```
                 OPERATING SYSTEM =  NOS 2.8.7 871/871.   23/09/20. PRINTED = 24/05/29. 17.40.14.

                 UJN          =  1HP871      FAMILY    = CYBER         JOB ORIGIN    = INTERACTIVE.
                 CREATING JSN =  AACY        USER NAME = INSTALL       SERVICE CLASS = INTERACTIVE.




    AAAAAAAAAA    AAAAAAAAAA    AAAAAAAAAA   IIIIIIIIIIII   AAAAAAAAAA    AAAAAAAAAA    CCCCCCCCCC   ZZZZZZZZZZZZ
   AAAAAAAAAAAA  AAAAAAAAAAAA  AAAAAAAAAAAA  IIIIIIIIIIII  AAAAAAAAAAAA  AAAAAAAAAAAA  CCCCCCCCCCCC  ZZZZZZZZZZZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC        CC  Z         ZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC        CC           ZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC                    ZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC                   ZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC                  ZZ
   AAAAAAAAAAAA  AAAAAAAAAAAA  AAAAAAAAAAAA       II       AAAAAAAAAAAA  AAAAAAAAAAAA  CC              ZZZZZZZZ
   AAAAAAAAAAAA  AAAAAAAAAAAA  AAAAAAAAAAAA       II       AAAAAAAAAAAA  AAAAAAAAAAAA  CC                 ZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC                ZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC               ZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC              ZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC             ZZ
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC        CC  ZZ         Z
   AA        AA  AA        AA  AA        AA  IIIIIIIIIIII  AA        AA  AA        AA  CCCCCCCCCCCC  ZZZZZZZZZZZZ
   AA        AA  AA        AA  AA        AA  IIIIIIIIIIII  AA        AA  AA        AA  CCCCCCCCCCC   ZZZZZZZZZZZZ


MWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWM
WMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMW
MWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWM
WMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMW
MWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWMWM
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```
MODIFY INPUT.
MODIFY,L=LIST.


    1   *EDIT 1HP
```

DECK - COPYRT

COPYRT MODIFIERS.

NS2796

4 ACTIVE LINE(S). 1 INACTIVE LINE(S). 1 INSERTED LINE(S).

1HP MODIFIERS.

NS2446	NS2468	1HP10	NS2481	NS2497	NS2505	NS2519	1HP13	NS2562	NS2732	NS2732B	NS2769
NS2454	NS2475	1HP12	252L678	NS2502	NS2507	NS2509	253L688	271L716	NS2732A	281L803	

*CALL	COMPMAC	1HP	93		
*CALL	COMPCHI	1HP	95		
*CALL	COMSCPS	1HP	96		
*CALL	COMSDFS	1HP	97		
*CALL	COMSHIO	1HP	99		
*CALL	COMSLSD	1HP	101		
*CALL	COMSMSC	252L678	1	101	
*CALL	COMSMSP	1HP	103		
*CALL	COMSPIM	1HP	105		
*CALL	COMS1DS	1HP	106		
*CALL	COMPC2D	1HP	2650		
*CALL	COMPIMB	NS2769	155	2650	

2572 ACTIVE LINE(S). 951 INACTIVE LINE(S). 561 INSERTED LINE(S).

DECKS ON PROGRAM LIBRARY.

COPYRT	COMCSFN	COMPC2D	COMPVID	COMSWEI	0ST	IHFU	TDUMP	COMFXFO	COMXSEB	EORSS15	SUBMT
CETEXT	COMCSKW	COMPDDT	COMPVLC	COMSZOL	0VJ	INSTALL	TDUOUT	COMFXSB	COMTALT	M86FORM	TARO
ECSTEXT	COMCSNF	COMPDLI	COMPVMS	COMS0VU	0VU	ISF	TDUTAB	COMFXSC	COMTBLD	M86SERV	TERMDEF
PPTEXT	COMCSNM	COMPDTS	COMPVPA	COMS1DS	1AJ	KEY	TERMIO	COMFXWK	COMTBLP	EORSS16	TSIM
PSSTEXT	COMCSOE	COMPDVC	COMPVSP	COMS1MV	1CD	KEYEX	TRMDEF	FSEBUFF	COMTCTW	VERMSGC	TSTAT
NOSTEXT	COMCSRI	COMPDV5	COMPWBB	COMS1RM	1CK	KEYPAN	ULIB	FSECMDS	COMTDBG	EORSS17	WAIT
SSYTEXT	COMCSRT	COMPECX	COMPWCB	COMS176	1CL	KRONREF	VALEX	FSEDATA	COMTDBP	MSE	WAITINP
SYSTEXT	COMCSSN	COMPFAT	COMPWEI	COMTBAN	1DL	LDI	VALNET	FSEEDIT	COMTDEF	MSESLAV	WSTAT
CPCOM	COMCSST	COMPFLF	COMPWSS	COMTCVT	1DS	LIBEDIT	VCC	FSEEX	COMTDER	MSECONF	BTASK
PPCOM	COMCSTF	COMPGBN	COMPWVE	COMTDA8	1HY	LIBGEN	VDTSUBS	FSEFILE	COMTDFP	EORSS18	CRMTASK
COMCMAC	COMCSYS	COMPGFP	COMSACC	COMTDP6	1IO	LIBRARY	VERIFY	FSEFORM	COMTERR	SSCONTL	CTASK
COMCCMD	COMCTIO	COMPGTN	COMSATF	COMTDP9	1IS	LIDOU	VFYLIB	FSEHELP	COMTFMT	FREEDSK	ITASK
COMABZF	COMCUPC	COMPICT	COMSBIO	COMTDSP	1LC	LISTLB	VIRTERM	FSELIB	COMTLAB	DESTAGE	KDIS
COMAFET	COMCUSB	COMPIFR	COMSCIO	COMTNAP	1MA	LISTLID	MAC1	FSEMAIN	COMTLBP	EORSS19	LOGT
COMAMSS	COMCVDE	COMPIMB	COMSCPD	COMTVDT	1MB	LIST80	MAC2	FSEPROC	COMTMOV	ISHARED	MSABT
COMAPFP	COMCVDT	COMPIOU	COMSCPS	COMT6DP	1MC	LOADBC	RFORM	FSESCRN	COMTMVD	COMKMAC	OFFTASK
COMAPFS	COMCVLC	COMPIRA	COMSCVS	COMT8AD	1MD	LO72	SYMSERV	FSESUBS	COMTMVP	COMKARF	RCTASK
COMCARG	COMCVQF	COMPLDA	COMSDFS	COMT9DP	1MI	MAG	CPUREL	FSETABL	COMTOUT	COMKBRD	RTASK
COMCARM	COMCWOD	COMPLDB	COMSDFT	COMUCPD	1MS	MAGNET	APRINST	FSEWORK	COMTSIT	COMKBST	STASK
COMCBAN	COMCWTA	COMPMRA	COMSDSL	COMUEST	1MT	MFILES	CMRINST	FSTEACH	COMTUSE	COMKCBD	SYSMSG
COMCBLP	COMCWTC	COMPMRM	COMSDSP	COMUFMT	1MU	MLSEXEC	EQPINST	SMFEX	COMTUSP	COMKCBT	XTASK
COMCCCE	COMCWTH	COMPMRQ	COMSDST	COMUJCA	1MV	MODIFY	IPRINST	SMFSTAT	COMTVLD	COMKCRM	COMCCDM
COMCCDD	COMCWTO	COMPMSV	COMSEJT	COMUOUT	1PP	MODVAL	COMLBAS	SMF	COMTVLF	COMKDPB	COMCCDP
COMCCFD	COMCWTS	COMPNFL	COMSESS	COMUPRB	1RI	MSI	COMLESM	1HP	COMTVLM	COMKFIO	COMSSTM
COMCCHD	COMCWTW	COMPPDI	COMSEVT	COMUQPR	1RM	NOTE	COMLFLD	COMCLNI	COMTVLP	COMKFLD	ADC
COMCCHG	COMCZAP	COMPPPR	COMSHIO	COMUQQC	1RO	OPLEDIT	COMLIPR	IAFP	COMTVLV	COMKIPR	BAT
COMCCIO	COMCZTB	COMPRBB	COMSIOQ	CALLCPU	1SJ	PACK	COMLSCD	IAFTM	COMTVLX	COMKKIM	DCC
COMCCNS	COMDMAC	COMPRCB	COMSIOU	CALLDIS	1TA	PANEL	COMLUEM	IAFTR	CALLFAS	COMKNWC	DDF
COMCCOD	COMDDBS	COMPRCS	COMSJCE	CALLPPU	1TM	PANSUBS	COMLVER	1TN	1SS	COMKNWF	DOG
COMCCPA	COMDDCM	COMPREI	COMSJIO	CALLSYS	1TO	PDU	APRDECK	RECOVER	EORSS1	COMKOPD	DS1
COMCCPM	COMDDIS	COMPREL	COMSJRO	CALLTAB	1VP	PFAM	CMRDECK	0MF	GMSG	COMKRRD	HFM
COMCCPT	COMDDSP	COMPRFI	COMSLFD	CALLINT	1XD	PFDM	EQPDECK	1MR	SMSG	COMKSCD	MPF
COMCCUA	COMDD7S	COMPRJC	COMSLFM	CPM	1XM	PFDUMP	IPRDECK	MREC	CALPFU	COMKSTC	SMP
COMCCVI	COMDGJD	COMPRLA	COMSLSD	CVL	1XY	PFHELPR	LIBDECK	MTE	GETMST	COMKTAF	WRM
COMCCVL	COMDSYS	COMPRLI	COMSMLS	DIO	5ME	PFILES	RDFP	COMBFAS	SETQP	COMKTDM	1TS
COMCDCM	COMDTFN	COMPRLM	COMSMMF	DIS	6DC	PFLIST	SUPERM	COMBBZF	EORSS2	COMKTER	DDFILE
COMCDCP	COMFCID	COMPRLS	COMSMRT	DSD	6DD	PFLOAD	VEMEM	COMBCDD	SSOVL	COMKTIF	DEMUX
COMCDTC	COMFVD2	COMPRNS	COMSMSC	DSP	6DE	PFS	ZTDAMT0	COMBCHN	SSARG	COMKTIP	DMPCCC
COMCDXB	COMFVD3	COMPRSI	COMSMSI	ELM	6DI	PROFILE	ZTDCCLC	COMBCMD	EORSS3	COMKTLD	KEYUTIL
COMCECM	COMFXTI	COMPRSS	COMSMSP	FDL	6DP	PURGALL	ZTDCCON	COMBCMS	SSEXEC	COMKTRF	LPT
COMCECS	COMFXVT	COMPSAF	COMSMST	IMS	6DX	QDSPLAY	ZTDCERR	COMBCPR	EORSS4	COMKTRN	MST
COMCEDT	COMFPAN	COMPSCA	COMSMTR	LFM	BATCHIO	QDUMP	ZTDCVRB	COMBFET	SSSLV	COMKTSA	PACKER
COMCFCE	COMFTIO	COMPSDA	COMSMTX	MDD	BLANK	QFSP	ZTDNMT0	COMBHFC	EORSS5	COMKTSC	SCRSIM
COMCFLD	COMFVDT	COMPSDI	COMSNCD	MSM	CATALOG	QFTLIST	ZTDPCLP	COMBKDA	ACCCAT	COMKTST	STIMULA
COMCFQO	COMFVD1	COMPSDN	COMSNET	MTR	CATLIST	QGET	ZTDPERR	COMBKDD	ACCMAP	COMKZFN	TST
COMCGMS	COMPMAC	COMPSDR	COMSPDT	OSB	CHKPT	QLOAD	ZTDPFIL	COMBLBL	SSINIT	TAFPRC	DFSORT
COMCGTO	COMPACS	COMPSEI	COMSPFM	O26	CLASS	QMOVE	ZTDPTBD	COMBLRQ	EORSS6	CALLKTS	PSAMP
COMCHXB	COMPANS	COMPSES	COMSPFS	PFM	CLDT	QREC	ZTDPTBS	COMBMAP	SSALTER	KTSDMP	SECART
COMCIQP	COMPAPI	COMPSFB	COMSPFU	PFU	CODING	RECLAIM	ZTDTFIL	COMBMAT	EORSS7	LIBTASK	MSGID
COMCJCR	COMPAST	COMPSFE	COMSPIM	PPR	CONFIG	REDO	ZTDTTAB	COMBMCT	SSBLD	TAFLOG	ABC
COMCLFM	COMPCDB	COMPSFI	COMSPRD	QAC	CONTROL	RESEQ	ZTDVERB	COMBOVL	EORSS8	TAF	CHD
COMCLOD	COMPCDD	COMPSFN	COMSPRO	QAP	COPYB	RESEX	ZTDVMT0	COMBPFP	SSDEBUG	TAFREC	DEBUG
COMCMSF	COMPCEA	COMPSIC	COMSQAC	QFM	COPYC	RESTART	ZTDVPDT	COMBPFS	EORSS9	BAAML	CPD
COMCMTM	COMPCFP	COMPSMI	COMSQFS	REC	CPMEM	ROUTE	5870JDL	COMBRCD	SSDEF	DMREC	ICPD
COMCMTP	COMPCHD	COMPSNT	COMSREM	RPV	CPUMLD	SCREX	EOR1	COMBSIT	EORSS10	TARL	ACPD

