PASS\
5 006276    127    122    117  RSPPK:  .ASCIZ  \WRONG OPCODE RECEIVED IN MESSAGE PACKET\
6 006346    115    105    123  RSPPRE: .ASCIZ  \MESSAGE PACKET RECEIVED WITH WRONG REFERENCE NUMBER\
7 006432    115    105    123  RSPPNE: .ASCIZ  \MESSAGE PACKET RECEIVED WITH UNKNOWN MESSAGE CODE\
8 006514    105    122    122  RSPSTE: .ASCIZ  \ERROR STATUS CODE REPORTED IN MESSAGE COMMAND\
9
10 006572    045    116    045  RM.CMP: .ASCIZ  \ZN%AUNIT %D2%A - CYLINDER %D4%A COMPLETED\
11
12 006644    045    116    045  RM.DNE: .ASCIZ  \ZN%AUNIT %D2%A - FORMAT SUCCESSFULLY COMPLETED\
13 006723    045    116    045  RM.D1T: .ASCIZ  \ZN%A          TOTAL REVECTORED BLOCKS          %D4\
14 007005    045    116    045  RM.D1P: .ASCIZ  \ZN%A          PRIMARY REVECTORS              %D4\
15 007067    045    116    045  RM.D1S: .ASCIZ  \ZN%A          SECONDARY REVECTORS           %D4\
16 007151    045    116    045  RM.D2D: .ASCIZ  \ZN%A          RCT BLOCKS WITH DATA ERRORS   %D4\
17 007233    045    116    045  RM.D2H: .ASCIZ  \ZN%A          RCT BLOCKS WITH HEADER/TIMING ERRORS %D4\
18 007315    045    116    045  RM.D3D: .ASCIZ  \ZN%A          DBN BLOCKS WITH DATA ERRORS   %D4\
19 007377    045    116    045  RM.D3H: .ASCIZ  \ZN%A          DBN BLOCKS WITH HEADER/TIMING ERRORS %D4\
20 007461    045    116    045  RM.D4D: .ASCIZ  \ZN%A          XBN BLOCKS WITH DATA ERRORS   %D4\
21 007543    045    116    045  RM.D4H: .ASCIZ  \ZN%A          XBN BLOCKS WITH HEADER/TIMING ERRORS %D4\
22 007625    045    116    045  RM.RET: .ASCIZ  \ZN%A          BLOCKS RETRIED ON CHECK PASS    %D4\
23
24 007707    045    116    045  RM.DC1: .ASCIZ  \ZN%A          FCT WAS USED TO FORMAT DRIVE\
25 007755    045    116    045  RM.DC2: .ASCIZ  \ZN%A          FCT WAS NOT USED TO FORMAT DRIVE\
26 010027    045    116    045  RM.DCX: .ASCIZ  \ZN%A**** UNKNOWN COMPLETION CODE RETURNED ****\
27
28 010106    045    116    045  RM.FM0: .ASCIZ  \ZN%A          UNKNOWN FORMAT COMPLETION MODE\
29 010156    045    116    045  RM.FM1: .ASCIZ  \ZN%A          FORMAT COMPLETED USING FCT\
30 010222    045    116    045  RM.FM2: .ASCIZ  \ZN%A          FORMAT COMPLETED WITHOUT FCT\
31
32 010270    125    104    101  RM.ER1: .ASCIZ  \UDA FORMATTER ERROR OCCURED\
33
34          .EVEN
35
36 010324          BGNMSG RM.ER2          ; FORMATTER RETURNED ERROR
          .MCALL MSPUSH,MSINCR,MSGNGBL
          I$MSG=F$BGN
          MSPUSH T$NS,T$NESTLEV,F$MSG
          .MCALL MSINCR,M$SETS
          MSINCR T$NESTLEV
          T$NESTLEV=T$NESTLEV+1
          M$SETS T$NS,\T$NESTLEV,F$MSG
          T$NSO=F$MSG
          T$MSG T$TAGNUM
          MSINCR T$TAGNUM
          T$TAGNUM=T$TAGNUM+1
          MSGNGBL RM.ER2
          .MCALL M$GEN
          .IF NB,RM.ER2
          .IF NB,
          M$GEN RM.ER2,.,SVCGBL,
          .ENDC
          .IF B,
          M$GEN RM.ER2,.,SVCGBL,< >
          .IF LE SVCGBL
          RM.ER2:

```

```

.MEXIT
.ENDC
.LIST

.NLIST
.ENDC
.ENDC
37 010324 PRINTB #RM.ER3,HC.BF2+4(R4)
.MCALL M$PRINT
.IF B #RM.ER3
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
.IF B <HC.BF2+4(R4)>
M$PRINT (SPNTB,#RM.ER3
.MEXIT
.ENDC
.IF B <>
M$PRINT (SPNTB,#RM.ER3,<HC.BF2+4(R4)>
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
T$ARGCNT=1
010324 000001 M$COUNT T$ARGCNT,<HC.BF2+4(R4)>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC
000002 .IF NB <HC.BF2+4(R4)>
T$ARGCNT=T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#RM.ER3,<HC.BF2+4(R4)>,<>,<>,<>,<>,<>,<>,<>
.ENDM
010324 M$PUT #2,#RM.ER3,<HC.BF2+4(R4)>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#RM.ER3>
010324 M$PUT <#RM.ER3>,<HC.BF2+4(R4)>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <HC.BF2+4(R4)>
010324 M$PUT <HC.BF2+4(R4)>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <>
M$PUT <>,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <HC.BF2+4(R4)>
010324 M$PUT1 HC.BF2+4(R4)
.MCALL M$GNINS
.IF B
010324 M$GNINS <MOV HC.BF2+4(R4),-(SP)>
.IF LT SVCINS
MOV HC.BF2+4(R4),-(SP)
.MEXIT
.ENDC
010324 016446 000216 .IF EQ SVCINS
MOV HC.BF2+4(R4),-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

RM.ER2::

MOV HC.BF2+4(R4),-(SP)

```
                                .NLIST
                                .ENDC
                                .IFF
                                .IF DIF B,<HC.BF2+4(R4)>
                                .ERROR ;ILL. ARG. 'HC.BF2+4(R4)'' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
                                MSGNINS <CLR -(SP)>
                                MSGNINS <BISB ,(SP)>
                                .ENDC
                                .ENDC
                                .ENDC
                                .IF NB <#RM.ER3>
010330 M$PUT1 #RM.ER3
                                .MCALL MSGNINS
                                .IF B
010330 MSGNINS <MOV #RM.ER3,-(SP)>
                                .IF LT SVCINS
                                MOV #RM.ER3,-(SP)
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS
010330 012746 010420 MOV #RM.ER3,-(SP)
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
```

MOV #RM.ER3,-(SP)

```
                                .NLIST
                                .ENDC
                                .IFF
                                .IF DIF B,<#RM.ER3>
                                .ERROR ;ILL. ARG. '#RM.ER3'' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
                                MSGNINS <CLR -(SP)>
                                MSGNINS <BISB ,(SP)>
                                .ENDC
                                .ENDC
                                .ENDC
                                .IF NB <#2>
010334 M$PUT1 #2
                                .MCALL MSGNINS
                                .IF B
010334 MSGNINS <MOV #2,-(SP)>
                                .IF LT SVCINS
                                MOV #2,-(SP)
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS
010334 012746 00000? MOV #2,-(SP)
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
```

MOV #2,-(SP)

```
                                .NLIST
                                .ENDC
                                .IFF
                                .IF DIF B,<#2>
                                .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
                                MSGNINS <CLR    -(SP)>
                                MSGNINS <BISB  ,(SP)>
                                .ENDC
010340  .ENDC
                                MSGNINS <MOV    SP,R0>
                                .IF LT SVCINS
                                MOV      SP,R0
                                .MEXIT
                                .ENDC
010340 010600 .IF EQ SVCINS
                                MOV      SP,R0
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                MOV      SP,R0
                                .NLIST
                                .ENDC
010342  M$SVC  C$PNTB
                                .MCALL  MSGNINS,M$TSTLAB
010342  M$TSTLAB
                                .MCALL  M$TLABEL,M$INCR
                                .IIF LT T$TSTMAC, .MEXIT
                                .RADIX  10
                                M$TLABEL \T$TESTNUN,\T$TSTSEC
                                .RADIX  8
                                M$INCR  T$TSTSEQ
010342  MSGNINS <TRAP  C$PNTB>
                                .IF LT SVCINS
                                TRAP    C$PNTB
                                .MEXIT
                                .ENDC
010342 104414 .IF EQ SVCINS
                                TRAP    C$PNTB
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                TRAP    C$PNTB
                                .NLIST
                                .ENDC
                                .IRP  N,<\T$ARGCNT*2+2>
010344  MSGNINS <ADD   #N,SP>
                                .ENDM
                                MSGNINS <ADD   #6,SP>
                                .IF LT SVCINS
                                ADD     #6,SP
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS
```

010344 062706 000006

```
ADD #6,SP  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST
```

ADD #6,SP

```
.NLIST  
.ENDC  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT ($PNTB,#RM.ER3,<HC.BF2+4(R4)>,<>  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT ($PNTB,#RM.ER3,<HC.BF2+4(R4)>,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT ($PNTB,#RM.ER3,<HC.BF2+4(R4)>,<>,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT ($PNTB,#RM.ER3,<HC.BF2+4(R4)>,<>,<>,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT ($PNTB,#RM.ER3,<HC.BF2+4(R4)>,<>,<>,<>,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT ($PNTB,#RM.ER3,<HC.BF2+4(R4)>,<>,<>,<>,<>,<>,<>  
PRINTB #RM.ER4,HC.BF2+6(R4)  
.MEXIT  
.ENDC  
.IF B <HC.BF2+6(R4)>  
M$PRINT ($PNTB,#RM.ER4  
.MEXIT  
.ENDC  
.IF B <>  
M$PRINT ($PNTB,#RM.ER4,<HC.BF2+6(R4)>  
.MEXIT  
.ENDC  
.IF NB <HC.BF2+6(R4)>  
M$COUNT T$ARGCNT,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>  
.IF NB <>  
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>  
.ENDC  
.IF NB <HC.BF2+6(R4)>  
T$ARGCNT=T$ARGCNT+1  
.ENDC  
.IRP N,<\T$ARGCNT>
```

38 010350

010350

000001

010350

000002







```

010366      .IIF LT T$STMAC, .MEXIT
            .RADIX 10
            M$TLABEL      \T$TESTNUM,\T$STSEQ
            .RADIX 8
            M$INCR T$STSEQ
            M$GNINS <TRAP C$PNTB>
            .IF LT SVCINS
            TRAP C$PNTB
            .MEXIT
            .ENDC
010366 104414 .IF EQ SVCINS
            TRAP C$PNTB
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                TRAP C$PNTB
                                .NLIST
            .ENDC
            .IRP N,<\T$ARGCNT*2+2>
            M$GNINS <ADD #N,SP>
            .ENDM
010370      M$GNINS <ADD #6,SP>
            .IF LT SVCINS
            ADD #6,SP
            .MEXIT
            .ENDC
010370 062706 000006 .IF EQ SVCINS
            ADD #6,SP
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                ADD #6,SP
                                .NLIST
            .ENDC
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#RM.ER4,<HC.BF2+6(R4)>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#RM.ER4,<HC.BF2+6(R4)>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#RM.ER4,<HC.BF2+6(R4)>,<>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#RM.ER4,<HC.BF2+6(R4)>,<>,<>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#RM.ER4,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>
            .MEXIT
    
```

```
.ENDC
  .IF B <>
M$PRINT ($PNTB,#RM.ER4,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>,<>)
  .MEXIT
  .ENDC
39 010374 M$PRINT ($PNTB,#RM.ER4,<HC.BF2+6(R4)>,<>,<>,<>,<>,<>,<>,<>)
  PRINTB #RM.ER5,R2
  .MCALL M$PRINT
  .IF B #RM.ER5
  .ERROR :MISSING FORMAT
  .MEXIT
  .ENDC
  .IF B <R2>
M$PRINT ($PNTB,#RM.ER5
  .MEXIT
  .ENDC
010374 .IF B <>
M$PRINT ($PNTB,#RM.ER5,<R2>
  .MCALL M$COUNT,M$PUT,MSGNINS,M$SVC
010374 000001 T$ARGCNT=1
M$COUNT T$ARGCNT,<R2>,<>,<>,<>,<>,<>,<>,<>
  .IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
  .ENDC
  .IF NB <R2>
010374 000002 I$ARGCNT-T$ARGCNT+1
  .ENDC
  .IRP N,<\T$ARGCNT>
M$PUT #N,#RM.ER5,<R2>,<>,<>,<>,<>,<>,<>,<>
  .ENDM
010374 M$PUT #2,#RM.ER5,<R2>,<>,<>,<>,<>,<>,<>,<>
  .MCALL M$PUT1
010374 .IF NB <#RM.ER5>
M$PUT <#RM.ER5>,<R2>,<>,<>,<>,<>,<>,<>,<>
  .MCALL M$PUT1
010374 .IF NB <R2>
M$PUT <R2>,<>,<>,<>,<>,<>,<>,<>,<>
  .MCALL M$PUT1
  .IF NB <>
M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
  .ENDC
  .IF NB <R2>
010374 M$PUT1 R2
  .MCALL MSGNINS
010374 .IF B
M$GNINS <MOV R2,-(SP)>
  .IF LT SVCINS
MOV R2,-(SP)
  .MEXIT
  .ENDC
010374 010246 .IF EQ SVCINS
MOV R2,-(SP)
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST
MOV R2,-(SP)
```

.NLIST

```
.ENDC
.IFF
.IF DIF B,<R2>
.ERROR ;ILL. ARG. 'R2' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
.IF NB <#RM.ER5>
010376 M$PUT1 #RM.ER5
.MCALL MSGNINS
.IF B
010376 MSGNINS <MOV #RM.ER5,-(SP)>
.IF LT SVCINS
MOV #RM.ER5,-(SP)
.MEXIT
.ENDC
010376 012746 010545 .IF EQ SVCINS
MOV #RM.ER5,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
```

MOV #RM.ER5,-(SP)

.NLIST

```
.ENDC
.IFF
.IF DIF B,<#RM.ER5>
.ERROR ;ILL. ARG. '#RM.ER5' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
.IF NB <#2>
010402 M$PUT1 #2
.MCALL MSGNINS
.IF B
010402 MSGNINS <MOV #2,-(SP)>
.IF LT SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
010402 012746 000002 .IF EQ SVCINS
MOV #2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
```

MOV #2,-(SP)

.NLIST

```
.ENDC
.IFF
.IF DIF B,<#2>
.ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
.ENDC
010406 .ENDC
MSGNINS <MOV SP,R0>
.IF LT SVCINS
MOV SP,R0
.MEXIT
.ENDC
010406 010600 .IF EQ SVCINS
MOV SP,R0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV SP,R0
.ENDC
.NLIST
010410 .ENDC
M$SVC C$PNTB
010410 .MCALL MSGNINS,M$TSTLAB
M$TSTLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$TSTMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUN,\T$TSTSEQ
.RADIX 8
M$INCR T$TSTSEQ
010410 MSGNINS <TRAP C$PNTB>
.IF LT SVCINS
TRAP C$PNTB
.MEXIT
.ENDC
010410 104414 .IF EQ SVCINS
TRAP C$PNTB
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
TRAP C$PNTB
.ENDC
.NLIST
010412 .ENDC
.IRP N,<\T$ARGCNT*2+2>
MSGNINS <ADD #N,SP>
.ENDM
MSGNINS <ADD #6,SP>
.IF LT SVCINS
ADD #6,SP
.MEXIT
.ENDC
010412 062706 000006 .IF EQ SVCINS
ADD #6,SP
```

```

.MEXIT
.ENDC
.IF GT SVCINS
.LIST

                                .NLIST
                                ADD      #6,SP

.ENDC
.MEXIT
.ENDC
.IF B <>
M$PRINT (C$PNTB,#RM.ER5,<R2>,<>)
.MEXIT
.ENDC
.IF B <>
M$PRINT (C$PNTB,#RM.ER5,<R2>,<>,<>)
.MEXIT
.ENDC
.IF B <>
M$PRINT (C$PNTB,#RM.ER5,<R2>,<>,<>,<>)
.MEXIT
.ENDC
.IF B <>
M$PRINT (C$PNTB,#RM.ER5,<R2>,<>,<>,<>,<>)
.MEXIT
.ENDC
.IF B <>
M$PRINT (C$PNTB,#RM.ER5,<R2>,<>,<>,<>,<>,<>)
.MEXIT
.ENDC
.IF B <>
M$PRINT (C$PNTB,#RM.ER5,<R2>,<>,<>,<>,<>,<>,<>)
.MEXIT
.ENDC
M$PRINT (C$PNTB,#RM.ER5,<R2>,<>,<>,<>,<>,<>,<>,<>)
ENDMSG
.MCALL M$POP,MSGNTAG,M$SVC,M$ENDERR
M$POP T$NS,T$NESTLEV,T$TEMP
.MCALL M$GETS,M$DECR
.IF LT T$NESTLEV
.ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
.MEXIT
.ENDC
M$GETS T$NS,\T$NESTLEV,T$TEMP
T$TEMP=T$NSO
M$DECR T$NESTLEV
T$NESTLEV=T$NESTLEV-1
.IF EQ F$MSG-T$TEMP
MSGNTAG L,T$$MSG
.MCALL M$GEN
M$GEN L,\T$$MSG,SVCTAG
.IF LE SVCTAG
L10006:
.MEXIT
.ENDC
.LIST

```

40 010416  
 010416  
  
 010416 000011  
 010416 177777  
  
 010416  
 010416  
 010416

I 10006:

.NLIST

```

010416 01000C          S$LSYM=T$LSYM
010416                M$SVC C$MSG
010416                .MCALL MSGNINS,M$STSTLAB
010416                M$STSTLAB
010416                .MCALL M$TLABEL,M$INCR
010416                .IF LT T$STSTMAC, .MEXIT
010416                .RADIX 10
010416                M$TLABEL \T$TESTNUN,\T$STSTSEQ
010416                .RADIX 8
010416                M$INCR T$STSTSEQ
010416                MSGNINS <TRAP C$MSG>
010416                .IF LT SVCINS
010416                TRAP C$MSG
010416                .MEXIT
010416                .ENDC
010416 104423        .IF EQ SVCINS
010416                TRAP C$MSG
010416                .MEXIT
010416                .ENDC
010416                .IF GT SVCINS
010416                .LIST
010416                .NLIST
010416                TRAP C$MSG
010416                .ENDC
010416                I$MSG=F$END
010416                .IFF
010416                M$ENDERR ENDMSG,T$TEMP
010416                .ENDC

41
42 010420 045 101 040 RM.ER3: .ASCIZ \XA ERROR NUMBER REPORTED WAS %D2\
43 010472 045 116 045 RM.ER4: .ASCIZ \NXA ERROR CODE WAS %D6%A DECIMAL\
44 010545 045 116 045 RM.ER5: .ASCIZ \NXA ERROR NUMBER MEANS:\
45 010606 045 116 045 .ASCIZ \NXA %T\
46
47 010627 105 122 122 M.ER0: .ASCIZ 'ERROR NUMBER NOT IN CURRENT TABLES'
48 010672 107 105 124 M.ER1: .ASCIZ 'GET STATUS FAILURE'
49 010715 123 104 111 M.ER2: .ASCIZ 'SDI SEND ERROR'
50 010734 125 116 123 M.ER3: .ASCIZ 'UNSUCCESSFUL SDI COMMAND'
51 010765 123 104 111 M.ER4: .ASCIZ 'SDI RECEIVF ERROR'
52 011007 125 116 111 M.ER5: .ASCIZ 'UNIBUS READ ERROR'
53 011031 106 117 122 M.ER6: .ASCIZ 'FORMATTER INITIALIZATION ERROR'
54 011070 116 117 116 M.ER7: .ASCIZ 'NON-EXISTANT UNIT NUMBER'
55 011121 104 102 116 M.ER8: .ASCIZ 'DBN/XBN FORMAT ERROR (FORMAT XFC FAILED)'
56 011172 106 103 124 M.ER9: .ASCIZ 'FCT CHECK ERROR'
57 011212 123 105 105 M.ER10: .ASCIZ 'SEEK ERROR'
58 011225 122 103 124 M.ER11: .ASCIZ 'RCT CHECK ERROR'
59 011245 114 102 116 M.ER12: .ASCIZ 'LBN FORMAT ERROR (FORMAT XFC FAILED)'
60 011312 106 103 124 M.ER13: .ASCIZ 'FCT WRITE ERROR'
61 011332 122 103 124 M.ER14: .ASCIZ 'RCT READ ERROR'
62 011351 122 103 124 M.ER15: .ASCIZ 'RCT WRITE ERROR'
63 011371 122 103 124 M.ER16: .ASCIZ 'RCT FULL'
64 011402 106 103 124 M.ER17: .ASCIZ 'FCT READ ERROR'
65 011421 106 103 124 M.ER18: .ASCIZ 'FCT NON-EXISTANT'
66 011442 106 103 124 M.ER19: .ASCIZ 'FCT DOWN! LINE LOAD ERROR (FCT BLOCK NOT AVBL.)'
67 011521 104 122 111 M.ER20: .ASCIZ 'DRIVE INIT TIMEOUT'
68 011544 000000 M.ER21 = 0
69 011544 123 105 114 M.ER22: .ASCIZ 'SELECT GROUP FAILURE'
    
```

```
70
71          .EVEN
72
73 011572 010627          TBLERR: .WORD M.ERO          : POINTERS TO ERROR MESSAGES
74 011574 010672 010715 010734      .WORD M.ER1 ,M.ER2 ,M.ER3 ,M.ER4 ,M.ER5 ,M.ER6 ,M.ER7 ,M.ER8
75 011614 011172 011212 011225      .WORD M.ER9 ,M.ER10 ,M.ER11 ,M.ER12 ,M.ER13 ,M.ER14 ,M.ER15 ,M.ER16
76 011634 011402 011421 011442      .WORD M.ER17 ,M.ER18 ,M.ER19 ,M.ER20 ,M.ER21 ,M.ER22
77
78          000026          MAXERR -          <.-TBLERR-2>/2
```

```

1      ;RUNDM
2
3      ;LOAD AND RUN A DM PROGRAM IN THE CONTROLLERS.
4
5      ;INPUTS:
6          TSTTAB - POINTER TO FIRST CONTROLLER TABLE
7
8      ;IMPLICIT INPUTS:
9          DMPROG - POINTER TO START OF DM PROGRAM IN MEMORY
10         DMTRAD - DM TRANSFER ADDRESS
11         DMTRLN - TRANSFER LENGTH OF MAIN DM PROGRAM
12
13     ;OUTPUTS:
14         NONE
15
16     ;ALL REGISTERS ARE USED AND PREVIOUS CONTENTS DESTROYED.
17
18
19 011650 005037 002220  RUNDM: CLR     URNING          ; COUNT # RUNNING UNITS
20
21     ;LOAD DM PROGRAM INTO EACH CONTROLLER
22
23 011654 012705 002202      MOV     #TSTTAB,R5          ; POINTER TO FIRST CONTROLLER TABLE
24 011660                   ASSUME  C.NEXT,EQ,0
                          .IF     EQ,<C.NEXT>--<0>
                          .IFF
                          .ERROR  ASSUMPTION VIOLATED
                          .ENDC
25 011660 016505 000000  LDDM:  MOV     C.NEXT(R5),R5      ; GET NEXT CONTROLLER TABLE ADDR
26 011664 001424                   BEQ     RUNDMX          ; EXIT IF NO MORE
27 011666 016537 000004 002074  MOV     C.UNIT(R5),L$LUN      ; RECORD WHICH LOGICAL UNIT IN USE
28 011674 005065 000014                   CLR     C.FLG(R5)          ; CLEAR ALL FLAGS
29 011700 032765 100000 000004  BIT     #CT.AVL,C.UNIT(R5)    ; SEE IF UNIT TO BE TESTED
30 011706 001014                   BNE    LDERR            ; IF NOT, DON'T LOAD THIS UNIT
31 011710 004737 003444                   CALL   LOADDM           ; LOAD THE DM PROGRAM
32 011714 001411                   BEQ    LDERR            ; IF AN ERROR, GO TO NEXT CONTROLLER
33 011716 052765 000002 000014  BIS     #CT.RN,C.FLG(R5)    ; SET PROGRAM RUNNING BIT
34 011724 004737 003110                   CALL   GETDMR           ; SEND THE 'RECEIVE' COMMAND
35 011730 005237 002220                   INC    URNING           ; COUNT # UNITS RUNNING
36 011734
37 011734 000751                   LDNEXT: BR     LDDM      ; DO NEXT CONTROLLER
38 011736 000207  RUNDMX: RETURN
39
40 011740  LDERR:  ERRDF  203,LDERRM      ; LOG ERROR
                          .MCALL  M$ERRINS
011740  M$ERRINS  203,LDERRM,,C$ERDF
011740  .MCALL  M$GNINS,M$WORD,M$TSTLAB
                          M$SVC  C$ERDF
011740  .MCALL  M$GNINS,M$TSTLAB
                          M$TSTLAB
                          .MCALL  M$TLABEL,M$INCR
                          .IF  LT  T$TSTMAC, .MEXIT
                          .RADIX 10
                          M$TLABEL  \T$TESTNUM,\T$TSTSEQ
                          .RADIX 8
                          M$INCR  T$TSTSEQ
011740  M$GNINS <TRAP  C$ERDF>
    
```





```
                                .NLIST
                                .ENDC
                                .IFF
                                M$WORD 0
                                .ENDC
                                .IF NB
                                M$WORD
                                .IFF
011746 M$WORD 0
                                .M$CALL M$GNINS
                                .IRP N,<0>
                                M$GNINS <.WORD N>
                                .ENDM
011746 M$GNINS <.WORD 0>
                                .IF LT SVCINS
                                .WORD 0
                                .MEXIT
                                .ENDC
011746 000000 .IF EQ SVCINS
                                .WORD 0
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
                                .ENDC
41 011750 000771 BR LDNEXT ; DO NEXT CONTROLLER
42
43 011752 125 116 101 LDERRM: .ASCIZ \UNABLE TO DOWN LINE LOAD UDA\
44
45 .EVEN
                                .WORD 0
```

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14

012010

012010 010046  
 012012 010146  
 15 012014 016504 000010  
 16 012020 012700 000014  
 17 012024 060400  
 18 012026 012701 000030  
 19 012032 005020  
 20 012034 005301  
 21 012036 001375  
 22 012040 012764 000060 000074  
 23 012046 012764 001001 000076  
 24 012054 012764 140000 000002  
 25 012062 012764 100000 000006  
 26 012070 005775 000002  
 27 012074 052765 000004 000014  
 28  
 29 012102

012102 012601  
 012104 012600  
 30 012106 000207

```

;SNDCMD
;SEND A COMMAND TO THE UDA.
;CLEAR THE RESPONSE PACKET. MARK BOTH PACKETS AVAILABLE TO THE
;UDA. SET COMMAND ISSUED BIT IN CONTROLLER TABLE AND INITIALIZE
;TIMEOUT COUNTER.
;INPUTS:
;R5 - CONTROLLER TABLE ADDRESS
;OUTPUTS:
;R4 - ADDRESS OF HOST COMM AREA

SNDCMD: PUSH <R0,R1>
        .IRP X,<R0,R1>
        MOV X,-(SP)
        .ENDM
        MOV R0,-(SP)
        MOV R1,-(SP)
        MOV C.RING(R5),R4           ;LOAD R4 WITH HOST COMM AREA ADDRESS
        MOV #HC.MPK,R0             ;POINT TO MESSAGE PACKET
        ADD R4,R0
        MOV #HC.PSZ/2,R1           ;SIZE OF MESSAGE PACKET
SNDC1:  CLR (R0)+                  ;CLEAR ENTIRE MESSAGE PACKET
        DEC R1
        BNE SNDC1
        MOV #HC.PSZ,HC.CEV(R4)    ; PUT PACKET SIZE IN ENVELOPE
        MOV #DUP.VC,HC.CEV+2(R4) ; MARK PACKET AS SPECIAL UDA FUNCTION
        MOV #RG.OWN+RG.FLG,HC.MCT(R4) ;MARK MESSAGE PACKET AVAILABLE
        MOV #RG.OWN,HC.CCT(R4)   ;MARK COMMAND TO UDA
        TST @C.UADR(R5)          ;TELL UDA COMMAND IS THERE
        BIS #CT.CMD,C.FLG(R5)    ;MARK COMMAND ISSUED
;;;INITIALIZE TIMEOUT COUNTER
        POP <R1,R0>
        .IRP X,<R1,R0>
        MOV (SP)+,X
        .ENDM
        MOV (SP)+,R1
        MOV (SP)+,R0
        RETURN
    
```

```

1      ;UDAIN
2
3      ;FUNCTIONAL DESCRIPTION:
4      SUBROUTINE TO INITIALIZE A UDA AND BRING IT ON-LINE.
5      ALL STEPS ARE CHECKED. AN ERROR MESSAGE IS REPORTED IF ANY ERROR
6      DETECTED.
7
8      THE COMMAND/RING BUFFERS ARE 1 ENTRY EACH
9
10     ;INPUTS:
11     R5 - ADDRESS OF CONTROLLER TABLE.
12
13     ;OUTPUTS:
14     CONDITION Z - SET IF ANY ERROR REPORTED. CLEAR IF NO ERROR.
15     R4 - ADDRESS OF UDAIP REGISTER IN UDA
16     R5 - UNCHANGED.
17
18     ;CHECK IF ENOUGH FREE MEMORY FOR RING BUFFER
19
20     UDAIN:
21
22     ;FILL HOST COMMUNICATION AREA WITH ALL ONES
23
24     012110      016502      000010      MOV      C.RING(R5),R2      ;GET FIRST ADDRESS OF RING BUFFER
25     012114      012703      000004      MOV      #RNGLEN,R3      ;GET SIZE OF RING BUFFER
26     012120      012722      177777      5$:     MOV      #-1,(R2)+      ;WRITE ONES TO BUFFER
27     012124      005303      012126      SOB      R3,5$
28     012124      001374      DEC      R3
29     BNE      5$
30
31     ; DO THE INITIALIZATION
32
33     012130      004737      012204      CALL     UDAIST      ;DO FIRST THREE STEPS
34     012134      103421      BCS     UDAIEX      ;GET OUT IF UDA MICROCODE REPORTED FAILURE
35
36     ; CHECK HOST COMMUNICATION AREA FOR ALL ZEROS
37
38     012136      016502      000010      MOV      C.RING(R5),R2      ;GET FIRST ADDRESS OF RING BUFFER
39     012142      012703      000004      MOV      #RNGLEN,R3      ;GET SIZE OF RING BUFFER
40     012146      005722      012150      10$:    TST      (R2)+      ;CHECK WORD IN BUFFER
41     012150      001007      BNE     UDAI2E      ;GO TO ERROR REPORTER IF NOT ZERO
42     012152      005303      SOB     R3,10$
43     012152      001374      DEC     R3
44     BNE     10$
45
46     ; SEND GO BIT TO UDASA REGISTER TO END INITIALIZATION
47
48     012156      012764      000001      000002      MOV     #SA.GO,2(R4)      ;SEND GO BIT
49     012164      000244      CLZ     ;CLEAR Z AS NO ERROR INDICATION
50     012166      000207      RETURN
51
52     UDAI2E: ERRDF 15,INTHD,INTBF      ;REPORT BUFFER NOT CLEARED
53     .MCALL  MSERRINS
54     MSERRINS 15,INTHD,INTBF,C$ERDF
55     .MCALL  M$GNINS,M$WORD,M$TSTLAB
56     M$SVC   C$ERDF
57     .MCALL  M$GNINS,M$TSTLAB

```

```

012170          MSTSTLAB
                .MCALL  MSTLABEL,MSINCR
                .IF LT TSTSTMAC, .MEXIT
                .RADIX  10
                MSTLABEL      \TSTESTNUN,\TSTSTSEQ
                .RADIX  8
                MSINCR  TSTSTSEQ
012170          MSGNINS <TRAP  CSERDF>
                .IF LT SVCINS
                TRAP  CSERDF
                .MEXIT
                .ENDC
                .IF EQ SVCINS
                TRAP  CSERDF
012170 104455   .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                .NLIST
                TRAP  CSERDF
                .ENDC
                .RADIX  10
                .IF NB 15
                TSERRNUM=15
                .IFF
                .ERROR :MISSING ERROR-NR
                .ENDC
012172          MSWORD  \TSERRNUM
                .MCALL  MSGNINS
                .IRP   N,<15>
                MSGNINS <.WORD  N>
                .ENDM
012172          MSGNINS <.WORD  15>
                .IF LT SVCINS
                .WORD  15
                .MEXIT
                .ENDC
                .IF EQ SVCINS
                .WORD  15
012172 000017  .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                .NLIST
                .WORD  15
                .ENDC
                .RADIX  8
                .IF NB INTHD
012174          MSWORD  INTHD
                .MCALL  MSGNINS
                .IRP   N,<INTHD>
                MSGNINS <.WORD  N>
                .ENDM
012174          MSGNINS <.WORD  INTHD>
                .IF LT SVCINS
                .WORD  INTHD
                .MEXIT
    
```

```

                                .ENDC
012174 013074                .IF EQ SVCINS
                                .WORD   INTHD
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST                                .WORD   INTHD

                                .ENDC
                                .IFF
012176                M$WORD  0
                                .ENDC
                                .IF NB INTBF
012176                M$WORD  INTBF
                                .MCALL  M$GNINS
                                .IRP   N,<INTBF>
                                M$GNINS <.WORD  N>
                                .ENDM
012176                M$GNINS <.WORD  INTBF>
                                .IF LT SVCINS
                                .WORD   INTBF
                                .MEXIT
                                .ENDC
012176 012750                .IF EQ SVCINS
                                .WORD   INTBF
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST                                .WORD   INTBF

                                .ENDC
                                .IFF
                                M$WORD  0
                                .ENDC
49
50                ;          ERROR RETURN
51
52 012200 000264        UDAIEX: SEZ
53 012202 000207        RETURN
                                ;SET Z TO INDICATE ERROR OCCURRED
    
```

```

1      :UDAIST
2      :
3      :START THE INITIALIZATION PROCESS ON THE SELECTED UDA.
4      :STOP BEFORE WRITING THE THIRD WORD SO UDA DOES NOT
5      :ATTEMPT ANY UNIBUS TRANSFERS.
6      :
7      :INPUTS:
8      :      R5 - ADDRESS OF CONTROLLER TABLE
9
10     012204  UDAIST: BREAK
11           .MCALL MSSVC
12           MSSVC C$BRK
13           .MCALL MSGNINS,MSTSTLAB
14           MSTSTLAB
15           .MCALL MSTLABEL,M$INCR
16           .IF LT T$STMAC, .MEXIT
17           .RADIX 10
18           MSTLABEL \T$TESTNUN,\T$STSEQ
19           .RADIX 8
20           M$INCR T$STSEQ
21           MSGNINS <TRAP C$BRK>
22           .IF LT SVCINS
23           TRAP C$BRK
24           .MEXIT
25           .ENDC
26           .IF EQ SVCINS
27           TRAP C$BRK
28           .MEXIT
29           .ENDC
30           .IF GT SVCINS
31           .LIST
32
33           .FNDC
34
35           :
36           :      START THE INITIALIZATION BY WRITING TO UDAIP REGISTER
37
38     012206  016504  000002  MOV C,UADR(R5),R4      ;GET ADDRESS OF UDAIP REG'ISTER
39     012212  005014          CLR (R4)                ;WRITE TO UDAIP
40
41     012214  012737  004000  012550  MOV #SA.S1,UDARSD    ; STEP 1 MASK
42     012222  004737  012426          CALL UDARSP          ; GET STEP 1 READ RESPONSE
43     012226  103475          BCS UDAIXY           ; EXIT ON FAILURE
44     012230  010200          MOV R2,R0             ; COPY RESPONSE
45     012232  042700  003777          BIC #IN.MS1,R0      ; CLEAR DON'T CARES
46     012236  012703  004000          MOV #IN.RS1,R3
47     012242  020300          CMP R3,R0           ; CHECK FOR CORRECT RESPONSE
48     012244  001062          BNE UDAIXX           ; ERROR
49     012246  012764  100000  000002  MOV #IN.WT1,2(R4)    ; DO STEP 1 WRITE
50
51     012254  012737  010000  012550  MOV #SA.S2,UDARSD    ; STEP 2 MASK
52     012262  004737  012426          CALL UDARSP          ; GET STEP 2 READ RESPONSE
53     012266  103455          BCS UDAIXY           ; EXIT ON FAILURE
54     012270  010200          MOV R2,R0             ; COPY RESPONSE
55     012272  042700  003500          BIC #IN.MS2,R0      ; CLEAR DON'T CARES
56     012276  012703  010200          MOV #IN.RS2,R3