COMCMVE	COMPCHI	COMPSOF	COMSRPV	SET	CPUMTR	SCTD	EOR2	COMBSNS	SSLABEL	TMSG	PROBE
COMCOVL	COMPCHL	COMPSPA	COMSRSX	SFM	CPUPFM	SDSPLAY	EOR3	COMBTDM	EORSS11	AAMI	XEDIT
COMCPFM	COMPCHM	COMPSRA	COMSSCD	SFP	CUESHEL	SECHDR	EOR4	COMBUCR	SSMOVE	AAML	XEDITH
COMCPFP	COMPCIB	COMPSRR	COMSSCP	SLL	CVLCP	SETCORE	EOR5	COMBUDT	EORSS12	BEGIN	1DA
COMCPFS	COMPCLC	COMPSRU	COMSSCR	STL	DAYFILE	SFORM	EOR6	COMXACM	SSUSE	BLDABH	0CT
COMCPFU	COMPCKP	COMPSSE	COMSSFM	TLX	DFTERM	SFS	EOR7	COMXBST	EORSS13	CALLRTN	COMCCKD
COMCPOP	COMPCLD	COMPSSF	COMSSFS	VEJ	DOCMENT	SHOW	EOR8	COMXCCB	SSVAL	CALLTRN	COMCMBS
COMCQFM	COMPCLX	COMPSTA	COMSSRT	VER	DSDI	SHOWEX	EOR9	COMXCTF	EORSS14	CALLTSK	COMPTFM
COMCQFP	COMPCMA	COMPSTI	COMSSRU	XHC	EDIT	SMFSUBS	EOR10	COMXEMC	EXDRVR	CEASE	COMSTFU
COMCRDA	COMPCMX	COMPSUD	COMSSSD	0AU	ENQUIRE	SORT	COMFDS1	COMXEXP	SXDEST	CHKON	TFM
COMCRDC	COMPCOB	COMPSUT	COMSSSE	0AV	FCOPY	STAGE	COMFDS2	COMXFCQ	SXHLR	CMDUMP	TFU
COMCRDH	COMPCPE	COMPTGB	COMSSSJ	0BF	FILES	SUBMIT	COMFFSE	COMXHLR	SXINIT	DSDUMP	TFILES
COMCRDO	COMPCRA	COMPTLB	COMSTCM	0DF	FOTD	SUBSYST	COMFMLT	COMXINT	SXKD	EXTRACT	TFSP
COMCRDS	COMPCRS	COMPTMA	COMSTDR	0DQ	GENPFD	SYMPCOD	COMFONL	COMXIPR	SXLLR	INTOT	LDISTAP
COMCRDW	COMPCSC	COMPUFT	COMSTFM	0FA	GTR	SYSEDIT	COMFSGL	COMXJCA	SXMAIN	JOURNL	GETTASV
COMCRSB	COMPCTE	COMPUPP	COMSTIO	0PT	HELPLIB	TCOMND	COMFSMF	COMXLTC	SXSERV	LIMITS	SETTASV
COMCRSP	COMPCTI	COMPUPS	COMSTIR	0QM	HOSTCPY	TDU	COMFTAB	COMXMFD	SXSTGE	LOGIN	TMSPROC
COMCRTN	COMPCUA	COMPVEI	COMSTRX	0RF	HSTCOPY	TDUEX	COMFXCM	COMXMMF	SXSLV	MULTCB	TMSPROG
COMCSCB	COMPCUT	COMPVFC	COMSVED	0RP	IAFEX	TDUFILE	COMFXED	COMXMSC	SXUCP	SEND	
COMCSFM	COMPCVI	COMPVFN	COMSVER	0RT	IEDIT	TDUIN	COMFXFL	COMXOVL	SX3UCP	SETCHT	

COMMON DECKS ON PROGRAM LIBRARY.

COPYRT	COMCGTO	COMCSYS	COMPAST	COMPIFR	COMPSIC	COMSCVS	COMSRPV	COMUEST	COMFXED	COMXHLR	COMKBST
CPCOM	COMCHXB	COMCTIO	COMPCDB	COMPIMB	COMPSMI	COMSDFS	COMSRSX	COMUFMT	COMFXFL	COMXINT	COMKCBD
PPCOM	COMCIQP	COMCUPC	COMPCDD	COMPIOU	COMPSNT	COMSDFT	COMSSCD	COMUJCA	COMFXFO	COMXIPR	COMKCBT
COMCMAC	COMCJCR	COMCUSB	COMPCEA	COMPIRA	COMPSOF	COMSDSL	COMSSCP	COMUOUT	COMFXSB	COMXJCA	COMKCRM
COMCCMD	COMCLFM	COMCVDE	COMPCFP	COMPLDA	COMPSPA	COMSDSP	COMSSCR	COMUPRB	COMFXSC	COMXLTC	COMKDPB
COMABZF	COMCLOD	COMCVDT	COMPCHD	COMPLDB	COMPSRA	COMSDST	COMSSFM	COMUQPR	COMFXWK	COMXMFD	COMKFIO
COMAFET	COMCMSF	COMCVLC	COMPCHI	COMPMRA	COMPSRR	COMSEJT	COMSSFS	COMUQQC	COMCLNI	COMXMMF	COMKFLD
COMAMSS	COMCMTM	COMCVQF	COMPCHL	COMPMRM	COMPSRU	COMSESS	COMSSRT	COMLBAS	COMBFAS	COMXMSC	COMKIPR
COMAPFP	COMCMTP	COMCWOD	COMPCHM	COMPMRQ	COMPSSE	COMSEVT	COMSSRU	COMLESM	COMBBZF	COMXOVL	COMKKIM
COMAPFS	COMCMVE	COMCWTA	COMPCIB	COMPMSV	COMPSSF	COMSHIO	COMSSSD	COMLFLD	COMBCDD	COMXSEB	COMKNWC
COMCARG	COMCOVL	COMCWTC	COMPCLC	COMPNFL	COMPSTA	COMSIOQ	COMSSSE	COMLIPR	COMBCHN	COMTALT	COMKNWF
COMCARM	COMCPFM	COMCWTH	COMPCKP	COMPPDI	COMPSTI	COMSIOU	COMSSSJ	COMLSCD	COMBCMD	COMTBLD	COMKOPD
COMCBAN	COMCPFP	COMCWTO	COMPCLD	COMPPPR	COMPSUD	COMSJCE	COMSTCM	COMLUEM	COMBCMS	COMTBLP	COMKRRD
COMCBLP	COMCPFS	COMCWTS	COMPCLX	COMPRBB	COMPSUT	COMSJIO	COMSTDR	COMLVER	COMBCPR	COMTCTW	COMKSCD
COMCCCE	COMCPFU	COMCWTW	COMPCMA	COMPRCB	COMPTGB	COMSJRO	COMSTFM	ZTDAMT0	COMBFET	COMTDBG	COMKSTC
COMCCDD	COMCPOP	COMCZAP	COMPCMX	COMPRCS	COMPTLB	COMSLFD	COMSTIO	ZTDCCLC	COMBHFC	COMTDBP	COMKTAF
COMCCFD	COMCQFM	COMCZTB	COMPCOB	COMPREI	COMPTMA	COMSLFM	COMSTIR	ZTDCCON	COMBKDA	COMTDEF	COMKTDM
COMCCHD	COMCQFP	COMDMAC	COMPCPE	COMPREL	COMPUFT	COMSLSD	COMSTRX	ZTDCERR	COMBKDD	COMTDER	COMKTER
COMCCHG	COMCRDA	COMDDBS	COMPCRA	COMPRFI	COMPUPP	COMSMLS	COMSVED	ZTDCVRB	COMBLBL	COMTDFP	COMKTIF
COMCCIO	COMCRDC	COMDDCM	COMPCRS	COMPRJC	COMPUPS	COMSMMF	COMSVER	ZTDNMT0	COMBLRQ	COMTERR	COMKTIP
COMCCNS	COMCRDH	COMDDIS	COMPCSC	COMPRLA	COMPVEI	COMSMRT	COMSWEI	ZTDPCLP	COMBMAP	COMTFMT	COMKTLD
COMCCOD	COMCRDO	COMDDSP	COMPCTE	COMPRLI	COMPVFC	COMSMSC	COMSZOL	ZTDPERR	COMBMAT	COMTLAB	COMKTRF
COMCCPA	COMCRDS	COMDD7S	COMPCTI	COMPRLM	COMPVFN	COMSMSI	COMS0VU	ZTDPFIL	COMBMCT	COMTLBP	COMKTRN
COMCCPM	COMCRDW	COMDGJD	COMPCUA	COMPRLS	COMPVID	COMSMSP	COMS1DS	ZTDPTBD	COMBOVL	COMTMOV	COMKTSA
COMCCPT	COMCRSB	COMDSYS	COMPCUT	COMPRNS	COMPVLC	COMSMST	COMS1MV	ZTDPTBS	COMBPFP	COMTMVD	COMKTSC
COMCCUA	COMCRSP	COMDTFN	COMPCVI	COMPRSI	COMPVMS	COMSMTR	COMS1RM	ZTDTFIL	COMBPFS	COMTMVP	COMKTST
COMCCVI	COMCRTN	COMFCID	COMPC2D	COMPRSS	COMPVPA	COMSMTX	COMS176	ZTDTTAB	COMBRCD	COMTOUT	COMKZFN
COMCCVL	COMCSCB	COMFVD2	COMPDDT	COMPSAF	COMPVSP	COMSNCD	COMTBAN	ZTDVERB	COMBSIT	COMTSIT	COMCCDM
COMCDCM	COMCSFM	COMFVD3	COMPDLI	COMPSCA	COMPWBB	COMSNET	COMTCVT	ZTDVMT0	COMBSNS	COMTUSE	COMCCDP
COMCDCP	COMCSFN	COMFXTI	COMPDTS	COMPSDA	COMPWCB	COMSPDT	COMTDA8	ZTDVPDT	COMBTDM	COMTUSP	COMSSTM
COMCDTC	COMCSKW	COMFXVT	COMPDVC	COMPSDI	COMPWEI	COMSPFM	COMTDP6	COMFDS1	COMBUCR	COMTVLD	COMCCKD
COMCDXB	COMCSNF	COMFPAN	COMPDV5	COMPSDN	COMPWSS	COMSPFS	COMTDP9	COMFDS2	COMBUDT	COMTVLF	COMCMBS
COMCECM	COMCSNM	COMFTIO	COMPECX	COMPSDR	COMPWVE	COMSPFU	COMTDSP	COMFFSE	COMXACM	COMTVLM	COMPTFM
COMCECS	COMCSOE	COMFVDT	COMPFAT	COMPSEI	COMSACC	COMSPIM	COMTNAP	COMFMLT	COMXBST	COMTVLP	COMSTFU

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 COMCEDT   COMCSRI   COMFVD1   COMPFLF   COMPSES   COMSATF   COMSPRD   COMTVDT   COMFONL   COMXCCB   COMTVLV
 COMCFCE   COMCSRT   COMPMAC   COMPGBN   COMPSFB   COMSBIO   COMSPRO   COMT6DP   COMFSGL   COMXCTF   COMTVLX
 COMCFLD   COMCSSN   COMPACS   COMPGFP   COMPSFE   COMSCIO   COMSQAC   COMT8AD   COMFSMF   COMXEMC   COMKMAC
 COMCFQO   COMCSST   COMPANS   COMPGTN   COMPSFI   COMSCPD   COMSQFS   COMT9DP   COMFTAB   COMXEXP   COMKARF
 COMCGMS   COMCSTF   COMPAPI   COMPICT   COMPSFN   COMSCPS   COMSREM   COMUCPD   COMFXCM   COMXFCQ   COMKBRD

DECKS WRITTEN ON COMPILE FILE.

 1HP

   102600B STORAGE USED.           8239 LINES WRITTEN ON COMPILE FILE.
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1HP

1412THE

1

STORAGE ALLOCATION.

```
                ADDRESS   LENGTH            BINARY CONTROL CARDS.

                  1100     3727             IDENT  1HP,FHP
                  5027     (623)            END


                                  BLOCKS     TYPE      ADDRESS    LENGTH

                                  PROGRAM*   ABSOLUTE        0      4767
                                  LITERALS*  ABSOLUTE     4767        40
                                  OVERFLOW   ABSOLUTE     5027         0



                                             IDENT  1HP,FHP                                  1HP          1
                                             PERIPH                                          1HP          3
                              D_M            BASE   MIXED                                    1HP          4
                                             SST                                             1HP          5
                                    COMMENT  86/06/05. 94/05/11. 1HP - 885-42 DRIVER.        1HP          6
                                             COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.  281L803  1



                                  ***        1HP - 885-42 DRIVER.                            1HP          9
                                  *                                                          1HP         10
                                  *          P. T. BARNETT.     83/09/04.                    1HP         11
                                  *          R. M. DANISCH.     85/12/23.                    1HP         12


                                  ***        1HP PROVIDES THE CAPABILITY TO ACCESS THE 885-42 DRIVE  1HP  14
                                  *          THROUGH THE 7155-401 (FA211-C) CONTROLLER.  1HP IS A    1HP  15
                                  *          DEDICATED PROGRAM THAT IS INITIATED AT DEADSTART AND REMAINS  1HP  16
                                  *          ACTIVE AS LONG AS ITS CHANNEL IS UP AND FUNCTIONAL.  1HP USES  1HP  17
                                  *          THE *BIOM* MONITOR FUNCTION TO COMMUNICATE WITH *CPUMTR*.      1HP  18


                                  ***        CALL FORMAT -                                   1HP          20
                                  *                                                          1HP          21
                                  *T,IR      18/*1HP*, 1/0, 5/CP, 6/CCTO, 18/0, 12/CH        1HP          22
                                  *                                                          1HP          23
                                  *          CP     CONTROL POINT NUMBER (MUST BE SYSTEM CP).  1HP          24
                                  *                                                          1HP          25
                                  *          CCTO   CCT ORDINAL.                             1HP          26
                                  *          CH     CHANNEL NUMBER.                          1HP          27
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***       ORGANIZATION OF 885-42.                                          1HP       29
*                                                                          1HP       30
*         UP TO THREE 885-42 UNITS CAN BE COMBINED TO FORM                 1HP       31
*         A LOGICAL DEVICE.                                                1HP       32
*                                                                          1HP       33
*         EQUIPMENT TYPE = *DB*.                                           1HP       34
*                                                                          1HP       35
*         SECTORS/TRACK = 640 LOGICAL / 160 PHYSICAL.                      1HP       36
*           (4 LOGICAL SECTORS FORM 1 PHYSICAL SECTOR)                     1HP       37
*                                                                          1HP       38
*         CM WORDS/PHYSICAL SECTOR = 400B.                                 1HP       39
*                                                                          1HP       40
*         LOGICAL SECTORS/PHYSICAL SECTOR = 4.                             1HP       41
*                                                                          1HP       42
*         LOGICAL SECTORS/LOGICAL TRACK = 1200B (640D).                    1HP       43
*                                                                          1HP       44
*         LOGICAL SECTORS/BUFFER = 40B.                                    1HP       45
*                                                                          1HP       46
*         TRACKS/UNIT = 3222B (1682D).                                     1HP       47
*                                                                          1HP       48
*         WORDS/UNIT = 68,894,720.                                         1HP       49
*                                                                          1HP       50
*         UNITS/DEVICE = 1-3.                                              1HP       51
*                                                                          1HP       52
*         WORDS/DEVICE = 68,894,720 - 206,684,160.                         1HP       53
*                                                                          1HP       54
*         MAXIMUM DATA RATE = 491.52 K WORDS/SECOND.                       1HP       55
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**        MESSAGES.                                                        1HP       57
*                                                                          1HP       58
*         * EQXXX CC ERROR RETRY UNDERWAY.*                                1HP       59
*         ISSUED TO THE SYSTEM CONTROL POINT FOR PRESENTATION ON THE       1HP       60
*         B-DISPLAY TO ALERT THE OPERATOR THAT ERROR RECOVERY IS BEING     1HP       61
*         PERFORMED ON THE DEVICE WHOSE EST ORDINAL IS XXX.  THE TWO       1HP       62
*         CHARACTER MNEMONIC CC DESCRIBES THE ERROR TYPE.                  1HP       63
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*         * 1HP - UNAUTHORIZED CALL.*                                      1HP       65
*         ISSUED TO THE SYSTEM DAYFILE IF 1HP WAS NOT CALLED FROM          1HP       66
*         THE SYSTEM.                                                      1HP       67
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                                   *         THE 7155-401 CONTROLLER IS CONNECTED TO ESM THROUGH A LOW     1HP         71
                                   *         SPEED PORT, AND THE DATA TRANSFER IS DONE THROUGH THAT        1HP         72
                                   *         CONNECTION.  THEREFORE, UPON ISSUING A READ OR WRITE          1HP         73
                                   *         FUNCTION, A 2-BYTE ESM ADDRESS IS SENT TO THE CONTROLLER      1HP         74
                                   *         THROUGH THE CHANNEL, AND THEN THE CHANNEL IS DISCONNECTED.    1HP         75
                                   *         *1HP* IS THEN FREE TO DO AS IT PLEASES WHILE THE CONTROLLER   1HP         76
                                   *         READS/WRITES THE DATA FROM/TO ESM.  SOMETIME BEFORE ISSUING   1HP         77
                                   *         THE NEXT READ/WRITE FUNCTION *1HP* WILL ISSUE A GENERAL       1HP         78
                                   *         STATUS FUNCTION.  THE CONTROLLER WILL PROVIDE STATUS ONLY     1HP         79
                                   *         AFTER COMPLETION OF THE DATA TRANSFER.                        1HP         80
                                   *                                                                       1HP         81
                                   *         IN ORDER TO MAXIMIZE THE TRANSFER RATE, *1HP* WILL SCAN THE   1HP         82
                                   *         UNIT QUEUE WHILE WAITING FOR I/O COMPLETION TO SEE IF THE     1HP         83
                                   *         CURRENT TRANSFER CAN BE CONTINUED.  IF THE 10B SECTORS        1HP         84
                                   *         IMMEDIATELY FOLLOWING THE CURRENT 10B SECTORS ARE TO          1HP         85
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                                   *         THE OPERATION, WITHOUT LOSING A DISK REVOLUTION.              1HP         87
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                                   *         *CPUMTR* OF COMPLETION ON THE PREVIOUS BUFFER.                1HP         89



                                   *         COMMON DECKS.                                                 1HP         91
                                                                                                           1HP         92
          0                                  CTEXT  COMPMAC - PP SYSTEM MACROS.                            COMPMAC      1
                        1     RICHI$         EQU    1            SELECT DEFERRED INSTRUCTION REDEFINITION  1HP         94
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          0                                  CTEXT  COMSCPS - CPUMTR SUBFUNCTION CODES.                    COMSCPS      1
                                                                                                         # COMSDFS      1
          0                                  CTEXT  COMSDFS - COMMON DAYFILE SYMBOL DEFINITIONS.           COMSDFS      2
                                             LIST   X                                                      1HP         98
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```
   0                                  CTEXT  COMSHIO - HIGH-SPEED BUFFERED I/O EQUIVALENCES.        COMSHIO      1

                       M_M            BASE   M                                                       COMSHIO      3
                                  *   COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.            281L803      1

                                  *** COMSHIO - HIGH-SPEED BUFFERED DEVICE EQUIVALENCES.             COMSHIO      6
                                  *   P. T. BARNETT.     81/12/10.                                   COMSHIO      7

                                  *** *COMSHIO* DEFINES PARAMETERS AND CONSTANTS FOR SUPPORT OF      COMSHIO      9
                                  *   HIGH SPEED BUFFERED DISK UNITS.                                COMSHIO     10

                                  **  CONSTANTS FOR DEVICE AND BUFFER CONTROL.                       COMSHIO     12
                                                                                                     COMSHIO     13
                                                                                                     COMSHIO     14
                        10   BMRL     EQU    10B         LENGTH OF RECALL REQUEST TABLE              COMSHIO     15
                        14   CCTH     EQU    12D         CONTINUOUS CYLINDER THRESHOLD               COMSHIO     16
                       400   BTSZ     EQU    400B        BLOCK TRANSFER SIZE                         COMSHIO     17
                        70   DACL     EQU    70B         MAXIMUM DEVICE ACTIVITY COUNT FOR WRITE     COMSHIO     18
                         4   DWLT     EQU    4           DATA WRITTEN LIST THRESHOLD                 COMSHIO     19
                         4   LLCV     EQU    4           LIST CONTROL FOR HASH ALGORITHM             COMSHIO     20
                        40   LSLB     EQU    40B         LOGICAL SECTORS PER I/O BUFFER              COMSHIO     21
                        10   MMXC     EQU    10B         MAXIMUM NUMBER OF MUX CHANNEL (819)         COMSHIO     22
                        10   MXCT     EQU    10B         MAXIMUM NUMBER OF *CCT* ENTRIES             COMSHIO     23
                         4   NCCT     EQU    4           NUMBER OF *CCT* ENTRIES FOR 819-S           COMSHIO     24
                         4   PSLB     EQU    4           PHYSICAL 819 SECTORS PER I/O BUFFER         COMSHIO     25
                       400   RCTH     EQU    256D        REQUEST COUNT THRESHOLD                     COMSHIO     26
```

```
                    **      BDT - BUFFERED DEVICE TABLE.                                    COMSHIO    28
                    *                                                                       COMSHIO    29
                    *       THIS TABLE CONTAINS DESCRIPTORS AND POINTERS TO TABLES USED     COMSHIO    30
                    *       FOR BUFFERED DEVICE CONTROL AND MANAGEMENT.                     COMSHIO    31
                    *                                                                       COMSHIO    32
                    *       THE FIRST PART CONTAINS BUFFERED I/O TABLE DESCRIPTORS -        COMSHIO    33
                    *                                                                       COMSHIO    34
                    *       12/NE, 6/LE, 18/LT, 6/FL, 18/FWAT                               NS2682      1
                    *                                                                       COMSHIO    36
                    *       NE      NUMBER OF ENTRIES IN TABLE                              COMSHIO    37
                    *       LE      LENGTH OF ENTRY                                         COMSHIO    38
                    *       LT      LENGTH OF TABLE(S)                                      COMSHIO    39
                    *       FL      OPTIONAL FLAG BITS (PUTP ONLY)                          NS2682      2
                    *       FWAT    FWA OF TABLE                                            COMSHIO    40
                                                                                            COMSHIO    41
                0    IBSP   EQU     0           I/O BUFFER STATISTICS TABLE                 283L840     1
                1    PLTP   EQU     IBSP+1      PP - I/O BUFFER LINK TABLE                  283L840     2
                2    CCTP   EQU     PLTP+1      CHANNEL CONTROL TABLE                       COMSHIO    44
                3    PUTP   EQU     CCTP+1      PHYSICAL UNIT TABLE                         COMSHIO    45
                4    FTTP   EQU     PUTP+1      FUNCTION TIMEOUT TABLE                      COMSHIO    46
                5    HATP   EQU     FTTP+1      HASH TABLE(S)                               COMSHIO    47
                6    CBTP   EQU     HATP+1      CONTROL BUFFER TABLE                        COMSHIO    48
                7    IOSP   EQU     CBTP+1      I/O STATISTICS TABLE                        COMSHIO    49
                                                                                            COMSHIO    50
                    *       THE NEXT PART CONTAINS LIST CONTROL WORD(S) -                   COMSHIO    51
                    *                                                                       COMSHIO    52
                    *       6/0, 18/NB, 18/LB, 18/FB                                        COMSHIO    53
                    *                                                                       COMSHIO    54
                    *       NB      NUMBER OF BUFFER(S) ON LIST                             COMSHIO    55
                    *       LB      ORDINAL OF LAST BUFFER ON LIST                          COMSHIO    56
                    *       FB      ORDINAL OF FIRST BUFFER ON LIST                         COMSHIO    57
                                                                                            COMSHIO    58
               10    EMTP   EQU     IOSP+1      EMPTY BUFFER LIST                           COMSHIO    59
               11    DWTP   EQU     EMTP+1      DATA WRITTEN LIST                           COMSHIO    60
               12    DRDP   EQU     DWTP+1      READ DATA LIST                              COMSHIO    61
               13    WRTP   EQU     DRDP+1      WRITE DATA LIST                             COMSHIO    62
                                                                                            COMSHIO    63
                    *       THE LAST PART CONTAINS MISCELLANEOUS DATA KEPT HERE SO          COMSHIO    64
                    *       THAT *DSDI* CAN FIND AND DISPLAY IT.                            COMSHIO    65
                                                                                            COMSHIO    66
               14    IORQP  EQU     WRTP+1      I/O REQUEST                                 COMSHIO    67
               15    BDTL   EQU     IORQP+1     LENGTH OF *BDT*                             COMSHIO    68
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                    **      IBST - I/O BUFFER STATISTICS TABLE.                          283L840     4
                    *                                                                   COMSHIO    71
                    *       THIS TABLE CONTAINS STATISTICS ABOUT I/O BUFFER ALLOCATION   COMSHIO    72
                    *       FOR *CPD* AND/OR *PROBE* TO DISPLAY OR PROCESS.             COMSHIO    73
                    *                                                                   COMSHIO    74
                    *       60/NUMBER OF BUFFERS                                        COMSHIO    75
                                                                                        COMSHIO    76
 0     EMTBC    EQU    0           REALLOCATED EMPTY BUFFERS                           COMSHIO    77
 1     DWTBC    EQU    EMTBC+1     REALLOCATED DATA WRITTEN BUFFERS                    COMSHIO    78
 2     DRDBC    EQU    DWTBC+1     REALLOCATED READ DATA BUFFERS                       COMSHIO    79
 3     WRTBC    EQU    DRDBC+1     REALLOCATED WRITE DATA BUFFERS                      COMSHIO    80
                                                                                        COMSHIO    81
 4     IBSL     EQU    WRTBC+1     LENGTH OF *IBST*                                    283L840     5
```