```

```

34 012302 020300      CMP      R3,R0      ; CHECK FOR CORRECT RESPONSE
35 012304 001042      BNE      UDAIXX     ; ERROR
36 012306 016564 000010 000002      MOV      C.RING(R5),2(R4) ; DO STEP 2 WRITE
37
38 012314 012737 020000 012550      MOV      #SA.S3,UDARSD ; STEP 3 MASK
39 012322 004737 012426      CALL     UDARSP     ; GET STEP 3 READ RESPONSE
40 012326 103435      BCS      UDAIXY     ; EXIT ON FAILURE
41 012330 010200      MOV      R2,R0      ; COPY RESPONSE
42 012332 042700 002000      BIC      #IN.MS3,R0 ; CLEAR DON'T CARES
43 012336 012703 020000      MOV      #IN.RS3,R3
44 012342 020300      CMP      R3,R0      ; CHECK FOR CORRECT RESPONSE
45 012344 001022      BNE      UDAIXX     ; ERROR
46 012346 012764 000000 000002      MOV      #IN.WT3,2(R4) ; DO STEP 3 WRITE
47
48 012354 012737 040000 012550      MOV      #SA.S4,UDARSD ; STEP 4 MASK
49 012362 004737 012426      CALL     UDARSP     ; GET STEP 4 READ RESPONSE
50 012366 103415      BCS      UDAIXY     ; EXIT ON FAILURE
51 012370 010200      MOV      R2,R0      ; COPY RESPONSE
52 012372 042700 003777      BIC      #IN.MS4,R0 ; CLEAR DON'T CARES
53 012376 012703 040000      MOV      #IN.RS4,R3
54 012402 020300      CMP      R3,R0      ; CHECK FOR CORRECT RESPONSE
55 012404 001002      BNE      UDAIXX     ; ERROR
56
57
58 012406 000241      CLC
59 012410 000207      RETURN
60
61 012412      UDAIXX: ERRDF 6,INTHD,INTR3 ;REPORT ERROR
      .MCALL MSERRINS
      MSGNINS 6,INTHD,INTR3,C$ERDF
      .MCALL MSGNINS,MSWORD,M$TSTLAB
      MS$VC C$ERDF
      .MCALL MSGNINS,M$TSTLAB
      M$TSTLAB
      .MCALL M$TLABEL,M$INCR
      .IF LT T$TSTMAC, .MEXIT
      .RADIX 10
      M$TLABEL \T$TESTNUM,\T$TSTSF?
      .RADIX 8
      M$INCR T$TSTSEQ
      MSGNINS <TRAP C$ERDF>
      .IF LT SVCINS
      TRAP C$ERDF
      .MEXIT
      .ENDC
      .IF EQ SVCINS
      TRAP C$ERDF
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      TRAP C$ERDF
      .ENDC
      .RADIX 10
      .IF NB 6
      T$ERRNUM-6
    
```



```
.IFF
.ERROR ;MISSING ERROR-NR
.ENDC
012414 MSWORD \TSERRNUM
.MCALL MSGNINS
.IRP N,<6>
MSGNINS <.WORD N>
.ENDM
012414 MSGNINS <.WORD 6>
.IF LT SVCINS
.WORD 6
.MEXIT
.ENDC
012414 000006 .IF EQ SVCINS
.WORD 6
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.WORD 6
.ENDC
000010 .RADIX 8
.IF NB INTHD
012416 MSWORD INTHD
.MCALL MSGNINS
.IRP N,<INTHD>
MSGNINS <.WORD N>
.ENDM
012416 MSGNINS <.WORD INTHD>
.IF LT SVCINS
.WORD INTHD
.MEXIT
.ENDC
012416 013074 .IF EQ SVCINS
.WORD INTHD
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.WORD INTHD
.ENDC
.IFF
012420 MSWORD 0
.ENDC
.IF NB INTR3
012420 MSWORD INTR3
.MCALL MSGNINS
.IRP N,<INTR3>
MSGNINS <.WORD N>
.ENDM
012420 MSGNINS <.WORD INTR3>
.IF LT SVCINS
.WORD INTR3
.MEXIT
.ENDC
```

```
012420 012662      .IF EQ SVCINS
                   .WORD  INTR3
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST
                   .NLIST
                   .ENDC
                   .IFF
MSWORD 0
                   .ENDC
62 012422 000261   UDAIXY: SEC
63 012424 000207   RETURN
                   ; FLAG ERROR TO CALLER
                   .WORD  INTR3
```

```

1      :UDARSP
2      :
3      :WAIT FOR UDA TO RESPOND WITH DATA IN UDASA REGISTER.
4      :EITHER STEP BIT FROM MASK IN LOCATION UDARSD OR ERROR BIT
5      :WILL CAUSE A TERMINATION.
6      :AN ERROR MESSAGE WILL BE PRINTED IF THE UDA DOES NOT RESPOND
7      :IN 30 SECONDS OR IF ERROR SETS. (30 SECONDS BASED ON 11/44 PROCESSOR
8      :EXECUTION TIME)
9      :
10     :INPUTS:
11     :       UDASRD - MASK OF STEP BIT TO LOOK FOR
12     :       R4 - ADDRESS OF UDAIP REGISTER
13     :
14     :OUTPUTS:
15     :       ERROR MESSAGE IF TIME OUT ON RESPONSE OR ERROR BIT SETS
16     :       R2 - DATA FROM UDASA REGISTER
17     :       CARRY SET IF ERROR BIT SETS
18     :
19 012426 052737 100000 012550 UDARSP: BIS #SA.ERR,UDARSD           ;SET ERROR BIT IN MASK WORD
20 012434 012702 006400          MOV #6400,R2                ;SET UP DELAY COUNT FOR 30 SECONDS
21 012440          UDARS1: DFLAY 5.                          ;DELAY 0.0005 SECOND
                .MCALL MSGNINS
                .IF LT G$DELM-5.
                .ERROR ;ARGUMENT TO 'DELAY' MUST NOT BE GREATER THAN 250
                .MEXIT
                .ENDC
                .IF B 5.
                MSGNINS <MOV #1,(PC)+>
                .IFF
                MSGNINS <MOV #5.,(PC)+>
                .IF LT SVCINS
                MOV #5.,(PC)+
                .MEXIT
                .ENDC
                .IF EQ SVCINS
                MOV #5.,(PC)+
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                .NLIST
                .ENDC
                .ENDC
                MSGNINS <.WORD 0>
                .IF LT SVCINS
                .WORD 0
                .MEXIT
                .ENDC
                .IF EQ SVCINS
                .WORD 0
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                .NLIST
                .WORD 0
    
```



```

012462          MSGNINS <DEC      -22(PC)>
                .IF LT SVCINS
                DEC      -22(PC)
                .MEXIT
                .ENDC
012462 005367 177756      .IF EQ SVCINS
                DEC      -22(PC)
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                DEC      -22(PC)
                                .NLIST
012466          .ENDC
                MSGNINS <BNE      .-20>
                .IF LT SVCINS
                BNE      .-20
                .MEXIT
                .ENDC
012466 001367      .IF EQ SVCINS
                BNE      .-20
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                BNE      .-20
                                .NLIST
                .ENDC
22 012470 033764 012550 000002      BIT UDARSD,2(R4)
23 012476 001011          PNE UDARS2
24 012500 005302          DEC R2
25 012502 001356          BNE UDARS1
26 012504 016402 000002      MOV 2(R4),R2
27 012510          ERDF 4,INTHD,INTR1
                                ;LOOK AT ERROR AND STEP BIT
                                ;BRANCH IF EITHER SET
                                ;LOOK AT TIME OUT COUNTER
                                ;LOOP UNLESS TIME OUT
                                ;GET REGISTER CONTENTS
                                ;REPORT TIME OUT ERROR
                .MCALL MSERRINS
012510          MSERRINS 4,INTHD,INTR1,C$ERDF
                .MCALL MSGNINS,MSWORD,M$STSTLAB
012510          M$SVC C$ERDF
                .MCALL MSGNINS,M$STSTLAB
012510          M$STSTLAB
                .MCALL M$TLABEL,M$INCR
                .IF LT T$STSTMAC, .MEXIT
                .RADIX 10
                M$TLABEL \T$TESTNUM,\T$STSEQ
                .RADIX 8
                M$INCR T$STSEQ
012510          MSGNINS <TRAP C$ERDF>
                .IF LT SVCINS
                TRAP C$ERDF
                .MEXIT
                .ENDC
012510 104455      .IF EQ SVCINS
                TRAP C$ERDF
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
    
```

TRAP (SERDF

```
                                .NLIST
000012      .ENDC
000004      .RADIX 10
           .IF NB 4
           T$ERRNUM=4
           .IFF
           .ERROR ;MISSING ERROR-NR
           .ENDC
012512      M$WORD \T$ERRNUM
           .MCALL M$GNINS
           .IRP N,<4>
           M$GNINS <.WORD N>
           .ENDM
012512      M$GNINS <.WORD 4>
           .IF LT SVCINS
           .WORD 4
           .MEXIT
           .ENDC
012512 000004 .IF EQ SVCINS
           .WORD 4
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
                                .NLIST
000010      .ENDC
012514      .RADIX 8
           .IF NB INTHD
           M$WORD INTHD
           .MCALL M$GNINS
           .IRP N,<INTHD>
           M$GNINS <.WORD N>
           .ENDM
012514      M$GNINS <.WORD INTHD>
           .IF LT SVCINS
           .WORD INTHD
           .MEXIT
           .ENDC
012514 013074 .IF EQ SVCINS
           .WORD INTHD
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST
                                .NLIST
012516      .ENDC
           .IFF
           M$WORD 0
           .ENDC
           .IF NB INTR1
           M$WORD INTR1
           .MCALL M$GNINS
           .IRP N,<INTR1>
           M$GNINS <.WORD N>
```

```
012516      .ENDM
            MSGNINS <.WORD INTR1>
            .IF LT SVCINS
            .WORD INTR1
            .MEXIT
            .ENDC
012516 012552 .IF EQ SVCINS
            .WORD INTR1
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
            .NLIST
            .WORD INTR1
            .ENDC
            .IFF
28 012520 000407 MSWORD 0
            .ENDC
            BR UDAXXX
```

```

1          ;CHECK IF ERROR BIT SET
2
3 012522 016402 000002 UDARS2: MOV 2(R4),R2          ;GET REGISTER CONTENTS
4 012526 100006          BPL UDARSX              ;EXIT IF ERROR NOT SET
5 012530          ERRDF 5,INTHD,INTR2            ;REPORT ERROR INFO
          .MCALL MSERRINS
012530 MSERRINS 5,INTHD,INTR2,C$ERDF
          .MCALL MSGNINS,MSWORD,M$TSTLAB
012530 M$SVC C$ERDF
          .MCALL MSGNINS,M$TSTLAB
012530 M$TSTLAB
          .MCALL M$TLABEL,M$INCR
          .IF LT T$TSTMAC, .MEXIT
          .RADIX 10
          M$TLABEL \T$TESTNUM,\T$TSTSEQ
          .RADIX 8
012530 M$INCR T$TSTSEQ
          MSGNINS <TRAP C$ERDF>
          .IF LT SVCINS
          TRAP C$ERDF
          .MEXIT
          .ENDC
          .IF EQ SVCINS
012530 104455 TRAP C$ERDF
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .NLIST
          .ENDC
          .RADIX 10
          .IF NB
          T$ERRNUM=5
          .IFF
          .ERROR ;MISSING ERROR-NR
          .ENDC
012532 M$WORD \T$ERRNUM
          .MCALL MSGNINS
          .IRP N,<5>
          MSGNINS < .WORD N>
          .ENDM
012532 MSGNINS < .WORD 5>
          .IF LT SVCINS
          .WORD 5
          .MEXIT
          .ENDC
          .IF EQ SVCINS
012532 000005 .WORD 5
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .NLIST
          .ENDC
          .RADIX 8
          .WORD 5
000010

```



```

012534      .IF NB INTHD
            M$WORD INTHD
            .MCALL M$GNINS
            .IRP   N,<INTHD>
            M$GNINS <.WORD N>
            .ENDM
012534      M$GNINS <.WORD INTHD>
            .IF LT SVCINS
            .WORD INTHD
            .MEXIT
            .ENDC
012534 013074 .IF EQ SVCINS
            .WORD INTHD
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD INTHD
                                                    .NLIST
            .ENDC
            .IFF
            M$WORD 0
            .ENDC
012536      .IF NB INTR2
            M$WORD INTR2
            .MCALL M$GNINS
            .IRP   N,<INTR2>
            M$GNINS <.WORD N>
            .ENDM
012536      M$GNINS <.WORD INTR2>
            .IF LT SVCINS
            .WORD INTR2
            .MEXIT
            .ENDC
012536 012616 .IF EQ SVCINS
            .WORD INTR2
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD INTR2
                                                    .NLIST
            .ENDC
            .IFF
            M$WORD 0
            .ENDC
6 012540 000261 UDAXXX: SEC
7 012542 000207 RETURN
8
9
10          ;NORMAL EXIT
11 012544 000241 UDARSX: CLC
12 012546 000207 RETURN
13
14          ;LOCATION FOR STEP BIT MASK
15
16 012550 000000 UDARSD: .WORD 0
    
```

;CLEAR CARRY AS NO ERROR INDICATION

;LOAD BY CALLING ROUTINE

```

1          ;UDAINIT ROUTINE ERROR MESSAGES
2
3 012552          BGNMSG INTR1          ;TIME OUT ERROR
          .MCALL MSPUSH,MSINCR,MSGNGBL
          I$MSG=F$BGN
012552 000040    MSPUSH T$NS,T$NESTLEV,F$MSG
          .MCALL MSINCR,M$SETS
012552          MSINCR T$NESTLEV
          T$NESTLEV=T$NESTLEV+1
012552 000000    M$SETS T$NS,\T$NESTLEV,F$MSG
          T$NSO=F$MSG
          T$SMSG=T$TAGNUM
012552 000011    MSINCR T$TAGNUM
          T$TAGNUM=T$TAGNUM+1
          010007    MSGNGBL INTR1
          .MCALL M$GEN
          .IF NB,INTR1
          .IF NB,
          M$GEN INTR1,.,SVCGBL,
          .ENDC
          .IF B,
012552          M$GEN INTR1,.,SVCGBL,< >
          .IF LE SVCGBL
012552          INTR1::
          .MEXIT
          .ENDC
          .LIST
          .NLIST
          .ENDC
          .ENDC
4 012552          PRINTB #INTM1
          .MCALL M$PRINT
          .IF B #INTM1
          .ERROR :MISSING FORMAT
          .MEXIT
          .ENDC
          .IF B <>
012552          M$PRINT C$PNTB,#INTM1
          .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
          T$ARGCNT=1
012552 000001    M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
          .IF NB <>
          M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
          .ENDC
          .IF NB <>
          T$ARGCNT-T$ARGCNT+1
          .ENDC
          .IRP N,<\T$ARGCNT>
          M$PUT #N,#INTM1,<>,<>,<>,<>,<>,<>,<>,<>
          .ENDM
012552          M$PUT #1,#INTM1,<>,<>,<>,<>,<>,<>,<>,<>
          .MCALL M$PUT1
          .IF NB <#INTM1>
012552          M$PUT <#INTM1>,<>,<>,<>,<>,<>,<>,<>,<>
          .MCALL M$PUT1
          .IF NB <>
    
```

INTR1::

```
M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC
012552 .IF NB <#INTM1>
M$PUT1 #INTM1
.MCALL M$GNINS
012552 .IF B
M$GNINS <MOV #INTM1,-(SP)>
.IF LT SVCINS
MOV #INTM1,-(SP)
.MEXIT
.ENDC
012552 012746 013121 .IF EQ SVCINS
MOV #INTM1,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV #INTM1,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#INTM1>
.ERROR ;ILL. ARG. '#INTM1' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
M$GNINS <CLR -(SP)>
M$GNINS <BISB ,(SP)>
.ENDC
.ENDC
.ENDC
012556 .IF NB <#1>
M$PUT1 #1
.MCALL M$GNINS
012556 .IF B
M$GNINS <MOV #1,-(SP)>
.IF LT SVCINS
MOV #1,-(SP)
.MEXIT
.ENDC
012556 012746 000001 .IF EQ SVCINS
MOV #1,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV #1,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#1>
.ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
M$GNINS <CLR -(SP)>
M$GNINS <BISB ,(SP)>
.ENDC
.FNDC
```

```

012562          MSGNINS <MOV      SP,R0>
                .IF LT SVCINS
                MOV      SP,R0
                .MEXIT
                .ENDC
012562 010600   .IF EQ SVCINS
                MOV      SP,R0
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .NLIST
                                MOV      SP,R0
                .ENDC
012564          MSSVC      C$PNTB
012564          .MCALL    MSGNINS,M$TSTLAB
                M$TSTLAB
                .MCALL    M$TLABEL,M$INCR
                .IF LT T$TSTMAC, .MEXIT
                .RADIX 10
                M$TLABEL      \T$TESTNUM,\T$TSTSEQ
                .RADIX 8
                M$INCR      T$TSTSEQ
012564          MSGNINS <TRAP    C$PNTB>
                .IF LT SVCINS
                TRAP    C$PNTB
                .MEXIT
                .ENDC
012564 104414   .IF EQ SVCINS
                TRAP    C$PNTB
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .NLIST
                                TRAP    C$PNTB
                .ENDC
                .IRP      N,<\T$ARGCNT*2+2>
                MSGNINS <ADD      #N,SP>
                .ENDM
012566          MSGNINS <ADD      #4,SP>
                .IF LT SVCINS
                ADD      #4,SP
                .MEXIT
                .ENDC
012566 062706 000004 .IF EQ SVCINS
                ADD      #4,SP
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .NLIST
                                ADD      #4,SP
                .ENDC
                .MEXIT
                .ENDC
                .IF B      <>
    
```

```

MSPRINT C$PNTB,#INTM1,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTM1,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTM1,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTM1,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTM1,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTM1,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTM1,<>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
MSPRINT C$PNTB,#INTM1,<>,<>,<>,<>,<>,<>,<>,<>
PRINTB #INTM2,R2
.MCALL M$PRINT
.IF B #INTM2
.ERROR ;MISSING FORMAT
.MEXIT
.FNDC
.IF B <R2>
MSPRINT C$PNTB,#INTM2
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTM2,<R2>
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
T$ARGCNT=1
MSCOUNT T$ARGCNT,<R2>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
MSCOUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <R2>
T$ARGCNT=T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#INTM2,<R2>,<>,<>,<>,<>,<>,<>
.ENDM
MSPUT #2,#INTM2,<R2>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#INTM2>
M$PUT <#INTM2>,<R2>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
    
```

5 012572

012572

000001

012572

000002

012572

012572



```

MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
.ENDC
012600 .IF NB <#2>
MSGPUT1 #2
.MCALL MSGNINS
012600 .IF B
MSGNINS <MOV     #2,-(SP)>
.IF LT SVCINS
MOV     #2,-(SP)
.MEXIT
.ENDC
012600 012746 000002 .IF EQ SVCINS
MOV     #2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV     #2,-(SP)
.NLIST
.ENDC
.IFF
.IF DIF B,<#2>
.ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
012604 MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
MSGNINS <MOV     SP,R0>
.IF LT SVCINS
MOV     SP,R0
.MEXIT
.ENDC
012604 010600 .IF EQ SVCINS
MOV     SP,R0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
MOV     SP,R0
.NLIST
.ENDC
012606 MSSVC C$PNTB
012606 .MCALL MSGNINS,M$TSTLAB
M$TSTLAB
.MCALL M$TLABEL,M$INCR
.IF LT T$TSTMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUM,\T$TSTSEQ
.RADIX 8
M$INCR T$TSTSEQ
012606 MSGNINS <TRAP  C$PNTB>
.IF LT SVCINS
    
```

```
012606 104414 TRAP C$PNTB
.MEXIT
.ENDC
.IF EQ SVCINS TRAP C$PNTB
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

.NLIST
.ENDC
.IRP N,<\T$ARGCNT*2+2>
MSGNINS <ADD #N,SP>
.ENDM
012610 MSGNINS <ADD #6,SP>
.IF LT SVCINS
ADD #6,SP
.MEXIT
.ENDC
012610 062706 000006 .IF EQ SVCINS
ADD #6,SP
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

.NLIST
.ENDC
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
6 012614 M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>,<>,<>,<>,<>
ENDMSG
```



```

012614      .MCALL  M$POP,M$GNTAG,M$SVC,M$ENDERR
            M$POP  T$NS,T$NESTLEV,T$TEMP
            .MCALL  M$GETS,M$DECR
            .IF LT  T$NESTLEV
            .ERROR  T$NESTLEV      ; MACRO T$NS UNDERFLOW
            .MEXIT
            .ENDC
012614      M$GETS  T$NS,\T$NESTLEV,T$TEMP
000011      T$TEMP=T$NSO
012614      M$DECR  T$NESTLEV
177777      T$NESTLEV=T$NESTLEV-1
            .IF EQ F$MSG-T$TEMP
012614      M$GNTAG L,T$$MSG
            .MCALL  M$GEN
012614      M$GEN   L,\T$$MSG,SVCTAG
            .IF LE  SVCTAG
012614      L10007:
            .MEXIT
            .ENDC
            .LIST

                                L10007:
                                .NLIST
012614      S$LSYM=T$LSYM
010000      M$SVC   C$MSG
            .MCALL  M$GNINS,M$STSTLAB
012614      M$STSTLAB
            .MCALL  M$TLABEL,M$INCR
            .IF LT  T$STSMAC, .MEXIT
            .RADIX  10
            M$TLABEL  \T$TESTNUN,\T$STSEQ
            .RADIX  8
012614      M$INCR  T$STSEQ
            M$GNINS <TRAP  C$MSG>
            .IF LT  SVCINS
            TRAP   C$MSG
            .MEXIT
            .ENDC
012614      .IF EQ  SVCINS
104423      TRAP   C$MSG
            .MEXIT
            .ENDC
            .IF GT  SVCINS
            .LIST

                                TRAP  C$MSG
                                .NLIST
                                .ENDC
000041      I$MSG=F$END
            .IFF
            M$ENDERR  ENDMSG,T$TEMP
            .ENDC

7
8 012616      BGNMSG INTR2      ;UDA DIAGS FAILED
            .MCALL  M$PUSH,M$INCR,M$GNGBL
000040      I$MSG=F$BGN
012616      M$PUSH  T$NS,T$NESTLEV,F$MSG
            .MCALL  M$INCR,M$SETS
012616      M$INCR  T$NESTLEV
    
```

```

012616 00000C      T$NESTLEV=T$NESTLEV+1
012616 000011      M$SETS T$NS,\T$NESTLEV,F$MSG
012616 010010      T$NSO=F$MSG
012616 010011      T$$MSG=T$TAGNUM
012616            M$TNCR T$TAGNUM
012616            T$TAGNUM=T$TAGNUM+1
012616            MSGNGBL INTR2
012616            .MCALL M$GEN
012616            .IF NB,INTR2
012616            .IF NB,
012616            M$GEN INTR2,.,SVCGBL,
012616            .ENDC
012616            .IF B,
012616            M$GEN INTR2,.,SVCGBL,< >
012616            .IF LE SVCGBL
012616            INTR2::
012616            .MEXIT
012616            .ENDC
012616            .LIST
012616            .NLIST
012616            .ENDC
012616            .ENDC
9 012616          PRINTB #INTM3
012616            .MCALL M$PRINT
012616            .IF B #INTM3
012616            .ERROR ;MISSING FORMAT
012616            .MEXIT
012616            .ENDC
012616            .IF B <>
012616            M$PRINT C$PNTB,#INTM3
012616            .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
012616            T$ARGCNT=1
012616            M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
012616            .IF NB <>
012616            M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
012616            .ENDC
012616            .IF NB <>
012616            T$ARGCNT-T$ARGCNT+1
012616            .ENDC
012616            .IRP N,<\T$ARGCNT>
012616            M$PUT #N,#INTM3,<>,<>,<>,<>,<>,<>,<>,<>
012616            .ENDM
012616            M$PUT #1,#INTM3,<>,<>,<>,<>,<>,<>,<>,<>
012616            .MCALL M$PUT1
012616            .IF NB <#INTM3>
012616            M$PUT <#INTM3>,<>,<>,<>,<>,<>,<>,<>,<>
012616            .MCALL M$PUT1
012616            .IF NB <>
012616            M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
012616            .ENDC
012616            .IF NB <#INTM3>
012616            M$PUT1 #INTM3
012616            .MCALL M$GNINS
012616            .IF B
012616            M$GNINS <MOV #INTM3,-(SP)>
012616            .IF LT SVCINS
    
```

INTR2::

```

MOV      #INTM3,-(SP)
.MEXIT
.ENDC
012616 012746 013253 .IF EQ SVCINS
MOV      #INTM3,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .NLIST
MOV      #INTM3,-(SP)
.ENDC
.IFF
.IF DIF B,<#INTM3>
.ERROR   ;ILL. ARG. '#INTM3' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR    -(SP)>
MSGNINS <BISB   ,(SP)>
.ENDC
.ENDC
.ENDC
012622 .IF NB <#1>
M$PUT1  #1
.MCALL  MSGNINS
012622 .IF B
MSGNINS <MOV    #1,-(SP)>
.IF LT SVCINS
MOV     #1,-(SP)
.MEXIT
.ENDC
012622 012746 000001 .IF EQ SVCINS
MOV     #1,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .NLIST
MOV     #1,-(SP)
.ENDC
.IFF
.IF DIF B,<#1>
.ERROR   ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR    -(SP)>
MSGNINS <BISB   ,(SP)>
.ENDC
.ENDC
012626 MSGNINS <MOV    SP,R0>
.IF LT SVCINS
MOV     SP,R0
.MEXIT
.ENDC
012626 010600 .IF EQ SVCINS
MOV     SP,R0
.MEXIT

```

```
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
012630  M$SVC C$PNTB
012630  .MCALL M$GNINS,M$TSTLAB
M$TSTLAB
012630  .MCALL M$TLABEL,M$INCR
                                .IF LT T$TSTMAC, .MEXIT
                                .RADIX 10
M$TLABEL \T$TESTNUM,\T$TSTSEQ
                                .RADIX 8
012630  M$INCR T$TSTSEQ
M$GNINS <TRAP C$PNTB>
                                .IF LT SVCINS
                                TRAP C$PNTB
                                .MEXIT
                                .ENDC
012630 104414 .IF EQ SVCINS
                                TRAP C$PNTB
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
012632 .IRP N,<\T$ARGCNT*2+2>
M$GNINS <ADD #N,SP>
                                .ENDM
M$GNINS <ADD #4,SP>
                                .IF LT SVCINS
                                ADD #4,SP
                                .MEXIT
                                .ENDC
012632 062706 000004 .IF EQ SVCINS
                                ADD #4,SP
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
                                .MEXIT
                                .ENDC
                                .IF B <>
M$PRINT C$PNTB,#INTM3,<>
                                .MEXIT
                                .ENDC
                                .IF B <>
M$PRINT C$PNTB,#INTM3,<>,<>
                                .MEXIT
                                .ENDC
                                .IF B <>
```

MOV SP,R0

TRAP C\$PNTB

ADD #4,SP



```

                                F 4
012636      .MCALL MSGNINS
                                .IF B
MSGNINS <MOV R2,-(SP)>
                                .IF LT SVCINS
MOV R2,-(SP)
                                .MEXIT
                                .ENDC
012636 010246      .IF EQ SVCINS
MOV R2,-(SP)
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .NLIST
                                                                MOV R2,-(SP)
                                .ENDC
                                .IFF
                                .IF DIF B,<R2>
                                .ERROR ;ILL. ARG. 'R2'' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
                                .ENDC
                                .ENDC
                                .ENDC
012640      .IF NB <#INTM2>
M$PUT1 #INTM2
                                .MCALL MSGNINS
                                .IF B
012640      MSGNINS <MOV #INTM2,-(SP)>
                                .IF LT SVCINS
MOV #INTM2,-(SP)
                                .MEXIT
                                .ENDC
012640 012746 013221      .IF EQ SVCINS
MOV #INTM2,-(SP)
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .NLIST
                                                                MOV #INTM2,-(SP)
                                .ENDC
                                .IFF
                                .IF DIF B,<#INTM2>
                                .ERROR ;ILL. ARG. '#INTM2'' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
                                .ENDC
                                .ENDC
                                .ENDC
012644      .IF NB <#2>
M$PUT1 #2
                                .MCALL MSGNINS
    
```

```

012644      .IF B
            MSGNINS <MOV #2,-(SP)>
            .IF LT SVCINS
            MOV #2,-(SP)
            .MEXIT
            .ENDC
012644 012746 000002      .IF EQ SVCINS
                        MOV #2,-(SP)
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                MOV #2,-(SP)
                                .NLIST
            .ENDC
            .IFF
            .IF DIF B,<#2>
            .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
            MSGNINS <CLR -(SP)>
            MSGNINS <BISB ,(SP)>
            .ENDC
            .ENDC
012650      MSGNINS <MOV SP,R0>
            .IF LT SVCINS
            MOV SP,R0
            .MEXIT
            .ENDC
012650 010600      .IF EQ SVCINS
                        MOV SP,R0
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                MOV SP,R0
                                .NLIST
            .ENDC
012652      M$SVC C$PNTB
012652      .MCALL MSGNINS,M$TSTLAB
            M$TSTLAB
            .MCALL M$TLABEL,M$INCR
            .IF LT T$TSTMAC, .MEXIT
            .RADIX 10
            M$TLABEL \T$TESTNUN,\T$TSTSEQ
            .RADIX 8
            M$INCR T$TSTSEQ
012652      MSGNINS <TRAP C$PNTB>
            .IF LT SVCINS
            TRAP C$PNTB
            .MEXIT
            .ENDC
012652 104414      .IF EQ SVCINS
                        TRAP C$PNTB
            .MEXIT
            .ENDC
            .IF GT SVCINS
    
```

```
.LIST
                                .NLIST
                                TRAP   C$PNTB
. ENDC
.IRP   N,<\T$ARGCNT*2+2>
MSGNINS <ADD   #N,SP>
. ENDM
012654 MSGNINS <ADD   #6,SP>
. IF LT SVCINS
ADD     #6,SP
. MEXIT
. ENDC
012654 062706 000006 . IF EQ SVCINS
                                ADD     #6,SP
. MEXIT
. ENDC
. IF GT SVCINS
. LIST
                                .NLIST
                                ADD     #6,SP
. ENDC
. MEXIT
. ENDC
. IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>
. MEXIT
. ENDC
. IF B <>
M$PRINT C$PNTB,#INIM2,<R2>,<>,<>
. MEXIT
. ENDC
. IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>
. MEXIT
. ENDC
. IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>,<>
. MEXIT
. ENDC
. IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>,<>,<>
. MEXIT
. ENDC
. IF B <>
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>,<>,<>,<>
. MEXIT
. ENDC
M$PRINT C$PNTB,#INTM2,<R2>,<>,<>,<>,<>,<>,<>,<>
ENDMSG
. MCALL MSPOP,MSGNTAG,M$SVC,M$ENDERR
012660 M$POP   T$NS,T$NESTLEV,T$TEMP
. MCALL MSGETS,M$DECR
. IF LT T$NESTLEV
. ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
. MEXIT
. ENDC
012660 M$GETS T$NS,\T$NESTLEV,T$TEMP
```



```
012660 000011      T$TEMP=T$NSO
                  M$DECR T$NESTLEV
                  T$NESTLEV=T$NESTLEV-1
                  .IF EQ F$MSG-T$TEMP
012660            MSGNTAG L,T$$MSG
                  .MCALL M$GEN
012660            M$GEN L,\T$$MSG,SVCTAG
                  .IF LE SVCTAG
012660            L10010:
                  .MEXIT
                  .ENDC
                  .LIST

                                L10C10:

012660 010000      .NLIST
                  S$LSYM=T$LSYM
                  M$SVC C$MSG
                  .MCALL M$GNINS,M$TSTLAB
012660            M$TSTLAB
                  .MCALL M$TLABEL,M$INCR
                  .IF LT T$TSTMAC, .MEXIT
                  .RADIX 10
                  M$TLABEL \T$TESTNUN,\T$TSTSEQ
                  .RADIX 8
                  M$INCR T$TSTSEQ
012660            M$GNINS <TRAP C$MSG>
                  .IF LT SVCINS
                  TRAP C$MSG
                  .MEXIT
                  .ENDC
                  .IF EQ SVCINS
012660 104423      TRAP C$MSG
                  .MEXIT
                  .ENDC
                  .IF GT SVCINS
                  .LIST

                                TRAP C$MSG

                                .NLIST

012660 000041      .ENDC
                  I$MSG=F$END
                  .IFF
                  M$ENDERR ENDMSG,T$TEMP
                  .ENDC

12
13 012662          BGNMSG INTR3 ;INPROPER RESPONSE
                  .MCALL M$PUSH,M$INCR,M$GNGBL
012662 000040      I$MSG=F$BGN
                  M$PUSH T$NS,T$NESTLEV,F$MSG
                  .MCALL M$INCR,M$SETS
012662            M$INCR T$NESTLEV
                  T$NESTLEV=T$NESTLEV+1
012662 000000      M$SETS T$NS,\T$NESTLEV,F$MSG
                  T$NSO-F$MSG
                  T$$MSG=T$TAGNUM
012662 000011      M$INCR T$TAGNUM
                  T$TAGNUM=T$TAGNUM+1
012662 010012      M$GNGBL INTR3
                  .MCALL M$GEN
```

```

        .IF NB,INTR3
        .IF NB,
        MSGEN INTR3,.,SVCGBL,
        .ENDC
012662   .IF B,
        MSGEN INTR3,.,SVCGBL,< >
012662   .IF LE SVCGBL
        INTR3::
        .MEXIT
        .ENDC
        .LIST
                                                    INTR3::

        .NLIST
        .ENDC
14 012662 .ENDC
        PRINTB #INTM4
        .MCALL M$PRINT
        .IF B #INTM4
        .ERROR ;MISSING FORMAT
        .MEXIT
        .ENDC
012662   .IF B <>
        M$PRINT C$PNTB,#INTM4
        .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
012662   000001 T$ARGCNT=1
        M$COUNT T$ARGCNT,<,>,<,>,<,>,<,>,<,>,<,>
        .IF NB <>
        M$COUNT T$ARGCNT,<,>,<,>,<,>,<,>,<,>,<,>
        .ENDC
        .IF NB <>
        T$ARGCNT-T$ARGCNT+1
        .ENDC
        .IRP N,<\T$ARGCNT>
        M$PUT #N,#INTM4,<,>,<,>,<,>,<,>,<,>,<,>,<,>
        .ENDM
012662   M$PUT #1,#INTM4,<,>,<,>,<,>,<,>,<,>,<,>,<,>
        .MCALL M$PUT1
012662   .IF NB <#INTM4>
        M$PUT <#INTM4>,<,>,<,>,<,>,<,>,<,>,<,>,<,>
        .MCALL M$PUT1
        .IF NB <>
        M$PUT <,>,<,>,<,>,<,>,<,>,<,>,<,>,<,>
        .ENDC
012662   .IF NB <#INTM4>
        M$PUT1 #INTM4
        .MCALL M$GNINS
012662   .IF B
        M$GNINS <MOV #INTM4,-(SP)>
        .IF LT SVCINS
        MOV #INTM4,-(SP)
        .MEXIT
        .ENDC
012662   012746 013331 .IF EQ SVCINS
        MOV #INTM4,-(SP)
        .MEXIT
        .ENDC
        .IF GT SVCINS
    
```

```

                                .LIST
                                .NLIST
                                .ENDC
                                .IFF
                                .IF DIF B,<#INTM4>
                                .ERROR ;ILL. ARG. '#INTM4' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
                                MSGNINS <CLR    -(SP)>
                                MSGNINS <BISB   ,(SP)>
                                .ENDC
                                .ENDC
                                .ENDC
                                .IF NB <#1>
012666      M$PUT1 #1
                                .MCALL M$GNINS
                                .IF B
012666      MSGNINS <MOV    #1,-(SP)>
                                .IF LT SVCINS
                                MOV    #1,-(SP)
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS
012666 012746 000001      MOV    #1,-(SP)
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
                                .IFF
                                .IF DIF B,<#1>
                                .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
                                MSGNINS <CLR    -(SP)>
                                MSGNINS <BISB   ,(SP)>
                                .ENDC
                                .ENDC
012672      MSGNINS <MOV    SP,R0>
                                .IF LT SVCINS
                                MOV    SP,R0
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS
012672 010600      MOV    SP,R0
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .ENDC
012674      M$SVC C$PNTB
                                .MCALL M$GNINS,M$TSTLAB
                                MOV    SP,R0
    
```

```
012674      M$STSLAB
            .MCALL M$TLABEL,M$INCR
            .IF LT T$STMAC, .MEXIT
            .RADIX 10
            M$TLABEL      \T$TESTNUM,\T$STSEQ
            .RADIX 8
            M$INCR T$STSEQ
012674      M$GNINS <TRAP C$PNTB>
            .IF LT SVCINS
            TRAP C$PNTB
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            TRAP C$PNTB
012674 104414
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                TRAP C$PNTB
                                .NLIST
            .ENDC
            .IRP N,<\T$ARGCNT*2+2>
            M$GNINS <ADD #N,SP>
            .ENDM
012676      M$GNINS <ADD #4,SP>
            .IF LT SVCINS
            ADD #4,SP
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            ADD #4,SP
012676 062706 000004
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                ADD #4,SP
                                .NLIST
            .ENDC
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#INTM4,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#INTM4,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#INTM4,<>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
            M$PRINT C$PNTB,#INTM4,<>,<>,<>,<>
            .MEXIT
            .ENDC
            .IF B <>
```

```

M$PRINT C$PNTB,#INTM4,<>,<>,<>,<>,<>
.MEXIT
.ENDC
    .IF B <>
M$PRINT C$PNTB,#INTM4,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
    .IF B <>
M$PRINT C$PNTB,#INTM4,<>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
M$PRINT C$PNTB,#INTM4,<>,<>,<>,<>,<>,<>,<>,<>
PRINTB #INTM5,R2
.MCALL M$PRINT
    .IF B #INTM5
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
    .IF B <R2>
M$PRINT C$PNTB,#INTM5
.MEXIT
.ENDC
    .IF B <>
M$PRINT C$PNTB,#INTM5,<R2>
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
T$ARGCNT=1
M$COUNT T$ARGCNT,<R2>,<>,<>,<>,<>,<>,<>,<>
    .IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC
    .IF NB <R2>
T$ARGCNT=T$ARGCNT+1
.ENDC
    .IRP N,<\T$ARGCNT>
M$PUT #N,#INTM5,<R2>,<>,<>,<>,<>,<>,<>,<>
.ENDM
M$PUT #2,#INTM5,<R2>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
    .IF NB <#INTM5>
M$PUT <#INTM5>,<R2>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
    .IF NB <R2>
M$PUT <R2>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
    .IF NB <>
M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC
    .IF NB <R2>
M$PUT1 R2
.MCALL M$GNINS
    .IF B
M$GNINS <MOV R2,-(SP)>
    .IF LT SVCINS
MOV R2,-(SP)
.MEXIT
.ENDC
    .IF EQ SVCINS

```

15 012702

012702

000001

012702

000002

012702

012702

012702

012702

012702

012702 010246

MOV R2,-(SP)  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST

.NLIST

MOV R2,-(SP)

.ENDC  
.IFF  
.IF DIF B,<R2>  
.ERROR ;ILL. ARG. 'R2' ONLY 'B' IS ALLOWED.  
.MEXIT  
.ENDC  
MSGNINS <CLR -(SP)>  
MSGNINS <BISB ,(SP)>  
.ENDC  
.ENDC  
.ENDC

012704

.IF NB <#INTM5>  
M\$PUT1 #INTM5  
.MCALL MSGNINS

012704

.IF B  
MSGNINS <MOV #INTM5,-(SP)>  
.IF LT SVCINS  
MOV #INTM5,-(SP)

012704 012746 013411

.MEXIT  
.ENDC  
.IF EQ SVCINS  
MOV #INTM5,-(SP)  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST

.NLIST

MOV #INTM5,-(SP)

.ENDC  
.IFF  
.IF DIF B,<#INTM5>  
.ERROR ;ILL. ARG. '#INTM5' ONLY 'B' IS ALLOWED.  
.MEXIT  
.ENDC  
MSGNINS <CLR -(SP)>  
MSGNINS <BISB ,(SP)>  
.ENDC  
.ENDC  
.ENDC

012710

.IF NB <#2>  
M\$PUT1 #2  
.MCALL MSGNINS

012710

.IF B  
MSGNINS <MOV #2,-(SP)>  
.IF LT SVCINS  
MOV #2,-(SP)

012710 012746 000002

.MEXIT  
.ENDC  
.IF EQ SVCINS  
MOV #2,-(SP)

```

        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV      #2,-(SP)
        .ENDC
        .IFF
        .IF DIF B,<#2>
        .ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
        MSGNINS <CLR      -(SP)>
        MSGNINS <BISB    ,(SP)>
        .ENDC
012714  .ENDC
        MSGNINS <MOV     SP,R0>
        .IF LT SVCINS
        MOV     SP,R0
        .MEXIT
        .ENDC
012714 010600 .IF EQ SVCINS
        MOV     SP,R0
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV      SP,R0
        .ENDC
012716  .ENDC
012716  MSSVC   C$PNTB
        .MCALL  MSGNINS,M$TSTLAB
        M$TSTLAB
        .MCALL  M$TLABEL,M$INCR
        .IF LT T$TSTMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUN,\T$TSTSEQ
        .RADIX 8
        M$INCR  T$TSTSEQ
012716  MSGNINS <TRAP   C$PNTB>
        .IF LT SVCINS
        TRAP   C$PNTB
        .MEXIT
        .ENDC
012716 104414 .IF EQ SVCINS
        TRAP   C$PNTB
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                TRAP    C$PNTB
        .ENDC
        .IRP   N,<\T$ARGCNT*2+2>
012720  MSGNINS <ADD    #N,SP>
        .ENDM
        MSGNINS <ADD    #6,SP>
    
```

012720 062706 000006

```
.IF LT SVCINS  
ADD #6,SP  
.MEXIT  
.ENDC  
.IF EQ SVCINS  
ADD #6,SP  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST
```

ADD #6,SP

.NLIST

```
.ENDC  
.MEXIT  
.ENDC  
.IF B <>  
MSPRINT C$PNTB,#INTM5,<R2>,<>  
.MEXIT  
.ENDC  
.IF B <>  
MSPRINT C$PNTB,#INTM5,<R2>,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
MSPRINT C$PNTB,#INTM5,<R2>,<>,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
MSPRINT C$PNTB,#INTM5,<R2>,<>,<>,<>,<>  
.MEXIT  
.ENDC  
.IF B <>  
MSPRINT C$PNTB,#INTM5,<R2>,<>,<>,<>,<>,<>  
.MEXIT  
.ENDC  
MSPRINT C$PNTB,#INTM5,<R2>,<>,<>,<>,<>,<>,<>,<>  
PRINTB #INTM6,R3  
.MCALL M$PRINT  
.IF B #INTM6  
.ERROR :MISSING FORMAT  
.MEXIT  
.ENDC  
.IF B <R3>  
MSPRINT C$PNTB,#INTM6  
.MEXIT  
.ENDC  
.IF B <>  
MSPRINT C$PNTB,#INTM6,<R3>  
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC  
T$ARGCNT=1  
M$COUNT T$ARGCNT,<R3>,<>,<>,<>,<>,<>,<>,<>  
.IF NB <>  
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
```

16 012724

012724

012724 000001



```

                                .ENDC
                                .IF NB <R3>
000002    T$ARGCNT=T$ARGCNT+1
                                .ENDC
                                .IRP    N,<\T$ARGCNT>
                                M$PUT  #N,#INTM6,<R3>,<>,<>,<>,<>,<>,<>,<>
                                .ENDM
012724    M$PUT  #2,#INTM6,<R3>,<>,<>,<>,<>,<>,<>
                                .MCALL  M$PUT1
                                .IF NB  <#INTM6>
012724    M$PUT  <#INTM6>,<R3>,<>,<>,<>,<>,<>,<>
                                .MCALL  M$PUT1
                                .IF NB  <R3>
012724    M$PUT  <R3>,<>,<>,<>,<>,<>,<>,<>
                                .MCALL  M$PUT1
                                .IF NB  <>
                                M$PUT  <>,<>,<>,<>,<>,<>,<>,<>
                                .ENDC
                                .IF NB  <R3>
012724    M$PUT1  R3
                                .MCALL  M$GNINS
                                .IF B
012724    M$GNINS <MOV    R3,-(SP)>
                                .IF LT SVCINS
                                MOV    R3,-(SP)
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS
012724  010346    MOV    R3,-(SP)
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                MOV    R3,-(SP)
                                                                .NLIST
                                .ENDC
                                .IFF
                                .IF DIF B,<R3>
                                .ERROR  ;ILL. ARG. 'R3' ONLY 'B' IS ALLOWED.
                                .MEXIT
                                .ENDC
                                M$GNINS <CLR    -(SP)>
                                M$GNINS <BISB  ,(SP)>
                                .ENDC
                                .ENDC
                                .ENDC
012726    .IF NB  <#INTM6>
                                M$PUT1  #INTM6
                                .MCALL  M$GNINS
012726    .IF B
                                M$GNINS <MOV    #INTM6,-(SP)>
                                .IF LT SVCINS
                                MOV    #INTM6,-(SP)
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS
012726  012746  013435    MOV    #INTM6,-(SP)
    
```

```
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .NLIST
                                MOV      #INTM6,-(SP)
.ENDC
.IFF
.IF DIF B,<#INTM6>
.ERROR ;ILL. ARG. '#INTM6' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
.ENDC
.IF NB <#2>
012732 M$PUT1 #2
.MCALL MSGNINS
.IF B
012732 MSGNINS <MOV      #2,-(SP)>
.IF LT SVCINS
MOV      #2,-(SP)
.MEXIT
.ENDC
012732 012746 000002 .IF EQ SVCINS
MOV      #2,-(SP)
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .NLIST
                                MOV      #2,-(SP)
.ENDC
.IFF
.IF DIF B,<#2>
.ERROR ;ILL. ARG. '#2' ONLY 'B' IS ALLOWED.
.MEXIT
.ENDC
MSGNINS <CLR      -(SP)>
MSGNINS <BISB    ,(SP)>
.ENDC
.ENDC
012736 MSGNINS <MOV      SP,R0>
.IF LT SVCINS
MOV      SP,R0
.MEXIT
.ENDC
012736 010600 .IF EQ SVCINS
MOV      SP,R0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .NLIST
                                MOV      SP,R0
```

```
012740 .ENDC
      M$SVC C$PNTB
012740 .MCALL M$GNINS,M$TSTLAB
      M$TSTLAB
      .MCALL M$TLABEL,M$INCR
      .IF LT T$TSTMAC, .MEXIT
      .RADIX 10
      M$TLABEL \T$TESTNUN,\T$TSTSEQ
      .RADIX 8
      M$INCR T$TSTSEQ
012740 M$GNINS <TRAP C$PNTB>
      .IF LT SVCINS
      TRAP C$PNTB
      .MEXIT
      .ENDC
012740 104414 .IF EQ SVCINS
      TRAP C$PNTB
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      TRAP C$PNTB
      .NLIST
      .ENDC
      .IRP N,<\T$ARGCNT*2+2>
      M$GNINS <ADD #N,SP>
      .ENDM
012742 M$GNINS <ADD #6,SP>
      .IF LT SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC
012742 062706 000006 .IF EQ SVCINS
      ADD #6,SP
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      ADD #6,SP
      .NLIST
      .ENDC
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTB,#INTM6,<R3>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTB,#INTM6,<R3>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTB,#INTM6,<R3>,<>,<>,<>
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT C$PNTB,#INTM6,<R3>,<>,<>,<>,<>
```

```

.MEXIT
.ENDC
.IF B <>
MS$PRINT (C$PNTB,#INTM6,<R3>,<>,<>,<>,<>,<>,<>)
.MEXIT
.ENDC
.IF B <>
MS$PRINT (C$PNTB,#INTM6,<R3>,<>,<>,<>,<>,<>,<>,<>)
.MEXIT
.ENDC
MS$PRINT (C$PNTB,#INTM6,<R3>,<>,<>,<>,<>,<>,<>,<>,<>)
ENDMSG
.MCALL MS$POP,MSGNTAG,M$SVC,M$ENDERR
MS$POP T$NS,T$NESTLEV,T$TEMP
.MCALL MS$GETS,MS$DECR
.IF LT T$NESTLEV
.ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
.MEXIT
.ENDC
MS$GETS T$NS,\T$NESTLEV,T$TEMP
T$TEMP=T$NS0
MS$DECR T$NESTLEV
T$NESTLEV=T$NESTLEV-1
.IF EQ F$MSG-T$TEMP
MSGNTAG L,T$$MSG
.MCALL M$GEN
M$GEN L,\T$$MSG,SVCTAG
.IF LE SVCTAG
L10011:
.MEXIT
.ENDC
.LIST

.NLIST
S$LSYM-T$LSYM
M$SVC C$MSG
.MCALL M$GNINS,M$STSTLAB
M$STSTLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$STMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUM,\T$STSEQ
.RADIX 8
M$INCR T$STSEQ
M$GNINS <TRAP C$MSG>
.IF LT SVCINS
TRAP C$MSG
.MEXIT
.ENDC
.IF EQ SVCINS
TRAP C$MSG
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

L10011:

TRAP C\$MSG

.NLIST



```

012750      .IF NB <#INTB1M>
            M$PUT <#INTB1M>,<>,<>,<>,<>,<>,<>,<>,<>
            .MCALL M$PUT1
            .IF NB <>
            M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
            .ENDC
012750      .IF NB <#INTB1M>
            M$PUT1 #INTB1M
            .MCALL M$GNINS
            .IF B
012750      M$GNINS <MOV #INTB1M,-(SP)>
            .IF LT SVCINS
            MOV #INTB1M,-(SP)
            .MEXIT
            .ENDC
012750 012746 013461      .IF EQ SVCINS
            MOV #INTB1M,-(SP)
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                MOV #INTB1M,-(SP)
                                .NLIST
            .ENDC
            .IFF
            .IF DIF B,<#INTB1M>
            .ERROR ;ILL. ARG. '#INTB1M' ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
            M$GNINS <CLR -(SP)>
            M$GNINS <BISB ,(SP)>
            .ENDC
            .ENDC
            .FNDC
012754      .IF NB <#1>
            M$PUT1 #1
            .MCALL M$GNINS
            .IF B
012754      M$GNINS <MOV #1,-(SP)>
            .IF LT SVCINS
            MOV #1,-(SP)
            .MEXIT
            .ENDC
012754 012746 000001      .IF EQ SVCINS
            MOV #1,-(SP)
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                MOV #1,-(SP)
                                .NLIST
            .ENDC
            .IFF
            .IF DIF B,<#1>
            .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
    
```

```

MSGNINS <CLR      -(SP)>
MSGNINS <BISB     ,(SP)>
.ENDC
.ENDC
012760 MSGNINS <MOV      SP,RO>
      .IF LT SVCINS
      MOV      SP,RO
      .MEXIT
      .ENDC
012760 010600 .IF EQ SVCINS
      MOV      SP,RO
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      MOV      SP,RO
      .NLIST
.ENDC
012762 M$SVC C$PNTB
012762 .MCALL MSGNINS,M$TSTLAB
      M$TSTLAB
      .MCALL M$TLABEL,M$INCR
      .IF LT T$TSTMAC, .MEXIT
      .RADIX 10
      M$TLABEL \T$TSTNUN,\T$TSTSEQ
      .RADIX 8
      M$INCR T$TSTSEQ
012762 MSGNINS <TRAP C$PNTB>
      .IF LT SVCINS
      TRAP C$PNTB
      .MEXIT
      .ENDC
012762 104414 .IF EQ SVCINS
      TRAP C$PNTB
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      TRAP C$PNTB
      .NLIST
.ENDC
      .IRP N,<\T$ARGCNT+2+2>
012764 MSGNINS <ADD #N,SP>
      .ENDM
      MSGNINS <ADD #4,SP>
      .IF LT SVCINS
      ADD #4,SP
      .MEXIT
      .ENDC
012764 062706 000004 .IF EQ SVCINS
      ADD #4,SP
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      ADD #4,SP
      .NLIST
    
```

21 012770

012770

000001

012770

012770

012770

```
.ENDC
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTB1M,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTB1M,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTB1M,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTB1M,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTB1M,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTB,#INTB1M,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
MSPRINT C$PNTB,#INTB1M,<>,<>,<>,<>,<>,<>,<>,<>
PRINTX #INTB2M
.MCALL MSPRINT
.IF B #INTB2M
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTX,#INTB2M
.MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
T$ARGCNT=1
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <>
T$ARGCNT-T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#INTB2M,<>,<>,<>,<>,<>,<>,<>,<>
.ENDM
M$PUT #1,#INTB2M,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#INTB2M>
M$PUT <#INTB2M>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
```



```

        .IF NB <>
        M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>,<>
        .ENDC
012770  .IF NB <#INTB2M>
        M$PUT1 #INTB2M
        .MCALL M$GNINS
012770  .IF B
        M$GNINS <MOV #INTB2M,-(SP)>
        .IF LT SVCINS
        MOV #INTB2M,-(SP)
        .MEXIT
        .ENDC
012770 012746 013530 .IF EQ SVCINS
        MOV #INTB2M,-(SP)
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV #INTB2M,-(SP)
        .ENDC
        .IFF
        .IF DIF B,<#INTB2M>
        .ERROR ;ILL. ARG. '#INTB2M' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
        M$GNINS <CLR -(SP)>
        M$GNINS <BISB ,(SP)>
        .ENDC
        .ENDC
        .ENDC
012774  .IF NB <#1>
        M$PUT1 #1
        .MCALL M$GNINS
012774  .IF B
        M$GNINS <MOV #1,-(SP)>
        .IF LT SVCINS
        MOV #1,-(SP)
        .MEXIT
        .ENDC
012774 012746 000001 .IF EQ SVCINS
        MOV #1,-(SP)
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV #1,-(SP)
        .ENDC
        .IFF
        .IF DIF B,<#1>
        .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
        M$GNINS <CLR -(SP)>
        M$GNINS <BISB ,(SP)>
        .ENDC
    
```

```

013000      .ENDC
            MSGNINS <MOV      SP,RO>
            .IF LT SVCINS
            MOV      SP,RO
            .MEXIT
            .ENDC
013000 010600 .IF EQ SVCINS
            MOV      SP,RO
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    MOV      SP,RO
                                                    .NLIST
013002      .ENDC
            MSSVC   C$PNTX
            .MCALL  MSGNINS,MS$STLAB
013002      MS$STLAB
            .MCALL  MS$TLABEL,MS$INCR
            .IF LT T$STMAC, .MEXIT
            .RADIX 10
            MS$TLABEL \T$TESTNUN,\T$STSEQ
            .RADIX 8
            MS$INCR T$STSEQ
013002      MSGNINS <TRAP   C$PNTX>
            .IF LT SVCINS
            TRAP   C$PNTX
            .MEXIT
            .ENDC
013002 104415 .IF EQ SVCINS
            TRAP   C$PNTX
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    TRAP   C$PNTX
                                                    .NLIST
            .ENDC
            .IRP   N,<\T$ARGCNT*2+2>
            MSGNINS <ADD   #N,SP>
            .ENDM
013004      MSGNINS <ADD   #4,SP>
            .IF LT SVCINS
            ADD   #4,SP
            .MEXIT
            .ENDC
013004 062706 000004 .IF EQ SVCINS
            ADD   #4,SP
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    ADD   #4,SP
                                                    .NLIST
            .ENDC
            .MEXIT
            .ENDC
    
```



```
013010      .IF NB <#INTB3M>
            M$PUT1 #INTB3M
            .MCALL MSGNINS
            .IF B
013010      MSGNINS <MOV #INTB3M,-(SP)>
            .IF LT SVCINS
            MOV #INTB3M,-(SP)
            .MEXIT
            .ENDC
            .IF EQ SVCINS
013010 012746 013575      MOV #INTB3M,-(SP)
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                MOV #INTB3M,-(SP)
            .ENDC
            .IFF
            .IF DIF B,<#INTB3M>
            .ERROR ;ILL. ARG. '#INTB3M' ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
            MSGNINS <CLR -(SP)>
            MSGNINS <BISB ,(SP)>
            .ENDC
            .ENDC
            .ENDC
013014      .IF NB <#1>
            M$PUT1 #1
            .MCALL MSGNINS
            .IF B
013014      MSGNINS <MOV #1,-(SP)>
            .IF LT SVCINS
            MOV #1,-(SP)
            .MEXIT
            .ENDC
            .IF EQ SVCINS
013014 012746 000001      MOV #1,-(SP)
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                MOV #1,-(SP)
            .ENDC
            .IFF
            .IF DIF B,<#1>
            .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
            MSGNINS <CLR -(SP)>
            MSGNINS <BISB ,(SP)>
            .ENDC
            .ENDC
013020      MSGNINS <MOV SP,R0>
            .IF LT SVCINS
```

```
MOV      SP,R0
.MEXIT
.ENDC
013020 010600 .IF EQ SVCINS
MOV      SP,R0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
MOV      SP,R0
.ENDC
013022
MSGVOC   CSPNTX
.MCALL   MSGNINS, MSTSTLAB
013022 MSTSTLAB
.MCALL   MSTLABEL, MSINCR
.IIF LT TSTSTMAC, .MEXIT
.RADIX   10
MSTLABEL \TSTESTNUN, \TSTSTSEQ
.RADIX   8
MSINCR   TSTSTSEQ
013022 MSGNINS <TRAP CSPNTX>
.IF LT SVCINS
TRAP     CSPNTX
.MEXIT
.ENDC
013022 104415 .IF EQ SVCINS
TRAP     CSPNTX
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
TRAP     CSPNTX
.ENDC
.IRP     N, <\T$ARGCNT*2+2>
MSGNINS  <ADD #N, SP>
.ENDM
013024 MSGNINS <ADD #4, SP>
.IF LT SVCINS
ADD      #4, SP
.MEXIT
.ENDC
013024 062706 000004 .IF EQ SVCINS
ADD      #4, SP
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
ADD      #4, SP
.ENDC
.MEXIT
.ENDC
.IF B <>
MSPRINT  CSPNTX, #INTB3M, <>
.MEXIT
```

23 013030 016502 000010  
 24 013034 012703 000004  
 25 013040

```

.ENDC
  .IF B <>
MSPRINT C$PNTX,#INTB3M,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
MSPRINT C$PNTX,#INTB3M,<>,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
MSPRINT C$PNTX,#INTB3M,<>,<>,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
MSPRINT C$PNTX,#INTB3M,<>,<>,<>,<>,<>
  .MEXIT
  .ENDC
  .IF B <>
MSPRINT C$PNTX,#INTB3M,<>,<>,<>,<>,<>,<>
  .MEXIT
  .ENDC
MSPRINT C$PNTX,#INTB3M,<>,<>,<>,<>,<>,<>,<>
  MOV C.RING(R5),R2
  MOV #RNGLEN,R3
INTBFL: PRINTX #INTB4M,R2,(R2)
  .MCALL MSPRINT
  .IF B #INTB4M
  .ERROR ;MISSING FORMAT
  .MEXIT
  .ENDC
  .IF B <R2>
MSPRINT C$PNTX,#INTB4M
  .MEXIT
  .ENDC
  .IF B <<R2>>
MSPRINT C$PNTX,#INTB4M,<R2>
  .MEXIT
  .ENDC
  .IF B <>
MSPRINT C$PNTX,#INTB4M,<R2>,<<R2>>
  .MCALL MSCOUNT,MSPUT,MSGNINS,MSSVC
  T$ARGCNT=1
  .IF NB <<R2>>
M$COUNT T$ARGCNT,<R2>,<<R2>>,<>,<>,<>,<>,<>,<>
  .IF NB <>
M$COUNT T$ARGCNT,<<R2>>,<>,<>,<>,<>,<>,<>,<>
  .IF NB <>
M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
  .ENDC
  .IF NB <<R2>>
  T$ARGCNT-T$ARGCNT+1
  .ENDC
  .ENDC
  .IF NB <R2>

```

013040  
 000001  
 013040  
 013040  
 000002

```

000003      T$ARGCNT=T$ARGCNT+1
            .ENDC
            .IRP      N,<\T$ARGCNT>
013040      M$PUT      #N,#INTB4M,<R2>,<(R2)>,<>,<>,<>,<>,<>,<>
            .ENDM
            M$PUT      #3,#INTB4M,<R2>,<(R2)>,<>,<>,<>,<>,<>,<>
            .MCALL    M$PUT1
            .IF NB    <#INTB4M>
013040      M$PUT      <#INTB4M>,<R2>,<(R2)>,<>,<>,<>,<>,<>,<>
            .MCALL    M$PUT1
            .IF NB    <R2>
013040      M$PUT      <R2>,<(R2)>,<>,<>,<>,<>,<>,<>,<>
            .MCALL    M$PUT1
            .IF NB    <(R2)>
013040      M$PUT      <(R2)>,<>,<>,<>,<>,<>,<>,<>,<>
            .MCALL    M$PUT1
            .IF NB    <>
            M$PUT      <>,<>,<>,<>,<>,<>,<>,<>,<>
            .ENDC
            .IF NB    <(R2)>
013040      M$PUT1     (R2)
            .MCALL    M$GNINS
            .IF B
013040      M$GNINS    <MOV      (R2),-(SP)>
            .IF LT    SVCINS
            MOV      (R2),-(SP)
            .MEXIT
            .ENDC
            .IF EQ    SVCINS
013040 011246      MOV      (R2),-(SP)
            .MEXIT
            .ENDC
            .IF GT    SVCINS
            .LIST
                                MOV      (R2),-(SP)
                                .NLIST
            .ENDC
            .IFF
            .IF DIF B,<(R2)>
            .ERROR    ;ILL. ARG. "(R2)" ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
            M$GNINS    <CLR      -(SP)>
            M$GNINS    <BISB    ,(SP)>
            .ENDC
            .ENDC
            .ENDC
            .IF NB    <R2>
013042      M$PUT1     R2
            .MCALL    M$GNINS
            .IF B
013042      M$GNINS    <MOV      R2,-(SP)>
            .IF LT    SVCINS
            MOV      R2,-(SP)
            .MEXIT
            .ENDC
            .IF EQ    SVCINS
    
```

013042 010246

MOV R2,-(SP)  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST

MOV R2,-(SP)

.NLIST  
.ENDC  
.IFF  
.IF DIF B,<R2>  
.ERROR ;ILL. ARG. 'R2' ONLY 'B' IS ALLOWED.  
.MEXIT  
.ENDC  
MSGNINS <CLR -(SP)>  
MSGNINS <BISB ,(SP)>  
.ENDC  
.ENDC  
.ENDC

013044

.IF NB <#INTB4M>  
M\$PUT1 #INTB4M  
.MCALL MSGNINS

013044

.IF B  
MSGNINS <MOV #INTB4M,-(SP)>  
.IF LT SVCINS  
MOV #INTB4M,-(SP)  
.MEXIT  
.ENDC

013044 012746 013631

.IF EQ SVCINS  
MOV #INTB4M,-(SP)  
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST

MOV #INTB4M,-(SP)

.NLIST  
.ENDC  
.IFF  
.IF DIF B,<#INTB4M>  
.ERROR ;ILL. ARG. '#INTB4M' ONLY 'B' IS ALLOWED.  
.MEXIT  
.ENDC  
MSGNINS <CLR -(SP)>  
MSGNINS <BISB ,(SP)>  
.ENDC  
.ENDC  
.ENDC

013050

.IF NB <#3>  
M\$PUT1 #3  
.MCALL MSGNINS

013050

.IF B  
MSGNINS <MOV #3,-(SP)>  
.IF LT SVCINS  
MOV #3,-(SP)  
.MEXIT  
.ENDC

013050 012746 000003

.IF EQ SVCINS  
MOV #3,-(SP)



```

        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV      #3,-(SP)
        .ENDC
        .IFF
        .IF DIF B,<#3>
        .ERROR ;ILL. ARG. '#3' ONLY 'B' IS ALLOWED.
        .MEXIT
        .ENDC
        MSGNINS <CLR      -(SP)>
        MSGNINS <BISB    ,(SP)>
        .ENDC
013054  MSGNINS <MOV      SP,R0>
        .IF LT SVCINS
        MOV      SP,R0
        .MEXIT
        .ENDC
013054 010600 .IF EQ SVCINS
        MOV      SP,R0
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                MOV      SP,R0
        .ENDC
013056  MSSVC    C$PNTX
013056  .MCALL  MSGNINS,M$STSLAB
        M$STSLAB
        .MCALL  M$TLABEL,M$INCR
        .IF LT T$STMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUM,\T$STSEQ
        .RADIX 8
        M$INCR  T$STSEQ
013056  MSGNINS <TRAP    C$PNTX>
        .IF LT SVCINS
        TRAP    C$PNTX
        .MEXIT
        .ENDC
013056 010415 .IF EQ SVCINS
        TRAP    C$PNTX
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                TRAP    C$PNTX
        .ENDC
        .IRP  N,<\T$ARGCNT*2*2>
013060  MSGNINS <ADD    #N,SP>
        .ENDM
        MSGNINS <ADD    #10,SP>
    
```

```

        .IF LT SVCINS
        ADD #10,SP
        .MEXIT
        .ENDC
013060 062706 000010 .IF EQ SVCINS
                        ADD #10,SP
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                ADD #10,SP
        .ENDC
        .MEXIT
        .ENDC
        .IF B <
        M$PRINT ($PIIX,#INTB4M,<R2>,<(R2)>,<>)
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT ($PNTX,#INTB4M,<R2>,<(R2)>,<>,<>)
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT ($PNTX,#INTB4M,<R2>,<(R2)>,<>,<>,<>)
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT ($PNIX,#INTB4M,<R2>,<(R2)>,<>,<>,<>,<>)
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT ($PNTX,#INTB4M,<R2>,<(R2)>,<>,<>,<>,<>,<>)
        .MEXIT
        .ENDC
        M$PRINT ($PNTX,#INTB4M,<R2>,<(R2)>,<>,<>,<>,<>,<>,<>)
26 013064 005722 TST (R2)+ ; POINT TO NEXT LOCATION
27 013066 SOB R3,INTBFL
        013066 005303 DEC R3
        013070 001363 BNE INTBFL
28 013072 ENDMSG
        .MCALL M$POP,M$GNTAG,M$SVC,M$ENDERR
        M$POP T$NS,T$NESTLEV,T$TEMP
        .MCALL M$GETS,M$DECR
        .IF LT T$NESTLEV
        .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
        .MEXIT
        .ENDC
013072 M$GETS T$NS,\T$NESTLEV,T$TEMP
        013072 000011 T$TEMP=T$NS0
013072 M$DECR T$NESTLEV
        177777 T$NESTLEV=T$NESTLEV-1
        .IF EQ F$MSG-T$TEMP
013072 M$GNTAG L,T$$MSG
        .MCALL M$GEN
013072 M$GEN L,\T$$MSG,SVCTAG
        .IF LE SVCTAG
    
```

```

013072          L10012:
                .MEXIT
                .ENDC
                .LIST

                                L10012:
                                .NLIST
013072 010000   S$LSYM=T$LSYM
                M$SVC  C$MSG
                .MCALL MSGNINS,M$TSTLAB
013072          M$TSTLAB
                .MCALL M$TLABEL,M$INCR
                .JIF LT T$TSTMAC, .MEXIT
                .RADIX 10
                M$TLABEL      \T$TESTNUN,\T$TSTSEQ
                .RADIX 8
                M$INCR T$TSTSEQ
013072          MSGNINS <TRAP C$MSG>
                .IF LT SVCINS
                TRAP C$MSG
                .MEXIT
                .ENDC
013072 104423  .IF EQ SVCINS
                TRAP C$MSG
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                TRAP C$MSG
                                .NLIST
                                .ENDC
                                I$MSG-F$END
                                .IFF
                                M$SENDERR      ENDMSG,T$TEMP
                                .FNDC
                                000041

29
30 013074      125      104      101  INTHD:  .ASCIZ\UDA INITIALIZE ERROR\
31 013121      045      101      124  INTM1:  .ASCIZ\%ATIME-OUT ERROR WHILE WAITING FOR RESPONSE IN UDASA REGISTER%\
32 013221      045      101      011  INTM2:  .ASCIZ\%A          UDASA REGISTER - %06%\
33 013253      045      101      125  INTM3:  .ASCIZ\%AUDA RESIDENT DIAGNOSTICS DETECTED FAILURE%\
34 013331      045      101      125  INTM4:  .ASCIZ\%AUDASA REGISTER DID NOT RETURN CORRECT VALUE%\
35 013411      045      101      011  INTM5:  .ASCIZ\%A          EXPECTED = %06%\
36 013435      045      101      011  INTM6:  .ASCIZ\%A          ACTUAL   = %06%\
37 013461      045      101      122  INTB1M: .ASCIZ\%ARING BUFFER WAS NOT CLEARED BY UDA%\
38 013530      045      101      103  INTB2M: .ASCIZ\%ACURRENT CONTENTS OF RING BUFFER:%%\
39 013575      045      123      066  INTB3M: .ASCIZ\%S6%AADDRESS%$4%ACONTENTS%\
40 013631      045      117      061  INTB4M: .ASCIZ\%013%011%\
41          .EVEN
    
```

```
1          :WAITMS
2          :
3          :WAIT FOR UDA TO RESPOND WITH A MESSAGE PACKET
4          :
5          :INPUTS:
6          :      R4 - ADDRESS OF HOST COMM AREA
7          :
8 013644 032764 100000 000002 WAITMS: BIT #RG.OWN,HC.MCT(R4)      ;LOOK AT OWN BIT
9 013652 001374          BNE WAITMS          ;WAIT FOR IT TO CLEAR
10 013654 000207          RETURN
```

```
1 ; .TITLE MISCELLANEOUS SECTIONS
2 ; .SBTTL REPORT CODING SECTION
3 013656 BGNMOD
      .MCALL MSGNGBL,M$PUSH
      .IF NE F$END-I$MOD
      .ERROR ;'BGNMOD' IN MOD
      .MEXIT
      .IFF
      000040 I$MOD=F$BGN
      .ENDC
      .IF NB
      MSGNGBL
      .ENDC
013656 M$PUSH T$NS,T$NESTLEV,F$MOD
013656 .MCALL M$INCR,M$SETS
013656 M$INCR T$NESTLEV
      000000 T$NESTLEV-T$NESTLEV+1
013656 M$SETS T$NS,\T$NESTLEV,F$MOD
      000000 T$NSO F$MOD

4
5
6 ;++
7 ; THE REPORT CODING SECTION CONTAINS THE
8 ; 'PRINTS' CALLS THAT GENERATE STATISTICAL REPORTS.
9 ;--
10 013656 BGNRPT
      .MCALL M$PUSH,M$INCR,MSGNGBL
      000040 I$RPT=F$BGN
      M$PUSH T$NS,T$NESTLEV,F$RPT
      .MCALL M$INCR,M$SETS
      M$INCR T$NESTLEV
      000001 T$NESTLEV-T$NESTLEV+1
      013656 M$SETS T$NS,\T$NESTLEV,F$RPT
      000012 T$NS1=F$RPT
      010013 T$$RPT=T$TAGNUM
      013656 M$INCR T$TAGNUM
      010014 T$TAGNUM=T$TAGNUM+1
      013656 MSGNGBL L$RPT
      .MCALL M$GEN
      .IF NB,L$RPT
      .IF NB,
      M$GEN L$RPT,.,SVCGBL,
      .ENDC
      .IF B,
      013656 M$GEN L$RPT,.,SVCGBL,< >
      .IF LE SVCGBL
      013656 L$RPT::
      .MEXIT
      .ENDC
      .LIST

      .NLIST
      L$RPT::

      .ENDC
      .ENDC

11
12 ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
13 ; THIS SECTION, WHICH IS OPTIONAL, CONTAINS THE CODE FOR PRINTING
```

14  
15  
16  
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18  
19  
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21  
22 013656

```
STATISTICAL INFORMATION GATHERED BY THE DIAGNOSTIC. IT IS  
EXECUTED BY THE OPERATOR COMMAND 'PRINT' OR BY THE MACRO CALL  
'DORPT'. USE THE PRINTS MACRO TO PRINT THE INFORMATION.  
USE FORMAT STATEMENTS AS IN THE PRINTB/PRINTX MACROS. IT IS  
THE PROGRAMMER'S RESPONSIBILITY TO DEVISE AND IMPLEMENT THE  
FORM AND CONTENT OF THE STATISTICS.  
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

013656 000041

```
EXIT RPT  
.MCALL MSSVC,MSEXIT,MSEXSEG,MSEXJ,MSGGETTOP,MSCHECK,MSWORD,XFER  
T$FLAG=F$END  
MSCHECK RPT,T$TEMP,T$FLAG  
.IF IDN <TST>,<RPT>  
T$TEMP=T$$TEST  
T$FLAG=I$TST  
.MEXIT  
.ENDC  
.IF IDN <SUB>,<RPT>  
T$TEMP-T$$SUB  
T$FLAG=I$SUB  
.MEXIT  
.ENDC  
.IF IDN <SEG>,<RPT>  
T$TEMP=T$$SEG  
T$FLAG=I$SEG  
.MEXIT  
.ENDC  
.IF IDN <INIT>,<RPT>  
T$TEMP=T$$INIT  
T$FLAG=I$INIT  
.MEXIT  
.ENDC  
.IF IDN <CLN>,<RPT>  
T$TEMP=T$$CLEAN  
T$FLAG=I$CLN  
.MEXIT  
.ENDC  
.IF IDN <SRV>,<RPT>  
T$TEMP-T$$SRV  
T$FLAG=I$SRV  
.MEXIT  
.ENDC  
.IF IDN <MSG>,<RPT>  
T$TEMP-T$$MSG  
T$FLAG=F$JMP  
.MEXIT  
.ENDC  
.IF IDN <RPT>,<RPT>  
T$TEMP-T$$RPT  
T$FLAG-F$JMP  
.MEXIT  
.ENDC  
.IF IDN <DU>,<RPT>  
T$TEMP-T$$DU  
T$FLAG=F$JMP  
.MEXIT  
.ENDC
```

010013  
000050

```
.IF IDN <AU>,<RPT>
T$TEMP T$$AL
T$FLAG=F$JMP
.MEXIT
.ENDC
013656 .IF EQ T$FLAG-F$JMP
M$WORD J$JMP
.MCALL M$GNINS
.IRP N,<J$JMP>
M$GNINS <.WORD N>
.ENDM
013656 M$GNINS <.WORD J$JMP>
.IF LT SVCINS
.WORD J$JMP
.MEXIT
.ENDC
013656 000167 .IF EQ SVCINS
.WORD J$JMP
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.WORD J$JMP
.ENDC
013660 M$EXTJ \T$TEMP
.MCALL M$GNINS
013660 M$GNINS <.WORD L10013-2-.>
.IF LT SVCINS
.WORD L10013-2-.
.MEXIT
.ENDC
013660 000000 .IF EQ SVCINS
.WORD L10013-2-.
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.WORD L10013-2-.
.ENDC
.MEXIT
.ENDC
.IF EQ T$FLAG-F$BGN
M$SVC C$EXIT
.IF IDN <SEG>,<RPT>
M$GETTOP T$SEK,T$SEGLEV,T$TEMP
M$EXSEG \T$TEMP
.IFF
M$EXIT \T$TEMP
.ENDC
.MEXIT
.ENDC
.IF IDN <HRD>,<RPT>
M$GETTOP T$NS,T$NESTLEV,T$TEMP
.IF EQ F$HARD-T$TEMP
.IRP N,<\T$$HARD>
```

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013662

013662

013662

000012

013662

000000

013662

013662

013662

013662

010000

013662

```
XFER L'N
.ENDM
.MEXIT
.ENDC
.ENDC
.IF IDN <SFT>,<RPT>
MSGGETTOP T$NS,T$NESTLEV,T$TEMP
.IF EQ F$$SOFT-T$TEMP
.IRP N,<\T$$SOFT>
XFER L'N
.ENDM
.MEXIT
.ENDC
.ENDC
.ERROR ;ILL. 'EXIT RPT' STMT.
```

```
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX:XXXXXXXXXXXXXXXXXXXXXXXXXXXX
: INSERT LOCAL STORAGE THAT IS USED ONLY
: DURING THE REPORT SECTION.
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX:XXXXXXXXXXXXXXXXXXXXXXXXXXXX
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX:XXXXXXXXXXXXXXXXXXXXXXXXXXXX
: INSERT MESSAGES THAT ARE USED ONLY
: DURING THE REPORT SECTION.
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX:XXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

```
.EVEN
ENDRPT
.MCALL M$POP,MSGNTAG,M$SVC,M$ENDERR
M$POP T$NS,T$NESTLEV,T$TEMP
.MCALL M$GETS,M$DECR
.IF LT T$NESTLEV
.ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
.MEXIT
.ENDC
M$GETS T$NS,\T$NESTLEV,T$TEMP
T$TEMP=T$NS1
M$DECR T$NESTLEV
T$NESTLEV=T$NESTLEV-1
.IF EQ F$RPT-T$TEMP
MSGNTAG L,T$$RPT
.MCALL M$GEN
M$GEN L,\T$$RPT,SVCTAG
.IF LE SVCTAG
L10013:
.MEXIT
.ENDC
.LIST
```

L10013:

```
.NLIST
S$L$SYM=T$L$SYM
M$SVC C$RPT
.MCALL M$GNINS,M$STLAB
M$STLAB
.MCALL M$TLABEL,M$I$NCR
.IIF LT T$T$MAC, .MEXIT
```



```
013662      .RADIX 10
            M$TLABEL      \T$TESTNUM,\T$TSTSEQ
            .RADIX 8
            M$INCR T$TSTSEQ
            M$GNINS <TRAP C$RPT>
            .IF LT SVCINS
            TRAP C$RPT
            .MEXIT
            .ENDC
013662 104425 .IF EQ SVCINS
            TRAP C$RPT
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                     TRAP C$RPT
            .NLIST
000041      .ENDC
            I$RPT=F$END
            .IFF
            M$ENDERR      ENDRPT,T$TEMP
            .ENDC
```

1  
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3  
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7  
8

.SBTTL PROTECTION TABLE

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

```

013664      BGNPROT
013664      .MCALL MSPUSH,MSINCR,MSGNGBL
013664      I$PROT=FSBGN
013664      .MCALL MSPUSH T$NS,T$NESTLEV,F$PROT
013664      .MCALL MSINCR,M$SETS
013664      MSINCR T$NESTLEV
013664      T$NESTLEV=T$NESTLEV+1
013664      M$SETS T$NS,\T$NESTLEV,F$PROT
013664      T$NS1=F$PROT
013664      T$$PROT=T$TAGNUM
013664      MSINCR T$TAGNUM
013664      T$TAGNUM=T$TAGNUM+1
013664      MSGNGBL L$PROT
013664      .MCALL M$GEN
013664      .IF NB,L$PROT
013664      .IF NB,
013664      M$GEN L$PROT,.,SVCGBL,
013664      .ENDC
013664      .IF B,
013664      M$GEN L$PROT,.,SVCGBL,< >
013664      .IF LE SVCGBL
013664      L$PROT::
013664      .MEXIT
013664      .ENDC
013664      .LIST
013664      .NLIST
013664      .ENDC
013664      .ENDC
013664      -1 ;OFFSET INTO P-TABLE FOR CSR ADDRESS
013664      -1 ;OFFSET INTO P-TABLE FOR MASSBUS ADDRESS
013664      -1 ;OFFSET INTO P-TABLE FOR DRIVE NUMBER
013664      ENDPROT
013664      .MCALL M$POP
013664      M$POP T$NS,T$NESTLEV,T$TEMP
013664      .MCALL M$GETS,M$DECR
013664      .IF LT T$NESTLEV
013664      .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
013664      .MEXIT
013664      .ENDC
013664      M$GETS T$NS,\T$NESTLEV,T$TEMP
013664      T$TEMP-T$NS1
013664      M$DECR T$NESTLEV
013664      T$NESTLEV=T$NESTLEV-1
013664      .IF NE F$PROT-T$TEMP
013664      .ERROR ;MISSING BGNPROT
013664      .MEXIT
013664      .ENDC
    
```

L\$PROT::

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29

.SBTTL INITIALIZE SECTION

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

013672  
000040  
013672  
000001  
013672  
000006  
010015  
013672  
010016  
013672  
013672  
013672

```
BGNINIT
.MCALL MSPUSH,MSINCR,MSGNGBL
L$INIT=F$BGN
MSPUSH T$NS,T$NESTLEV,F$INIT
.MCALL MSINCR,M$SETS
MSINCR T$NESTLEV
T$NESTLEV=T$NESTLEV+1
M$SETS T$NS,^T$NESTLEV,F$INIT
T$NS1=F$INIT
T$$INIT=T$TAGNUM
MSINCR T$TAGNUM
T$TAGNUM=T$TAGNUM+1
MSGNGBL L$INIT
.MCALL M$GEN
.IF NB,L$INIT
.IF NB,
M$GEN L$INIT,.,SVCGBL,
.ENDC
.IF B,
M$GEN L$INIT,.,SVCGBL,< >
.IF LE SVCGBL
L$INIT::
.MEXIT
.ENDC
.LIST
```

L\$INIT::

.NLIST

.ENDC  
.ENDC

```
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
: THE INITIALIZE CODE IS EXECUTED UNDER FIVE CONDITIONS. THERE
: ARE SUPERVISOR EVENT FLAGS THAT ARE USED TO LET THE
: DIAGNOSTIC KNOW UNDER WHICH CONDITION THE EXECUTION IS TAKING
: PLACE. THE EVENT FLAGS ARE READ USING THE 'READEF' MACRO.
: THE CONDITIONS UNDER WHICH THE INIT CODE IS EXECUTED AND THE
: CORRESPONDING EVENT FLAGS ARE:
:         START COMMAND          EF.START
:         RESTART COMMAND        EF.RESTART
:         CONTINUE COMMAND        EF.CONTINUE
:         POWERDOWN/POWERUP      EF.PWR
:         NEW PASS                EF.NEW
:
: EXAMPLE OF EVENT FLAG USE:
: READEF #EF.START
: BCOMPLETE      STARTCODE
: DURING THE INIT CODE, USE THE 'GPARD' MACRO TO OBTAIN P-TABLE
: INFORMATION FOR DEVICE TESTING. GET ONE UNIT'S INFORMATION IF
: THIS IS A SEQUENTIAL DIAGNOSTIC. GET INFORMATION ON ALL
: UNITS AVAILABLE FOR TESTING IF THIS IS AN EXERCISER. THE NUMBER
: OF UNITS AVAILABLE IS IN A HEADER LOCATION: 'L$UNIT'.
```

```
30 ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
31
32 013672 005037 002222 CLR IFLAGS ;INITIALIZE EVENT FLAG RECORD
33 013676 REDEF #EF.START ;CHECK START FLAG
    .MCALL M$LDRO,M$SVC
    M$LDRO #EF.START,REDEF
    .MCALL M$GNINS
    .IF NB #EF.START
    .IF DIF RO,#EF.START
013676 M$GNINS <MOV #EF.START,RO>
    .IF LT SVCINS
    MOV #EF.START,RO
    .MEXIT
    .ENDC
    .IF EQ SVCINS
013676 012700 000040 MOV #EF.START,RO
    .MEXIT
    .ENDC
    .IF GT SVCINS
    .LIST
                                .NLIST
                                MOV #EF.START,RO
    .ENDC
    .ENDC
    .IFF
    .ERROR ;MISSING ARG. ON 'REDEF'
    .ENDC
013702 M$SVC C$REFG
013702 .MCALL M$GNINS,M$STSTLAB
    M$STSTLAB
    .MCALL M$TLABEL,M$INCR
    .IF LT T$STSMAC, .MEXIT
    .RADIX 10
    M$TLABEL \T$TESTNUM,\T$STSEQ
    .RADIX 8
013702 M$INCR T$STSEQ
    M$GNINS <TRAP C$REFG>
    .IF LT SVCINS
    TRAP C$REFG
    .MEXIT
    .ENDC
013702 104447 .IF EQ SVCINS
    TRAP C$REFG
    .MEXIT
    .ENDC
    .IF GT SVCINS
    .LIST
                                .NLIST
                                TRAP C$REFG
    .ENDC
34 013704 .ENDC
    BNCOMPLETE INIT1 ;JUMP IF NOT SET
    .MCALL M$GNINS
    M$GNINS <BCC INIT1>
    .IF LT SVCINS
    BCC INIT1
    .MEXIT
    .ENDC
```

```

013704 103003          .IF EQ SVCINS
                        BCC      INIT1
                        .MEXIT
                        .ENDC
                        .IF GT SVCINS
                        .LIST
                                                BCC      INIT1
                                                .NLIST
                        .ENDC
35 013706 152737 000001 002222  .IF EQ SVCINS          BISB      #ISTART,IFLAGS          ;SET START BIT IN FLAG RECORD
36 013714          .INIT1:  REDEF      #EF.CONTINUE          ;CHECK CONTINUE FLAG
                        .MCALL  MSLDRO,MSSVC
013714          .MSLDRO  #EF.CONTINUE,REDEF
                        .MCALL  MSGNINS
                        .IF NB #EF.CONTINUE
                        .IF DIF RO,#EF.CONTINUE
013714          MSGNINS <MOV      #EF.CONTINUE,RO>
                        .IF LT SVCINS
                        MOV      #EF.CONTINUE,RO
                        .MEXIT
                        .ENDC
013714 012700 000036          .IF EQ SVCINS          MOV      #EF.CONTINUE,RO
                        .MEXIT
                        .ENDC
                        .IF GT SVCINS
                        .LIST
                                                MOV      #EF.CONTINUE,RO
                                                .NLIST
                        .ENDC
                        .ENDC
                        .IFF
                        .ERROR ;MISSING ARG. ON 'REDEF'
                        .ENDC
013720          MSSVC  CSREFG
013720          .MCALL  MSGNINS,MSTSTLAB
                        MSTSTLAB
                        .MCALL  MSTLABEL,M$INCR
                        .IF LT T$STMAC, .MEXIT
                        .RADIX 10
                        MSTLABEL \T$TESTNUM,\T$STSEQ
                        .RADIX 8
                        M$INCR T$STSEQ
013720          MSGNINS <TRAP  CSREFG>
                        .IF LT SVCINS
                        TRAP  CSREFG
                        .MEXIT
                        .ENDC
013720 104447          .IF EQ SVCINS          TRAP  CSREFG
                        .MEXIT
                        .ENDC
                        .IF GT SVCINS
                        .LIST
                                                TRAP  CSREFG
                                                .NLIST
                        .ENDC
    
```

```
37 013722          BNCOMPLETE INIT2          ;JUMP IF NOT SET
          .MCALL MSGNINS
013722          MSGNINS <BCC INIT2>
          .IF LT SVCINS
          BCC INIT2
          .MEXIT
          .ENDC
013722 103005      .IF EQ SVCINS
          BCC INIT2
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .NLIST
          .ENDC
          BCC INIT2
38 013724 152737 000002 002222      BISB #ICONT,IFLAGS          ;SET CONTINUE BIT IN FLAG RECORD
39 013732          EXIT INIT          ;EXIT THE INIT CODE
          .MCALL MSSVC,MSEXIT,MSEXSEG,MSEXTJ,MSGETTOP,MSCHECK,MSWORD,XFER
013732 000041      T$FLAG=F$END
          MSCHECK INIT,T$TEMP,T$FLAG
          .IF IDN <TST>,<INIT>
          T$TEMP=T$$TEST
          T$FLAG=I$TST
          .MEXIT
          .ENDC
          .IF IDN <SUB>,<INIT>
          T$TEMP=T$$SUB
          T$FLAG=I$SUB
          .MEXIT
          .ENDC
          .IF IDN <SEG>,<INIT>
          T$TEMP=T$$SEG
          T$FLAG=I$SEG
          .MEXIT
          .ENDC
          .IF IDN <INIT>,<INIT>
          T$TEMP=T$$INIT
          T$FLAG=I$INIT
          .MEXIT
          .ENDC
          .IF IDN <CLN>,<INIT>
          T$TEMP=T$$CLEAN
          T$FLAG=I$CLN
          .MEXIT
          .ENDC
          .IF IDN <SRV>,<INIT>
          T$TEMP=T$$SRV
          T$FLAG=I$SRV
          .MEXIT
          .ENDC
          .IF IDN <MSG>,<INIT>
          T$TEMP=T$$MSG
          T$FLAG=F$JMP
          .MEXIT
          .ENDC
          .IF IDN <RPT>,<INIT>
```

010015  
000040

```
T$TEMP=T$$RPT
T$FLAG=F$JMP
.MEXIT
.ENDC
.IF IDN <DU>,<INIT>
T$TEMP=T$$DU
T$FLAG=F$JMP
.MEXIT
.ENDC
.IF IDN <AU>,<INIT>
T$TEMP=T$$AU
T$FLAG=F$JMP
.MEXIT
.ENDC
.IF EQ T$FLAG-F$JMP
M$WORD J$JMP
M$EXTJ \T$TEMP
.MEXIT
.ENDC
.IF EQ T$FLAG-F$BGN
013732 M$SVC C$EXIT
013732 .MCALL M$GNINS,M$TSTLAB
M$TSTLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$TSTMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUN,\T$TSTSEQ
.RADIX 8
013732 M$INCR T$TSTSEQ
M$GNINS <TRAP C$EXIT>
.IF LT SVCINS
TRAP C$EXIT
.MEXIT
.FNDC
013732 104432 .IF EQ SVCINS
TRAP C$EXIT
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
TRAP C$EXIT
.NLIST
.ENDC
.IF IDN <S$G>,<INIT>
M$GETTOP T$SEK,T$SEGLEV,T$TEMP
M$EXSEG \T$TEMP
.IFF
013734 M$EXIT \T$TEMP
013734 .MCALL M$GNINS
M$GNINS <.WORD L10015-.>
.IF LT SVCINS
.WORD L10015-.
.MEXIT
.ENDC
013734 000566 .IF EQ SVCINS
.WORD L10015-.
.MEXIT
```



.ENDC  
.IF GT SVCINS  
.LIST

.WORD L10015-

.NLIST

.ENDC  
.ENDC  
.MEXIT  
.ENDC  
.IF IDN <HRD>,<INIT>  
MSGGETTOP T\$NS,T\$NESTLEV,T\$TEMP  
.IF EQ F\$HARD-T\$TEMP  
.IRP N,<\T\$\$HARD>  
XFER L'N  
.ENDM

.MEXIT  
.ENDC  
.ENDC  
.IF IDN <SFT>,<INIT>  
MSGGETTOP T\$NS,T\$NESTLEV,T\$TEMP  
.IF EQ F\$\$SOFT-T\$TEMP  
.IRP N,<\T\$\$SOFT>  
XFER L'N  
.ENDM

.MEXIT  
.ENDC  
.ENDC  
.ERROR ;ILL. 'EXIT INIT' STMT.

40  
41 013736

INIT2: READEF #EF.PWR ;CHECK POWER FAIL FLAG  
.MCALL M\$LDRO,M\$\$SVC  
M\$LDRO #EF.PWR,READEF  
.MCALL M\$GNINS

013736

013736

.IF NB #EF.PWR  
.IF DIF RO,#EF.PWR  
M\$GNINS <MOV #EF.PWR,RO>  
.IF LT SVCINS  
MOV #EF.PWR,RO

013736 012700 000034

.MEXIT  
.ENDC  
.IF EQ SVCINS  
MOV #EF.PWR,RO

MOV #EF.PWR,RO

.NLIST

.ENDC  
.ENDC  
.IFF  
.ERROR ;MISSING ARG. ON 'READEF'  
.ENDC

013742

M\$\$SVC C\$REFG  
.MCALL M\$GNINS,M\$TSTLAB  
M\$TSTLAB  
.MCALL M\$TLABEL,M\$INCR

013742

```

        .IIF LT T$STMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUM,\T$STSEQ
        .RADIX 8
        M$INCR T$STSEQ
013742 M$GNINS <TRAP C$REFG>
        .IF LT SVCINS
        TRAP C$REFG
        .MEXIT
        .ENDC
013742 104447 .IF EQ SVCINS
        TRAP C$REFG
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                                    TRAP C$REFG
                                                    .NLIST
        .ENDC
42 013744 BNCOMPLETE INIT3 ;JUMP IF NOT SET
        .MCALL M$GNINS
013744 M$GNINS <BCC INIT3>
        .IF LT SVCINS
        BCC INIT3
        .MEXIT
        .ENDC
013744 103020 .IF EQ SVCINS
        BCC INIT3
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                                    BCC INIT3
                                                    .NLIST
        .ENDC
43 .::: DORPT ;PRINT A STATISTICAL REPORT
44 013746 012701 004540 POWDLY: MOV #240.,R1 ;DELAY ONE MINUTE FOR DISK
45 013752 DELAY 250. ; UNITS POWER UP
        .MCALL M$GNINS
        .IF LT G$DELM-250.
        .ERROR ;ARGUMENT TO 'DELAY' MUST NOT BE GREATER THAN 250
        .MEXIT
        .ENDC
        .IF B 250.
013752 M$GNINS <MOV #1,(PC)+>
        .IFF
        M$GNINS <MOV #250.,(PC)+>
        .IF LT SVCINS
        MOV #250.,(PC)+
        .MEXIT
        .ENDC
013752 012727 000372 .IF EQ SVCINS
        MOV #250.,(PC)+
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
    
```

```
MOV #250.,(PC)+  
013756 .NLIST  
      .ENDC  
      .ENDC  
      MSGNINS <.WORD 0>  
      .IF LT SVCINS  
      .WORD 0  
      .MEXIT  
      .ENDC  
013756 000000 .IF EQ SVCINS .WORD 0  
      .MEXIT  
      .ENDC  
      .IF GT SVCINS  
      .LIST  
      .NLIST  
      .WORD 0  
013760 .ENDC  
      MSGNINS <MOV L$DLY,(PC)+>  
      .IF LT SVCINS  
      MOV L$DLY,(PC)+  
      .MEXIT  
      .ENDC  
013760 013727 002116 .IF EQ SVCINS MOV L$DLY,(PC)+  
      .MEXIT  
      .ENDC  
      .IF GT SVCINS  
      .LIST  
      .NLIST  
      MOV L$DLY,(PC)+  
013764 .ENDC  
      MSGNINS <.WORD 0>  
      .IF LT SVCINS  
      .WORD 0  
      .MEXIT  
      .ENDC  
013764 000000 .IF EQ SVCINS .WORD 0  
      .MEXIT  
      .ENDC  
      .IF GT SVCINS  
      .LIST  
      .NLIST  
      .WORD 0  
013766 .ENDC  
      MSGNINS <DEC -6(PC)>  
      .IF LT SVCINS  
      DEC -6(PC)  
      .MEXIT  
      .ENDC  
013766 005367 177772 .IF EQ SVCINS DEC -6(PC)  
      .MEXIT  
      .ENDC  
      .IF GT SVCINS  
      .LIST
```

					DEC	-6(PC)
013772	.ENDC MSGNINS <BNE .IF LT SVCINS BNE .-4 .MEXIT .ENDC	.NLIST .-4>				
013772 001375	.IF EQ SVCINS BNE .MEXIT .ENDC .IF GT SVCINS .LIST	.-4				
					BNE	.-4
013774	.ENDC MSGNINS <DEC .IF LT SVCINS DEC -22(PC) .MEXIT .ENDC	.NLIST -22(PC)>				
013774 005367 177756	.IF EQ SVCINS DEC .MEXIT .ENDC .IF GT SVCINS .LIST	-22(PC)				
					DEC	-22(PC)
014000	.ENDC MSGNINS <BNE .IF LT SVCINS BNE .-20 .MEXIT .ENDC	.NLIST .-20>				
014000 001367	.IF EQ SVCINS BNE .MEXIT .ENDC .IF GT SVCINS .LIST	.-20				
					BNE	.-20
46 014002 005301 47 014004 003360	.ENDC DEC BGT	.NLIST R1 POWDLY				
					:	WHILE RESPONDING TO ^C EVERY 0.025 SECOND

```

1 014006          INIT3: BRESET          ;RESET ALL UNITS
                  .MCALL  M$SVC
014006          M$SVC  C$RESET
                  .MCALL  M$GNINS,M$TSTLAB
014006          M$TSTLAB
                  .MCALL  M$TLABEL,M$INCR
                  .IIF LT T$TSTMAC, .MEXIT
                  .RADIX 10
                  M$TLABEL      \T$TESTNUN,\T$TSTSEQ
                  .RADIX 8
014006          M$INCR  T$TSTSEQ
                  M$GNINS <TRAP  C$RESET>
                  .IF LT SVCINS
                  TRAP  C$RESET
                  .MEXIT
                  .ENDC
014006 104433    .IF EQ SVCINS
                  TRAP  C$RESET
                  .MEXIT
                  .ENDC
                  .IF GT SVCINS
                  .LIST
                                                    TRAP  C$RESET
                                                    .NLIST
                  .ENDC
2 014010          MEMORY  FFREE          ;RESET START OF FREE MEMORY
                  .MCALL  M$SVC,M$RNRO
014010          M$SVC  C$MEM
                  .MCALL  M$GNINS,M$TSTLAB
014010          M$TSTLAB
                  .MCALL  M$TLABEL,M$INCR
                  .IIF LT T$TSTMAC, .MEXIT
                  .RADIX 10
                  M$TLABEL      \T$TESTNUN,\T$TSTSEQ
                  .RADIX 8
014010          M$INCR  T$TSTSEQ
                  M$GNINS <TRAP  C$MEM>
                  .IF LT SVCINS
                  TRAP  C$MEM
                  .MEXIT
                  .ENDC
014010 104431    .IF EQ SVCINS
                  TRAP  C$MEM
                  .MEXIT
                  .ENDC
                  .IF GT SVCINS
                  .LIST
                                                    TRAP  C$MEM
                                                    .NLIST
                  .ENDC
014012          M$RNRO  FFREE, MEMORY
                  .MCALL  M$GNINS
                  .IF NB  FFREE
                  .IF DIF R0,FFREE
014012          M$GNINS <MOV  R0,FFREE>
                  .IF LT SVCINS
                  MOV  R0,FFREE
    
```

```
014012 010037 002170 .MEXIT
                      .ENDC
                      .IF EQ SVCINS
                        MOV RO,FFREE
                      .MEXIT
                      .ENDC
                      .IF GT SVCINS
                        .LIST
                                                                MOV RO,FFREE
                      .NLIST
                      .ENDC
                      .ENDC
                      .IFF
                      .ERROR ;MISSING ARG. ON 'MEMORY'
                      .ENDC
3 014016 017737 166146 002172 MOV @FFREE,FSIZE ;RESET SIZE OF FREE MEMORY
4 014024 162737 000100 002172 ::: TEMPORARY UNTIL SUPERVISOR MEMORY CALL FIXED WITH SETUP
5 014024 162737 000100 002172 SUB #100,FSIZE
6 014024 162737 000100 002172 :::
```

```

1          ;INITIALIZE CONTROLLER TABLE STORAGE WITH A WORD OF ZEROS
2
3 014032 005037 002202          CLR      TSTTAB          ;ZEROS MARKS END CONTROLLER TABLES
4 014036 005037 002200          CLR      CTRLRS          ;CLEAR CONTROLLER COUNT
5
6          ;GET A P-TABLE FROM DRS
7
8 014042 005002          CLR      R2          ;LOGICAL UNIT NUMBER IN R2
9 014044          INIT4:  GPHARD R2,R0          ;GET POINTER TO A P-TABLE
          .MCALL  M$LDRO,M$SVC,M$RNRO
          M$LDRO  R2,GPHARD
          .MCALL  M$GNINS
          .IF NB R2
          .IF DIF R0,R2
014044  M$GNINS <MOV      R2,R0>
          .IF LT SVCINS
          MOV      R2,R0
          .MEXIT
          .ENDC
          .IF EQ SVCINS
014044 010200          MOV      R2,R0
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .NLIST
          .ENDC
          .ENDC
          .IFF
          .ERROR ;MISSING ARG. ON 'GPHARD'
          .ENDC
014046  M$SVC  C$GPHRD
014046  .MCALL  M$GNINS,M$TSTLAB
          M$TSTLAB
          .MCALL  M$TLABEL,M$INCR
          .IF LT T$TSTMAC, .MEXIT
          .RADIX 10
          M$TLABEL  \T$TESTNUN,\T$TSTSEQ
          .RADIX 8
          M$INCR  T$TSTSEQ
014046  M$GNINS <TRAP  C$GPHRD>
          .IF LT SVCINS
          TRAP  C$GPHRD
          .MEXIT
          .ENDC
          .IF EQ SVCINS
014046 104442          TRAP  C$GPHRD
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST
          .NLIST
          .ENDC
014050  M$RNRO  R0,GPHARD
          .MCALL  M$GNINS
          TRAP  C$GPHRD
    
```

```

10
11
12
13 014050 012703 002202
14 014054 005737 002200
15 014060 001410
16 014062 021063 000002
17 014066 001500
18 014070 005713
19 014072 001403
20 014074 016303 000000
21 014100 000770

      .IF NB R0
      .IF DIF R0,R0
MSGNINS <MOV R0,R0>
      .ENDC
      .IFF
      .ERROR ;MISSING ARG. ON 'GPHARD'
      .ENDC

;SEE IF A CONTROLLER TABLE ALREADY EXISTS FOR CONTROLLER IN P-TABLE

      MOV #TSTTAB,R3 ;GET ADDRESS OF CONTROLLER TABLES
      TST CTRLRS ;MAKE SURE ATLEAST 1 TABLE EXISTS
      BEQ NEWTAB ;NO TABLES - SKIP CHECK
INIT5: CMP (R0),C.UADR(R3) ;CHECK IF SAME UNIBUS ADDRESS
      BEQ DUPERR ;FATAL ERROR
      TST (R3) ;ANY MORE TABLES?
      BEQ NEWTAB ;NO - INSERT THIS ONE
      MOV C.NEXT(R3),R3 ;YES - POINT TO NEXT TABLE
      BR INIT5
```



```
1 ;BUILD A CONTROLLER TABLE
2
3 014102 ASSUME C.NEXT,EQ,0
      .IF EQ,<C.NEXT>--<0>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
4 014102 ASSUME C.UADR,EQ,C.NEXT+2
      .IF EQ,<C.UADR>--<C.NEXT+2>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
5 014102 ASSUME C.UNIT,EQ,C.UADR+2
      .IF EQ,<C.UNIT>--<C.UADR+2>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
6 014102 ASSUME C.VEC ,EQ,C.UNIT+2
      .IF EQ,<C.VEC>--<C.UNIT+2>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
7 014102 ASSUME C.RING,EQ,C.VEC+2
      .IF EQ,<C.RING>--<C.VEC+2>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
8 014102 ASSUME C.TO ,EQ,C.RING+2
      .IF EQ,<C.TO>--<C.RING+2>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
9 014102 ASSUME C.FLG ,EQ,C.TO+2
      .IF EQ,<C.FLG>--<C.TO+2>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
10 014102 ASSUME C.REF ,EQ,C.FLG+2
      .IF EQ,<C.REF>--<C.FLG+2>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
11 014102 ASSUME C.UNUM,EQ,C.REF+2
      .IF EQ,<C.UNUM>--<C.REF+2>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
12
13 014102 ASSUME PT.UBA,EQ,0
      .IF EQ,<PT.UBA>--<0>
      .IFF
      .ERROR ASSUMPTION VIOLATED
      .ENDC
14 014102 ASSUME PT.UNIT,EQ,PT.UBA+2
      .IF EQ,<PT.UNIT>--<PT.UBA+2>
      .IFF
      .ERROR ASSUMPTION VIOLATED
```



```

014206 MSGENBR BR,\SSLSYM,$
014206 .MCALL MSGNINS
MSGNINS <BR 10000$>
    .IF LT SVCINS
BR 10000$
    .MEXIT
    .ENDC
014206 000406 .IF EQ SVCINS
BR 10000$
    .MEXIT
    .ENDC
    .IF GT SVCINS
    .LIST
BR 10000$
    .NLIST
    .ENDC
014210 MSWORD FCTFIL
.MCALL MSGNINS
    .IRP N,<FCTFIL>
MSGNINS <.WORD N>
    .ENDM
014210 MSGNINS <.WORD FCTFIL>
    .IF LT SVCINS
    .WORD FCTFIL
    .MEXIT
    .ENDC
014210 014410 .IF EQ SVCINS
    .WORD FCTFIL
    .MEXIT
    .ENDC
    .IF GT SVCINS
    .LIST
    .NLIST
    .WORD FCTFIL
    .ENDC
014212 GPRMD ASKFIL,0,A,0,<0>,<-1>,NO
.MCALL MSRADIX,MSDEFAULT,MSEXCP,MSWORD,MSCNTOP
    .IF IDN A,A
    .IF EQ T$GMANID
    .ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'
    .ENDC
    .ENDC
000000 T$TEMP-0&1
    .IF NE T$TEMP & 1
    .ERROR ;ODD OFFSET
    .ENDC
    .IF LT G$OFFSIZE-0
    .ERROR ;OFFSET TOO BIG
    .ENDC
014212 000002 T$CODE=G$PRMD + <0 * G$OFFSET>
MSRADIX A,T$TEMP
    .IF IDN B,A
T$TEMP=G$RADB
    .MEXIT
    .ENDC
    .IF IDN O,A
T$TEMP=G$RADO
    
```

```

.MEXIT
.ENDC
.IF IDN D,A
T$TEMP=G$RADD
.MEXIT
.ENDC
.IF IDN L,A
T$TEMP=G$RADL
.MEXIT
.ENDC
.IF IDN A,A
T$TEMP=G$RADA
.MEXIT
.ENDC
T$TEMP=-1
.ERROR ;ILL. RADIX 'A'
T$CODE=T$CODE . T$TEMP
M$DEFAULT NO,T$TEMP
.IF IDN YES,NO
T$TEMP=G$YES
.MEXIT
.ENDC
.IF IDN NO,NO
T$TEMP=G$NO
.MEXIT
.ENDC
T$TEMP--1
.ERROR ;DEFAULT 'NO' MUST BE 'YES' OR 'NO'
T$CODE=T$CODE ! T$TEMP
T$EXCP=0
M$EXCP T$CODE,T$EXCP,G$LOLIM,T$LOLIM,0
.IF IDN <@>,<0>
.IF LT G$OF SIZE-
.ERROR ;INDIRECT PAR. TOO BIG
.MEXIT
.ENDC
T$LOLIM=/2
T$CODE T$CODE : G$EXCP
T$EXCP=T$EXCP ! G$LOLIM
.IFF
.IF B,
T$LOLIM=0
.IFF
.ERROR ;ILL. DEFERRED MODE
.ENDC
.ENDC
M$EXCP T$CODE,T$EXCP,G$HILIM,T$HILIM,-1
.IF IDN <@>,<-1>
.IF LT G$OF SIZE-
.ERROR ;INDIRECT PAR. TOO BIG
.MEXIT
.ENDC
T$HILIM=/2
T$CODE T$CODE : G$EXCP
T$EXCP=T$EXCP . G$HILIM
.IFF
.IF B,

```

```
177777 T$HILIM=-1
.IFF
.ERROR ;ILL. DEFERRED MODE
.ENDC
.ENDC
014212 M$CNTOP <>,<T$CODE>
.IF NB
.IF NE ISSFT - F$BGN
.ERROR ; "COUNT" OPTION VALID ONLY IN S.W. QUES.
.MEXIT
.ENDC
T$CODE=T$CODE : G$CNTOP
.ENDC
014212 M$WORD <T$CODE,ASKFIL,0,T$LLOLIM,T$HILIM>
.MCALL M$GNINS
.IRP N,<T$CODE,ASKFIL,0,T$LLOLIM,T$HILIM>
M$GNINS <.WORD N>
.ENDM
014212 M$GNINS <.WORD T$CODE>
.IF LT SVCINS
.WORD T$CODE
.MEXIT
.ENDC
014212 000142 .IF EQ SVCINS
.WORD T$CODE
.MEXIT
.ENDC
.IF GT SVCINS
.LIST .WORD T$CODE
.NLIST
.ENDC
014214 M$GNINS <.WORD ASKFIL>
.IF LT SVCINS
.WORD ASKFIL
.MEXIT
.ENDC
014214 014345 .IF EQ SVCINS
.WORD ASKFIL
.MEXIT
.ENDC
.IF GT SVCINS
.LIST .WORD ASKFIL
.NLIST
.ENDC
014216 M$GNINS <.WORD 0>
.IF LT SVCINS
.WORD 0
.MEXIT
.ENDC
014216 000000 .IF EQ SVCINS
.WORD 0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
```

.WORD C

```

        .NLIST
014220 .ENDC
        MSGNINS <.WORD T$LOLIM>
        .IF LT SVCINS
        .WORD T$LOLIM
        .MEXIT
        .ENDC
014220 000000 .IF EQ SVCINS
        .WORD T$LOLIM
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
    
```

.WORD T\$LOLIM

```

        .NLIST
014222 .ENDC
        MSGNINS <.WORD T$HILIM>
        .IF LT SVCINS
        .WORD T$HILIM
        .MEXIT
        .ENDC
014222 177777 .IF EQ SVCINS
        .WORD T$HILIM
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
    
```

.WORD T\$HILIM

```

        .NLIST
014224 .ENDC
        .IF NE T$EXCP
        M$WORD T$EXCP
        .ENDC
        .IF NB
        M$WORD </2>
        .ENDC
        MSGNLS
        .MCALL M$GEN
        .IF NB
        M$GEN \, $, SVCTAG
        .IFF
        M$GEN \S$LSYM, $, SVCTAG
        .IF LE SVCTAG
        10000$:
        .MEXIT
        .ENDC
        .LIST
    
```

10000\$:

```

        .NLIST
014224 .ENDC
        M$INCR S$LSYM
        S$LSYM S$LSYM+1
        T$GMANID-0
    
```

42  
 43 014224 004737 003144  
 44 014230 005237 002200

```

NODLL: CALL HCOMM
        INC CTRLRS
    
```

```

: ALLOCATE HOST COMM AREA
: COUNT THE CONTROLLER
    
```

```

45
46 ;GET NEXT P-TABLE
47
48 014234 005202          NXTTAB: INC      R2          ;INCREMENT LOGICAL UNIT NUMBER
49 014236 023702 002012      CMP      L$UNIT,R2      ;CHECK IF GOT ALL TABLES
50 014242 003300          BGT      INIT4        ;IF NOT, GO BACK FOR NEXT
51
52 014244 004757 004440      CALL     READDM        ; LOAD DM FORMATTER INTO HOST MEMORY
53
54 ;SAVE CURRENT PARAMETERS FOR HISTORY
55
56 014250 013737 002170 002174  MOV     FFREE,FMEM      ;SAVE START ADDRESS
57 014256 013737 002172 002176  MOV     FSIZE,FMEMS     ;SAVE SIZE
58
59 014264          EXIT     INIT
          .MCALL  MSSVC,MSEXIT,MSEXSEG,MSEXJ,MSGGETTOP,MSCHECK,MSWORD,XFER
          T$FLAG=F$END
          M$CHECK INIT,T$TEMP,T$FLAG
          .IF IDN <TST>,<INIT>
          T$TEMP=T$$TEST
          T$FLAG=I$TST
          .MEXIT
          .ENDC
          .IF IDN <SUB>,<INIT>
          T$TEMP=T$$SUB
          T$FLAG=I$SUB
          .MEXIT
          .ENDC
          .IF IDN <SEG>,<INIT>
          T$TEMP=T$$SEG
          T$FLAG=I$SEG
          .MEXIT
          .ENDC
          .IF IDN <INIT>,<INIT>
          T$TEMP=T$$INIT
          T$FLAG=I$INIT
          .MEXIT
          .ENDC
          .IF IDN <CLN>,<INIT>
          T$TEMP=T$$CLEAN
          T$FLAG=I$CLN
          .MEXIT
          .ENDC
          .IF IDN <SRV>,<INIT>
          T$TEMP=T$$SRV
          T$FLAG=I$SRV
          .MEXIT
          .ENDC
          .IF IDN <MSG>,<INIT>
          T$TEMP=T$$MSG
          T$FLAG=F$JMP
          .MEXIT
          .ENDC
          .IF IDN <RPT>,<INIT>
          T$TEMP=T$$RPT
          T$FLAG=F$JMP
          .MEXIT
    
```

000041

014264

010015  
000040

```
.ENDC
  .IF IDN <DU>,<INIT>
  T$TEMP=T$$DU
  T$FLAG=F$JMP
  .MEXIT
  .ENDC
  .IF IDN <AU>,<INIT>
  T$TEMP=T$$AJ
  T$FLAG=F$JMP
  .MEXIT
  .ENDC
  .IF EQ T$FLAG-F$JMP
  M$WORD JSJMP
  M$EXTJ \T$TEMP
  .MEXIT
  .ENDC
  .IF EQ T$FLAG-F$BGN
  M$SVC C$EXIT
  .MCALL M$GNINS,M$TSTLAB
  M$TSTLAB
  .MCALL M$TLABEL,M$INCR
  .IIF LT T$TSTMAC, .MEXIT
  .RADIX 10
  M$TLABEL \T$TESTNUM,\T$TSTSEQ
  .RADIX 8
  M$INCR T$TSTSEQ
  M$GNINS <TRAP C$EXIT>
  .IF LT SVCINS
  TRAP C$EXIT
  .MEXIT
  .ENDC
  .IF EQ SVCINS
  TRAP C$EXIT
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST
  .NLIST
  .ENDC
  .IF IDN <SEG>,<INIT>
  M$GETTOP T$SEK,T$SEGLEV,T$TEMP
  M$EXSEG \T$TEMP
  .IFF
  M$EXIT \T$TEMP
  .MCALL M$GNINS
  M$GNINS <.WORD L10015-.>
  .IF LT SVCINS
  .WORD L10015-.
  .MEXIT
  .ENDC
  .IF EQ SVCINS
  .WORD L10015-.
  .MEXIT
  .ENDC
  .IF GT SVCINS
  .LIST
```

TRAP C\$EXIT



.WORD L10015-.

.NLIST

```
.ENDC
.ENDC
.MEXIT
.ENDC
.IF IDN <HRD>,<INIT>
MSGGETTOP      T$NS,T$NESTLEV,T$TEMP
.IF EQ F$HARD-T$TEMP
.IRP      N,<\T$$HARD>
XFER      L'N
.ENDM
.MEXIT
.ENDC
.ENDC
.IF IDN <SFT>,<INIT>
MSGGETTOP      T$NS,T$NESTLEV,T$TEMP
.IF EQ F$SOFT-T$TEMP
.IRP      N,<\T$$SOFT>
XFER      L'N
.ENDM
.MEXIT
.ENDC
.ENDC
.ERROR ;ILL. 'EXIT INIT' STMT.
```