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                **      CCT - CHANNEL CONTROL TABLE.                                    COMSHIO    84
                *                                                                       COMSHIO    85
                *       *CCT* FORMAT FOR 819 DEVICES.                                   NS2762      1
                *                                                                       COMSHIO    91
                *T,CREQ  12/FLAGA, 12/0, 12/RQ, 12/PQ, 12/AQ                            COMSHIO    92
                *T,CCNT  12/FLAGB, 6/CH2, 6/CH1, 36/QCNT                                COMSHIO    93
                *T,CUN1  12/0, 12/UN3, 12/UN2, 12/UN1, 12/UN0                           NS2762      2
                *T,CUN2  12/0, 12/UN7, 12/UN6, 12/UN5, 12/UN4                           COMSHIO    96
                *                                                                       COMSHIO    97
                *       FLAGA  BIT 59 - CHANNEL BUSY (TRANSFER IN PROGRESS)             COMSHIO    98
                *       RQ     RETRY REQUEST                                            NS2762      3
                *       PQ     PENDING REQUEST                                          NS2762      4
                *       AQ     COUNT OF ACTIVE REQUESTS                                 NS2762      5
                *       FLAGB  BIT 59 - REQUEST INITIATED FOR UNIT 0                    COMSHIO   100
                *                .                                                      COMSHIO   101
                *                .                                                      COMSHIO   102
                *              BIT 52 - REQUEST INITIATED FOR UNIT 7                    COMSHIO   103
                *       CH1    FIRST CHANNEL                                            NS2762      6
                *       CH2    SECOND CHANNEL                                           NS2762      7
                *       QCNT   COUNT OF TOTAL REQUESTS PROCESSED                        NS2762      8
                *       UN0                                                             COMSHIO   115
                *        .     *PUT* ORDINALS FOR UNITS ON THIS CHANNEL                 COMSHIO   116
                *        .                                                              COMSHIO   117
                *       UN7                                                             COMSHIO   118
                *                                                                       NS2762      9
                *                                                                       NS2762     10
                *       *CCT* FORMAT FOR NON-819 BUFFERED DEVICES.                      NS2762     11
                *                                                                       NS2762     12
                *T,CREQ  12/CHA, 12/UAC, 36/RESERVED                                    NS2762     13
                *T,CCNT  18/RESERVED, 6/CHN, 36/RESERVED                                NS2762     14
                *T,CUN1  18/NAM, 6/0, 6/CTO, 18/0, 12/CHN                               NS2762     15
                *T,CUN2  60/RESERVED                                                    NS2762     16
                *                                                                       NS2762     17
                *       CHA    CHANNEL ACTIVITY (NONZERO IF CHANNEL ACTIVE)             NS2762     18
                *       UAC    UNIT ACTIVITY COUNT                                      NS2762     19
                *       CHN    CHANNEL NUMBER                                           NS2762     20
                *       NAM    DRIVER NAME                                              NS2762     21
                *       CTO    CCT ORDINAL                                              NS2762     22
                *       CHN    CHANNEL NUMBER                                           NS2762     23
                                                                                        NS2762     24
                                                                                        COMSHIO   119
0       CREQ    EQU     0           CHANNEL REQUEST CONTROL                             COMSHIO   120
1       CCNT    EQU     CREQ+1      CHANNEL REQUEST COUNT                               COMSHIO   121
2       CUN1    EQU     CCNT+1      UNIT LIST - 1                                       COMSHIO   122
3       CUN2    EQU     CUN1+1      UNIT LIST - 2                                       COMSHIO   123
                                                                                        COMSHIO   124
4       CCTL    EQU     CUN2+1      LENGTH OF *CCT* ENTRY                               COMSHIO   125
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                              **        HAT - HASH TABLE.                                           COMSHIO    127
                              *                                                                     COMSHIO    128
                              *         THIS TABLE KEEPS TRACK OF WHAT DATA IS IN THE I/O BUFFERS.  COMSHIO    129
                              *         IF THE PHYSICAL ADDRESS DESCRIBED IS IN A BUFFER, THE *HAT* COMSHIO    130
                              *         TABLE ENTRY WILL POINT TO THE FIRST CONTROL BUFFER IN A     COMSHIO    131
                              *         CHAIN THAT CONTAINS THE DESIRED DATA.  THERE ARE MULTIPLE   COMSHIO    132
                              *         TABLES IN THE AREA RESERVED FOR THIS USE - ONE FOR EACH     COMSHIO    133
                              *         BUFFERED DISK UNIT.  THE LENGTH MUST BE A POWER             COMSHIO    134
                              *         OF TWO, UP TO A MAXIMUM OF 400B.  EACH TABLE IS POINTED TO  284L847      1
                              *         BY A FIELD IN THE *PUT* ENTRY FOR THE PHYSICAL DEVICE.  FOR 284L847      2
                              *         PARTITIONED DEVICES, THE *HAT* TABLE FOR A PARTICULAR       284L847      3
                              *         PARTITION IS LOCATED AT FWAH+PN*HATLE, WHERE FWAH IS THE    284L847      4
                              *         HASH TABLE ADDRESS FROM THE *PUT*, *PN* IS THE PARTITION    284L847      5
                              *         NUMBER, AND *HATLE* IS THE HASH TABLE LENGTH.               284L847      6
                              *                                                                     COMSHIO    137
                              *         12/TRK, 12/FS, 12/LS, 12/0, 12/CBO                          COMSHIO    138
                              *                                                                     COMSHIO    139
                              *         TRK    LOGICAL TRACK                                        COMSHIO    140
                              *         FS     FIRST SECTOR                                         COMSHIO    141
                              *         LS     LAST SECTOR                                          COMSHIO    142
                              *         CBO    ORDINAL OF FIRST CONTROL BUFFER IN CHAIN             COMSHIO    143
                                                                                                    COMSHIO    144
                                                                                                    COMSHIO    145
                         1     HATL     EQU    1           LENGTH OF *HAT* ENTRY                    COMSHIO    146
                                                                                                    COMSHIO    147
                       400     HATLE    EQU    400B        SIZE OF HASH TABLE                       COMSHIO    148