```

1 014270      DUPERR: ERRSF 1,DUPERM
               .MCALL MSERRINS
014270      MSERRINS 1,DUPERM,C$ERSF
               .MCALL MSGNINS,MSWORD,MS$STLAB
014270      MSSVC C$ERSF
               .MCALL MSGNINS,MS$STLAB
014270      MS$STLAB
               .MCALL MS$TLABEL,MS$INCR
               .IF LT T$STMAC, .MEXIT
               .RADIX 10
               MS$TLABEL \T$TESTNUN,\T$STSEQ
               .RADIX 8
014270      MS$INCR T$STSEQ
               MSGNINS <TRAP C$ERSF>
               .IF LT SVCINS
               TRAP C$ERSF
               .MEXIT
               .ENDC
014270 104454 .IF EQ SVCINS
               TRAP C$ERSF
               .MEXIT
               .ENDC
               .IF GT SVCINS
               .LIST
               .NLIST
               .ENDC
               .RADIX 10
000012      .IF NB 1
000001      T$ERRNUM=1
               .IFF
               .ERROR ;MISSING ERROR-NR
               .ENDC
014272      MSWORD \T$ERRNUM
               .MCALL MSGNINS
               .IRP N,<1>
               MSGNINS <.WORD N>
               .ENDM
014272      MSGNINS <.WORD 1>
               .IF LT SVCINS
               .WORD 1
               .MEXIT
               .ENDC
014272 000001 .IF EQ SVCINS
               .WORD 1
               .MEXIT
               .ENDC
               .IF GT SVCINS
               .LIST
               .NLIST
               .ENDC
000010      .RADIX 8
014274      .IF NB DUPERM
               MSWORD DUPERM
               .MCALL MSGNINS
               .IRP N,<DUPERM>
    
```

TRAP C\$ERSF

.WORD 1

```

014274      MSGNINS <.WORD N>
            .ENDM
            MSGNINS <.WORD DUPERM>
            .IF LT SVCINS
            .WORD DUPERM
            .MEXIT
            .ENDC
014274 014300 .IF EQ SVCINS
            .WORD DUPERM
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
            .WORD DUPERM
            .NLIST
            .ENDC
            .IFF
            M$WORD 0
            .ENDC
            .IF NB
            M$WORD
            .IFF
            M$WORD 0
            .MCALL MSGNINS
            .IRP N,<0>
014276      MSGNINS <.WORD N>
            .ENDM
014276      MSGNINS <.WORD 0>
            .IF LT SVCINS
            .WORD 0
            .MEXIT
            .ENDC
014276 000000 .IF EQ SVCINS
            .WORD 0
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
            .WORD 0
            .NLIST
            .ENDC
            .ENDC
2
3 014300      124      127      117 DUPERM: .ASCIZ \TWO CONTROLLERS WITH THE SAME UDAISP\
4 014345      105      116      124 ASKFI: .ASCIZ \ENTER FILE NAME FOR DOWN LINE LOAD\
5 014410      .        .        . FCTFI: .BLKB 72. ; INPUT FILE NAME FOR DLL
6 014520      000      .        . .BYTE 0
7 .EVEN
8
9 014522      .MCALL ENDINIT
            M$POP,MSGNTAG,M$SVC,M$ENDERR
014522      M$POP TSNS,TSNESTLEV,TS$TEMP
            .MCALL M$GETS,M$DECR
            .IF LT TSNESTLEV
            .ERROR TSNESTLEV ; MACRO TSNS UNDERFLOW
            .MEXIT
            .ENDC
    
```

```

014522      000006      MSGETS  TSNS,\T$NESTLEV,T$TEMP
014522      000000      T$TEMP-T$NST
                        MSDECR  T$NESTLEV
                        T$NESTLEV=T$NESTLEV-1
                        .IF EQ F$INIT-T$TEMP
014522      MSGNTAG  L,T$$INIT
                        .MCALL  M$GEN
014522      M$GEN    L,\T$$INIT,SVCTAG
                        .IF LE  SVCTAG
014522      L10015:
                        .MEXIT
                        .ENDC
                        .LIST

```

L10015:

```

014522      010000      .NLIST
                        S$LSYM=T$LSYM
014522      M$SVC    C$INIT
                        .MCALL  M$GNINS,M$STSLAB
014522      M$STSLAB
                        .MCALL  M$TLABEL,M$INCR
                        .IIF LT T$STMAC, .MEXIT
                        .RADIX  10
014522      M$TLABEL      \T$TESTNUN,\T$STSEQ
                        .RADIX  8
                        M$INCR  T$STSEQ
                        M$GNINS <TRAP  C$INIT>
                        .IF LT  SVCINS
014522      TRAP    C$INIT
                        .MEXIT
                        .ENDC
014522      104411      .IF EQ  SVCINS
                        TRAP    C$INIT
                        .MEXIT
                        .FNDC
                        .IF GT  SVCINS
014522      .LIST

```

TRAP C\$INIT

```

000041      .ENDC
                        .NLIST
                        I$INIT=F$END
                        .IFF
014522      M$ENDERR      ENDINIT,T$TEMP
                        .ENDC

```

1  
2  
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8  
9

.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.  
:--

10 014524  
  
014524 000040  
  
014524  
  
014524 0000C1  
  
014524 000020  
010016  
  
014524 010017  
  
014524

```
BGNAUTO
.MCALL MSPUSH,MSINCR,MSGNGBL
I$AUTO=FSBGN
MSPUSH T$NS,T$NESTLEV,FS$AUTO
.MCALL MSINCR,M$SETS
MSINCR T$NESTLEV
T$NESTLEV=T$NESTLEV+1
M$SETS T$NS,\T$NESTLEV,FS$AUTO
T$NS1=FS$AUTO
T$$AUTO-T$TAGNUM
MSINCR T$TAGNUM
T$TAGNUM=T$TAGNUM+1
MSGNGBL L$AUTO
.MCALL M$GEN
.IF NB,L$AUTO
.IF NB,
M$GEN L$AUTO,.,SVCGBL,
.ENDC
.IF B,
M$GEN L$AUTO,.,SVCGBL,< >
.IF LE SVCGBL
L$AUTO::
.MEXIT
.ENDC
.IIST
```

L\$AUTO::

```
.NLIST
.ENDC
.ENDC
```

11  
12  
13  
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16  
17

```
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
:
: INSERT CODE HERE TO CHECK DEVICE(S) TO SEE IF THEY RESPOND.
: ISSUE A 'DODU' FOR THOSE THAT DON'T.
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

014524  
  
014524  
  
  
014524 000020  
014524 000000

```
ENDAUTO
.MCALL M$POP,MSGNTAG,M$SVC,M$ENDERR
M$POP T$NS,T$NESTLEV,T$TEMP
.MCALL M$GETS,M$DECR
.IF LT T$NESTLEV
.ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
.MEXIT
.ENDC
M$GETS T$NS,\T$NESTLEV,T$TEMP
T$TEMP=T$NS1
M$DECR T$NESTLEV
T$NESTLEV T$NESTLEV-1
.IF EQ FS$AUTO-T$TEMP
```

```
014524 MSGNTAG L,T$$AUTO
014524 .MCALL MSGEN
014524 MSGEN L,\T$$AUTO,SVCTAG
014524 .IF LE SVCTAG
L10016:
.MEXIT
.ENDC
.LIST

.NLIST
SSLSYM=T$LSYM
M$SVC C$AUTO
014524 010000 .MCALL MSGNINS,M$STSTLAB
014524 M$STSTLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$STIMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUN,\T$STSEQ
.RADIX 8
M$INCR T$STSEQ
014524 M$GNINS <TRAP C$AUTO>
.IF LT SVCINS
TRAP C$AUTO
.MEXIT
.ENDC
014524 104461 .IF EQ SVCINS
TRAP C$AUTO
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

.NLIST
.FNDC
I$AUTO-F$END
.IFF
M$ENDERR ENDAUTO,T$TEMP
.ENDC
```

L10016:

TRAP C\$AUTO

1  
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8

.SBTTL CLEANUP CODING SECTION

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

014526  
000040  
014526  
014526  
000001  
014526  
0000C7  
010017  
014526  
010020  
014526

BGNCLN  
.MCALL MSPUSH,MSINCR,MSGNGBL  
I\$CLN=F\$BGN  
MSPUSH T\$NS,T\$NESTLEV,F\$CLEAN  
.MCALL MSINCR,M\$SETS  
MSINCR T\$NESTLEV  
T\$NESTLEV=T\$NESTLEV+1  
M\$SETS T\$NS,\T\$NESTLEV,F\$CLEAN  
T\$NS1=F\$CLEAN  
T\$\$CLEAN=T\$TAGNUM  
MSINCR T\$TAGNUM  
T\$TAGNUM=T\$TAGNUM+1  
MSGNGBL L\$CLEAN  
.MCALL M\$GEN  
.IF NB,L\$CLEAN  
.IF NB,  
M\$GEN L\$CLEAN,.,SVCGBL,  
.ENDC  
.IF B,  
M\$GEN L\$CLEAN,.,SVCGBL,< >  
.IF LE SVCGBL  
L\$CLEAN::  
.MEXIT  
.ENDC  
.LIST

L\$CLEAN::

.NLIST

.ENDC  
.ENDC

9  
10  
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15  
16

:XX  
: INSERT YOUR CLEANUP CODING. THIS CODING SHOULD  
: RESTORE YOUR TEST-DEVICE TO A NEUTRAL STATE.  
: THIS CODE WILL BE EXECUTED AFTER EACH PASS AND AFTER THE  
: PROGRAM IS INTERRUPTED BY '^C'.  
:XX

014526  
000041  
014526

EXIT CLN  
.MCALL M\$SVC,M\$EXIT,M\$EXSEG,M\$EXTJ,M\$GETTOP,M\$CHECK,M\$WORD,XFER  
T\$FLAG=F\$END  
M\$CHECK CLN,T\$TEMP,T\$FLAG  
.IF IDN <TST>,<CLN>  
T\$TEMP=T\$\$TEST  
T\$FLAG I\$TST  
.MEXIT  
.ENDC  
.IF IDN <SUB>,<CLN>  
T\$TEMP=T\$\$SUB  
T\$FLAG-!\$SUB  
.MEXIT

010017  
000040

014526

014526

014526

```
.ENDC
  .IF IDN <SEG>,<CLN>
  T$TEMP=T$$SEG
  T$FLAG=I$SEG
  .MEXIT
  .ENDC
  .IF IDN <INIT>,<CLN>
  T$TEMP=T$$INIT
  T$FLAG=I$INIT
  .MEXIT
  .ENDC
  .IF IDN <CLN>,<CLN>
  T$TEMP=T$$CLEAN
  T$FLAG=I$CLN
  .MEXIT
  .ENDC
  .IF IDN <SRV>,<CLN>
  T$TEMP=T$$SRV
  T$FLAG=I$SRV
  .MEXIT
  .ENDC
  .IF IDN <MSG>,<CLN>
  T$TEMP=T$$MSG
  T$FLAG=F$JMP
  .MEXIT
  .ENDC
  .IF IDN <RPT>,<CLN>
  T$TEMP=T$$RPT
  T$FLAG=F$JMP
  .MEXIT
  .ENDC
  .IF IDN <DU>,<CLN>
  T$TEMP=T$$DU
  T$FLAG=F$JMP
  .MEXIT
  .ENDC
  .IF IDN <AU>,<CLN>
  T$TEMP=T$$AU
  T$FLAG=F$JMP
  .MEXIT
  .ENDC
  .IF EQ T$FLAG-F$JMP
  M$WORD JSJMP
  M$EXTJ \T$TEMP
  .MEXIT
  .ENDC
  .IF EQ T$FLAG-F$BGN
  M$SVC C$EXIT
  .MCALL M$GNINS,M$TSTLAB
  M$TSTLAB
  .MCALL M$TLABEL,M$INCR
  .IIF LT T$TSTMAC, .MEXIT
  .RADIX 10
  M$TLABEL \T$TESTNUM,\T$TSTSEQ
  .RADIX 8
  M$INCR T$TSTSEQ
  M$GNINS <TRAP C$EXIT>
```





20  
21  
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29

```
: INSERT LOCAL STORAGE THAT IS USED ONLY  
: DURING THE CLEANUP SECTION.  
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
: INSERT MESSAGES THAT ARE USED ONLY  
: DURING THE CLEANUP SECTION.  
:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

014532

```
ENDCLN  
.MCALL M$POP,M$GNTAG,M$SVC,M$ENDERR  
M$POP T$NS,T$NESTLEV,T$TEMP  
.MCALL M$GETS,M$DECR  
.IF LT T$NESTLEV  
.ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW  
.MEXIT  
.ENDC
```

014532 000007

```
M$GETS T$NS,\T$NESTLEV,T$TEMP  
T$TEMP=T$NS1
```

014532 000000

```
M$DECR T$NESTLEV  
T$NESTLEV-T$NESTLEV-1  
.IF EQ F$CLEAN-T$TEMP
```

014532

```
M$GNTAG L,T$$CLEAN
```

014532

```
.MCALL M$GEN  
M$GEN L,\T$$CLEAN,SVCTAG
```

014532

```
.IF LE SVCTAG  
L10017:  
.MEXIT  
.ENDC  
.LIST
```

L10017:

014532 010000

```
.NLIST  
S$LSYM=T$LSYM  
M$SVC C$CLEAN  
.MCALL M$GNINS,M$TSTLAB  
M$TSTLAB  
.MCALL M$TLABEL,M$INCR  
.IF LT T$TSTMAC, .MEXIT  
.RADIX 10  
M$TLABEL \T$TESTNUN,\T$TSTSEQ  
.RADIX 8  
M$INCR T$TSTSEQ
```

014532

```
M$GNINS <TRAP C$CLEAN>  
.IF LT SVCINS  
TRAP C$CLEAN  
.MEXIT  
.ENDC
```

014532 104412

```
.IF EQ SVCINS  
TRAP C$CLEAN
```

```
.MEXIT  
.ENDC  
.IF GT SVCINS  
.LIST
```

TRAP C\$CLEAN

000041

```
.ENDC  
I$CLN-F$END  
.NLIST
```

```
30  
31 014534  
000041  
014534  
014534 000000  
014534 177777  
32
```

```
.IFF  
M$ENDERR      ENDCLN,T$TEMP  
.ENDC  
  
ENDMOD  
.MCALL M$POP,M$ENDERR  
.IF EQ F$BGN-I$MOD  
I$MOD=F$END  
.IFF  
.ERROR ; MISSING 'BGNMOD'  
.MEXIT  
.ENDC  
M$POP T$NS,T$NESTLEV,T$TEMP  
.MCALL M$GETS,M$DECR  
.IF LT T$NESTLEV  
.ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW  
.MEXIT  
.ENDC  
M$GETS T$NS,\T$NESTLEV,T$TEMP  
T$TEMP=T$NS0  
M$DECR T$NESTLEV  
T$NESTLEV=T$NESTLEV-1  
.IF NE F$MOD-T$TEMP  
M$ENDERR      ENDMOD,T$TEMP  
.ENDC
```

1  
2  
3  
4  
5  
6  
7  
8  
9  
  
  
  
  
  
  
10  
11  
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14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24

014534  
  
  
000040  
  
014534  
014534  
000000  
014534 000000  
  
  
  
  
  
  
  
000040  
  
014534

```
; .TITLE HARDWARE TESTS  
; .SBTTL TEST 1:  
;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
; APPEND THE NAME OF THIS TEST TO THE .SBTTL, AS SHOWN IN THE  
; FOLLOWING EXAMPLE. .SBTTL TEST 1: NAME OF TEST  
;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
  
      BGNMOD  
.MCALL MSGNGBL,M$PUSH  
.IF NE F$END-I$MOD  
.ERROR ;'BGNMOD' IN MOD  
.MEXIT  
.IFF  
I$MOD=F$BGN  
.ENDC  
.IF NB  
MSGNGBL  
.ENDC  
M$PUSH T$NS,T$NESTLEV,F$MOD  
.MCALL M$INCR,M$SETS  
M$INCR T$NESTLEV  
T$NESTLEV-T$NESTLEV+1  
M$SETS T$NS,\T$NESTLEV,F$MOD  
T$NSO-r $MOD  
  
; ++  
; TEST TO ...  
; --  
  
;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
; CHANGE THE PHRASE 'TEST TO ...' TO BE A FUNCTIONAL  
; DESCRIPTION OF THE HARDWARE TEST WHICH FOLLOWS.  
;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
  
;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
; INSERT PROGRAM EQUATES THAT ARE USED ONLY IN THIS TEST.  
;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
  
      BGNTST  
.MCALL M$INCR,MSGNTST,M$PUSH,M$INCR  
.IF NE F$END-I$SUB  
.ERROR ;'BGNTST' IN SUB  
.MEXIT  
.ENDC  
.IF NE F$END-I$SEG  
.ERROR ;'BGNTST' IN SEG  
.MEXIT  
.ENDC  
.IF NE F$END-I$TST  
.ERROR ;'BGNTST' IN TST  
.MEXIT  
.IFF  
I$TST-F$BGN  
.ENDC  
.IF B  
M$INCR T$TESTNUM
```

```

000001          T$TESTNUM=T$TESTNUM+1
                .IFF
                T$TESTNUM=
                .ENDC
000000          T$SUBNUM=0
000012          .RADIX 10
014534          MSGNTEST          \T$TESTNUM
                .MCALL M$GEN
014534          M$GEN T,1:,SVCTST
                .IF LE SVCTST
014534          T1::
                .MEXIT
                .ENDC
                .LIST

                .NLIST
014534          000010          .RADIX 8
                MSPUSH T$NS,T$NESTLEV,F$TEST
014534          .MCALL M$INCR,M$SETS
                M$INCR T$NESTLEV
014534          000001          T$NESTLEV=T$NESTLEV+1
                M$SETS T$NS,\T$NESTLEV,F$TEST
000001          T$NS1=F$TEST
010020          T$STEST=T$TAGNUM
014534          .MCALL M$INCR T$TAGNUM
                T$TAGNUM=T$TAGNUM+1
010021          T$STSEQ=1
000001          PRINTF #JFK1
25 014534          .MCALL M$PRINT
                .IF B #JFK1
                .ERROR ;MISSING FORMAT
                .MEXIT
                .ENDC
                .IF B <>
014534          M$PRINT C$PRINTF,#JFK1
                .MCALL M$COUNT,M$PUT,M$GNINS,M$SVC
014534          000001          T$ARGCNT=1
                M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>,<>
                .IF NB <>
                M$COUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>,<>
                .ENDC
                .IF NB <>
                T$ARGCNT-T$ARGCNT+1
                .ENDC
                .IRP N,<\T$ARGCNT>
014534          M$PUT #N,#JFK1,<>,<>,<>,<>,<>,<>,<>,<>,<>
                .ENDM
                M$PUT #1,#JFK1,<>,<>,<>,<>,<>,<>,<>,<>,<>
                .MCALL M$PUT1
014534          .IF NB <#JFK1>
                M$PUT <#JFK1>,<>,<>,<>,<>,<>,<>,<>,<>,<>
                .MCALL M$PUT1
                .IF NB <>
                M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>,<>
                .ENDC
                .IF NB <#JFK1>
014534          M$PUT1 #JFKi
    
```

T1::

```
014534      .MCALL MSGNINS
            .IF B
MSGNINS <MOV #JFK1,-(SP)>
            .IF LT SVCINS
MOV #JFK1,-(SP)
            .MEXIT
            .ENDC
014534 012746 014653      .IF EQ SVCINS
                        MOV #JFK1,-(SP)
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                MOV #JFK1,-(SP)
            .ENDC
            .IFF
            .IF DIF B,<#JFK1>
            .ERROR ;ILL. ARG. '#JFK1' ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
            .ENDC
            .ENDC
            .ENDC
014540      .IF NB <#1>
M$PUT1 #1
            .MCALL MSGNINS
014540      .IF B
MSGNINS <MOV #1,-(SP)>
            .IF LT SVCINS
MOV #1,-(SP)
            .MEXIT
            .ENDC
014540 012746 000001      .IF EQ SVCINS
                        MOV #1,-(SP)
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                .NLIST
                                MOV #1,-(SP)
            .ENDC
            .IFF
            .IF DIF B,<#1>
            .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
            .MEXIT
            .ENDC
MSGNINS <CLR -(SP)>
MSGNINS <BISB ,(SP)>
            .ENDC
            .ENDC
014544      MSGNINS <MOV SP,R0>
            .IF LT SVCINS
MOV SP,R0
            .MEXIT
```

```
014544 010600 .ENDC
                .IF EQ SVCINS
                MOV SP,RO
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                                MOV SP,RO
                .NLIST

014546 .ENDC
014546 M$SVC C$PNTF
        .MCALL M$GNINS,M$TSTLAB
        M$TSTLAB
        .MCALL M$TLABEL,M$INCR
        .IIF LT T$TSTMAC, .MEXIT
        .RADIX 10
        M$TLABEL \T$TESTNUN,\T$TSTSEQ
        .RADIX 8
        M$INCR T$TSTSEQ
        M$GNINS <TRAP C$PNTF>
        .IF LT SVCINS
        TRAP C$PNTF
        .MEXIT
        .ENDC
014546 104417 .IF EQ SVCINS
                TRAP C$PNTF
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                                TRAP C$PNTF
                .NLIST

014550 .ENDC
        .IRP N,<\T$ARGCNT*2+2>
        M$GNINS <ADD #N,SP>
        .ENDM
        M$GNINS <ADD #4,SP>
        .IF LT SVCINS
        ADD #4,SP
        .MEXIT
        .ENDC
014550 062706 000004 .IF EQ SVCINS
                ADD #4,SP
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                                ADD #4,SP
                .NLIST

        .ENDC
        .MEXIT
        .ENDC
        .IF B <>
        M$PRINT C$PNTF,#JFK1,<>
        .MEXIT
        .ENDC
        .!F E <>
```

```

MSPRINT C$PNTF,#JFK1,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTF,#JFK1,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTF,#JFK1,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTF,#JFK1,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTF,#JFK1,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
.IF B <>
MSPRINT C$PNTF,#JFK1,<>,<>,<>,<>,<>,<>,<>
.MEXIT
.ENDC
MSPRINT C$PNTF,#JFK1,<>,<>,<>,<>,<>,<>,<>,<>

```

26  
27 014554 004737 011650  
28  
29 014560 005737 002220  
30 014564 001414  
31  
32 014566 004737 004566  
33  
34 014572

```

CALL RUNDM ; START DMS RUNNING
TST URNING ; SEE IF ANY STARTED
BEQ NOGOER ; NONE - FATAL
CALL RESPDM ; AWAIT FORMAT COMPLETION

```

```

.PRINTF #JFK5
.MCALL MSPRINT
.IF B #JFK5
.ERROR ;MISSING FORMAT
.MEXIT
.ENDC

```

014572  
014572 000001

```

.IF B <>
MSPRINT C$PNTF,#JFK5
.MCALL MSCOUNT,M$PUT,M$GNINS,M$SVC
T$ARGCNT=1
MSCOUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
.IF NB <>
MSCOUNT T$ARGCNT,<>,<>,<>,<>,<>,<>,<>,<>
.ENDC
.IF NB <>
T$ARGCNT-T$ARGCNT+1
.ENDC
.IRP N,<\T$ARGCNT>
M$PUT #N,#JFK5,<>,<>,<>,<>,<>,<>,<>,<>
.ENDM
M$PUT #1,#JFK5,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1
.IF NB <#JFK5>
M$PUT <#JFK5>,<>,<>,<>,<>,<>,<>,<>,<>
.MCALL M$PUT1

```

014572  
014572



```

      .IF NB <>
      M$PUT <>,<>,<>,<>,<>,<>,<>,<>,<>
      .ENDC
014572 .IF NB <#JFK5>
      M$PUT1 #JFK5
      .MCALL M$GNINS
014572 .IF B
      M$GNINS <MOV #JFK5,-(SP)>
      .IF LT SVCINS
      MOV #JFK5,-(SP)
      .MEXIT
      .ENDC
014572 012746 014677 .IF EQ SVCINS
      MOV #JFK5,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IFF
      .IF DIF B,<#JFK5>
      .ERROR ;ILL. ARG. '#JFK5' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      M$GNINS <CLR -(SP)>
      M$GNINS <BISB ,(SP)>
      .ENDC
      .ENDC
      .ENDC
014576 .IF NB <#1>
      M$PUT1 #1
      .MCALL M$GNINS
014576 .IF B
      M$GNINS <MOV #1,-(SP)>
      .IF LT SVCINS
      MOV #1,-(SP)
      .MEXIT
      .ENDC
014576 012746 000001 .IF EQ SVCINS
      MOV #1,-(SP)
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .ENDC
      .IFF
      .IF DIF B,<#1>
      .ERROR ;ILL. ARG. '#1' ONLY 'B' IS ALLOWED.
      .MEXIT
      .ENDC
      M$GNINS <CLR -(SP)>
      M$GNINS <BISB ,(SP)>
      .ENDC

```

MOV #JFK5,-(SP)

MOV #1,-(SP)

014602 .ENDC  
 MSGNINS <MOV SP,R0>  
 .IF LT SVCINS  
 MOV SP,R0  
 .MEXIT  
 .ENDC

014602 010600 .IF EQ SVCINS  
 MOV SP,R0  
 .MEXIT  
 .ENDC  
 .IF GT SVCINS  
 .LIST

MOV SP,R0

.NLIST

014604 .ENDC  
 MSSVC C\$PNTF  
 .MCALL MSGNINS,M\$TSTLAB  
 014604 M\$TSTLAB  
 .MCALL M\$TLABEL,M\$INCR  
 .IF LT T\$TSTMAC, .MEXIT  
 .RADIX 10  
 M\$TLABEL \T\$TESTNUN,\T\$TSTSEQ  
 .RADIX 8  
 M\$INCR T\$TSTSEQ

014604 MSGNINS <TRAP C\$PNTF>  
 .IF LT SVCINS  
 TRAP C\$PNTF  
 .MEXIT  
 .ENDC  
 .IF EQ SVCINS  
 TRAP C\$PNTF

TRAP C\$PNTF

.NLIST

014606 .ENDC  
 .IRP N,<\T\$ARGCNT\*2+2>  
 MSGNINS <ADD #N,SP>  
 .ENDM  
 MSGNINS <ADD #4,SP>  
 .IF LT SVCINS  
 ADD #4,SP  
 .MEXIT  
 .ENDC

014606 062706 000004 .IF EQ SVCINS  
 ADD #4,SP  
 .MEXIT  
 .ENDC  
 .IF GT SVCINS  
 .LIST

ADD #4,SP

.NLIST

.ENDC  
.MEXIT  
.ENDC

```

      .IF B <>
      M$PRINT (C$PNTF,#JFK5,<>)
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTF,#JFK5,<>,<>)
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTF,#JFK5,<>,<>,<>)
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTF,#JFK5,<>,<>,<>,<>)
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTF,#JFK5,<>,<>,<>,<>,<>)
      .MEXIT
      .ENDC
      .IF B <>
      M$PRINT (C$PNTF,#JFK5,<>,<>,<>,<>,<>,<>)
      .MEXIT
      .ENDC
      M$PRINT (C$PNTF,#JFK5,<>,<>,<>,<>,<>,<>,<>,<>)

```

35  
36 014612

000041  
014612  
010020  
000040

```

      EXIT TST
      .M$CALL M$SVC,M$EXIT,M$EXSEG,M$EXTJ,M$GETTOP,M$CHECK,M$WORD,XFER
      T$FLAG=F$END
      M$CHECK TST,T$TEMP,T$FLAG
      .IF IDN <TST>,<TST>
      T$TEMP=T$$TEST
      T$FLAG=I$TST
      .MEXIT
      .ENDC
      .IF IDN <SUB>,<TST>
      T$TEMP=T$$SUB
      T$FLAG=I$SUB
      .MEXIT
      .ENDC
      .IF IDN <SEG>,<TST>
      T$TEMP=T$$SEG
      T$FLAG=I$SEG
      .MEXIT
      .ENDC
      .IF IDN <INIT>,<TST>
      T$TEMP=T$$INIT
      T$FLAG=I$INIT
      .MEXIT
      .ENDC
      .IF IDN <CLN>,<TST>
      T$TEMP=T$$CLEAN
      T$FLAG=I$CLN

```

```

.MEXIT
.ENDC
.IF IDN <SRV>,<TST>
T$TEMP=T$$SRV
T$FLAG=I$SRV
.MEXIT
.ENDC
.IF IDN <MSG>,<TST>
T$TEMP=T$$MSG
T$FLAG=F$JMP
.MEXIT
.ENDC
.IF IDN <RPT>,<TST>
T$TEMP=T$$RPT
T$FLAG=F$JMP
.MEXIT
.ENDC
.IF IDN <DU>,<TST>
T$TEMP=T$$DU
T$FLAG=F$JMP
.MEXIT
.ENDC
.IF IDN <AU>,<TST>
T$TEMP=T$$AU
T$FLAG=F$JMP
.MEXIT
.ENDC
.IF EQ T$FLAG-F$JMP
M$WORD J$JMP
M$EXTJ \T$TEMP
.MEXIT
.ENDC
.IF EQ T$FLAG-F$BGN
M$SVC C$EXIT
.MCALL M$GNINS,M$STSLAB
M$STSLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$STMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUN,\T$STSEQ
.RADIX 8
M$INCR T$STSEQ
M$GNINS <TRAP C$EXIT>
.IF LT SVCINS
TRAP C$EXIT
.MEXIT
.ENDC
.IF EQ SVCINS
TRAP C$EXIT
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.ENDC
.IF IDN <SEG>,<TST>

```

014612

014612

014612

014612 104432

TRAP C\$EXIT

014614

014614

014614 000114

```

MSGGETTOP T$SEK,T$SEGLEV,T$TEMP
MSEXSEG \T$TEMP
.IFF
MSEXIT \T$TEMP
.MCALL MSGNINS
MSGNINS <.WORD L10020-.>
.IF LT SVCINS
.WORD L10020-.
.MEXIT
.ENDC
.IF EQ SVCINS
.WORD L10020-.
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

.WORD L10020-.

.NLIST

```

.ENDC
.ENDC
.MEXIT
.ENDC
.IF IDN <HRD>,<TST>
MSGGETTOP T$NS,T$NESTLEV,T$TEMP
.IF EQ F$HARD-T$TEMP
.IRP N,<\T$$HARD>
XFER L'N
.ENDM
.MEXIT
.ENDC
.ENDC
.IF IDN <SFT>,<TST>
MSGGETTOP T$NS,T$NESTLEV,T$TEMP
.IF EQ F$SOFT-T$TEMP
.IRP N,<\T$$SOFT>
XFER L'N
.ENDM
.MEXIT
.ENDC
.ENDC
.ERROR ;ILL. 'EXIT TST' STMT.

```

37

38 014616

014616

014616

014616

014616

```

NOGOER: ERRSF NOGOM
.MCALL M$ERRINS
M$ERRINS NOGOM,,,$C$ERSF
.MCALL MSGNINS,M$WORD,M$TSTLAB
M$SVC C$ERSF
.MCALL MSGNINS,M$TSTLAB
M$TSTLAB
.MCALL M$TLABEL,M$INCR
.IIF LT T$TSTMAC, .MEXIT
.RADIX 10
M$TLABEL \T$TESTNUN,\T$TSTSEQ
.RADIX 8
M$INCR T$TSTSEQ
MSGNINS <TRAP C$ERSF>
.IF LT SVCINS

```

```

TRAP CSERSF
.MEXIT
.ENDC
014610 104454 .IF EQ SVCINS
TRAP CSERSF
.MEXIT
.ENDC
014620 .IF GT SVCINS
.LIST
TRAP CSERSF
.ENDC
.NLIST
000012 .RADIX 10
014626 .IF NB NOGOM
TSERRNUM=NOGOM
.IFF
.ERROR ;MISSING ERROR-NR
.ENDC
014620 M$WORD \TSERRNUM
.MCALL M$GNINS
.IRP N,<6550>
M$GNINS <.WORD N>
.ENDM
014620 M$GNINS <.WORD 6550>
.IF LT SVCINS
.WORD 6550
.MEXIT
.ENDC
014620 014626 .IF EQ SVCINS
.WORD 6550
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
TRAP CSERSF
.NLIST
.WORD 6550
.ENDC
000010 .RADIX 8
.IF NB
M$WORD
.IFF
014622 M$WORD 0
.MCALL M$GNINS
.IRP N,<0>
M$GNINS <.WORD N>
.ENDM
014622 M$GNINS <.WORD 0>
.IF LT SVCINS
.WORD 0
.MEXIT
.ENDC
014622 000000 .IF EQ SVCINS
.WORD 0
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

.WORD 0

.NLIST

```
014624 .ENDC  
014624 .ENDC  
014624 .IF NB  
014624 M$WORD  
014624 .IFF  
014624 M$WORD 0  
014624 .MCALL M$GNINS  
014624 .IRP N,<0>  
014624 M$GNINS <.WORD N>  
014624 .ENDM  
014624 M$GNINS <.WORD 0>  
014624 .IF LT SVCINS  
014624 .WORD 0  
014624 .MEXIT  
014624 .ENDC  
014624 000000 .IF EQ SVCINS  
014624 .WORD 0  
014624 .MEXIT  
014624 .ENDC  
014624 .IF GT SVCINS  
014624 .LIST
```

.WORD 0

.NLIST

```
39 014626 045 116 045 .ENDC  
40 014653 045 116 045 .ENDC  
41 014677 045 116 045 NOGOM: .ASCIZ /%N%AND UNITS STARTED/  
42 JFK1: .ASCIZ /%N%AFORMAT(S) BEGUN/  
43 JFK5: .ASCIZ /%N%AFORMAT(S) COMPLETED/  
44 .EVEN  
45 014730 .ENDTST  
014730 .MCALL M$POP,M$GNTAG,M$SVC,M$ENDERR  
014730 .IF EQ F$BGN-I$TST  
014730 I$TST=F$END  
014730 .IFF  
014730 .ERROR ;MISSING 'BGNTST'  
014730 .MEXIT  
014730 .ENDC  
014730 M$POP T$NS,T$NESTLEV,T$TEMP  
014730 .MCALL M$GETS,M$DECR  
014730 .IF LT T$NESTLEV  
014730 .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW  
014730 .MEXIT  
014730 .ENDC  
014730 M$GETS T$NS,\T$NESTLEV,T$TEMP  
014730 T$TEMP=T$NS1  
014730 M$DECR T$NESTLEV  
014730 T$NESTLEV=T$NESTLEV-1  
014730 .IF EQ F$TEST-T$TEMP  
014730 M$GNTAG L,T$$TEST  
014730 .MCALL M$GEN  
014730 M$GEN L,\T$$TEST,SVCTAG  
014730 .IF LE SVCTAG  
014730 L10020:
```

```
.MEXIT
.ENDC
.LIST

                                L10020:
                                .NLIST
014730 010000  S$LSYM=T$LSYM
014730  M$SVC C$SETST
                                .MCALL M$GNINS,M$STSTLAB
014730  M$STSTLAB
                                .MCALL M$TLABEL,M$INCR
                                .IIF LT T$STSTMAC, .MEXIT
                                .RADIX 10
014730  M$TLABEL \T$TESTNUN,\T$STSEQ
                                .RADIX 8
                                M$INCR T$STSEQ
014730  M$GNINS <TRAP C$SETST>
                                .IF LT SVCINS
                                TRAP C$SETST
                                .MEXIT
                                .ENDC
014730 104401  .IF EQ SVCINS
                                TRAP C$SETST
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                TRAP C$SETST
                                .NLIST
                                .ENDC
                                I$ST-F$END
                                .IFF
000041  M$ENDERR ENDTST,T$TEMP
                                .ENDC
46
47 014732  .MCALL ENDMOD
                                M$POP,M$ENDERR
                                .IF EQ F$BGN-I$MOD
                                I$MOD=F$END
                                .IFF
                                .ERROR ; MISSING 'BGNMOD'
                                .MEXIT
                                .ENDC
014732  M$POP T$NS,T$NESTLEV,T$TEMP
                                .MCALL M$GETS,M$DECR
                                .IF LT T$NESTLEV
                                .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
                                .MEXIT
                                .ENDC
014732  M$GETS T$NS,\T$NESTLEV,T$TEMP
000000  T$TEMP T$NSO
014732  M$DECR T$NESTLEV
177777  T$NESTLEV-T$NESTLEV-1
                                .IF NE F$MOD-T$TEMP
                                M$ENDERR ENDMOD,T$TEMP
                                .ENDC
```



TEST 1:

```

1          ;          .TITLE PARAMETER CODING
2          ;          .SBTTL  HARDWARE PARAMETER CODING SECTION
3
4 014732   BGNMOD
          .MCALL  MSGNGBL,M$PUSH
          .IF NE  F$END-I$MOD
          .ERROR  ;'BGNMOD'' IN MOD
          .MEXIT
          .IFF
          000040  I$MOD=F$BGN
          .ENDC
          .IF NB
          MSGNGBL
          .ENDC
          014732  M$PUSH  T$NS,T$NESTLEV,F$MOD
          014732  .MCALL  M$INCR,M$SETS
          M$INCR  T$NESTLEV
          000000  T$NESTLEV-T$NESTLEV+1
          014732  M$SETS  T$NS,\T$NESTLEV,F$MOD
          000000  T$NSO=F$MOD
5
6          ;++
7          ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
8          ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES. THE
9          ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
10         ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES. THE
11         ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
12         ; WITH THE OPERATOR.
13         ;--
14
15 014732   BGNHRD
          .MCALL  M$PUSH,M$INCR,M$GNINS,M$GNGBL
          000040  I$HRD=F$BGN
          014732  M$PUSH  T$NS,T$NESTLEV,F$HARD
          014732  .MCALL  M$INCR,M$SETS
          M$INCR  T$NESTLEV
          000001  T$NESTLEV=T$NESTLEV+1
          014732  M$SETS  T$NS,\T$NESTLEV,F$HARD
          000004  T$NS1=F$HARD
          010021  T$$HARD T$TAGNUM
          014732  M$INCR  T$TAGNUM
          010022  T$TAGNUM=T$TAGNUM+1
          .IRP   TAG,<\T$$HARD>
          MSGNINS <.WORD L'TAG'-L$HARD/2>
          .ENDM
          014732  MSGNINS <.WORD L10021-L$HARD/2>
          .IF LT SVCINS
          .WORD L10021-L$HARD/2
          .MEXIT
          .ENDC
          .IF EQ SVCINS
          .WORD L10021-L$HARD/2
          .MEXIT
          .ENDC
          .IF GT SVCINS
          .LIST

```

.WORD L10021-L\$HARD/2