                              **        PP LINK TABLE.                                              COMSHIO    150
                              *                                                                     COMSHIO    151
                              *         THIS TABLE CONTAINS THE CONTROL BUFFER ORDINALS THAT ARE    COMSHIO    152
                              *         CURRENTLY IN USE BY A PP DOING I/O THROUGH *6DE*.  WHILE    COMSHIO    153
                              *         NOT NEEDED, THIS METHOD INCREASES PERFORMANCE CONSIDERABLY. COMSHIO    154
                              *                                                                     COMSHIO    155
                              *         48/0, 12/CONTROL BUFFER ORDINAL                             COMSHIO    156
                                                                                                    COMSHIO    157
                        36     PLTL     EQU    30D         NUMBER OF ENTRIES - ONE FOR EACH PP / CPP COMSHIO    158
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**        PHYSICAL UNIT TABLE.                                            COMSHIO    160
*                                                                         COMSHIO    161
*         THIS TABLE CONTAINS STATISTICS AND CONTROL INFORMATION FOR     COMSHIO    162
*         EACH UNIT IT DESCRIBES.  THERE IS ONE ENTRY FOR EACH PHYSICAL  284L847      7
*         BUFFERED I/O UNIT CONFIGURED IN THE SYSTEM.  FOR PARTITIONED   284L847      8
*         DEVICES, ONE *PUT* ENTRY SERVICES ALL EST ORDINALS COMPRISING  284L847      9
*         THE PHYSICAL DEVICE.                                            284L847     10
*                                                                         COMSHIO    165
*T,UNCT   1/UI, 1/RW, 4/EQ, 6/UN, 12/ESTO, 12/QS, 12/CQ, 12/FQ            272L774      1
*T,HSCT   6/PS,3/0,9/HM,18/FWAH,12/RCNT,12/PUTC                           COMSHIO    167
*T,RDST   24/0, 36/SCRD                                                   COMSHIO    168
*T,WTST   24/0, 36/SCWT                                                   COMSHIO    169
*T,ACRJ   12/CHR, 12/CHW, 12/CHF, 24/CBB                                  COMSHIO    170
*T,ACST   24/RCL, 36/CNT                                                  COMSHIO    171
*T,INST   24/VFRJ, 36/VFDG                                                COMSHIO    172
*T,PILL   12/ERFG, 6/ERUN, 18/RESERVED, 12/SRFG, 12/PPOR                  NS2783       1
*                                                                         COMSHIO    174
*         UI      UNIT INTERLOCK                                          COMSHIO    175
*         RW      REQUEST(S) WAITING FLAG.                                COMSHIO    176
*         EQ      EQUIPMENT/CONTROLLER NUMBER (9853/583X/47444 ONLY)      284L847     11
*                 READ RECOVERY INDEX (819 ONLY)                          272L774      3
*         UN      PHYSICAL UNIT NUMBER                                    COMSHIO    178
*         ESTO    EST ORDINAL OF DEVICE/FIRST PARTITION.                  284L847     12
*         QS      UNIT QUEUE SIZE - NUMBER OF CONTROL BUFFERS             COMSHIO    180
*         CQ      ORDINAL OF CURRENT CONTROL BUFFER IN THE UNIT QUEUE     COMSHIO    181
*         FQ      ORDINAL OF FIRST CONTROL BUFFER IN THE UNIT QUEUE       COMSHIO    182
*         PS      PHYSICAL SECTORS PER I/O BUFFER                         COMSHIO    183
*         HM      HASH MASK - LENGTH-1 OF *HAT* FOR THIS UNIT             COMSHIO    184
*         FWAH    FWA OF FIRST *HAT* FOR THIS PHYSICAL UNIT               284L847     13
*         RCNT    REQUESTS PROCESSED SINCE *RW* FLAG SET.                 COMSHIO    186
*         PUTC    *PUT* ORDINAL OF NEXT UNIT IN CHAIN (MULTI-SPINDLE).    COMSHIO    187
*         SCRD    TOTAL NUMBER OF SECTORS READ                            COMSHIO    188
*         SCWT    TOTAL NUMBER OF SECTORS WRITTEN                         COMSHIO    189
*         CHR     TOTAL NUMBER OF EVICTED READ HASH TABLE ENTRIES         COMSHIO    190
*         CHW     TOTAL NUMBER OF EVICTED WRITE HASH TABLE ENTRIES        COMSHIO    191
*         CHF     TOTAL NUMBER OF REJECTS DUE TO FULL HASH TABLE          COMSHIO    192
*         CBB     TOTAL NUMBER OF REJECTS DUE TO BUFFER BUSY              COMSHIO    193
*         RCL     TOTAL NUMBER OF RECALL REQUEST REPLIES                  COMSHIO    194
*         CNT     TOTAL NUMBER OF BUFFER REQUESTS PROCESSED               COMSHIO    195
*         VFRJ    VERIFY AND INTERLOCK BUFFER REJECT                      COMSHIO    196
*         VFDG    VERIFY AND INTERLOCK DATA GOOD                          COMSHIO    197
*         ERFG    ERROR FLAGS                                             272L774      4
*                 2**48 = I/O QUEUE SIZE ERROR (LEVEL 3 RECOVERY)         272L774      5
*                 2**49 = I/O QUEUE LINKAGE ERROR (LEVEL 3 RECOVERY)      272L774      6
*                 2**50 = I/O QUEUE *PUT* ORDINAL ERROR (LVL 3 RECOVERY)  272L774      7
*                 2**51 = FORMAT/CLUSTERING FAILURE (583X/47444 ONLY)     284L847     14
*         ERUN    583X/47444 UNIT WHERE ERROR WAS FIRST ENCOUNTERED.      284L847     15
*         SRFG    SPECIAL REQUEST FLAGS (887 ONLY)                        COMSHIO    202
*                 2**17 = RESERVED                                        271L716      1
*                 2**16 = VERIFICATION DIAGNOSTICS REQUESTED              271L716      2
*                 2**15 = UNIT CHARACTERISTICS REQUESTED                  271L716      3
*                 2**14 = SPIN UP REQUESTED                               COMSHIO    206
*                 2**13 = SPIN DOWN REQUESTED                             COMSHIO    207
*                 2**12 = DEVICE UNAVAILABLE FOR I/O                      COMSHIO    208
*         SRFG    SPECIAL REQUEST FLAGS (895 DMA ONLY)                    COMSHIO    209
*                 2**23 - 2**18 = CHANNEL NUMBER FOR FIRMWARE LOGGING     271L716      4
*                 2**17 = LIST FIRMWARE REVISION                          271L716      5
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                    *             2**16 = RESERVED                                    271L716      6
                    *             2**15 = LIST PACK SERIAL NUMBER                     271L716      7
                    *             2**14 = FORMAT MAINTENANCE CYLINDER                 271L716      8
                    *             2**13 = PROCESS DISK FLAWS                          271L716      9
                    *             2**12 = ERRORS ENCOUNTERED PROCESSING *PUT* REQUEST 271L716     10
                    *      SRFG   SPECIAL REQUEST FLAGS (9853 ONLY)                   271L716     11
                    *             2**23 - 2**18 = CHANNEL NUMBER FOR FIRMWARE LOGGING 271L716     12
                    *             2**17 = LIST FIRMWARE REVISION                      271L716     13
                    *             2**16 = RESERVED                                    271L716     14
                    *             2**15 = LIST PACK SERIAL NUMBER                     271L716     15
                    *             2**14 = RESERVED                                    NS2750       1
                    *             2**13 = RESERVED                                    NS2750       2
                    *             2**12 = ENABLE CONTROLLER ACTIVITY                  NS2750       3
                    *      SFRG   SPECIAL REQUEST FLAGS (583X/47444 ONLY)             284L847     16
                    *             2**23 - 2**18 = CHANNEL NUMBER FOR FIRMWARE LOGGING 272L774     10
                    *             2**17 = LIST FIRMWARE REVISION                      272L774     11
                    *             2**16 = FORMAT/CLUSTERING REQUESTED                 272L774     12
                    *             2**15 = LIST PACK SERIAL NUMBER                     272L774     13
                    *             2**14 = RESERVED                                    NS2750       4
                    *             2**13 = RESTORE PARITY PROTECTION                   NS2767       1
                    *             2**12 = ENABLE CONTROLLER ACTIVITY                  NS2750       6
                    *      PPOR   *OR* ADDRESS OF PP HOLDING THE UNIT INTERLOCK       COMSHIO    216
                                                                                      NS2750       7
                                                                                      COMSHIO    217
               0    UNCT   EQU    0            UNIT CONTROL                           COMSHIO    218
               1    HSCT   EQU    UNCT+1       HASH TABLE CONTROL                     COMSHIO    219
               2    RDST   EQU    HSCT+1       READ STATISTICS                        COMSHIO    220
               3    WTST   EQU    RDST+1       WRITE STATISTICS                       COMSHIO    221
               4    ACRJ   EQU    WTST+1       BUFFER ACCESS REJECT STATISTICS        COMSHIO    222
               5    ACST   EQU    ACRJ+1       BUFFER ACCESS STATISTICS               COMSHIO    223
               6    INST   EQU    ACST+1       BUFFER INTERLOCK STATISTICS            COMSHIO    224
               7    PILL   EQU    INST+1       PP INTERLOCK WORD                      COMSHIO    225
              10    PUTL   EQU    PILL+1       LENGTH OF *PUT* ENTRY                  COMSHIO    226