```

                                .NLIST
014734      .ENDC
            MSGNGBL L$HARD
            .MCALL MSGEN
            .IF NB,L$HARD
            .IF NB,
            MSGEN L$HARD,::,SVCGBL,
            .ENDC
            .IF B,
014734      MSGEN L$HARD,::,SVCGBL,< >
            .IF LE SVCGBL
014734      L$HARD::
            .MEXIT
            .ENDC
            .LIST

                                .NLIST
            .ENDC
            .ENDC
16          :
17          :
18          :      HARDWARE PARAMATER TABLE FORMAT
19          :
20          :
21          000000      PT.UBA - 0 ; UNIBUS ADDRESS
22          000002      PT.UNIT - 2 ; UNIT NUMBER
23          000004      PT.FLAG = 4 ; STARTUP FLAGS
24          000006      PT.SNUM = 6 ; SERIAL NUMBER
25
26 014734      GPRMA PTM.UBA ,PT.UBA,0,0,-1,YES
            .MCALL MSRADIX,MSDEFAULT,MSEXCP,MSWORD,MSCNTOP
            .IF IDN A,0
            .ERROR ;INVALID RADIX
            .ENDC
            T$TEMP=PT.UBA&1
            .IF NE T$TEMP & 1
            .ERROR ;ODD OFFSET
            .ENDC
            .IF LT G$OFFSIZE-PT.UBA
            .ERROR ;OFFSET TOO BIG
            .ENDC
            T$CODE=G$PRMA + <PT.UBA * G$OFFSET>
014734      MSRADIX 0,T$TEMP
            .IF IDN B,0
            T$TEMP-G$RADB
            .MEXIT
            .ENDC
            .IF IDN 0,0
            T$TEMP=G$RADO
            .MEXIT
            .ENDC
            .IF IDN D,0
            T$TEMP=G$RADD
            .MEXIT
            .ENDC
            .IF IDN L,0
            T$TEMP-G$RADL

```

L\$HARD::

```

.MEXIT
.ENDC
.IF IDN A,0
T$TEMP=G$RADA
.MEXIT
.ENDC
T$TEMP=-1
.ERROR ;ILL. RADIX 'D'
T$CODE=T$CODE ! T$TEMP
M$DEFAULT YES,T$TEMP
.IF IDN YES,YES
T$TEMP=G$YES
.MEXIT
.ENDC
.IF IDN NO,YES
T$TEMP=G$NO
.MEXIT
.ENDC
T$TEMP=-1
.ERROR ;DEFAULT 'YES' MUST BE 'YES' OR 'NO'
T$CODE=T$CODE . T$TEMP
T$EXCP=0
M$EXCP T$CODE,T$EXCP,G$LOLIM,T$LOLIM,0
.IF IDN <@>,<0>
.IF LT G$OFSIZE-
.ERROR ;INDIRECT PAR. TOO BIG
.MEXIT
.ENDC
T$LOLIM-/2
T$CODE-T$CODE ! G$EXCP
T$EXCP T$EXCP ! G$LOLIM
.IFF
.IF B,
T$LOLIM=0
.IFF
.ERROR ;ILL. DEFERRED MODE
.ENDC
.ENDC
M$EXCP T$CODE,T$EXCP,G$SHILIM,T$SHILIM,-1
.IF IDN <@>,<-1>
.IF LT G$OFSIZE-
.ERROR ;INDIRECT PAR. TOO BIG
.MEXIT
.ENDC
T$SHILIM-/2
T$CODE=T$CODE ! G$EXCP
T$EXCP=T$EXCP ! G$SHILIM
.IFF
.IF B,
T$SHILIM=-1
.IFF
.ERROR ;ILL. DEFERRED MODE
.ENDC
.ENDC
M$CNTOP <>,<T$CODE>
.IF NB
.IF NE I$SFT - F$BGN

```

014734 000021

000010

014734 000031  
000000

000000

014734

177777

014734

```

.ERROR ; "COUNT" OPTION VALID ONLY IN S.W. QUES.
.MEXIT
.ENDC
T$CODE=T$CODE ! G$CNTOP
.ENDC
014734 M$WORD <T$CODE,PTM.UBA,T$LLOLIM,T$HILIM>
.MCALL M$GNINS
.IRP N,<T$CODE,PTM.UBA,T$LLOLIM,T$HILIM>
M$GNINS <.WORD N>
.ENDM
014734 M$GNINS <.WORD T$CODE>
.IF LT SVCINS
.WORD T$CODE
.MEXIT
.ENDC
014734 000031 .IF EQ SVCINS
.WORD T$CODE
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.WORD T$CODE
.ENDC
014736 M$GNINS <.WORD PTM.UBA>
.IF LT SVCINS
.WORD PTM.UBA
.MEXIT
.ENDC
014736 015060 .IF EQ SVCINS
.WORD PTM.UBA
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.WORD PTM.UBA
.ENDC
014740 M$GNINS <.WORD T$LLOLIM>
.IF LT SVCINS
.WORD T$LLOLIM
.MEXIT
.ENDC
014740 000000 .IF EQ SVCINS
.WORD T$LLOLIM
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
.NLIST
.WORD T$LLOLIM
.ENDC
014742 M$GNINS <.WORD T$HILIM>
.IF LT SVCINS
.WORD T$HILIM
.MEXIT
.ENDC

```

```

014742 177777      .IF EQ SVCINS
                   .WORD   T$HILIM
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST

```

.WORD T\$HILIM

.NLIST

```

                   .ENDC
                   .IF NE T$EXCP
MSWORD T$EXCP
                   .ENDC
                   .IF NB
MSWORD </2>
                   .ENDC

```

27 014744

```

                   GPRMD PTM.UNIT,PT.UNIT,D,-1,0,255,YES
                   .MCALL M$RADIX,M$DEFAULT,M$EXCP,M$WORD,M$CNTOP
                   .IF IDN A,D
                   .IF EQ T$GMANID
                   .ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'
                   .ENDC
                   .ENDC

```

000000

```

T$TEMP-PT.UNIT&1
                   .IF NE T$TEMP & 1
                   .ERROR ;ODD OFFSET
                   .ENDC
                   .IF LT G$OFFSIZE-PT.UNIT
                   .ERROR ;OFFSET TOO BIG
                   .ENDC

```

014744 001002

```

T$CODE=G$PRMD + <PT.UNIT * G$OFFSET>
MSRADIX D,T$TEMP
                   .IF IDN B,D
T$TEMP=G$RADB
                   .MEXIT
                   .ENDC
                   .IF IDN O,D
T$TEMP-G$RADO
                   .MEXIT
                   .ENDC

```

000040

```

                   .IF IDN D,D
T$TEMP-G$RADD
                   .MEXIT
                   .ENDC
                   .IF IDN L,D
T$TEMP G$RADL
                   .MEXIT
                   .ENDC

```

014744 001042

```

                   .IF IDN A,D
T$TEMP=G$RADA
                   .MEXIT
                   .ENDC
T$TEMP=-1
                   .ERROR ;ILL. RADIX 'D'
T$CODE=T$CODE ! T$TEMP
MSDEFAULT YES,T$TEMP
                   .IF IDN YES,YES
T$TEMP-G$YES

```

000010

```

014744 001052
000000
.MEXIT
.ENDC
.IF IDN NO,YES
T$TEMP=G$NO
.MEXIT
.ENDC
T$TEMP=-1
.ERROR ;DEFAULT 'YES' MUST BE 'YES' OR 'NO'
T$CODE=T$CODE . T$TEMP
T$EXCP=0
M$EXCP T$CODE,T$EXCP,G$LOLIM,T$LOLIM,0
.IF IDN <@>.<0>
.IF LT G$OFSIZE-
.ERROR ;INDIRECT PAR. TOO BIG
.MEXIT
.ENDC
T$LOLIM=/2
T$CODE=T$CODE . G$EXCP
T$EXCP-T$EXCP . G$LOLIM
.IFF
.IF B,
T$LOLIM=0
.IFF
.ERROR ;ILL. DEFERRED MODE
.ENDC
.ENDC
014744
M$EXCP T$CODE,T$EXCP,G$HILIM,T$HILIM,255
.IF IDN <@>.<255>
.IF LT G$OFSIZE-
.ERROR ;INDIRECT PAR. TOO BIG
.MEXIT
.ENDC
T$HILIM-/2
T$CODE=T$CODE ! G$EXCP
T$EXCP=T$EXCP . G$HILIM
.IFF
.IF B,
T$HILIM=255
.IFF
.ERROR ;ILL. DEFERRED MODE
.ENDC
.ENDC
014744
M$CNTOP <>,<T$CODE>
.IF NB
.IF NE I$SFT - F$BGN
.ERROR ; 'COUNT' OPTION VALID ONLY IN S.W. QUES.
.MEXIT
.ENDC
T$CODE=T$CODE ! G$CNTOP
.ENDC
014744
M$WORD <T$CODE,PTM.UNIT,-1,T$LOLIM,T$HILIM>
.MCALL M$GNINS
.IRP N,<T$CODE,PTM.UNIT,-1,T$LOLIM,T$HILIM>
M$GNINS <.WORD N>
.ENDM
014744
M$GNINS <.WORD T$CODE>
.IF LT SVCINS

```

```

                                .WORD  T$CODE
                                .MEXIT
                                .ENDC
014744 001052                .IF EQ SVCINS
                                .WORD  T$CODE
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD  T$CODE

                                .ENDC
                                .NLIST
014746                .MSGNINS <.WORD PTM.UNIT>
                                .IF LT SVCINS
                                .WORD  PTM.UNIT
                                .MEXIT
                                .ENDC
014746 015106                .IF EQ SVCINS
                                .WORD  PTM.UNIT
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD  PTM.UNIT

                                .ENDC
                                .NLIST
014750                .MSGNINS <.WORD -1>
                                .IF LT SVCINS
                                .WORD  -1
                                .MEXIT
                                .ENDC
014750 177777                .IF EQ SVCINS
                                .WORD  -1
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD  -1

                                .ENDC
                                .NLIST
014752                .MSGNINS <.WORD T$LLOLIM>
                                .IF LT SVCINS
                                .WORD  T$LLOLIM
                                .MEXIT
                                .ENDC
014752 000000                .IF EQ SVCINS
                                .WORD  T$LLOLIM
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD  T$LLOLIM

                                .ENDC
                                .NLIST
014754                .MSGNINS <.WORD T$HILIM>
                                .IF LT SVCINS
                                .WORD  T$HILIM

```

```

.MEXIT
.ENDC
014754 000255 .IF EQ SVCINS .WORD T$HILIM
.MEXIT
.ENDC
014756 .IF GT SVCINS
.LIST
.NLIST
.ENDC
.ENDC
014756 .IF NE T$EXCP
MSWORD T$EXCP
.ENDC
014756 .IF NB
MSWORD </2>
.ENDC
GPRML PTM.RES,PT.FLAG,USERES,YES ; 01
.MCALL M$RADIX,M$DEFAULT,MSWORD,M$CNTOP
T$TEMP=PT.FLAG&1
000000 .IF NE T$TEMP & 1
.ERROR ;ODD OFFSET
.ENDC
014756 .IF LT G$OFFSIZE-PT.FLAG
.ERROR ;OFFSET TOO BIG
.ENDC
002000 T$CODE=G$PRML * <PT.FLAG * G$OFFSET>
M$RADIX L,T$TEMP
014756 .IF IDN B,L
T$TEMP=G$RADB
.MEXIT
.ENDC
000120 .IF IDN O,L
T$TEMP=G$RADO
.MEXIT
.ENDC
000120 .IF IDN D,L
T$TEMP=G$RADD
.MEXIT
.ENDC
000120 .IF IDN L,L
T$TEMP=G$RADL
.MEXIT
.ENDC
000120 .IF IDN A,L
T$TEMP=G$RADA
.MEXIT
.ENDC
000120 T$TEMP=-1
.ERROR ;ILL. RADIX 'L'
014756 T$CODE=T$CODE : T$TEMP
M$DEFAULT YES,T$TEMP
000010 .IF IDN YES,YES
T$TEMP=G$YES
.MEXIT
.ENDC
014756 .IF IDN NO,YES

```



```
                                T$TEMP=G$NO
                                .MEXIT
                                .ENDC
                                T$TEMP=-1
014756 002130 .ERROR ;DEFAULT 'YES' MUST BE 'YES' OR 'NO'
                                T$CODE=T$CODE ! T$TEMP
                                M$CNTOP <>,<T$CODE>
                                .IF NB
                                .IF NE ISSFT - F$BGN
                                .ERROR ; 'COUNT' OPTION VALID ONLY IN S.W. QUES.
                                .MEXIT
                                .ENDC
                                T$CODE=T$CODE ! G$CNTOP
014756 .ENDC
                                M$WORD <T$CODE,PTM.RES,USERES>
                                .MCALL M$GNINS
                                .IRP N,<T$CODE,PTM.RES,USERES>
                                M$GNINS <.WORD N>
014756 .ENDM
                                M$GNINS <.WORD T$CODE>
                                .IF LT SVCINS
                                .WORD T$CODE
                                .MEXIT
                                .ENDC
014756 002130 .IF EQ SVCINS
                                .WORD T$CODE
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD T$CODE
                                                                .NLIST
014760 .ENDC
                                M$GNINS <.WORD PTM.RES>
                                .IF LT SVCINS
                                .WORD PTM.RES
                                .MEXIT
                                .ENDC
014760 015134 .IF EQ SVCINS
                                .WORD PTM.RES
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD PTM.RES
                                                                .NLIST
014762 .ENDC
                                M$GNINS <.WORD USERES>
                                .IF LT SVCINS
                                .WORD USERES
                                .MEXIT
                                .ENDC
014762 000001 .IF EQ SVCINS
                                .WORD USERES
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
```

```

                .LIST
                .NLIST
                .ENDC
                .IF NB
MSWORD </2>
                .ENDC
29 014764          XFERF  ASKDLL          ; 'N' -> 04
                .MCALL MSXFER
014764          MSXFER X$FALSE,ASKDLL
                .MCALL MSGETTOP,MSWORD
014764          MSGU TTOP T$NS,T$NESTLEV,T$CODE
                .MCALL MSGETS
014764          MSGETS T$NS,\T$NESTLEV,T$CODE
000004          T$CODE=T$NS1
                .IF NE F$HARD - T$CODE
                .IF NE F$SOFT - T$CODE
                .ERROR ;'XFER'S' MUST BE IN GPRM CODING.
                .MEXIT
                .ENDC
                .ENDC
000014          T$CODE=ASKDLL -
                .IF GT T$CODE-376
                .ERROR ;'XFER'' RANGE TOO BIG
                .MEXIT
                .ENDC
006000          T$CODE=T$CODE * X$OFFSET
006044          T$CODE=T$CODE + G$XFER + X$FALSE
014764          MSWORD T$CODE
                .MCALL MSGNINS
                .IRP N,<T$CODE>
MSGNINS <.WORD N>
                .ENDM
014764          MSGNINS <.WORD T$CODE>
                .IF LT SVCINS
                .WORD T$CODE
                .MEXIT
                .ENDC
014764          .IF EQ SVCINS
006044          .WORD T$CODE
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                .NLIST
                .ENDC
30 014766          GPRML  PTM.STP,PT.FLAG,STPBAD,YES ; 02
000000          .MCALL MSRADIX,MSDEFAULT,MSWORD,MSCNTOP
                T$TEMP=PT.FLAG&1
                .IF NE T$TEMP & 1
                .ERROR ;ODD OFFSET
                .ENDC
                .IF LT G$OFFSIZE-PT.FLAG
                .ERROR ;OFFSET TOO BIG
                .ENDC
002000          T$CODE=G$PRML + <PT.FLAG * G$OFFSET>

```

```

014766          M$RADIX L,T$TEMP
                .IF IDN B,L
                T$TEMP=G$RADB
                .MEXIT
                .ENDC
                .IF IDN O,L
                T$TEMP=G$RADO
                .MEXIT
                .ENDC
                .IF IDN D,L
                T$TEMP=G$RADD
                .MEXIT
                .ENDC
                .IF IDN L,L
                T$TEMP=G$RADL
                .MEXIT
                .ENDC
                .IF IDN A,L
                T$TEMP=G$RADA
                .MEXIT
                .ENDC
                T$TEMP=-1
                .ERROR :ILL. RADIX 'L'
                T$CODE=T$CODE : T$TEMP
                M$DEFAULT YES,T$TEMP
                .IF IDN YES,YES
                T$TEMP=G$YES
                .MEXIT
                .ENDC
                .IF IDN NO,YES
                T$TEMP=G$NO
                .MEXIT
                .ENDC
                T$TEMP=-1
                .ERROR :DEFAULT 'YES' MUST BE 'YES' OR 'NO'
                T$CODE=T$CODE ! T$TEMP
                M$CNTOP <>,<T$CODE>
                .IF NB
                .IF NE I$SFT - F$BGN
                .ERROR : 'COUNT' OPTION VALID ONLY IN S.W. QUES.
                .MEXIT
                .ENDC
                T$CODE=T$CODE ! G$CNTOP
                .ENDC
014766          M$WORD <T$CODE,PTM.STP,STPBAD>
                .MCALL M$GNINS
                .IRP N,<T$CODE,PTM.STP,STPBAD>
                M$GNINS <.WORD IN>
                .ENDM
014766          M$GNINS <.WORD T$CODE>
                .IF LT SVCINS
                .WORD T$CODE
                .MEXIT
                .ENDC
                .IF EQ SVCINS
                .WORD T$CODE
014766          .MEXIT

```

```

        .ENDC
        .IF GT SVCINS
        .LIST
                                .WORD    T$CODE
                                .NLIST
014770      .ENDC
        MSGNINS <.WORD PTM.STP>
        .IF LT SVCINS
        .WORD    PTM.STP
        .MEXIT
        .ENDC
014770 015155 .IF EQ SVCINS
        .WORD    PTM.STP
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .WORD    PTM.STP
                                .NLIST
014772      .ENDC
        MSGNINS <.WORD STPBAD>
        .IF LT SVCINS
        .WORD    STPBAD
        .MEXIT
        .ENDC
014772 000002 .IF EQ SVCINS
        .WORD    STPBAD
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .WORD    STPBAD
                                .NLIST
31 014774      .ENDC
        .IF NB
        M$WORD </2>
        .ENDC
        XFERT    PTDONE          ; 'Y' -> DONE
        .MCALL  M$XFER
014774      M$XFER X$TRUE,PTDONE
        .MCALL  M$GETTOP,M$WORD
014774      M$GETTOP T$NS,T$NESTLEV,T$CODE
        .MCALL  M$GETS
014774      M$GETS T$NS,\T$NESTLEV,T$CODE
        000004      T$CODE T$NS1
        .IF NE F$HARD - T$CODE
        .IF NE F$SOFT - T$CODE
        .ERROR ;'XFER'S' MUST BE IN GPRM CODING.
        .MEXIT
        .ENDC
        .ENDC
        000064      T$CODE PTDONE -
        .IF GT T$CODE-376
        .ERROR ;'XFER' RANGE TOO BIG
        .MEXIT
        .ENDC
        032000      T$CODE-T$CODE * X$OFFSET
    
```

```

014774 032024      T$CODE=T$CODE + G$XFER + X$TRUE
                   M$WORD T$CODE
                   .MCALL MSGNINS
                   .IRP  N,<T$CODE>
                   MSGNINS <.WORD N>
                   .ENDM
014774            MSGNINS <.WORD T$CODE>
                   .IF LT SVCINS
                   .WORD T$CODE
                   .MEXIT
                   .ENDC
014774 032024      .IF EQ SVCINS
                   .WORD T$CODE
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST
                                     .WORD T$CODE
                                     .NLIST
014776            .ENDC
32 014776          XFER GTSNUM ; 'N' -> Q3
                   .MCALL M$XFER
014776            M$XFER X$ALWAYS,GTSNUM
                   .MCALL M$GETTOP,M$WORD
014776            M$GETTOP T$NS,T$NESTLEV,T$CODE
014776            .MCALL M$GETS
014776            M$GETS T$NS,\T$NESTLEV,T$CODE
014776            T$CODE=T$NS1
014776            .IF NE F$HARD - T$CODE
014776            .IF NE F$SOFT - T$CODE
014776            .ERROR ;'XFER'S' MUST BE IN GPRM CODING.
014776            .MEXIT
014776            .ENDC
014776            .ENDC
014776            T$CODE-GTSNUM -
014776            .IF GT T$CODE-376
014776            .ERROR ;'XFER' RANGE TOO BIG
014776            .MEXIT
014776            .ENDC
014776            T$CODE-T$CODE * X$OFFSET
014776            T$CODE=T$CODE + G$XFER + X$ALWAYS
014776            M$WORD T$CODE
014776            .MCALL MSGNINS
014776            .IRP  N,<T$CODE>
014776            MSGNINS <.WORD N>
014776            .ENDM
014776            MSGNINS <.WORD T$CODE>
014776            .IF LT SVCINS
014776            .WORD T$CODE
014776            .MEXIT
014776            .ENDC
014776            .IF EQ SVCINS
014776            .WORD T$CODE
014776            .MEXIT
014776            .ENDC
014776            .IF GT SVCINS
014776            .LIST
    
```

.WORD T\$CODE

.NLIST

33 015000  
34 015000

000000

015000

002000

000120

015000

002120

000010

015000

002130

```

.ENDC
ASKDLL:
      GPRML  PTM.DLL,PT.FLAG,DLLFCT,YES      ; Q4
.MCALL M$RADIX,M$DEFAULT,M$WORD,M$CNTOP
T$TEMP=PT.FLAG&1
      .IF NE T$TEMP & 1
      .ERROR ;ODD OFFSET
      .ENDC
      .IF LT G$OFFSIZE-PT.FLAG
      .ERROR ;OFFSET TOO BIG
      .ENDC
T$CODE=G$PRML + <PT.FLAG * G$OFFSET>
M$RADIX L,T$TEMP
      .IF IDN B,L
      T$TEMP=G$RADB
      .MEXIT
      .ENDC
      .IF IDN O,L
      T$TEMP=G$RADO
      .MEXIT
      .ENDC
      .IF IDN D,L
      T$TEMP=G$RADD
      .MEXIT
      .ENDC
      .IF IDN L,L
      T$TEMP=G$RADL
      .MEXIT
      .ENDC
      .IF IDN A,L
      T$TEMP=G$RADA
      .MEXIT
      .ENDC
T$TEMP=-1
      .ERROR ;ILL. RADIX 'L'
T$CODE-T$CODE ! T$TEMP
M$DEFAULT YES,T$TEMP
      .IF IDN YES,YES
      T$TEMP=G$YES
      .MEXIT
      .ENDC
      .IF IDN NO,YES
      T$TEMP=G$NO
      .MEXIT
      .ENDC
T$TEMP=-1
      .ERROR ;DEFAULT 'YES' MUST BE 'YES' OR 'NO'
T$CODE=T$CODE ! T$TEMP
M$CNTOP <>,<T$CODE>
      .IF NB
      .IF NE I$SFT - F$BGN
      .ERROR ; 'COUNT' OPTION VALID ONLY IN S.W. QUES.
      .MEXIT
      .ENDC
T$CODE-T$CODE ! G$CNTOP

```

```

015000      .ENDC
            M$WORD <T$CODE,PTM.DLL,DLLFCT>
            .MCALL M$GNINS
            .IRP  N,<T$CODE,PTM.DLL,DLLFCT>
            M$GNINS <.WORD N>
            .ENDM
015000      M$GNINS <.WORD T$CODE>
            .IF LT SVCINS
            .WORD T$CODE
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD T$CODE
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD T$CODE
                                                    .NLIST
015002      .ENDC
            M$GNINS <.WORD PTM.DLL>
            .IF LT SVCINS
            .WORD PTM.DLL
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD PTM.DLL
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD PTM.DLL
                                                    .NLIST
015004      .ENDC
            M$GNINS <.WORD DLLFCT>
            .IF LT SVCINS
            .WORD DLLFCT
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD DLLFCT
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD DLLFCT
                                                    .NLIST
            .ENDC
            .IF NB
            M$WORD </2>
            .ENDC
35 015006      XFERT PTDONE ; 'Y' -> DONE
            .MCALL M$XFER
015006      M$XFER X$TRUE,PTDONE
            .MCALL M$GETTOP,M$WORD
015006      M$GETTOP T$NS,T$NESTLEV,T$CODE
            .MCALL M$GETS

```

015006 000004

```

MSGETS T$NS, T$NESTLEV, T$CODE
T$CODE=T$NS1
.IF NE F$HARD - T$CODE
.IF NE F$SOFT - T$CODE
.ERROR ;'XFER'S' MUST BE IN GPRM CODING.
.MEXIT
.ENDC
.ENDC

```

000052

```

T$CODE=PTDONE -
.IF GT T$CODE-376
.ERROR ;'XFER' RANGE TOO BIG
.MEXIT
.ENDC

```

025000  
025024

015006

```

T$CODE=T$CODE * X$OFFSET
T$CODE=T$CODE + G$XFER + X$TRUE
M$WORD T$CODE
.MCALL M$GNINS
.IRP N, <T$CODE>
M$GNINS <.WORD N>
.ENDM

```

015006

```

M$GNINS <.WORD T$CODE>
.IF LT SVCINS
.WORD T$CODE
.MEXIT
.ENDC

```

015006 025024

```

.IF EQ SVCINS
.WORD T$CODE
.MEXIT
.ENDC
.IF GT SVCINS
.LIST

```

.WORD T\$CODE

.NLIST

36 015010  
37 015010

```

.ENDC
GTSNUM:
GPRMD PTM.SNUM, PT.SNUM, D, -1, 0, -1, NO ; Q3
.MCALL M$RADIX, M$DEFAULT, M$EXCP, M$WORD, M$CNTOP
.IF IDN A, D
.IF EQ T$GMANID
.ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'
.ENDC
.ENDC

```

000000

```

T$TEMP=PT.SNUM&1
.IF NE T$TEMP & 1
.ERROR ;ODD OFFSET
.ENDC
.IF LT G$OFFSIZE-PT.SNUM
.ERROR ;OFFSET TOO BIG
.ENDC

```

015010 003002

```

T$CODE=G$PRMD + <PT.SNUM * G$OFFSET>
M$RADIX D, T$TEMP
.IF IDN B, D
T$TEMP=G$RADB
.MEXIT
.ENDC
.IF IDN O, D
T$TEMP=G$RADO

```



```

                                .MEXIT
                                .ENDC
000040      .IF IDN D,D
                                T$TEMP=G$RADD
                                .MEXIT
                                .ENDC
                                .IF IDN L,D
                                T$TEMP=G$RADL
                                .MEXIT
                                .ENDC
                                .IF IDN A,D
                                T$TEMP=G$RADA
                                .MEXIT
                                .ENDC
                                T$TEMP=-1
                                .ERROR ;ILL. RADIX 'D'
015010 003042      T$CODE=T$CODE . T$TEMP
                                M$DEFAULT NO,T$TEMP
                                .IF IDN YES,NO
                                T$TEMP=G$YES
                                .MEXIT
                                .ENDC
                                .IF IDN NO,NO
000000      T$TEMP=G$NO
                                .MEXIT
                                .ENDC
                                T$TEMP--1
                                .ERROR ;DEFAULT 'NO' MUST BE 'YES' OR 'NO'
015010 003042      T$CODE=T$CODE ! T$TEMP
                                000000      T$EXCP 0
                                M$EXCP T$CODE,T$EXCP,G$LOLIM,T$LOLIM,0
                                .IF IDN <@>,<0>
                                .IF LT G$OFSIZE-
                                .ERROR ;INDIRECT PAR. TOO BIG
                                .MEXIT
                                .ENDC
                                T$LOLIM=/2
                                T$CODE=T$CODE ! G$EXCP
                                T$EXCP=T$EXCP ! G$LOLIM
                                .IFF
000000      .IF B,
                                T$LOLIM=0
                                .IFF
                                .ERROR ;ILL. DEFERRED MODE
                                .ENDC
                                .ENDC
015010      M$EXCP T$CODE,T$EXCP,G$SHILIM,T$SHILIM,-1
                                .IF IDN <@>,<-1>
                                .IF LT G$OFSIZE-
                                .ERROR ;INDIRECT PAR. TOO BIG
                                .MEXIT
                                .ENDC
                                T$SHILIM=/2
                                T$CODE=T$CODE ! G$EXCP
                                T$EXCP=T$EXCP ! G$SHILIM
                                .IFF
                                .IF B,

```

```

177777      T$HILIM=-1
            .IFF
            .ERROR ;ILL. DEFERRED MODE
            .ENDC
            .ENDC
015010      M$CNTOP <>,<T$CODE>
            .IF NB
            .IF NE ISSFT - F$BGN
            .ERROR ; 'COUNT' OPTION VALID ONLY IN S.W. QUES.
            .MEXIT
            .ENDC
            T$CODE=T$CODE ! G$CNTOP
            .ENDC
015010      M$WORD <T$CODE,PTM.SNUM,-1,T$LLOLIM,T$HILIM>
            .MCALL M$GNINS
            .IRP N,<T$CODE,PTM.SNUM,-1,T$LLOLIM,T$HILIM>
            M$GNINS <.WORD N>
            .ENDM
015010      M$GNINS <.WORD T$CODE>
            .IF LT SVCINS
            .WORD T$CODE
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD T$CODE
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD T$CODE
                                                    .NLIST
            .ENDC
015012      M$GNINS <.WORD PTM.SNUM>
            .IF LT SVCINS
            .WORD PTM.SNUM
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD PTM.SNUM
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
                                                    .WORD PTM.SNUM
                                                    .NLIST
            .ENDC
015014      M$GNINS <.WORD -1>
            .IF LT SVCINS
            .WORD -1
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .WORD -1
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST

```

.WORD -1

```

                                .NLIST
015016      .ENDC
            MSGNINS <.WORD T$LOLIM>
            .IF LT SVCINS
            .WORD T$LOLIM
            .MEXIT
            .ENDC

```

```

015016 000000      .IF EQ SVCINS
                  .WORD T$LOLIM
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST

```

.WORD T\$LOLIM

```

                                .NLIST
015020      .ENDC
            MSGNINS <.WORD T$HILIM>
            .IF LT SVCINS
            .WORD T$HILIM
            .MEXIT
            .ENDC

```

```

015020 177777      .IF EQ SVCINS
                  .WORD T$HILIM
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST

```

.WORD T\$HILIM

```

                                .NLIST
            .ENDC
            .IF NE T$EXCP
            M$WORD T$EXCP
            .ENDC
            .IF NB
            M$WORD </2>
            .ENDC

```

```

38 015022      GPRMD PT.S2,PT.SNUM+2,D,-1,0,-1,NO
            .MCALL M$RADIX,M$DEFAULT,M$EXCP,M$WORD,M$CNTOP
            .IF IDN A,D
            .IF EQ T$GMANID
            .ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'
            .ENDC
            .ENDC

```

```

000000      T$TEMP=PT.SNUM+2&1
            .IF NE T$TEMP & 1
            .ERROR ;ODD OFFSET
            .ENDC
            .IF LT G$OFFSIZE-PT.SNUM+2
            .ERROR ;OFFSET TOO BIG
            .ENDC

```

```

015022 004002      T$CODE=G$PRMD + <PT.SNUM+2 * G$OFFSET>
            M$RADIX D,T$TEMP
            .IF IDN B,D
            T$TEMP G$RADB
            .MEXIT
            .ENDC

```



```

177777      .IFF
            .IF B,
            T$HILIM=-1
            .IFF
            .ERROR ;ILL. DEFERRED MODE
            .ENDC
015022      .ENDC
            M$CNTOP <>,<T$CODE>
            .IF NB
            .IF NE ISSFT - F$BGN
            .ERROR ; "COUNT" OPTION VALID ONLY IN S.W. QUES.
            .MEXIT
            .ENDC
            T$CODE=T$CODE ! G$CNTOP
            .ENDC
015022      M$WORD <T$CODE,PTM.S2,-1,T$LOLIM,T$HILIM>
            .MCALL M$GNINS
            .IRP N,<T$CODE,PTM.S2,-1,T$LOLIM,T$HILIM>
            M$GNINS <.WORD N>
            .ENDM
015022      M$GNINS <.WORD T$CODE>
            .IF LT SVCINS
            .WORD T$CODE
            .MEXIT
            .ENDC
015022 004042 .IF EQ SVCINS
            .WORD T$CODE
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
            .WORD T$CODE
            .NLIST
015024      .ENDC
            M$GNINS <.WORD PTM.S2>
            .IF LT SVCINS
            .WORD PTM.S2
            .MEXIT
            .ENDC
015024 015320 .IF EQ SVCINS
            .WORD PTM.S2
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST
            .WORD PTM.S2
            .NLIST
015026      .ENDC
            M$GNINS <.WORD -1>
            .IF LT SVCINS
            .WORD -1
            .MEXIT
            .ENDC
015026 177777 .IF EQ SVCINS
            .WORD -1
            .MEXIT
            .ENDC

```

```

        .IF GT SVCINS
        .LIST
                                .NLIST
                                .WORD -1
015030 .ENDC
MSGNINS <.WORD T$LOLIM>
        .IF LT SVCINS
        .WORD T$LOLIM
        .MEXIT
        .ENDC
015030 000000 .IF EQ SVCINS
        .WORD T$LOLIM
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                .WORD T$LOLIM
015032 .ENDC
MSGNINS <.WORD T$HILIM>
        .IF LT SVCINS
        .WORD T$HILIM
        .MEXIT
        .ENDC
015032 177777 .IF EQ SVCINS
        .WORD T$HILIM
        .MEXIT
        .ENDC
        .IF GT SVCINS
        .LIST
                                .NLIST
                                .WORD T$HILIM
        .ENDC
        .IF NE T$EXCP
        M$WORD T$EXCP
        .ENDC
        .IF NB
        M$WORD </2>
        .ENDC
39 015034 GPRMD PTM.S3,PT.SNUM+4,D,-1,0,-1,NO
        .MCALL M$RADIX,M$DEFAULT,M$EXCP,M$WORD,M$CNTOP
        .IF IDN A,D
        .IF EQ T$GMANID
        .ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'
        .ENDC
        .ENDC
        T$TEMP=PT.SNUM+4&1
        .IF NE T$TEMP & 1
        .ERROR ;ODD OFFSET
        .ENDC
        .IF LT G$OFFSIZE-PT.SNUM+4
        .ERROR ;OFFSET TOO BIG
        .ENDC
        T$CODE=G$PRMD + <PT.SNUM+4 * G$OFFSET>
015034 005002 M$RADIX D,T$TEMP
        .IF IDN B,D
        T$TEMP-G$RADB
    
```

```
000040 .MEXIT
        .ENDC
        .IF IDN 0,D
        T$TEMP=G$RADO
        .MEXIT
        .ENDC
        .IF IDN D,D
        T$TEMP=G$RADD
        .MEXIT
        .ENDC
        .IF IDN L,D
        T$TEMP=G$RADL
        .MEXIT
        .ENDC
        .IF IDN A,D
        T$TEMP=G$RADA
        .MEXIT
        .ENDC
        T$TEMP=-1
        .ERROR ;ILL. RADIX 'D'
        T$CODE=T$CODE ! T$TEMP
015034 M$DEFAULT NO,T$TEMP
        .IF IDN YES,NO
        T$TEMP=G$YES
        .MEXIT
        .ENDC
        .IF IDN NO,NO
        T$TEMP=G$NO
        .MEXIT
        .ENDC
        T$TEMP--1
        .ERROR ;DEFAULT 'NO' MUST BE 'YES' OR 'NO'
        T$CODE=T$CODE ! T$TEMP
015034 T$EXCP=0
        M$EXCP T$CODE,T$EXCP,G$LOLIM,T$LOLIM,0
        .IF IDN <@>,<0>
        .IF LT G$OFSIZE-
        .ERROR ;INDIRECT PAR. TOO BIG
        .MEXIT
        .ENDC
        T$LOLIM-/2
        T$CODE=T$CODE ! G$EXCP
        T$EXCP-T$EXCP ! G$LOLIM
        .IFF
        .IF B,
        T$LOLIM-0
        .IFF
        .ERROR ;ILL. DEFERRED MODE
        .ENDC
        .ENDC
015034 M$EXCP T$CODE,T$EXCP,G$HILIM,T$HILIM,-1
        .IF IDN <@>,<-1>
        .IF LT G$OFSIZE-
        .ERROR ;INDIRECT PAR. TOO BIG
        .MEXIT
        .ENDC
        T$HILIM /2
```

```

                                T$CCODE=T$CODE . G$EXCP
                                T$EXCP=T$EXCP . G$HILIM
                                .IFF
                                .IF B,
177777                                T$HILIM=-1
                                .IFF
                                .ERROR ;ILL. DEFERRED MODE
                                .ENDC
015034                                .ENDC
                                M$CNTOP <>,<T$CODE>
                                .IF NB
                                .IF NE I$SFT - F$BGN
                                .ERROR ; "COUNT" OPTION VALID ONLY IN S.W. QUES.
                                .MEXIT
                                .ENDC
                                T$CODE=T$CODE . G$CNTOP
                                .ENDC
015034                                M$WORD <T$CODE,PTM.S3,-1,T$LOLIM,T$HILIM>
                                .MCALL M$GNINS
                                .IRP N,<T$CODE,PTM.S3,-1,T$LOLIM,T$HILIM>
                                M$GNINS <.WORD N>
                                .ENDM
015034                                M$GNINS <.WORD T$CODE>
                                .IF LT SVCINS
                                .WORD T$CODE
                                .MEXIT
                                .ENDC
015034 005042                                .IF EQ SVCINS
                                .WORD T$CODE
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD T$CODE
                                                                .NLIST
                                .ENDC
015036                                M$GNINS <.WORD PTM.S3>
                                .IF LT SVCINS
                                .WORD PTM.S3
                                .MEXIT
                                .ENDC
015036 015327                                .IF EQ SVCINS
                                .WORD PTM.S3
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD PTM.S3
                                                                .NLIST
                                .ENDC
015040                                M$GNINS <.WORD -1>
                                .IF LT SVCINS
                                .WORD -1
                                .MEXIT
                                .ENDC
015040 177777                                .IF EQ SVCINS
                                .WORD -1

```



```

.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .WORD -1
                                .NLIST
015042 .ENDC
MSGNINS <.WORD T$LOLIM>
.IF LT SVCINS
.WORD T$LOLIM
.MEXIT
.ENDC
015042 000000 .IF EQ SVCINS
.WORD T$LOLIM
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .WORD T$LOLIM
                                .NLIST
015044 .ENDC
MSGNINS <.WORD T$HILIM>
.IF LT SVCINS
.WORD T$HILIM
.MEXIT
.ENDC
015044 177777 .IF EQ SVCINS
.WORD T$HILIM
.MEXIT
.ENDC
.IF GT SVCINS
.LIST
                                .WORD T$HILIM
                                .NLIST
015046 .ENDC
.IF NE T$EXCP
M$WORD T$EXCP
.ENDC
.IF NB
M$WORD </?>
.ENDC
40 015046 GPRMD PTM.S4,PT.SNUM+6,D,-1,0,-1,NO
.MCALL M$RADIX,M$DEFAULT,M$EXCP,M$WORD,M$CNTOP
.IF IDN A,D
.IF EQ T$GMANID
.ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'
.ENDC
.ENDC
000000 T$TEMP-PT.SNUM+6&1
.IF NE T$TEMP & 1
.ERROR ;ODD OFFSET
.ENDC
.IF LT G$OFFSIZE-PT.SNUM+6
.ERROR ;OFFSET TOO BIG
.ENDC
015046 006002 T$CODE-G$PRMD + <PT.SNUM+6 * G$OFFSET>
M$RADIX D,T$TEMP

```

```

      .IF IDN B,D
      T$TEMP=G$RADB
      .MEXIT
      .ENDC
      .IF IDN O,D
      T$TEMP=G$RADO
      .MEXIT
      .ENDC
000040 .IF IDN D,D
      T$TEMP=G$RADD
      .MEXIT
      .ENDC
      .IF IDN L,D
      T$TEMP=G$RADL
      .MEXIT
      .ENDC
      .IF IDN A,D
      T$TEMP=G$RADA
      .MEXIT
      .ENDC
      T$TEMP=-1
015046 006042 .ERROR ;ILL. RADIX 'D'
      T$CODE=T$CODE ! T$TEMP
      M$DEFAULT NO,T$TFMP
      .IF IDN YES,NO
      T$TEMP=G$YES
      .MEXIT
      .ENDC
      .IF IDN NO,NO
      T$TEMP=G$NO
      .MEXIT
      .ENDC
      T$TEMP=-1
      .FRROR ;DEFAULT 'NO' MUST BE 'YES' OR 'NO'
015046 006042 T$CODE=T$CODE ! T$TEMP
      000000 T$EXCP=0
      M$EXCP T$CODE,T$EXCP,G$LOLIM,T$LOLIM,0
      .IF IDN <@>,<0>
      .IF LT G$OF SIZE-
      .ERROR ;INDIRECT PAR. TOO BIG
      .MEXIT
      .ENDC
      T$LOLIM=/2
      T$CODE-T$CODE ! G$EXCP
      T$EXCP=T$EXCP ! G$LOLIM
      .IFF
      .IF B,
      T$LOLIM=0
      .IFF
      .ERROR ;ILL. DEFERRED MODE
      .ENDC
      .ENDC
015046 M$EXCP T$CODE,T$EXCP,G$HILIM,T$HILIM,-1
      .IF IDN <@>,<-1>
      .IF LT G$OF SIZE-
      .ERROR ;INDIRECT PAR. TOO BIG
      .MEXIT

```

```

                                .ENDC
                                T$HILIM=12
                                T$CODE=T$CODE : G$EXCP
                                T$EXCP=T$EXCP : G$HILIM
                                .IFF
                                .IF B,
                                177777 T$HILIM=-1
                                .IFF
                                .ERROR ;ILL. DEFERRED MODE
                                .ENDC
015046 .ENDC
                                M$CNTOP <>,<T$CODE>
                                .IF NB
                                .IF NE I$SFT - F$BGN
                                .ERROR ; "COUNT" OPTION VALID ONLY IN S.W. QUES.
                                .MEXIT
                                .ENDC
                                T$CODE=T$CODE ! G$CNTOP
015046 .ENDC
                                M$WORD <T$CODE,PTM.S4,-1,T$LLOLIM,T$HILIM>
                                .MCALL M$GNINS
                                .IRP N,<T$CODE,PTM.S4,-1,T$LLOLIM,T$HILIM>
                                M$GNINS <.WORD N>
015046 .ENDM
                                M$GNINS <.WORD T$CODE>
                                .IF LT SVCINS
                                .WORD T$CODE
                                .MEXIT
                                .ENDC
015046 006042 .IF EQ SVCINS
                                .WORD T$CODE
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD T$CODE
                                                                .NLIST
015050 .ENDC
                                M$GNINS <.WORD PTM.S4>
                                .IF LT SVCINS
                                .WORD PTM.S4
                                .MEXIT
                                .ENDC
015050 015336 .IF EQ SVCINS
                                .WORD PTM.S4
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                                                .WORD PTM.S4
                                                                .NLIST
015052 .ENDC
                                M$GNINS <.WORD -1>
                                .IF LT SVCINS
                                .WORD -1
                                .MEXIT
                                .ENDC
```

```

015052 177777      .IF EQ SVCINS
                   .WORD -1
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST
                                     .NLIST
                                     .WORD -1
015054             .ENDC
MSGNINS <.WORD T$LOLIM>
                   .IF LT SVCINS
                   .WORD T$LOLIM
                   .MEXIT
                   .ENDC
015054 000000     .IF EQ SVCINS
                   .WORD T$LOLIM
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST
                                     .NLIST
                                     .WORD T$LOLIM
015056             .ENDC
MSGNINS <.WORD T$HILIM>
                   .IF LT SVCINS
                   .WORD T$HILIM
                   .MEXIT
                   .ENDC
015056 177777     .IF EQ SVCINS
                   .WORD T$HILIM
                   .MEXIT
                   .ENDC
                   .IF GT SVCINS
                   .LIST
                                     .NLIST
                                     .WORD T$HILIM
                   .ENDC
                   .IF NE T$EXCP
MSWORD T$EXCP
                   .ENDC
                   .IF NB
MSWORD </2>
                   .ENDC
PTDONE:
41 015060         .ENDHRD
42 015060         .MCALL M$POP,MSGNINS,MSGNTAG,M$ENDERR
43 015060         M$POP T$NS,T$NESTLEV,T$TEMP
015060         .MCALL M$GETS,M$DECR
                   .IF LT T$NESTLEV
                   .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
                   .MEXIT
                   .ENDC
015060         M$GETS T$NS,\T$NESTLEV,T$TEMP
015060 000004     T$TEMP-T$NS1
015060 000000     M$DECR T$NESTLEV
                   T$NESTLEV-T$NESTLEV-1
    
```

```

015060      .IF EQ F$HARD-T$TEMP
            MSGNINS .EVEN
            .IF LT SVCINS
            .EVEN
            .MEXIT
            .ENDC
            .IF EQ SVCINS
            .EVEN
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST

```

.EVEN

```

                                .NLIST
015060      .ENDC
            MSGNTAG L,T$$HARD
015060      .MCALL MSGEN
            MSGEN L,\T$$HARD,SVCTAG
015060      .IF LE SVCTAG
            L10021:
            .MEXIT
            .ENDC
            .LIST

```

L10021:

010000  
000041

```

                                .NLIST
            S$LSYM=T$LSYM
            I$HRD=F$END
            .IFF
            M$ENDERR      ENDHRD,T$TEMP
            .ENDC

```

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```

                                .NLIST
015060      PTM.UBA:      .ASCIZ 'UNIBUS ADDRESS OF UDA'
015106      PTM.UNIT:    .ASCIZ 'UNIT NUMBER TO FORMAT'
015134      PTM.RES:     .ASCIZ 'USE RESIDENT FCT'
015155      PTM.STP:     .ASCIZ 'STOP IF RESIDENT FCT IS BAD'
015211      PTM.DLL:     .ASCIZ 'DOWN LINE LOAD FCT'
015234      PTM.SNUM:    .ASCIZ 'SERIAL NUMBER TO BE ASSIGNED (TOTAL 4 WORDS) WORD 1'
015320      PTM.S2:      .ASCIZ 'WORD 2'
015327      PTM.S3:      .ASCIZ 'WORD 3'
015336      PTM.S4:      .ASCIZ 'WORD 4'

```

.EVEN

```

000004      DLLFCT =      4      ; DOWN LINE LOAD FCT FLAG
000002      STPBAD      2      ; STOP IF FCT COPY IS BAD FLAG
000001      USERES     -      1      ; USE RESIDENT FCT FLAG

```

```
1
2 015346          .SBTTL SOFTWARE PARAMETER CODING SECTION
                  BGNSFT
                  .MCALL MSPUSH,MSINCR,MSGNINS,MSGNGBL
015346 000040     ISSFT=FBGN
                  MSPUSH T$NS,T$NESTLEV,F$SOFT
015346          .MCALL MSINCR,M$SETS
015346 000001     MSINCR T$NESTLEV
                  T$NESTLEV=T$NESTLEV+1
015346 000005     M$SETS T$NS,\T$NESTLEV,F$SOFT
010022          T$NS1-F$SOFT
015346 010023     T$$$SOFT-T$TAGNUM
                  MSINCR T$TAGNUM
                  T$TAGNUM=T$TAGNUM+1
                  .IRP TAG,<\T$$$SOFT>
015346          MSGNINS <.WORD L'TAG'-L$SOFT/2>
                  .ENDM
                  MSGNINS <.WORD L10022-L$SOFT/2>
                  .IF LT SVCINS
                  .WORD L10022-L$SOFT/2
                  .MEXIT
                  .ENDC
015346 000024     .IF EQ SVCINS
                  .WORD L10022-L$SOFT/2
                  .MEXIT
                  .ENDC
                  .IF GT SVCINS
                  .LIST
                  .WORD L10022-L$SOFT/2

                  .NLIST

015350          .ENDC
                  MSGNGBL L$SOFT
                  .MCALL M$GEN
                  .IF NB,L$SOFT
                  .IF NB,
015350          M$GEN L$SOFT,.,SVCGBL,
                  .ENDC
                  .IF B,
015350          M$GEN L$SOFT,.,SVCGBL,< >
                  .IF LE SVCGBL
015350          L$SOFT::
                  .MEXIT
                  .ENDC
                  .LIST
                  .NLIST
                  L$SOFT::

                  .ENDC
                  .ENDC

3
4 015350          GPRMD STM.DATE,0,D,-1,0,-1,YES
                  .MCALL MSRADIX,M$DEFAULT,M$EXCP,M$WORD,M$CNTOP
                  .IF IDN A,D
                  .IF EQ T$GMANID
                  .ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'
                  .ENDC
                  .ENDC
000000          T$TEMP 0&1
                  .IF NE T$TEMP & 1
```



```

015350 .ENDC
      .ENDC
      M$EXCP T$CODE,T$EXCP,G$HILIM,T$HILIM,-1
      .IF IDN <@>,<-1>
      .IF LT G$OF$SIZE-
      .ERROR ;INDIRECT PAR. TOO BIG
      .MEXIT
      .ENDC
      T$HILIM=/2
      T$CODE=T$CODE ! G$EXCP
      T$EXCP=T$EXCP ! G$HILIM
      .IFF
      .IF B,
177777 T$HILIM=-1
      .IFF
      .ERROR ;ILL. DEFERRED MODE
      .ENDC
015350 .ENDC
      M$CNTOP <>,<T$CODE>
      .IF NB
      .IF NE I$SFT - F$BGN
      .ERROR ; "COUNT" OPTION VALID ONLY IN S.W. QUES.
      .MEXIT
      .ENDC
      T$CODE=T$CODE ! G$CNTOP
      .ENDC
015350 M$WORD <T$CODE,STM.DATE,-1,T$LLOLIM,T$HILIM>
      .MCALL M$GNINS
      .IRP N,<T$CODE,STM.DATE,-1,T$LLOLIM,T$HILIM>
      M$GNINS <.WORD N>
      .ENDM
015350 M$GNINS <.WORD T$CODE>
      .IF LT SVCINS
      .WORD T$CODE
      .MEXIT
      .ENDC
015350 000052 .IF EQ SVCINS
      .WORD T$CODE
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .NLIST
      .WORD T$CODE
      .ENDC
015352 M$GNINS <.WORD STM.DATE>
      .IF LT SVCINS
      .WORD STM.DATE
      .MEXIT
      .ENDC
015352 015420 .IF EQ SVCINS
      .WORD STM.DATE
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
      .WORD STM.DATE

```



```

                                .NLIST
015354      .ENDC
            M$GNINS <.WORD -1>
            .IF LT SVCINS
            .WORD -1
            .MEXIT
            .ENDC
015354 177777 .IF EQ SVCINS
            .WORD -1
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST

```

.WORD -1

```

                                .NLIST
015356      .ENDC
            M$GNINS <.WORD T$LOLIM>
            .IF LT SVCINS
            .WORD T$LOLIM
            .MEXIT
            .ENDC
015356 000000 .IF EQ SVCINS
            .WORD T$LOLIM
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST

```

.WORD T\$LOLIM

```

                                .NLIST
015360      .ENDC
            M$GNINS <.WORD T$HILIM>
            .IF LT SVCINS
            .WORD T$HILIM
            .MEXIT
            .ENDC
015360 177777 .IF EQ SVCINS
            .WORD T$HILIM
            .MEXIT
            .ENDC
            .IF GT SVCINS
            .LIST

```

.WORD T\$HILIM

```

                                .NLIST
5 015362      .ENDC
            .IF NE T$EXCP
            M$WORD T$EXCP
            .ENDC
            .IF NB
            M$WORD </2>
            .ENDC
            GPRMD STM.D2,2,D,-1,0,-1,YES
            .MCALL M$RADIX,M$DEFAULT,M$EXCP,M$WORD,M$CNTOP
            .IF IDN A,D
            .IF EQ T$GMANID
            .ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'
            .ENDC
            .ENDC

```

```

000000      T$TEMP=2&1
              .IF NE T$TEMP & 1
              .ERROR ;ODD OFFSET
              .ENDC
              .IF LT G$OFFSIZE-2
              .ERROR ;OFFSET TOO BIG
              .ENDC
015362 001002 T$CODE=G$PRMD + <2 * G$OFFSET>
              M$RADIX D,T$TEMP
              .IF IDN B,D
              T$TEMP=G$RADB
              .MEXIT
              .ENDC
              .IF IDN O,D
              T$TEMP=G$RADO
              .MEXIT
              .ENDC
              .IF IDN D,D
              T$TEMP=G$RADD
              .MEXIT
              .ENDC
              .IF IDN L,D
              T$TEMP=G$RADL
              .MEXIT
              .ENDC
              .IF IDN A,D
              T$TEMP=G$RADA
              .MEXIT
              .ENDC
              T$TEMP=-1
              .ERROR ;ILL. RADIX 'D'
              T$CODE=T$CODE : T$TEMP
              M$DEFAULT YES,T$TEMP
000040      .IF IDN YES,YES
              T$TEMP=G$YES
              .MEXIT
              .ENDC
              .IF IDN NO,YES
              T$TEMP G$NO
              .MEXIT
              .ENDC
              T$TEMP--1
              .ERROR ;DEFAULT 'YES' MUST BE 'YES' OR 'NO'
              T$CODE=T$CODE : T$TEMP
              T$EXCP=0
015362 001052 M$EXCP T$CODE,T$EXCP,G$LOLIM,T$LOLIM,0
              .IF IDN <@>,<0>
              .IF LT G$OFFSIZE-
              .ERROR ;INDIRECT PAR. TOO BIG
              .MEXIT
              .ENDC
              T$LOLIM=/2
              T$CODE=T$CODE : G$EXCP
              T$EXCP T$EXCP : G$LOLIM
              .IFF
              .IF B,
000000      T$LOLIM 0

```

```

    .IFF
    .ERROR ;ILL. DEFERRED MODE
    .ENDC
    .ENDC
015362 M$EXCP T$CODE,T$EXCP,G$HILIM,T$HILIM,-1
    .IF IDN <@>,<-1>
    .IF LT G$OFSIZE-
    .ERROR ;INDIRECT PAR. TOO BIG
    .MEXIT
    .ENDC
    T$HILIM=/2
    T$CODE=T$CODE : G$EXCP
    T$EXCP=T$EXCP : G$HILIM
    .IFF
    .IF B,
177777 T$HILIM=-1
    .IFF
    .ERROR ;ILL. DEFERRED MODE
    .ENDC
    .ENDC
015362 M$CNTOP <>,<T$CODE>
    .IF NB
    .IF NE I$SFT - F$BGN
    .ERROR ; "COUNT" OPTION VALID ONLY IN S.W. QUES.
    .MEXIT
    .ENDC
    T$CODE=T$CODE : G$CNTOP
    .ENDC
015362 M$WORD <T$CODE,STM.D2,-1,T$LOLIM,T$HILIM>
    .MCALL M$GNINS
    .IRP N,<T$CODE,STM.D2,-1,T$LOLIM,T$HILIM>
015362 M$GNINS <.WORD N>
    .ENDM
    M$GNINS <.WORD T$CODE>
    .IF LT SVCINS
    .WORD T$CODE
    .MEXIT
    .ENDC
015362 001052 .IF EQ SVCINS
    .WORD T$CODE
    .MEXIT
    .ENDC
    .IF GT SVCINS
    .LIST
    .WORD T$CODE
    .NLIST
    .ENDC
015364 M$GNINS <.WORD STM.D2>
    .IF LT SVCINS
    .WORD STM.D2
    .MEXIT
    .ENDC
015364 015467 .IF EQ SVCINS
    .WORD STM.D2
    .MEXIT
    .ENDC
    .IF GT SVCINS
    
```

```

                                .LIST
                                .NLIST
                                .WORD STM.D2
015366 .ENDC
MSGNINS <.WORD -1>
      .IF LT SVCINS
      .WORD -1
      .MEXIT
      .ENDC
015366 177777 .IF EQ SVCINS
      .WORD -1
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
                                .NLIST
                                .WORD -1
015370 .ENDC
MSGNINS <.WORD T$LOLIM>
      .IF LT SVCINS
      .WORD T$LOLIM
      .MEXIT
      .ENDC
015370 000000 .IF EQ SVCINS
      .WORD T$LOLIM
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
                                .NLIST
                                .WORD T$LOLIM
015372 .ENDC
MSGNINS <.WORD T$HILIM>
      .IF LT SVCINS
      .WORD T$HILIM
      .MEXIT
      .ENDC
015372 177777 .IF EQ SVCINS
      .WORD T$HILIM
      .MEXIT
      .ENDC
      .IF GT SVCINS
      .LIST
                                .NLIST
                                .WORD T$HILIM
015374 .ENDC
      .IF NE T$EXCP
      M$WORD T$EXCP
      .ENDC
      .IF NB
      M$WORD </2>
      .ENDC
      GPRMD STM.D3,4,D,-1,0,-1,YES
      .MCALL M$RADIX,M$DEFAULT,M$EXCP,M$WORD,M$CNTOP
      .IF IDN A,D
      .IF EQ T$GMANID
      .ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'

```

```
                                .ENDC
                                .ENDC
000000                          T$TEMP=4&1
                                .IF NE T$TEMP & 1
                                .ERROR :ODD OFFSET
                                .ENDC
                                .IF LT G$OFFSIZE-4
                                .ERROR :OFFSET TOO BIG
                                .ENDC
015374 002002                  T$CODE=G$PRMD + <4 * G$OFFSET>
                                M$RADIX D,T$TEMP
                                .IF IDN B,D
                                T$TEMP=G$RADB
                                .MEXIT
                                .ENDC
                                .IF IDN O,D
                                T$TEMP=G$RADO
                                .MEXIT
                                .ENDC
                                .IF IDN D,D
                                T$TEMP=G$RADD
                                .MEXIT
                                .ENDC
                                .IF IDN L,D
                                T$TEMP=G$RADL
                                .MEXIT
                                .ENDC
                                .IF IDN A,D
                                T$TEMP=G$RADA
                                .MEXIT
                                .ENDC
                                T$TEMP=-1
                                .ERROR :ILL. RADIX 'D'
                                T$CODE-T$CODE ! T$TEMP
                                M$DEFAULT YES,T$TEMP
                                .IF IDN YES,YES
                                T$TEMP=G$YES
                                .MEXIT
                                .ENDC
                                .IF IDN NO,YES
                                T$TEMP=G$NO
                                .MEXIT
                                .ENDC
                                T$TEMP=-1
                                .ERROR :DEFAULT 'YES' MUST BE 'YES' OR 'NO'
                                T$CODE-T$CODE ! T$TEMP
                                T$EXCP=0
015374 002052                  M$EXCP T$CODE,T$EXCP,G$LLOLIM,T$LLOLIM,0
                                000000
                                .IF IDN <@>,<0>
                                .IF LT G$OFFSIZE-
                                .ERROR :INDIRECT PAR. TOO BIG
                                .MEXIT
                                .ENDC
                                T$LLOLIM /2
                                T$CODE-T$CODE : G$EXCP
                                T$EXCP T$EXCP : G$LLOLIM
                                .IFF
```



```

                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .WORD STM.D3
015400
                                .ENDC
MSGNINS <.WORD -1>
                                .IF LT SVCINS
                                .WORD -1
                                .MEXIT
                                .ENDC
015400 177777
                                .IF EQ SVCINS
                                .WORD -1
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .WORD -1
015402
                                .ENDC
MSGNINS <.WORD T$LOLIM>
                                .IF LT SVCINS
                                .WORD T$LOLIM
                                .MEXIT
                                .ENDC
015402 000000
                                .IF EQ SVCINS
                                .WORD T$LOLIM
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .WORD T$LOLIM
015404
                                .ENDC
MSGNINS <.WORD T$HILIM>
                                .IF LT SVCINS
                                .WORD T$HILIM
                                .MEXIT
                                .ENDC
015404 177777
                                .IF EQ SVCINS
                                .WORD T$HILIM
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .NLIST
                                .WORD T$HILIM
015406
                                .ENDC
                                .IF NE T$EXCP
MSWORD T$EXCP
                                .ENDC
                                .IF NB
MSWORD </2>
                                .ENDC
                                GPRMD STM.D4,6,D,-1,0,-1,YES
                                .MCALL MSRADIX,MSDEFAULT,MSEXCP,MSWORD,MSCNTOP
                                .IF IDN A,D
```

```
                                .IF EQ T$GMANID
                                .ERROR ;ASCII RADIX VALID ONLY ON 'GMANID'
                                .ENDC
                                .ENDC
000000 T$TEMP-6&1
                                .IF NE T$TEMP & 1
                                .ERROR ;ODD OFFSET
                                .ENDC
                                .IF LT G$OFFSIZE-6
                                .ERROR ;OFFSET TOO BIG
                                .ENDC
015406 003002 T$CODE=G$PRMD + <6 * G$OFFSET>
                                M$RADIX D,T$TEMP
                                .IF IDN B,D
                                T$TEMP-G$RADB
                                .MEXIT
                                .ENDC
                                .IF IDN O,D
                                T$TEMP=G$RADO
                                .MEXIT
                                .ENDC
                                .IF IDN D,D
                                T$TEMP-G$RADD
                                .MEXIT
                                .ENDC
                                .IF IDN L,D
                                T$TEMP-G$RADL
                                .MEXIT
                                .ENDC
                                .IF IDN A,D
                                T$TEMP-G$RADA
                                .MEXIT
                                .ENDC
                                T$TEMP=-1
                                .ERROR ;ILL. RADIX 'D'
                                T$CODE=T$CODE ! T$TEMP
                                M$DEFAULT YES,T$TEMP
015406 003042 .IF IDN YES,YES
                                T$TEMP G$YES
                                .MEXIT
                                .ENDC
                                .IF IDN NO,YES
                                T$TEMP-G$NO
                                .MEXIT
                                .ENDC
                                T$TEMP -1
                                .ERROR ;DEFAULT 'YES' MUST BE 'YES' OR 'NO'
                                T$CODE=T$CODE ! T$TEMP
                                T$EXCP-0
015406 003052 M$EXCP T$CODE,T$EXCP,G$LOLIM,T$LOLIM,0
                                000000 .IF IDN <@>,<0>
                                .IF LT G$OFFSIZE-
                                .ERROR ;INDIRECT PAR. TOO BIG
                                .MEXIT
                                .ENDC
                                T$LOLIM=/2
                                T$CODE=T$CODE . G$EXCP
```



```

                                T$EXCP T$EXCP . G$LOLIM
                                .IFF
000000                          .IF B,
                                T$LOLIM=0
                                .IFF
                                .ERROR ;ILL. DEFERRED MODE
                                .ENDC
015406                          .ENDC
                                M$EXCP T$CODE,T$EXCP,G$HILIM,T$HILIM,-1
                                .IF IDN <@>,<-1>
                                .IF LT G$OFSIZE-
                                .ERROR ;INDIRECT PAR. TOO BIG
                                .MEXIT
                                .ENDC
                                T$HILIM-/2
                                T$CODE-T$CODE ! G$EXCP
                                T$EXCP-T$EXCP ! G$HILIM
                                .IFF
                                .IF B,
                                .IF B,
177777                          T$HILIM=-1
                                .IFF
                                .ERROR ;ILL. DEFERRED MODE
                                .ENDC
                                .ENDC
015406                          M$CNTOP <>,<T$CODE>
                                .IF NB
                                .IF NE I$SFT - F$BGN
                                .ERROR ; "COUNT" OPTION VALID ONLY IN S.W. QUES.
                                .MEXIT
                                .ENDC
                                T$CODE=T$CODE ! G$CNTOP
                                .ENDC
015406                          M$WORD <T$CODE,STM.D4,-1,T$LOLIM,T$HILIM>
                                .MCALL MSGNINS
                                .IRP N,<T$CODE,STM.D4,-1,T$LOLIM,T$HILIM>
                                MSGNINS <.WORD N>
                                .ENDM
015406                          MSGNINS <.WORD T$CODE>
                                .IF LT SVCINS
                                .WORD T$CODE
                                .MEXIT
                                .ENDC
015406 003052                  .IF EQ SVCINS
                                .WORD T$CODE
                                .MEXIT
                                .ENDC
                                .IF GT SVCINS
                                .LIST
                                .WORD T$CODE
                                .NLIST
015410                          .ENDC
                                MSGNINS <.WORD STM.D4>
                                .IF LT SVCINS
                                .WORD STM.D4
                                .MEXIT
                                .ENDC
                                .IF EQ SVCINS

```

```
015410 015505          .WORD  STM.D4
                      .MEXIT
                      .ENDC
                      .IF GT SVCINS
                      .LIST
                      .NLIST
                      .WORD  STM.D4
015412                .ENDC
MSGNINS <.WORD -1>
                      .IF LT SVCINS
                      .WORD  -1
                      .MEXIT
                      .ENDC
015412 177777        .IF EQ SVCINS
                      .WORD  -1
                      .MEXIT
                      .ENDC
                      .IF GT SVCINS
                      .LIST
                      .NLIST
                      .WORD  -1
015414                .ENDC
MSGNINS <.WORD T$LOLIM>
                      .IF LT SVCINS
                      .WORD  T$LOLIM
                      .MEXIT
                      .ENDC
015414 000000        .IF EQ SVCINS
                      .WORD  T$LOLIM
                      .MEXIT
                      .ENDC
                      .IF GT SVCINS
                      .LIST
                      .NLIST
                      .WORD  T$LOLIM
015416                .ENDC
MSGNINS <.WORD T$HILIM>
                      .IF LT SVCINS
                      .WORD  T$HILIM
                      .MEXIT
                      .ENDC
015416 177777        .IF EQ SVCINS
                      .WORD  T$HILIM
                      .MEXIT
                      .ENDC
                      .IF GT SVCINS
                      .LIST
                      .NLIST
                      .WORD  T$HILIM
                      .ENDC
                      .IF NE T$EXCP
MSWORD T$EXCP
                      .ENDC
                      .IF NB
MSWORD </2>
                      .ENDC
```

```

9 015420          ENDSFT
015420          .MCALL MSPOP,MSGNINS,MSGNTAG,MSENDERR
                MSPOP  TSNS,TSNESTLEV,T$TEMP
015420          .MCALL MSGETS,MSDECR
                .IF LT  TSNESTLEV
                .ERROR TSNESTLEV      ; MACRO TSNS UNDERFLOW
                .MEXIT
                .ENDC
015420          MSGETS  TSNS,\TSNESTLEV,T$TEMP
015420 000005    T$TEMP=TSNST
015420          MSDECR  TSNESTLEV
015420 000000    TSNESTLEV=TSNESTLEV-1
                .IF EQ F$SOFT-T$TEMP
015420          MSGNINS .EVEN
                .IF LT SVCINS
                .EVEN
                .MEXIT
                .ENDC
                .IF EQ SVCINS
                .EVEN
                .MEXIT
                .ENDC
                .IF GT SVCINS
                .LIST
                                .EVEN
                                .NLIST
015420          .ENDC
015420          MSGNTAG L,T$$$SOFT
015420          .MCALL MSGEN
015420          MSGEN  L,\T$$$SOFT,SVCTAG
015420          .IF LE  SVCTAG
015420          L10022:
                .MEXIT
                .ENDC
                .LIST
                                L10022:
                                .NLIST
010000          $$LSYM=T$LSYM
000041          I$SFT=F$END
                .IFF
015420          MSENDERR      ENDSFT,T$TEMP
                .ENDC
10 015420      104      101      124  STM.DATE:      .ASCIZ  'DATE VAX FORMAT (TOTAL 4 WORDS) WORD 1'
11 015467      127      117      122  STM.D2:      .ASCIZ  'WORD 2'
12 015476      127      117      122  STM.D3:      .ASCIZ  'WORD 3'
13 015505      127      117      122  STM.D4:      .ASCIZ  'WORD 4'
14
15 015514          $PATCH:
16 015514          .BLKW  20
17
18          :XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
19          :          THIS IS A PATCH AREA THAT SHOULD BE INCLUDED IN ALL DIAGNOSTICS.
20          :          ADJUST THE SIZE TO FIT YOUR OWN PREFERENCES.
21          :XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
22
23 015554          LASTAD
                .MCALL  MSGNINS,MSGNGBL
    
```

```

015554      MSGNINS .EVEN
           .IF LT SVCINS
           .EVEN
           .MEXIT
           .ENDC
           .IF EQ SVCINS
           .EVEN
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST

```

.EVEN

000001

.NLIST

```

015554      .ENDC
           T$LAST=1
           .IF EQ O$SETUP
015554      M$WORD <0>
           M$WORD <0>
           .IFF
015554      MSGNINS <.WORD T$FREE>
           .IF LT SVCINS
           .WORD T$FREE
           .MEXIT
           .ENDC
015554 015602 .IF EQ SVCINS
           .WORD T$FREE
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST

```

.WORD T\$FREE

.NLIST

```

015556      .ENDC
           MSGNINS <.WORD T$SIZE>
           .IF LT SVCINS
           .WORD T$SIZE
           .MEXIT
           .ENDC
015556 000011 .IF EQ SVCINS
           .WORD T$SIZE
           .MEXIT
           .ENDC
           .IF GT SVCINS
           .LIST

```

.WORD T\$SIZE

.NLIST

015560 000000

```

           .ENDC
           .ENDC
           SVCGBL=0
015560      M$GNGBL L$LAST
           .MCALL M$GEN
           .IF NB,L$LAST
           .IF NB,
           M$GEN L$LAST,.,SVCGBL,
           .ENDC
015560      .IF B,
           M$GEN L$LAST,.,SVCGBL,< >

```

```

015560          .IF LE SVCGBL
                L$LAST::
                .MEXIT
                .ENDC
                .LIST
                                .NLIST
                                .ENDC
                                .ENDC
24 015560 000001  T$LTNO-T$TESTNUM
                                ENDMOD
                .MCALL M$POP,M$ENDERR
                .IF EQ F$BGN-I$MOD
015560 000041  I$MOD-F$END
                .IFF
                .ERROR ; MISSING 'BGNMOD'
                .MEXIT
                .ENDC
015560  M$POP T$NS,T$NESTLEV,T$TEMP
                .MCALL M$GETS,M$DECR
                .IF LT T$NESTLEV
                .ERROR T$NESTLEV ; MACRO T$NS UNDERFLOW
                .MEXIT
                .ENDC
015560  M$GETS T$NS,\T$NESTLEV,T$TEMP
015560 000000  T$TEMP=T$NSO
015560 177777  M$DECR T$NESTLEV
                T$NESTLEV-T$NESTLEV-1
                .IF NE F$MOD-T$TEMP
                M$ENDERR ENDMOD,T$TEMP
                .ENDC

```

L\$LAST::

```
1  
2 015560 .SBTTL DEFAULT P-TABLE  
          BGNSETUP 1  
          .MCALL MSINCR  
          .IF NE F$END - I$SETUP  
          .ERROR ; ONLY 1 SETUP!  
          .MEXIT  
          .ENDC  
          .IF NE T$LAST-1  
          .ERROR ; 'LASTAD' MUST PRECEDE 'BGNSETUP'  
          .MEXIT  
          .ENDC  
          I$SETUP=F$BGN  
          T$$PTAB=T$TAGNUM  
015560 MSINCR T$TAGNUM  
          T$TAGNUM=T$TAGNUM+1  
          .IF NB 1  
          T$PCNT=1  
          T$$PC=1  
          .IFF  
          .ERROR ; MISSING # OF PTABLES  
          T$PCNT=1  
          .ENDC  
3 015560 BGNPTAB  
          .MCALL MSINCR,MS$DECR,MS$WORD,MSGNINS,MSGNTAG  
          .IF NE F$BGN-I$SETUP  
          .ERROR ; MISSING 'BGNSETUP'  
          .MEXIT  
          .ENDC  
          .IF NE F$END-I$PTAB  
          .ERROR ; MISSING 'ENDPTAB'  
          .MEXIT  
          .ENDC  
          I$PTAB=F$BGN  
          T$PTAB=T$TAGNUM  
015560 MSINCR T$TAGNUM  
          T$TAGNUM=T$TAGNUM+1  
015560 MS$DECR T$PCNT  
          T$PCNT=T$PCNT-1  
          .IF LE T$PCNT  
015560 MS$WORD <0>  
          .MCALL MSGNINS  
          .IRP N,<0>  
          MSGNINS <.WORD N>  
          .ENDM  
015560 MSGNINS <.WORD 0>  
          .IF LT SVCINS  
          .WORD 0  
          .MEXIT  
          .ENDC  
015560 000000 .IF EQ SVCINS  
          .WORD 0  
          .MEXIT  
          .ENDC  
          .IF GT SVCINS  
          .LIST
```

.NLIST

.WORD 0



.MEXIT  
.ENDC  
.LIST

L10025:

.NLIST

11  
12 015602

ENDSETUP  
.IF NE F\$BGN - I\$SETUP  
.ERROR ; MISSING 'BGNSETUP'  
.MEXIT  
.ENDC  
I\$SETUP=F\$END  
.IF NE T\$SPC - T\$PTNUM  
.ERROR ; PTABLE COUNT INCORRECT  
.ENDC  
T\$FREE=.  
T\$SIZE=-L\$LAST / 2  
T\$PTHV=T\$PTNUM  
.END