                    **     FTT - FUNCTION TIMEOUT TABLE.                              COMSHIO    228
                    *                                                                 COMSHIO    229
                    *      THIS TABLE IS USED BY DRIVERS ON C180 MAINFRAMES           COMSHIO    230
                    *      TO TIMEOUT FUNCTIONS THAT HAVE BEEN ISSUED TO THE          COMSHIO    231
                    *      DISK.  THE TABLE IS INDEXED BY *PUT* ORDINAL.              COMSHIO    232
                    *      ENTRIES ARE MODIFIED BY PP-S AND CPP-S ONLY.  THE          COMSHIO    233
                    *      CPU DOES NOT CHANGE THIS TABLE.                            COMSHIO    234
                    *                                                                 COMSHIO    235
                    *      60/DDD                                (GENERAL FORMAT)     COMSHIO    236
                    *                                                                 COMSHIO    237
                    *      DDD    DEVICE DEPENDENT DATA                               COMSHIO    238
                    *                                                                 COMSHIO    239
                    *          =  12/, 12/TO, 12/AD, 24/TL  (887/9853/583X/47444)     284L847     17
                    *      TO     TIMEOUT VALUE FOR LAST FUNCTION                     271L716     20
                    *      AD     ADDRESS *STO* CALLED FROM                           271L716     21
                    *      TL     TIME LIMIT IN SECONDS                               271L716     22
                                                                                      COMSHIO    243
                                                                                      COMSHIO    244
               1    FTTL   EQU    1            LENGTH OF *FTT* ENTRY                  COMSHIO    245
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**         CBT - CONTROL BUFFER TABLE.                                      COMSHIO    247
*                                                                           COMSHIO    248
*          THIS TABLE IS USED FOR ALLOCATION, ACCESS, AND CONTROL           COMSHIO    249
*          OF THE I/O BUFFERS IN *UEM*, *LCM*, OR *ESM*.                    COMSHIO    250
*                                                                           COMSHIO    251
*          EACH I/O BUFFER CONTAINS 4000B WORDS OR 40B LOGICAL SECTORS.     272L774     18
*          I/O BUFFERS NEVER CROSS LOGICAL TRACK BOUNDARIES; THIS           272L774     19
*          DICTATES THAT BUFFERED DEVICE SECTOR LIMITS MUST BE EVENLY       272L774     20
*          DIVISIBLE BY 40B.  THE NUMBER OF PHYSICAL SECTORS IN AN          272L774     21
*          I/O BUFFER DIFFERS FOR DIFFERENT DEVICE TYPES, AS FOLLOWS -      272L774     22
*                                                                           272L774     23
*          DEVICE TYPE        SECTOR SIZE          SECTORS/BUFFER           272L774     24
*                                                                           272L774     25
*            885-42                400B                   8                 272L774     26
*            9853                  400B                   8                 272L774     27
*            819                  1000B                   4                 272L774     28
*            887 (DF)             1000B                   4                 272L774     29
*            887 (DH)             4000B                   1                 272L774     30
*            895                  4000B                   1                 272L774     31
*            583X                 4000B                   1                 272L774     32
*            47444 (EO/EP)        1000B                   4                 284L847     18
*            47444 (ALL OTHERS)   2000B                   2                 284L847     19
*                                                                           272L774     33
*          SINCE THERE ARE ONLY FOUR PHYSICAL ADDRESSES (PAD1-PAD4) IN      272L774     34
*          THE *CBT*, EACH PHYSICAL ADDRESS FOR AN 885-42 OR 9853 REFERS    272L774     35
*          TO TWO CONSECUTIVE SECTORS.                                      272L774     36
*                                                                           COMSHIO    260
*T,PAD1    6/    0, 6/UN, 12/CYL, 6/TK, 6/SC, 12/FLAGD, 12/LINK             COMSHIO    261
*T,PAD2    6/    0, 6/UN, 12/CYL, 6/TK, 6/SC, 12/FLAGD, 12/LINK             COMSHIO    262
*T,PAD3    6/    0, 6/UN, 12/CYL, 6/TK, 6/SC, 12/FLAGD, 12/LINK             COMSHIO    263
*T,PAD4    6/   CH, 6/UN, 12/CYL, 6/TK, 6/SC, 12/FLAGD, 12/LINK             253L688      1
*T,FSTC    60/ FST                                                          COMSHIO    265
*T,IOLK    12/FLAGE, 12/IOLKB, 12/IOLKF, 24/IOBA                            COMSHIO    266
*T,HSLK    12/FLAGF, 12/HSLKB, 12/HSLKF, 3/LI, 9/HI, 12/PUTO                COMSHIO    267
*T,LSLK    12/AC, 12/LSLKB, 12/LSLKF, 6/CP, 18/REA                          COMSHIO    268
*                                                                           COMSHIO    269
*          UN     PHYSICAL UNIT NUMBER                                      COMSHIO    270
*          CYL    CYLINDER NUMBER                                           COMSHIO    271
*          TK     PHYSICAL TRACK NUMBER                                     COMSHIO    272
*          SC     PHYSICAL SECTOR NUMBER                                    COMSHIO    273
*          FLAGD  BIT 23 -  FIRST SECTOR DOES NOT CONTAIN VALID DATA        COMSHIO    274
*                 BIT 22 - SECOND SECTOR DOES NOT CONTAIN VALID DATA        COMSHIO    275
*                          (BOTH BITS WILL BE SET FOR AN 819 SECTOR)        COMSHIO    276
*                          (BOTH BITS IN *PAD1* - *PAD4* WILL BE SET        COMSHIO    277
*                           FOR AN 895 SECTOR)                              COMSHIO    278
*                 BIT 21 - UNUSED.                                          COMSHIO    279
*                 BIT 20 - UNUSED.                                          COMSHIO    280
*                 BIT 19 - SHORT PRU (LOGICAL SECTORS 37, 27, 17, 7)        253L688      2
*                 BIT 18 - SHORT PRU (LOGICAL SECTORS 36, 26, 16, 6)        253L688      3
*                 BIT 17 - SHORT PRU (LOGICAL SECTORS 35, 25, 15, 5)        253L688      4
*                 BIT 16 - SHORT PRU (LOGICAL SECTORS 34, 24, 14, 4)        253L688      5
*                 BIT 15 - SHORT PRU (LOGICAL SECTORS 33, 23, 13, 3)        253L688      6
*                 BIT 14 - SHORT PRU (LOGICAL SECTORS 32, 22, 12, 2)        253L688      7
*                 BIT 13 - SHORT PRU (LOGICAL SECTORS 31, 21, 11, 1)        253L688      8
*                 BIT 12 - SHORT PRU (LOGICAL SECTORS 30, 20, 10, 0)        253L688      9
*          LINK   LINK TO NEXT SECTOR                                       COMSHIO    286
*          CH     CHANNEL NUMBER FOR DEVICE VERIFICATION OR ERROR RETRY.    253L688     10
```

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                    *         FST    DATA FROM *FST* ENTRY.                                 COMSHIO    287
                    *         FLAGE  BIT 59 - I/O INTERLOCK                                 COMSHIO    288
                    *                BIT 58 - READ THRESHOLD TRIGGER                        COMSHIO    289
                    *                BIT 57 - BUFFER CONTAINS WRITE DATA                    COMSHIO    290
                    *                BIT 56 - I/O LINKUP (819 ONLY).                        COMSHIO    291
                    *                BIT 55 - SYSTEM FILE DATA IN BUFFER.                   COMSHIO    292
                    *                BIT 54 - RECOVERED WRITE BUFFER.                       COMSHIO    293
                    *                BIT 53 - DATA STREAMING DISABLED.                      COMSHIO    294
                    *                BIT 52 - 48  RESERVED.                                 283L840      6
                    *         IOLKB  BACKWARD LINK FOR UNIT I/O QUEUE                       COMSHIO    295
                    *         IOLKF  FORWARD LINK FOR UNIT I/O QUEUE                        COMSHIO    296
                    *         IOBA   I/O BUFFER ADDRESS                                     COMSHIO    297
                    *         FLAGF  BIT 59 - I/O ERROR.                                    COMSHIO    298
                    *                BIT 58 - FORCED CHANNEL SELECTION.                     COMSHIO    299
                    *                BITS 57 - 54 - UNUSED.                                 253L688     11
                    *                BIT 53 - ERROR CODE.                                   253L688     12
                    *                  .           .                                        COMSHIO    305
                    *                  .           .                                        COMSHIO    306
                    *                  .           .                                        COMSHIO    307
                    *                BIT 48        .                                        COMSHIO    308
                    *         HSLKB  BACKWARD LINK FOR HASH ENTRY LIST                      COMSHIO    309
                    *         HSLKF  FORWARD LINK FOR HASH ENTRY LIST                       COMSHIO    310
                    *         LI     LIST INDEX TO INDICATE RESIDENCE OF BUFFER             COMSHIO    311
                    *                1 = EMPTY BUFFER LIST                                  COMSHIO    312
                    *                2 = DATA WRITTEN LIST                                  COMSHIO    313
                    *                3 = READ DATA LIST                                     COMSHIO    314
                    *                4 = WRITE DATA LIST                                    COMSHIO    315
                    *         HI     HASH INDEX TO ENTRY FOR THIS BUFFER                    COMSHIO    316
                    *         PUTO   *PUT* ORDINAL OF DEVICE TO WHICH BUFFER IS ASSIGNED    COMSHIO    317
                    *         AC     ACTIVE COUNT (4000B IF BUFFER IS WRITE INTERLOCKED)    COMSHIO    318
                    *         LSLKB  BACKWARD LINK FOR BUFFER LIST                          COMSHIO    319
                    *         LSLKF  FORWARD LINK FOR BUFFER LIST                           COMSHIO    320
                    *         CPN    CONTROL POINT NUMBER (ZERO IF REQUEST FROM PP)         COMSHIO    321
                    *         REA    RECALL ENTRY ADDRESS (PP MESSAGE BUFFER)               COMSHIO    322
                                                                                            COMSHIO    323
                                                                                            COMSHIO    324
               0    PAD1      EQU    0           FIRST SECTOR(S)                            COMSHIO    325
               1    PAD2      EQU    PAD1+1      SECOND SECTOR(S)                           COMSHIO    326
               2    PAD3      EQU    PAD2+1      THIRD SECTOR(S)                            COMSHIO    327
               3    PAD4      EQU    PAD3+1      FOURTH SECTOR(S)                           COMSHIO    328
               4    FSTC      EQU    PAD4+1      *FST* DATA                                 COMSHIO    329
               5    IOLK      EQU    FSTC+1      I/O QUEUE LINK                             COMSHIO    330
               6    HSLK      EQU    IOLK+1      HASH ENTRY LINK                            COMSHIO    331
               7    LSLK      EQU    HSLK+1      LIST LINK                                  COMSHIO    332
                                                                                            COMSHIO    333
              10    CBTL      EQU    LSLK+1      LENGTH OF *CBT* ENTRY                      COMSHIO    334
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                    **      SELECTIVE RESET FLAGS SET IN *PUT* POINTER WORD.          271L716   30
                                                                                      271L716   31
                                                                                      271L716   32
27   XDSR   EQU   23D       *CM3* DRIVER RESET INTERLOCK                              271L716   33


                    **      SPECIAL REQUEST FLAGS SET IN *PUT* ENTRY (SEE *SRFG*      271L716   34
                    *       FIELD UNDER DESCRIPTION OF PHYSICAL UNIT TABLE).          271L716   35
                                                                                      COMSHIO   337
                                                                                      COMSHIO   338
                    *       FLAGS FOR 887 DEVICES.                                    271L716   36
                                                                                      271L716   37
                    *       EQU   17D       RESERVED                                  271L716   38
20   DVDF   EQU   16D       VERIFICATION DIAGNOSTICS REQUESTED                        271L716   39
17   DUCF   EQU   15D       UNIT CHARACTERISTICS REQUESTED                            271L716   40
16   SPUF   EQU   14D       SPIN-UP REQUESTED                                         COMSHIO   342
15   SPDF   EQU   13D       SPIN-DOWN REQUESTED                                       COMSHIO   343
14   DUNF   EQU   12D       DEVICE UNAVAILABLE FOR I/O                                COMSHIO   344
                                                                                      COMSHIO   345
                    *       FLAGS FOR 895 DMA.                                        271L716   41
                                                                                      COMSHIO   347
21   LFMI   EQU   17D       LIST FIRMWARE REVISION                                    271L716   42
                    *       EQU   16D       RESERVED                                  271L716   43
17   LPSN   EQU   15D       LIST PACK SERIAL NUMBER                                   271L716   44
16   FMMC   EQU   14D       FORMAT MAINTENANCE CYLINDER                               271L716   45
15   PRFM   EQU   13D       PROCESS DISK FLAW MAP                                     271L716   46
14   PERR   EQU   12D       ERROR IN PROCESSING *PUT* REQUEST                         271L716   47
                                                                                      271L716   48
                    *       FLAGS FOR 9853 DEVICES.                                   271L716   49
                                                                                      271L716   50
21   LMLF   EQU   LFMI      LIST MICROCODE REVISION LEVEL                             271L716   51
                    *       EQU   16D       RESERVED                                  271L716   52
17   LDIF   EQU   LPSN      LIST DRIVE UNIQUE IDENTIFICATION                          271L716   53
                    *       EQU   14D       RESERVED                                  NS2750     8
                    *       EQU   13D       RESERVED                                  NS2750     9
14   ECAF   EQU   12D       ENABLE CONTROLLER ACTIVITY                                NS2750    10
                                                                                      272L774   37
                    *       FLAGS FOR 583X/47444 DEVICES.                             284L847   20
                                                                                      272L774   39
21   LMLF   EQU   LFMI      LIST MICROCODE REVISION LEVEL                             272L774   40
20   FCRF   EQU   16D       FORMAT/CLUSTERING REQUESTED                               272L774   41
17   LDIF   EQU   LPSN      LIST DRIVE UNIQUE IDENTIFICATION                          272L774   42
                    *       EQU   14D       RESERVED                                  NS2750    11
15   RSPF   EQU   13D       RESTORE PARITY PROTECTION                                 NS2767     2
14   ECAF   EQU   ECAF      ENABLE CONTROLLER ACTIVITY                                NS2750    13
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**      IOST - I/O STATISTICS TABLE.                                    COMSHIO   354
*                                                                       COMSHIO   355
*       THIS TABLE IS PRESENT ONLY IF *PROBE* IS ENABLED.  IT IS USED   COMSHIO   356
*       TO COLLECT DATA CONCERNING THE NUMBER OF REQUESTS PER DISK      COMSHIO   357
*       WITH A SPECIFIED TRANSFER SIZE.  SEPARATE DATA IS KEPT FOR      COMSHIO   358
*       READ AND WRITE REQUESTS.  TRANSFER SIZE IS IN TERMS OF NUMBER   COMSHIO   359
*       OF *CBT*S TRANSFERED.  EACH *PUT* WILL HAVE AN ASSOCIATED       COMSHIO   360
*       *IOST* ENTRY.                                                   COMSHIO   361
*                                                                       COMSHIO   362
*                                                                       COMSHIO   363
*T IOST  30/ RCNT0, 30/ WCNT0                                           COMSHIO   364
*T,      30/ RCNT1, 30/ WCNT1                                           COMSHIO   365
*T,      30/ RCNT2, 30/ WCNT2                                           COMSHIO   366
*T,      30/ RCNT3, 30/ WCNT3                                           COMSHIO   367
*T,      30/ RCNT4, 30/ WCNT4                                           COMSHIO   368
*T,      30/ RCNT5, 30/ WCNT5                                           COMSHIO   369
*T,      30/ RCNT6, 30/ WCNT6                                           COMSHIO   370
*T,      30/ RCNT7, 30/ WCNT7                                           COMSHIO   371
*                                                                       COMSHIO   372
*       ------------------------------------------------------------    COMSHIO   373
*       I   FIELD      I      LENGTH OF READ TRANSFER IN-          I    COMSHIO   374
*       I              I        *CBT*S              SECTORS        I    COMSHIO   375
*       ------------------------------------------------------------    COMSHIO   376
*       I              I                    I                     I    COMSHIO   377
*       I   RCNT0      I          1         I       1 - 40B       I    COMSHIO   378
*       I   RCNT1      I        2 - 3       I     41B - 140B      I    COMSHIO   379
*       I   RCNT2      I        4 - 7       I    141B - 340B      I    COMSHIO   380
*       I   RCNT3      I      10B - 17B     I    341B - 740B      I    COMSHIO   381
*       I   RCNT4      I      20B - 37B     I    741B - 1740B     I    COMSHIO   382
*       I   RCNT5      I      40B - 77B     I   1741B - 3740B     I    COMSHIO   383
*       I   RCNT6      I     100B - 177B    I   3741B - 7740B     I    COMSHIO   384
*       I   RCNT7      I   MORE THAN 200B   I   MORE THAN 7740B   I    COMSHIO   385
*       I              I                    I                     I    COMSHIO   386
*       ------------------------------------------------------------    COMSHIO   387
*                                                                       COMSHIO   388
*                                                                       COMSHIO   389
*       ------------------------------------------------------------    COMSHIO   390
*       I   FIELD      I      LENGTH OF WRITE TRANSFER IN-         I    COMSHIO   391
*       I              I        *CBT*S              SECTORS        I    COMSHIO   392
*       ------------------------------------------------------------    COMSHIO   393
*       I              I                    I                     I    COMSHIO   394
*       I   WCNT0      I          1         I       1 - 40B       I    COMSHIO   395
*       I   WCNT1      I        2 - 3       I     41B - 140B      I    COMSHIO   396
*       I   WCNT2      I        4 - 7       I    141B - 340B      I    COMSHIO   397
*       I   WCNT3      I      10B - 17B     I    341B - 740B      I    COMSHIO   398
*       I   WCNT4      I      20B - 37B     I    741B - 1740B     I    COMSHIO   399
*       I   WCNT5      I      40B - 77B     I   1741B - 3740B     I    COMSHIO   400
*       I   WCNT6      I     100B - 177B    I   3741B - 7740B     I    COMSHIO   401
*       I   WCNT7      I   MORE THAN 177B   I   MORE THAN 7740B   I    COMSHIO   402
*       I              I                    I                     I    COMSHIO   403
*       ------------------------------------------------------------    COMSHIO   404
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                        **      LEVEL-3 RECOVERY ERROR FLAGS.                                   COMSHIO   406
                        *                                                                       COMSHIO   407
                        *       FLAGS SET IN WORD *REML* BY *CPUMTR* PRESET.                    COMSHIO   408
                        *                                                                       COMSHIO   409
                        *       2**0 = WRITE LIST LINKAGE ERROR.                                COMSHIO   410
                        *       2**1 = READ DATA ON WRITE LIST.                                 COMSHIO   411
                        *       2**2 = INTERLOCKED BUFFER ON WRITE LIST.                        COMSHIO   412
                        *       2**3 = WRITE LIST BUFFER COUNT ERROR.                           COMSHIO   413
                        *       2**4 = NON-LINKED WRITE BUFFER FOUND.                           COMSHIO   414
                                                                                                COMSHIO   415
                    1    WLLE   EQU   1          WRITE LIST LINKAGE ERROR                    COMSHIO   416
                    2    WLRD   EQU   2          READ DATA ON WRITE LIST                     COMSHIO   417
                    4    WLIB   EQU   4          INTERLOCKED BUFFER ON WRITE LIST            COMSHIO   418
                   10    WLBC   EQU   10         WRITE LIST BUFFER COUNT ERROR               COMSHIO   419
                   20    WLNL   EQU   20         NON-LINKED WRITE BUFFER FOUND               COMSHIO   420
                                                                                                COMSHIO   421
                        *       FLAGS SET IN WORD *PILL* OF THE *PUT* TABLE.                    COMSHIO   422
                                                                                                COMSHIO   423
                    1    IOQS   EQU   1          I/O QUEUE SIZE ERROR                        COMSHIO   424
                    2    IOQL   EQU   2          I/O QUEUE LINKAGE ERROR                     COMSHIO   425
                    4    IOQP   EQU   4          I/O QUEUE *PUT* ORDINAL ERROR               COMSHIO   426
                                                                                                
                                                                                                
                                                                                                
                        **      SHIFT CONSTANTS.                                                COMSHIO   428
                        *                                                                       COMSHIO   429
                        *       THE FOLLOWING SHIFT CONSTANTS ARE DEFINED TO SIMPLIFY           COMSHIO   430
                        *       COMPUTATION OF THE ADDRESS OF INDIVIDUAL ENTRIES IN THE         COMSHIO   431
                        *       TABLES DEFINED ABOVE.  NOTE THAT ALL ENTRY LENGTHS ARE          COMSHIO   432
                        *       POWERS OF TWO.                                                  COMSHIO   433
                                                                                                COMSHIO   434
                                                                                                COMSHIO   435
                    3    CBTLS  EQU   3          CONTROL BUFFER ENTRY                        COMSHIO   436
                    0           ERRNZ CBTL-10B   COUNT MUST BE CHANGED TO MATCH LENGTH       COMSHIO   437
                    2    CCTLS  EQU   2          CHANNEL CONTROL ENTRY                       COMSHIO   438
                    0           ERRNZ CCTL-4     COUNT MUST BE CHANGED TO MATCH LENGTH       COMSHIO   439
                    0    FTTLS  EQU   0          FUNCTION TIMEOUT ENTRY                      COMSHIO   440
                    0           ERRNZ FTTL-1     COUNT MUST BE CHANGED TO MATCH LENGTH       COMSHIO   441
                    5    LSLBS  EQU   5          LOGICAL SECTORS PER I/O BUFFER              COMSHIO   442
                    0           ERRNZ LSLB-40B   COUNT MUST BE CHANGED TO MATCH LENGTH       COMSHIO   443
                    3    PUTLS  EQU   3          PHYSICAL UNIT ENTRY                         COMSHIO   444
                    0           ERRNZ PUTL-10B   COUNT MUST BE CHANGED TO MATCH LENGTH       COMSHIO   445
                                                                                                
                                                                                                
                                                                                                
                                                                                                
                                                                                                
                  M_M           BASE  *                                                       COMSHIO   447
                        HIO     ENDX                                                          COMSHIO   448
                                LIST  *                                                       1HP       100
                0               CTEXT COMSLSD - LABEL SECTOR DEFINITION.                      COMSLSD     1
                0               CTEXT COMSMSC - MISCELLANEOUS SYSTEM CONSTANTS.               COMSMSC     1
                                LIST  X                                                       1HP       102
                                                                                                
                                                                                                
                                                                                                
                                                                                                
                                                                                                
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       0                         CTEXT  COMSMSP - MASS STORAGE PROCESSING EQUIVALENCES.        COMSMSP      1

                       M_M       BASE   M                                                      COMSMSP      3
                            *    COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.           281L803      1
                            ***  COMSMSP - MASS STORAGE PROCESSING EQUIVALENCES.               COMSMSP      4
                            *    R. E. TATE.         72/02/26.                                 COMSMSP      5
                            *    R. J. THIELEN.      75/01/08.                                 COMSMSP      6
                            *    W. E. GOEBEL.       77/01/24.                                 COMSMSP      7

                            **   MSEQ - DEFINES SUPPORTED MASS STORAGE EQUIPMENTS.             COMSMSP      9
                            *                                                                  COMSMSP     10
                            *    MSEQ IS A MICRO CONTAINING ALL THE CURRENTLY SUPPORTED MASS   COMSMSP     11
                            *    STORAGE EQUIPMENT MNEMONICS.  THIS MICRO IS GENERATED BY      COMSMSP     12
                            *    THE *MSDC* MACRO.                                             COMSMSP     13

                            **   TBL - GENERATE TABLE BASED UPON PARAMETER STRING.             COMSMSP     15
                            *                                                                  COMSMSP     16
                            *    ENTRY  TBLM IS A USER SUPPLIED MACRO TO GENERATE EACH         COMSMSP     17