000041

015602  
000011  
000001  
000001

13



SYMBOL TABLE

ADR	00G020	G	C\$AUTO=	000061	C.INIT=	000020	F\$AUTO=	000020	HC.RES=	000010
ALOCM	002474		C\$BRK =	000022	C.NEXT=	000000	F\$BGN =	000040	HC.RSZ=	000004
ASKDLL	015000		C\$BSEG=	000004	C.REF =	000016	F\$CLEA=	000007	HC.SIZ=	000254
ASKFIL	014345		C\$BSUB=	000002	C.RING=	000010	F\$DU =	000016	HC.VC =	000012
ASSEMB=	000010		C\$CEFG=	000045	C.SIZE=	000044	F\$END =	000041	HDR.MW=	000000
ASSUMP=	*****		C\$CLCK=	000062	C.SNUM=	000030	F\$HARD=	000004	HDR.OV=	000004
BIT0 =	000001	G	C\$CLEA=	000012	C.TO =	000012	F\$HW -	000013	HOE =	100000 G
BIT00 =	000001	G	C\$CLOS=	000035	C.UADR=	000002	F\$INIT=	000006	IBE =	010000 G
BIT01 =	000002	G	C\$CLP1=	000006	C.UNIT=	000004	F\$JMP =	000050	ICONT =	000002 G
BIT02 =	000004	G	C\$CVEC=	000036	C.UNUM=	000020	F\$MOD =	000000	IDU =	000040 G
BIT03 =	000010	G	C\$DCLN=	000044	C.VEC =	000006	F\$MSG =	000011	IER =	020000 G
BIT04 =	000020	G	C\$DODU=	000051	DATE	002150	F\$PROT=	000021	IFLAGS	002222 G
BIT05 =	000040	G	C\$DRPT=	000024	DFPTBL	002130 G	F\$PWR =	000017	INIT1	013714
BIT06 =	000100	G	C\$DU =	000053	DIAGMC=	000000	F\$RPT =	000012	INIT2	013736
BIT07 =	000200	G	C\$EDIT=	000003	D'LFCT=	000004	F\$SEG =	000003	INIT3	014006
BIT08 =	000400	G	C\$ERDF=	000055	MOVRL	002206	F\$SOFT=	000005	INIT4	014044
BIT09 =	001000	G	C\$ERHR=	000056	DMPROG	002204	F\$SRV =	000010	INIT5	014062
BIT1 =	000002	G	C\$ERRO=	000060	DMTRLN	002210	F\$SUB =	000002	INTBF	012750 G
BIT10 =	002000	G	C\$ERSF=	000054	DUPERM	014300	F\$SW =	000014	INTBFL	013040
BIT11 =	004000	G	C\$ERSO=	000057	DUPERR	014270	F\$TEST=	000001	INTB1M	013461
BIT12 =	010000	G	C\$ESCA=	000010	DUP.VC=	001001	GETBLK	002656	INTB2M	013530
BIT13 =	020000	G	C\$ESEG=	000005	EF.BBR=	000200	GETDMR	003110	INTB3M	013575
BIT14 =	040000	G	C\$ESUB=	000003	EF.BBU=	000100	GETEOF	002764	INTB4M	013631
BIT15 =	100000	G	C\$ETST=	000001	EF.CON=	000036 G	GETFCT	005364	INTHD	013074
BIT2 =	000004	G	C\$EXIT=	000032	EF.FRS=	000200	GTSNUM	015010	INTM1	013121
BIT3 =	000010	G	C\$GETB=	000026	EF.LST=	000100	G\$CNT0=	000200	INTM2	013221
BIT4 =	000020	G	C\$GETW=	000027	EF.MIS=	000001	G\$DELM=	000372	INTM3	013253
BIT5 =	000040	G	C\$GMAN=	000043	EF.NEW=	000035 G	G\$DISP=	000003	INTM4	013331
BIT6 =	000100	G	C\$GPHR=	000042	EF.PWR=	000034 G	G\$EXCP=	000400	INTM5	013411
BIT7 =	000200	G	C\$GPLO=	000030	EF.RES=	000037 G	G\$HILI=	000002	INTM6	013435
BIT8 =	000400	G	C\$GPRI=	000040	EF.SDF=	000017	G\$LOLI=	000001	INTR1	012552 G
BIT9 =	001000	G	C\$INIT=	000011	EF.SD0=	000001	G\$NO =	000000	INTR2	012616 G
BLDCMD	002520		C\$INLP =	000020	EF.SD1=	000002	G\$OFFS=	000400	INTR3	012662 G
BLDC1	002564		C\$MANI=	000050	EF.SD2=	000004	G\$OFSI=	000376	IN.MS1=	003777
BLKFND	002752		C\$MEM =	000031	EF.SD3=	000010	G\$PRMA=	000001	IN.MS2=	003500
BOE =	000400	G	C\$MSG =	000023	EF.SHE=	000040	G\$PRMD=	000002	IN.MS3=	002000
CF.AVL=	100000		C\$OPEN=	000034	EF.STA=	000040 G	G\$PRML=	000000	IN.MS4=	003777
CF.MSC=	040000		C\$PNTB=	000014	ERRBLK	002166 G	G\$RADA=	000140	IN.RS1=	004000
CF.OTH=	020000		C\$PNTF=	000017	ERRMSG	002164 G	G\$RADB=	000000	IN.RS2=	010200
CF.RPL=	000001		C\$PNTS=	000016	ERRNBR	002162 G	G\$RADD=	000040	IN.RS3=	020000
CF.SHD=	000002		C\$PNTX=	000015	ERRTYP	002160 G	G\$RADL=	000120	IN.RS4=	040000
CF.THS=	010000		C\$QIO =	000377	EVL =	000004 G	G\$RADO=	000020	IN.WT1=	100000
CF.576=	000004		C\$RDBU=	000007	E\$END =	002100	G\$XFER=	000004	IN.WT3=	000000
CLRBFL	002642		C\$REFG=	000047	E\$LOAD=	000035	G\$YES =	000010	ISCAN	003170
CLRBUF	002614		C\$RESE=	000033	FCTFIL	014410	HCOMM	003144	ISCANX	003224
CTRLRS	002200		C\$REVI=	000003	FDATA	004436	HC.BF1=	000160	ISR =	000100 G
CT.AVL=	100000		C\$RFLA=	000021	FFREE	002170 G	HC.BF2=	000212	ISTART=	000001 G
CT.BRL=	007000		C\$RPT =	000025	FMEM	002174	HC.BSZ=	000032	IXE =	004000 G
CT.CMD=	000004		C\$SEFG=	000046	FMEMS	002176	HC.CCT=	000006	ISAU =	000041
CT.LD =	000001		C\$SPRI=	000041	FMERR	002310	HC.CEV=	000074	ISAUTO=	000041
CT.MSG=	000010		C\$SVEC=	000037	FMTERR	002330	HC.CMD=	000004	ISCLN =	000041
CT.REQ=	000020		C\$TPRI=	000013	FMTDNE	005440	HC.CPK=	000100	ISDU =	000041
CT.RN =	000002		C.CNT =	000040	FMTERR	006062	HC.MCT=	000002	ISHRD =	000041
CT.UNT=	000177		C.DFLG=	000022	FNAME	004422	HC.MEV=	000010	ISINIT=	000041
CT.VEC=	000777		C.FBLK=	000026	F\$SIZE	002172 G	HC.MPK=	000014	ISMOD =	000041
CYLCMP	005204		C.FBUF=	000024	FWORD	003646	HC.MSG=	000000	ISMSG =	000041
C\$AJ =	000052		C.FLG =	000014	F\$AU -	000015	HC.PSZ=	000060	ISPROT=	000040

SYMBOL TABLE

ISPTAB= 000041	L\$LAST 015560 G	MD.EXP= 100000	OSPOIN= 000001	P.SFTW= 000040
ISPWR 000041	L\$LOAD 002100 G	MD.FEU= 000002	OSSETU= 000001	P.SHST= 000020
ISRP - 000041	L\$LUN 002074 G	MD.NXU= 010000	PNT = 001000 G	P.SHUN= 000016
ISSEG - 000041	L\$MREV 002050 G	MD.ORD= 000040	POWDLY 013746	P.STS = 000012
ISSETU= 000041	L\$NAME 002000 G	MD.SCH= 002000	PRI = 002000 G	P.SZOF= 000012
ISSFT = 000041	L\$PRIO 002042 G	MD.SCL= 001000	PRI00 = 000000 G	P.TIME= 000024
ISSRV = 000041	L\$PROT 013664 G	MD.SEC= 000100	PRI01 = 000040 G	P.TRCK= 000026
ISSUB = 000041	L\$PRT 002112 G	MD.SER= 000020	PRI02 = 000100 G	P.TRLN= 000014
ISTCT = 000041	L\$REPP 002062 G	MD.SFT= 004000	PRI03 = 000140 G	P.UADR= 000020
JFK1 014653	L\$REV 002010 G	MD.SPD= 000001	PRI04 = 000200 G	P.UNCL= 000034
JFK5 014677	L\$RPT 013656 G	MD.SSH= 000010	PRI05 = 000240 G	P.UNFL= 000014
JSJMP = 000167	L\$SOFT 015350 G	MD.VOL= 000003	PRI06 = 000300 G	P.UNIT= 000004
KRANTZ 005244	L\$SPC 002056 G	MD.WBN= 000400	PRI07 = 000340 G	P.UNSZ= 000040
LDDM 011660	L\$SPCP 002020 G	MD.WBV= 000200	PTDONE 015060	P.UNTI= 000020
LDERR 011740	L\$SPTP 002024 G	MIDERR 003014	PTM.DL 015211	P.USEF= 000020
LDERRM 011752	L\$STA 002030 G	M.ERO 010627	PTM.RE 015134	P.VSER= 000044
LDNEXT 011734	L\$SW 002150 G	M.ER1 010672	PTM.SN 015234	RDERR 002320
LOAD 003226	L\$TEST 002114 G	M.ER10 011212	PTM.ST 015155	RDERRM 002411
LOADDM 003444	L\$TIML 002014 G	M.ER11 011225	PTM.S2 015320	RDERR1 003710
LOADER 003466	L\$UNIT 002012 G	M.ER12 011245	PTM.S3 015327	RDHIGH 002214
LOAEX 003460	L.CHVR= 000015	M.ER13 011312	PTM.S4 015336	RDLOW 002212
LOADE1 003326	L.CNTI= 000014	M.ER14 011332	PTM.UB 015060	RDREC 003500
LOADM1 003356	L.CYL = 000034	M.ER15 011351	PTM.UN 015106	RD.AT 002216
LOE = 040000 G	L.DATA= 000050	M.ER16 011371	PT.FLA 000004	RD.SZ = 000100
LOT = 000010 G	L.ERLC= 000030	M.ER17 011402	PT.SNU= 000006	READDM 004440
L\$ACP 002110 G	L.EVNT= 000000	M.ER18 011421	PT.UBA= 000000	READWD 004556
L\$APT 002036 G	L.GRP = 000040	M.ER19 011442	PT.UNI= 000002	REMMMSG 006202
L\$AUT 002070 G	L.SCTR= 000042	M.ER2 010715	P.BCNT= 000014	RESPCT 004572
L\$AUTO 014524 G	L.SLOT= 000002	M.ER20 011521	P.BUFF= 000020	RESPDM 004566
L\$CCP 002106 G	L.TRCK= 000041	M.ER21= 000000	P.CMST= 000020	RG.FLG= 040000
L\$CLEA 014526 G	L.UHVR= 000027	M.ER22 011544	P.CNCL= 000020	RG.OWN= 100000
L\$CO 002032 G	L.UNTI= 000016	M.ER3 010734	P.CNT = 000006	RM.CMP 006572
L\$DEPO 002011 G	L.USVR= 000026	M.ER4 010765	P.CNTF= 000014	RM.DCX 010027
L\$DESC 002260 G	L.VSER= 000044	M.ER5 011007	P.CNTI= 000024	RM.DC1 007707
L\$DESP 002076 G	L10000 002146	M.ER6 011031	P.CRF = 000000	RM.DC2 007755
L\$DEVP 002060 G	L10001 002160	M.ER7 011070	P.CTMO= 000016	RM.DNE 006644
L\$DISP 002124 G	L10002 002472	M.ER8 011121	P.CYL = 000022	RM.D1P 007005
L\$DLY 002116 G	L10003 003764	M.ER9 011172	P.ELGF= 000034	RM.D1S 007067
L\$DTP 002040 G	L10004 004042	NEWTAB 014102	P.FBBK= 000034	RM.D1T 006723
L\$DTYP 002034 G	L10005 004110	NODLL 014224	P.FLGS= 000011	RM.D2D 007151
L\$DJT 002072 G	L10006 010416	NOGOER 014616	P.GRP = 000024	RM.D2H 007233
L\$DVTY 002224 G	L10007 012614	NOGOM 014626	P.HSTI= 000030	RM.D3D 007315
L\$EF 002052 G	L10007 012614	NORESP 006132	P.HTMO= 000016	RM.D3H 007377
L\$ENVI 002044 G	L10010 012660	NXTTAB 014234	P.LBN = 000034	RM.D4D 007461
L\$ERRT 002160 G	L10011 012746	ONEFIL= 000001	P.LGDT= 000014	RM.D4H 007543
L\$ETP 002102 G	L10012 013072	OPENLF 003470	P.MAIN= 000020	RM.ER1 010270
L\$EXP1 002046 G	L10013 013662	OP.DLE= 000002	P.MOD = 000012	RM.ER2 010324 G
L\$EXP4 002064 G	L10015 014522	OP.END= 000200	P.OPCD= 000010	RM.ER3 010420
L\$EXP5 002066 G	L10016 014524	OP.RCV= 000005	P.OTRF= 000014	RM.ER4 010472
L\$SHARD 014734 G	L10017 014532	OP.SND= 000004	P.OVRL= 000034	RM.ER5 010545
L\$HIME 002120 G	L10020 014730	OSAPTS= 000000	P.RBN = 000014	RM.FM0 010106
L\$HPCP 002016 G	L10021 015060	OSAU = 000000	P.RBNS= 000034	RM.FM1 010156
L\$HPTP 002022 G	L10022 015420	OSBGNR= 000001	P.RCTC= 000035	RM.FM2 010222
L\$HW 002130 G	L10023 015564	OSBGNS= 000001	P.RCTP= 000032	RM.RET 007625
L\$ICP 002104 G	L10025 015602	OSDU = 000000	P.RCTS= 000030	RNGLEN= 000004
L\$INIT 013672 G	MAXERR= 000026	OSERRT= 000001	P.RGID= 000034	RSPDNE 004734
L\$LADP 002026 G	MD.CMP= 020000	OSGNSW= 000001	P.RGOF= 000040	RSPDRP 004710
	MD.ERR= 040000			

SYMBOL TABLE

RSPIN	004752	SA.S3 =	020000	SVCTST=	000000	T\$TAGN=	010026	UDARSP	012426
RSPMWR	005012	SA.S4 =	040000	S\$LSYM=	010000	T\$TEMP=	000000	UDARSX	012544
RSPNXT	004700	SFTBL	002150 G	TBLERR	011572	T\$TEST=	000001	UDARST	012440
RSPPK	006276	SNDCMD	012010	TSTTAB	002202	T\$TSTM=	177777	UDARS2	012522
RSPNE	006432	SNDC1	012032	T\$ARGC=	000001	T\$TSTS=	000001	UDAXXX	012540
RSPPRE	006346	STM.DA	015420	T\$CODE=	003052	T\$SAUT=	010016	UF.AVL=	000001
RSPPTW	005076	STM.D2	015467	T\$ERRN=	014626	T\$SCLE=	010017	UF.CMR=	020000
RSPPT2	005116	STM.D3	015476	T\$EXCP=	000000	T\$SD'T=	010025	UF.CMW=	010000
RSPREF	005054	STM.D4	015505	T\$FLAG=	000040	T\$SHAR=	010021	UF.FRS=	000002
RSPSTE	006514	STPBAD=	000002	T\$FREE=	015602	T\$SHW =	010000	UF.INA=	100000
RSPSTS	005032	ST.ABO=	000002	T\$GMAN=	000000	T\$SINI=	010015	UF.LST=	000004
RUNDM	011650	ST.AVL=	000005	T\$HILI=	177777	T\$MSG=	010012	UF.MDL=	000006
RUNDMX	011736	ST.CMD=	000001	T\$LAST=	000001	T\$SPC =	000001	UF.MLT=	000006
RWORDT	003630	ST.CMP=	000007	T\$LOLI=	000000	T\$SPRO=	010014	UF.RMV=	000100
RWRDEM	004112	ST.CNT=	000012	T\$LSYM=	010000	T\$SPTA=	010024	UF.RPL=	004000
RWRDE1	003670	ST.DAT=	000010	T\$LTNO=	000001	T\$SRPT=	010013	UF.SCH=	002000
RWRDE3	003700	ST.DIA=	000037	T\$NEST=	177777	T\$SSOF=	010022	UF.SCL=	001000
RWRDF1	004172	ST.DRV=	000013	T\$NSO =	000000	T\$SSW =	010001	UF.WBN=	000400
RWRDF2	004230	ST.HST=	000011	T\$NS1 =	000005	T\$STES=	010020	UF.WPR=	040000
RWRDF3	004316	ST.MSK=	000037	T\$PCNT=	000000	T1	014534 G	UF.576=	000010
RWRDF4	004376	ST.OFL=	000004	T\$PTAB=	010024	UAM =	000200 G	URNING	002220
RWRDM1	003720 G	ST.SHE=	000003	T\$PTHV=	000001	UDAIEX	012200	USERES=	000001
RWRDM2	003766 G	ST.SUB=	000040	T\$PTNU=	000001	UDAINT	012110	WAITMS	013644
RWRDM3	004044 G	ST.SUC=	000000	T\$SAVL=	177777	UDAIST	012204	X\$ALWA=	000000
SA.ERC=	003777	ST.WPR=	000006	T\$SEGL=	177777	UDAIXX	012412	X\$FALS=	000040
SA.ERR=	100000	SVCGBL=	000000	T\$SIZE=	000011	UDAIXY	012422	X\$OFFS=	000400
SA.GO =	000001	SVCINS=	000000	T\$SUBN=	000000	UDAIZE	012170	X\$TRUE=	000020
SA.S1 =	004000	SVCSUB=	000000	T\$TAGL=	177777	UDARSD	012550	\$PATCH	015514 G
SA.S2 =	010000	SVCTAG=	000000						

. ABS. 015602 000  
000000 001

ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 28160 WORDS ( 110 PAGES)  
DYNAMIC MEMORY AVAILABLE FOR 7 PAGES  
.B:ZUDEBO/C=[20,0]SVC34R.MLB/P:1,B:ZUDEAO.DOC ,B:ZUDEAO

SPATCH	63-15#								
ADR	8-25#								
ALOCM	23-18#	28-15	36-21	36-39	57-18	57-37			
ASKDLL	62-29	62-33#							
ASKFIL	57-41	58-4#							
ASSEMB	5-7	5-7							
BIT0	8-25#	17-20	19-25						
BIT00	8-25	8-25#							
BIT01	8-25	8-25#							
BIT02	8-25	8-25#							
BIT03	8-25	8-25#							
BIT04	8-25	8-25#							
BIT05	8-25	8-25#							
BIT06	8-25	8-25#							
BIT07	8-25	8-25#							
BIT08	8-25	8-25#							
BIT09	8-25	8-25#							
BIT1	8-25#	17-21	19-26						
BIT10	8-25#								
BIT11	8-25#								
BIT12	8-25#								
BIT13	8-25#								
BIT14	8-25#								
BIT15	8-25#	17-13							
BIT2	8-25#	17-22							
BIT3	8-25#	17-23							
BIT4	8-25#	17-25							
BIT5	8-25#								
BIT6	8-25#								
BIT7	8-25#								
BIT8	8-25#								
BIT9	8-25#								
BLDC1	24-25#	24-27							
BLDCMD	24-15#	27-3	30-14	40-3	40-30				
BLKFND	26-27	26-39#							
BOE	8-25#								
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C\$AUTO	5-7#	59-17							
C\$BRK	5-7#	37-23	47-10						
C\$BSEG	5-7#								
C\$BSUB	5-7#								
C\$CEFG	5-7#								
C\$CLCK	5-7#								
C\$CLEA	5-7#	60-29							
C\$CLOS	5-7#	26-19	26-52	34-44					
C\$CLP1	5-7#								
C\$CVEC	5-7#								
C\$DCLN	5-7#								
C\$DODU	5-7#								
C\$DRPT	5-7#								
C\$DU	5-7#								
C\$EDIT	5-7#	5-49							
C\$ERDF	5-7#	44-40	46-48	47-61	48-27	49-5			
C\$ERHR	5-7#	31-4	38-15	38-22	38-29	39-17	42-13		
C\$ERRO	5-7#								
C\$ERSF	5-7#	22-11	22-12	35-1	35-2	35-3	58-1	61-38	



CF.THS	14-7#														
CLRBFL	25-23#	25-25													
CLRBUF	25-17#	27-5	40-5	40-32											
CT.AVL	17-13#	44-29													
CT.BRL	17-16#														
CT.CMD	17-22#	29-10	29-14	30-22	45-27										
CT.LD	17-20#	32-19													
CT.MSG	17-23#	29-15	37-14	38-3											
CT.REQ	17-25#	27-7	38-10	38-34	39-3										
CT.PN	17-21#	37-10	37-33	44-33											
CT.UNT	17-12#														
CT.VEC	17-15#														
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DATE	7-20#	40-18	40-19	40-20	40-21										
DFPTBL	7-10#														
DIAGMC	5-7	5-7													
DLLFCT	57-33	62-34	62-58#												
DMOVRL	19-17#	30-17	36-23*	36-33*											
DMPROG	19-16#	30-16	36-22*	36-30	40-8										
DMTRLN	19-18#	30-15	36-32*	40-9											
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DUPERR	56-17	58-1#													
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EF.BBU	13-23#														
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EF.FRS	16-3#														
EF.LST	16-4#														
EF.MIS	16-5#														
EF.NEW	8-25#														
EF.PWR	8-25#	54-41													
EF.RES	8-25#														
EF.SD0	13-29#														
EF.SD1	13-28#														
EF.SD2	13-27#														
FF.SD3	13-26#														
EF.SDF	13-25#														
EF.SHE	13-24#														
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ERRMSG	19-8#														
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ERRTYP	19-8#														
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F\$AUTO	5-7#	59-10	59-17												
F\$BGN	5-7#	5-25	7-23	8-12	22-10	35-5	35-10	35-15	35-30	43-36	50-3	50-8	50-13	50-19	
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		61-47	62-4	62-15	63-2	63-24	64-2	64-3	64-3	64-10	64-12				
F\$CLEA	5-7#	60-8	60-29												
F\$DU	5-7#														
F\$END	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7
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		50-17	50-28	52-3	52-22	52-36	54-39	57-59	58-9	59-17	60-17	60-29	60-31	61-9	61-24

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F\$INIT	5-7#	54-8	58-9											
F\$JMP	5-7#	52-22	52-22	54-39	57-59	60-17	61-36							
F\$MOD	5-7#	5-25	7-23	8-12	35-30	52-3	60-31	61-9	61-47	62-4	63-24			
F\$MSG	5-7#	22-10	22-18	35-5	35-8	35-10	35-13	35-15	35-18	43-36	43-40	50-3	50-6	50-8
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F\$PROT	5-7#	53-8	53-14											
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F\$RPT	5-7#	52-10	52-36											
F\$SEG	5-7#													
F\$SOFT	5-7#	63-2	63-9											
F\$SRV	5-7#													
F\$SUB	5-7#													
F\$SW	5-7#	7-19	7-21											
F\$TEST	5-7#	61-24	61-45											
F\$CTFIL	26-24	57-41	58-5#											
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F\$MEMS	19-13#	57-57*												
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F\$MTDNE	39-10	41-1#												
F\$MTERR	39-15	42-1#												
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G\$EXCP	5-7#													
G\$HILI	5-7#													
G\$LOLI	5-7#													
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L\$NAME	5-49#							
L\$PRIO	5-49#							
L\$PROT	5-49	53-8#						
L\$PRT	5-49#							
L\$REPP	5-49#							
L\$REV	5-49#							
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L\$SPC	5-49#							
L\$SPCP	5-49#							
L\$SPTP	5-49#							
L\$STA	5-49#							
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LASTAD	63-23													
MSBYTE	5-49	5-49	5-49#											
MSCHEC	52-22	52-22#	54-39	54-39#	57-59	57-59#	60-17	60-17#	61-36	61-36#				
MSCNTO	57-41	57-41#	62-26	62-26#	62-27	62-27#	62-28	62-28#	62-30	62-30#	62-34	62-34#	62-37	62-37#





	61-25	61-25#	61-25#	61-25#	61-25#	61-34	61-34	61-34	61-34	61-34	61-34#	61-34#	61-34#	61-34#
	61-36	61-36	61-36#	61-36#	61-38	61-38	61-38	61-38	61-38#	61-38#	61-38#	61-38#	61-38#	61-45
	61-45#	62-15	62-15#	62-26	62-26	62-26	62-26#	62-27	62-27	62-27	62-27	62-27	62-27	62-27#
	62-28	62-28	62-28	62-28#	62-29	62-29#	62-30	62-30	62-30	62-30#	62-31	62-31#	62-32	62-32#
	62-34	62-34	62-34	62-34#	62-35	62-35#	62-37	62-37	62-37	62-37	62-37	62-37#	62-38	62-38
	62-38	62-38	62-38	62-38#	62-39	62-39	62-39	62-39	62-39	62-39#	62-40	62-40	62-40	62-40
	62-40	62-40#	62-43	62-43#	63-2	63-2#	63-4	63-4	63-4	63-4	63-4	63-4#	63-5	63-5
	63-5	63-5	63-5	63-5#	63-6	63-6	63-6	63-6	63-6	63-6#	63-7	63-7	63-7	63-7
	63-7	63-7#	63-9	63-9#	63-23	63-23	63-23	63-23	64-3	64-3	64-3#	64-3#	64-3#	64-3#
MSGNLS	57-41	57-41#												
MSGNTA	7-17	7-17#	7-21	7-21#	22-18	22-18#	35-8	35-8#	35-13	35-13#	35-18	35-18#	43-40	43-40#
	50-6	50-6#	50-11	50-11#	50-17	50-17#	50-28	50-28#	52-36	52-36#	58-9	58-9#	59-17	59-17#
	60-29	60-29#	61-45	61-45#	62-43	62-43#	63-9	63-9#	64-3	64-3#	64-10	64-10#		
MSGNTE	61-24	61-24#												
MSHAPT	5-49	5-49#												
MSHNAP	5-49	5-49#												
MSINCR	5-25	5-25#	7-10	7-10	7-10#	7-10#	7-19	7-19	7-19#	7-19#	8-12	8-12#	22-10	22-10
	22-10#	22-10#	22-11#	22-12#	22-18#	26-19#	26-24#	26-32#	26-52#	31-4#	33-1#	34-1#	34-6#	34-26#
	34-33#	34-40#	34-44#	34-48#	34-51#	35-1#	35-2#	35-3#	35-5	35-5	35-5#	35-5#	35-6#	35-7#
	35-8#	35-10	35-10	35-10#	35-10#	35-11#	35-12#	35-13#	35-15	35-15	35-15#	35-15#	35-16#	35-17#
	35-18#	37-21#	37-23#	37-31#	38-15#	38-22#	38-29#	39-17#	39-20#	41-1#	41-7#	41-8#	41-9#	41-10#
	41-11#	41-12#	41-13#	41-14#	41-15#	41-16#	41-19#	41-23#	41-26#	42-13#	43-36	43-36	43-36#	43-36#
	43-37#	43-38#	43-39#	43-40#	44-40#	46-48#	47-10#	47-61#	48-27#	49-5#	50-3	50-3	50-3#	50-3#
	50-4#	50-5#	50-6#	50-8	50-8	50-8#	50-8#	50-9#	50-10#	50-11#	50-13	50-13	50-13#	50-13#
	50-14#	50-15#	50-16#	50-17#	50-19	50-19	50-19#	50-19#	50-20#	50-21#	50-22#	50-25#	50-28#	52-3
	52-3#	52-10	52-10	52-10#	52-10#	52-36#	53-8	53-8	53-8#	53-8#	54-8	54-8	54-8#	54-8#
	54-33#	54-36#	54-39#	54-41#	55-1#	55-2#	56-9#	57-41	57-41#	57-41#	57-59#	58-1#	58-9#	59-10
	59-10	59-10#	59-10#	59-17#	60-8	60-8	60-8#	60-8#	60-17#	60-29#	61-9	61-9#	61-24	61-24
	61-24	61-24#	61-24#	61-24#	61-25#	61-34#	61-36#	61-38#	61-45#	62-4	62-4#	62-15	62-15	62-15#
	62-15#	63-2	63-2	63-2#	63-2#	64-2	64-2#	64-3	64-3	64-3	64-3#	64-3#	64-3#	64-3#
MSLDRO	26-24	26-24#	33-1	33-1#	54-33	54-33#	54-36	54-36#	54-41	54-41#	56-9	56-9#		
MSMCHI	5-7	5-7#												
MSMCLO	5-7	5-7#												
MSPOP	7-17	7-17#	7-21	7-21#	7-23	7-23#	22-18	22-18#	35-8	35-8#	35-13	35-13#	35-18	35-18#
	35-30	35-30#	43-4)	43-40#	50-6	50-6#	50-11	50-11#	50-17	50-17#	50-28	50-28#	52-36	52-36#
	53-14	53-14#	58-9	58-9#	59-17	59-17#	60-29	60-29#	60-31	60-31#	61-45	61-45#	61-47	61-47#
	62-43	62-43#	63-9	63-9#	63-24	63-24#								
MSPRIN	35-6	35-6#	35-7	35-7#	35-11	35-11#	35-12	35-12#	35-16	35-16#	35-17	35-17#	37-21	37-21#
	37-31	37-31#	39-20	39-20#	41-1	41-1#	41-7	41-7#	41-8	41-8#	41-9	41-9#	41-10	41-10#
	41-11	41-11#	41-12	41-12#	41-13	41-13#	41-14	41-14#	41-15	41-15#	41-16	41-16#	41-19	41-19#
	41-23	41-23#	41-26	41-26#	43-37	43-37#	43-38	43-38#	43-39	43-39#	50-4	50-4#	50-5	50-5#
	50-9	50-9#	50-10	50-10#	50-14	50-14#	50-15	50-15#	50-16	50-16#	50-20	50-20#	50-21	50-21#
	50-22	50-22#	50-25	50-25#	61-25	61-25#	61-34	61-34#						
MSPUSH	5-25	5-25#	7-10	7-10#	7-19	7-19#	8-12	8-12#	22-10	22-10#	35-5	35-5#	35-10	35-10#
	35-15	35-15#	43-36	43-36#	50-3	50-3#	50-8	50-8#	50-13	50-13#	50-19	50-19#	52-3	52-3#
	52-10	52-10#	53-8	53-8#	54-8	54-8#	59-10	59-10#	60-8	60-8#	61-9	61-9#	61-24	61-24#
	62-4	62-4#	62-15	62-15#	63-2	63-2#								
MSPUT	35-6	35-6	35-6	35-6#	35-7	35-7	35-7#	35-11	35-11	35-11	35-11#	35-12	35-12	35-12
	35-12	35-12#	35-16	35-16	35-16	35-16#	35-17	35-17	35-17#	37-21	37-21	37-21#	37-21#	37-31
	37-31	37-31	37-31#	39-20	39-20	39-20	39-20	39-20	39-20#	41-1	41-1	41-1#	41-7	41-7
	41-7	41-7#	41-8	41-8	41-8	41-8#	41-9	41-9	41-9	41-9#	41-10	41-10	41-10	41-10#
	41-11	41-11	41-11	41-11#	41-12	41-12	41-12	41-12#	41-13	41-13	41-13	41-13#	41-14	41-14
	41-14	41-14#	41-15	41-15	41-15	41-15#	41-16	41-16	41-16	41-16#	41-19	41-19	41-19#	41-23
	41-23	41-23#	41-26	41-26	41-26#	43-37	43-37	43-37	43-37#	43-38	43-38	43-38	43-38#	43-39
	43-39	43-39	43-39#	50-4	50-4	50-4#	50-5	50-5	50-5	50-5#	50-9	50-9	50-9#	50-10
	50-10	50-10	50-10#	50-14	50-14	50-14#	50-15	50-15	50-15	50-15#	50-16	50-16	50-16	50-16#
	50-20	50-20	50-20#	50-21	50-21	50-21#	50-22	50-22	50-22#	50-25	50-25	50-25	50-25	50-25#

MSPUT1	61-25	61-25	61-25#	61-34	61-34	61-34#	35-7	35-7	35-7#	35-7#	35-11	35-11	35-11	35-11#
	35-6	35-6	35-6	35-6#	35-6#	35-6#	35-12#	35-12#	35-12#	35-12#	35-16	35-16	35-16	35-16#
	35-11#	35-11#	35-12	35-12	35-12	35-12	37-21	37-21	37-21	37-21#	37-21#	37-21#	37-31	37-31
	35-16#	35-16#	35-17	35-17	35-17#	35-17#	39-20	39-20	39-20#	39-20#	39-20#	39-20#	41-1	41-1
	37-31	37-31#	37-31#	37-31#	39-20	39-20	41-7	41-7	41-7#	41-7#	41-8	41-8	41-8	41-8#
	41-1	41-1#	41-1#	41-1#	41-7	41-7	41-9#	41-9#	41-9#	41-10	41-10	41-10#	41-10#	41-10#
	41-8#	41-8#	41-9	41-9	41-9	41-9#	41-12	41-12	41-12	41-12#	41-12#	41-12#	41-13	41-13
	41-11	41-11	41-11	41-11#	41-11#	41-11#	41-14	41-14	41-14#	41-14#	41-15	41-15	41-15	41-15#
	41-13	41-13#	41-13#	41-13#	41-14	41-14	41-16#	41-16#	41-16#	41-19	41-19#	41-19#	41-23	41-23
	41-15#	41-15#	41-16	41-16	41-16	41-16#	43-37	43-37	43-37	43-37#	43-37#	43-37#	43-38	43-38
	41-23#	41-23#	41-26	41-26	41-26#	41-26#	50-9	50-9	50-9#	50-9#	50-10	50-10	50-10	50-10#
	43-38	43-38#	43-38#	43-38#	43-39	43-39	50-15	50-15	50-15	50-15#	50-15#	50-15#	50-16	50-16
	50-5	50-5	50-5	50-5#	50-5#	50-5#	50-20#	50-20#	50-20#	50-21	50-21#	50-21#	50-22	50-22
	50-10#	50-10#	50-14	50-14	50-14#	50-14#	50-25#	50-25#	50-25#	50-25#	50-25#	50-25#	50-25#	50-25#
	50-16	50-16#	50-16#	50-16#	50-20	50-20	61-25	61-25	61-25#	61-25	61-25	61-25#	61-25#	61-25#
	50-22#	50-22#	50-25	50-25	50-25	50-25								
	61-34	61-34	61-34#	61-34#										
MSRADI	57-41	57-41#	62-26	62-26#	62-27	62-27#	62-28	62-28#	62-30	62-30#	62-34	62-34#	62-37	62-37#
	62-38	62-38#	62-39	62-39#	62-40	62-40#	63-4	63-4#	63-5	63-5#	63-6	63-6#	63-7	63-7#
MSRBRO	34-1	34-1#	34-6	34-6#	34-26	34-26#	34-33	34-33#	34-40	34-40#	34-48	34-48#	34-51	34-51#
MSRNRO	26-32	26-32#	55-2	55-2#	56-9	56-9#								
MSSETS	5-25	5-25#	7-10	7-10#	7-19	7-19#	8-12	8-12#	22-10	22-10#	35-5	35-5#	35-10	35-10#
	35-15	35-15#	43-36	43-36#	50-3	50-3#	50-8	50-8#	50-13	50-13#	50-19	50-19#	52-3	52-3#
	52-10	52-10#	53-8	53-8#	54-8	54-8#	59-10	59-10#	60-8	60-8#	61-9	61-9#	61-24	61-24#
	62-4	62-4#	62-15	62-15#	63-2	63-2#								
MS SVC	22-11	22-12	22-18	22-18#	26-19	26-19#	26-24	26-24#	26-32	26-32#	26-52	26-52#	31-4	33-1
	33-1#	34-1	34-1#	34-6	34-6#	34-26	34-26#	34-33	34-33#	34-40	34-40#	34-44	34-44#	34-48
	34-48#	34-51	34-51#	35-1	35-2	35-3	35-6	35-6#	35-7	35-7#	35-8	35-8#	35-11	35-11#
	35-12	35-12#	35-13	35-13#	35-16	35-16#	35-17	35-17#	35-18	35-18#	37-21	37-21#	37-23	37-23#
	37-31	37-31#	38-15	38-22	38-29	39-17	39-20	39-20#	41-1	41-1#	41-7	41-7#	41-8	41-8#
	41-9	41-9#	41-10	41-10#	41-11	41-11#	41-12	41-12#	41-13	41-13#	41-14	41-14#	41-15	41-15#
	41-16	41-16#	41-19	41-19#	41-23	41-23#	41-26	41-26#	42-13	43-37	43-37#	43-38	43-38#	43-39
	43-39#	43-40	43-40#	44-40	46-48	47-10	47-10#	47-61	48-27	49-5	50-4	50-4#	50-5	50-5#
	50-6	50-6#	50-9	50-9#	50-10	50-10#	50-11	50-11#	50-14	50-14#	50-15	50-15#	50-16	50-16#
	50-17	50-17#	50-21	50-20#	50-21	50-21#	50-22	50-22#	50-25	50-25#	50-28	50-28#	52-22#	52-36
	52-36#	54-33	54-33#	54-36	54-36#	54-39	54-39#	54-41	54-41#	55-1	55-1#	55-2	55-2#	56-9
	56-9#	57-41	57-41#	57-59	57-59#	58-1	58-9	58-9#	59-17	59-17#	60-17	60-17#	60-29	60-29#
	61-25	61-25#	61-34	61-34#	61-36	61-36#	61-38	61-45	61-45#					
MS TLAB	22-11#	22-12#	22-18#	26-19#	26-24#	26-32#	26-52#	31-4#	33-1#	34-1#	34-6#	34-26#	34-33#	34-40#
	34-44#	34-48#	34-51#	35-1#	35-2#	35-3#	35-6#	35-7#	35-8#	35-11#	35-12#	35-13#	35-16#	35-17#
	35-18#	37-21#	37-23#	37-31#	38-15#	38-22#	38-29#	39-17#	39-20#	41-1#	41-7#	41-8#	41-9#	41-10#
	41-11#	41-12#	41-13#	41-14#	41-15#	41-16#	41-19#	41-23#	41-26#	42-13#	43-37#	43-38#	43-39#	43-40#
	44-40#	46-48#	47-10#	47-61#	48-27#	49-5#	50-4#	50-5#	50-6#	50-9#	50-10#	50-11#	50-14#	50-15#
	50-16#	50-17#	50-20#	50-21#	50-22#	50-25#	50-28#	52-36#	54-33#	54-36#	54-39#	54-41#	55-1#	55-2#
	56-9#	57-41#	57-59#	58-1#	58-9#	59-17#	60-17#	60-29#	61-25#	61-34#	61-36#	61-38#	61-45#	55-2#
MS STL	22-11	22-11#	22-11#	22-12	22-12#	22-12#	22-18	22-18#	26-19	26-19#	26-24	26-24#	26-32	26-32#
	26-52	26-52#	31-4	31-4#	31-4#	33-1	33-1#	33-1#	34-1	34-1#	34-6	34-6#	34-26	34-33
	34-33#	34-40	34-40#	34-44	34-44#	34-48	34-48#	34-51	34-51#	35-1	35-1#	35-1#	35-2	35-2#
	35-2#	35-3	35-3#	35-3#	35-6	35-6#	35-7	35-7#	35-8	35-8#	35-11	35-11#	35-12	35-12#
	35-13	35-13#	35-16	35-16#	35-17	35-17#	35-18	35-18#	37-21	37-21#	37-23	37-23#	37-31	37-31#
	38-15	38-15#	38-15#	38-22	38-22#	38-22#	38-29	38-29#	38-29#	39-17	39-17#	39-17#	39-20	39-20#
	41-1	41-1#	41-7	41-7#	41-8	41-8#	41-9	41-9#	41-10	41-10#	41-11	41-11#	41-12	41-12#
	41-13	41-13#	41-14	41-14#	41-15	41-15#	41-16	41-16#	41-19	41-19#	41-23	41-23#	41-26	41-26#
	42-13	42-13#	42-13#	43-37	43-37#	43-38	43-38#	43-39	43-39#	43-40	43-40#	44-40	44-40#	44-40#
	46-48	46-48#	46-48#	47-10	47-10#	47-61	47-61#	47-61#	48-27	48-27#	48-27#	49-5	49-5#	49-5#
	50-4	50-4#	50-5	50-5#	50-6	50-6#	50-9	50-9#	50-10	50-10#	50-11	50-11#	50-14	50-14#
	50-15	50-15#	50-16	50-16#	50-17	50-17#	50-20	50-20#	50-21	50-21#	50-22	50-22#	50-25	50-25#