                            *           INDIVIDUAL TABLE ENTRY. TBLM HAS ONE PARAMETER THE     COMSMSP     18
                            *           EQUIPMENT TYPE TO GENERATE THE TABLE ENTRY FOR.        COMSMSP     19
                                                                                               COMSMSP     20
                                                                                               COMSMSP     21
                                 PURGMAC  TBL                                                  COMSMSP     22
                             TBL MACRO  P                                                      COMSMSP     23
                                 IRP    P                                                      COMSMSP     24
                                 TBLM   P                                                      COMSMSP     25
                                 IRP    P                                                      COMSMSP     26
                                 ENDM                                                          COMSMSP     27

                            **   DRIVER INDEX DEFINITIONS.                                     COMSMSP     29
                                                                                               COMSMSP     30
                                                                                               COMSMSP     31
       0                     BEGIN    BSSN   1                                                 COMSMSP     32
   L   1                     LA6DI    BSSN   1            *6DI* DRIVER INDEX                   COMSMSP     35
   L   2                     LA6DJ    BSSN   1            *6DJ* DRIVER INDEX                   COMSMSP     36
   L   3                     LA6DP    BSSN   1            *6DP* DRIVER INDEX                   COMSMSP     37
   L   4                     LA6DE    BSSN   1            *6DE* DRIVER INDEX                   COMSMSP     38
   L   5                     LA6DX    BSSN   1            *6DX* DRIVER INDEX                   COMSMSP     39
   L   6                     LA6MX    BSSN   0            MAXIMAL DRIVER INDEX + 1             COMSMSP     40
                                                                                               COMSMSP     43
                                                                                               COMSMSP     44
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                **      MSDC - GENERATE MASS STORAGE DEVICE CHARACTERISTICS.          COMSMSP    46
                *       THIS MACRO IS INTENDED TO SUPPLY VIRTUALLY ALL PARAMETERS     COMSMSP    47
                *       ASSOCIATED WITH A MASS STORAGE DEVICE.  IN MOST PROGRAMS NO   COMSMSP    48
                *       WORK SHOULD BE INVOLVED ADDING OR DELETING EQUIPMENT          COMSMSP    49
                *       SUPPORT.  THIS IS THE GOAL OF SPECIFYING PARAMETERS           COMSMSP    50
                *       IN THIS COMMON DECK.                                          COMSMSP    51
                *                                                                     COMSMSP    52
                * TY    MSDC N,S,C,P,M,T,U,F,A,D,B,F1,F2,F3,F4,F5,F6,O1,T1,O2,T2,F7,F8284L847     1
                *,,F9,BC,RT,RB,NP,CP,MLI,MI,DD                                       284L847     2
                *       PARAM  TAG          MEANING                                   COMSMSP    55
                *       TY                  DEVICE TYPE.                              COMSMSP    56
                *       N      NTTY         NUMBER OF TRACKS PER PARTITION/DEVICE.    284L847     3
                *       S      SLTY         SECTOR LIMIT.                             COMSMSP    58
                *       C      CTTY         DEFAULT NUMBER OF CATALOG TRACKS.         COMSMSP    59
                *       P      PKTY         NUMBER OF PACKS ALLOWED PER DEVICE        COMSMSP    60
                *       M      SDTY         SHARED DEVICE ALLOWED FLAG                COMSMSP    61
                *       T      TTTY         FULL / HALF TRACK FLAG.                   251L670     2
                *       U      NUTY         MAXIMUM UNIT NUMBER+1 ALLOWED.            COMSMSP    63
                *       F      FWTY         DEFAULT FIRMWARE TYPE OF EQUIPMENT.       COMSMSP    64
                *       A      LDAMTY       ALGORITHM INDEX CONTROL OR OVERRIDE.      284L847     4
                *                           *LDAM* = DEVICE IS AN *LDAM* DEVICE.      284L847     5
                *                  AITY = AIXX *XX* MEANS USE THE SAME ALGORITHM INDEX 284L847     6
                *                           PREVIOUSLY DEFINED FOR DEVICE TYPE *XX*.  284L847     7
                *       D      DRNTY        *6XX* DRIVER NAME FOR DEVICE TYPE         272L774     2
                *       B      BFTY         BUFFERED DEVICE FLAGS (3 BITS)            COMSMSP    67
                *                           BIT 2 = DEVICE SUPPORTS DIRECT TRANSFER.  COMSMSP    68
                *                           BIT 1 = DEVICE IS BUFFERED RMS.           COMSMSP    69
                *                           BIT 0 = DEVICE IS PARITY PROTECTED.       284L847     8
                *                  AITY     ALGORITHM INDEX GENERATED IF BFTY.NE.4    284L847     9
                *                           AND IF NOT OVERRIDDEN BY PARAMETER *A*.   284L847    10
                *       F1     CYUNTY       PHYSICAL CYLINDERS PER UNIT               COMSMSP    71
                *       F2     PTCYTY       PHYSICAL TRACKS PER CYLINDER              COMSMSP    72
                *       F3     LSPTTY       LOGICAL SECTORS PER PHYSICAL TRACK.       251L670     3
                *       F4     CFSTY        CONVERSION FACTOR SHIFT COUNT;            272L774     3
                *                           USED TO DETERMINE NUMBER OF -             272L774     4
                *                  LSPSTY   LOGICAL SECTORS PER PHYSICAL SECTOR.      251L670     6
                *                  PSBFTY   PHYSICAL SECTORS PER I/O BUFFER.          251L670     7
                *                  PSPTTY   PHYSICAL SECTORS PER PHYSICAL TRACK.      251L670     8
                *                  LTCYTY   LOGICAL TRACKS PER CYLINDER.              272L774     5
                *                  PSLTTY   PHYSICAL SECTORS PER LOGICAL TRACK.       272L774     6
                *       F5     GSTY         GAP SECTORS PER LOGICAL TRACK.            251L670     9
                *       F6     MCLTTY       MAINTENANCE CYLINDER LOGICAL TRACK.       251L670    10
                *       O1     SOH1TY       SEEK OVERHEAD FOR SEEKS .LE. 30           253L688     2
                *                           CYLINDERS (MICROSECONDS)                  253L688     3
                *       T1     SC1TY        SEEKS .LE. 30 TIME PER CYLINDER           253L688     4
                *                           (MICROSECONDS)                            253L688     5
                *       O2     SOH2TY       SEEK OVERHEAD FOR SEEKS .GT. 30           253L688     6
                *                           CYLINDERS (MICROSECONDS)                  253L688     7
                *       T2     SC2TY        SEEKS .GT. 30 TIME PER CYLINDER           253L688     8
                *                           (MICROSECONDS)                            253L688     9
                *       F7     LCTY         FIRST SECTOR OF LABEL COPY.               253L688    10
                *       F8     SPSCTY       SPARE PHYSICAL SECTORS PER CYLINDER       272L774     7
                *       F9     PNUNTY       PARTITIONS PER PHYSICAL UNIT.             284L847    11
                *                           USED WITH CYUNTY TO DERIVE -              284L847    12
                *                  CYPNTY   CYLINDERS PER PARTITION.                  284L847    13
                *       BC     BCTTY        DEFAULT BUFFER COUNT FOR DEVICE.          284L847    14
                *       RT     RATTY        READ-AHEAD THRESHOLD FOR DEVICE.          284L847    15
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*         RB     RBTTY       DEFAULT READ BUFFER THRESHOLD FOR DEVICE.  284L847    16
*         NP     NPPTY       NIO PP DRIVER NAME FOR DEVICE.             284L847    17
*         CP     CPPTY       CIO PP DRIVER NAME FOR DEVICE.             284L847    18
*         MLI    MLIDTY      MAINTENANCE LOG IDENTIFIER FOR DEVICE.     284L847    19
*         MI     MDLTY       MODEL NUMBER IDENTIFIER FOR DEVICE.        284L847    20
*                            (HEXADECIMAL REPRESENTATION)               284L847    21
*         DD     PDDTY       NUMBER OF PARALLEL DATA DRIVES PER DEVICE. 284L847    22
                                                                        COMSMSP    77
          PURGMAC MSDC                                                  COMSMSP    78
   MACRO  MSDC,TY,N,S,C,P,M,T,U,F,A,D,B,F1,F2,F3,F4,F5,F6,O1,T1,O2,T2,F7 253L688    11
,,F8,F9,BC,RT,RB,NP,CP,MLI,MI,DD                                       284L847    23
 MSEQ     MICRO  1,, "MSEQ"".1"TY                                      COMSMSP    80
 .1       MICRO  1,,*,*                                                COMSMSP    81
          IFC    EQ,*N**                                               COMSMSP    82
 NT_TY    EQU    TL_TY*4      NUMBER OF TRACKS IS TLTY*4               COMSMSP    83
          ELSE   1                                                     COMSMSP    84
 NT_TY    EQU    N            NUMBER OF TRACKS                         COMSMSP    85
 .1       SET    N+3                                                   COMSMSP    86
 TL_TY    EQU    .1/4                                                  COMSMSP    87
 SL_TY    EQU    S            NUMBER OF SECTORS PER TRACK              COMSMSP    88
 CT_TY    EQU    C            NUMBER OF CATALOG TRACKS                 COMSMSP    89
 PK_TY    EQU    P            PACK TYPE DEVICE FLAG                    COMSMSP    90
 SD_TY    EQU    M            SHARED DEVICE ALLOWED FLAG               COMSMSP    91
          IFC    EQ,*T*FT*                                             COMSMSP    92
 TT_TY    EQU    0            SET FULL TRACK STATUS                    COMSMSP    93
          ELSE   1                                                     COMSMSP    94
 TT_TY    EQU    1            SET HALF TRACK STATUS                    COMSMSP    95
 .A1      SET    U 0                                                   284L847    24
 NU_TY    EQU    .A1          MAXIMUM UNIT NUMBER ALLOWED              284L847    25
          IFC    EQ,*F**                                               COMSMSP   100
 FW_TY    MICRO  1,,*NNC*                                              COMSMSP   101
          ELSE   1                                                     COMSMSP   102
 FW_TY    MICRO  1,,*F*                                                COMSMSP   103
 .A2      SET    0                                                     284L847    26
 .A2      IFC    EQ,*A*LDAM*                                           284L847    27
 LDAM_TY  EQU    1                                                     284L847    28
 .A2      ELSE                                                         284L847    29
 LDAM_TY  EQU    0                                                     284L847    30
          IFC    NE,*A**,1                                             284L847    31
 .A2      SET    1                                                     284L847    32
 .A2      ENDIF                                                        284L847    33
 .A1      SET    B 0          BUFFERED DEVICE FLAGS                    284L847    34
 BF_TY    EQU    .A1                                                   284L847    35
          ERRNG  7-BF_TY      DEFINITION EXCEEDS FIELD SIZE            284L847    36
 .A2      IFNE   .A2,0                                                 284L847    37
 AI_TY    EQU    AI_A                                                  284L847    38
 .A2      ELSE                                                         284L847    39
 .A1      IFEQ   .A1,4                                                 284L847    40
 AI_TY    EQU    0                                                     284L847    41
 .A1      ELSE                                                         284L847    42
 AI_TY    EQU    .AI          SET ALGORITHM INDEX                      COMSMSP   105
 .AI      SET    .AI+1                                                 COMSMSP   106
 .A1      ENDIF                                                        284L847    43
 .A2      ENDIF                                                        284L847    44
          IFC    EQ,*D**                                               COMSMSP   109
 DRN_TY   MICRO  1,,*TY*      DRIVER NAME IS DEVICE TYPE               272L774     9
          ELSE   1                                                     COMSMSP   111
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DRN_TY   MICRO  1,,*D*      DRIVER NAME                                    272L774  10
DI_TY    EQU    LA6"DRN_TY"                                                272L774  11
.A1      SET    F1 0                                                       284L847  45
CYUN_TY  EQU    .A1         CYLINDERS PER UNIT                             284L847  46
.A1      SET    F2 0                                                       284L847  47
PTCY_TY  EQU    .A1         PHYSICAL TRACKS PER CYLINDER                   284L847  48
.A1      SET    F3 0                                                       284L847  49
LSPT_TY  EQU    .A1         LOGICAL SECTORS PER PHYSICAL TRACK             284L847  50
.A1      SET    F4 0                                                       284L847  51
CFS_TY   EQU    .A1         CONVERSION FACTOR                              284L847  52
.2       DECMIC .A1                                                        284L847  53
LSPS_TY  EQU    1S".2"      LOGICAL SECTORS PER PHYSICAL SECTOR            251L670  28
         IFNE   BF_TY,0,1                                                  251L670  29
PSBF_TY  EQU    40/LSPS_TY  PHYSICAL SECTORS PER I/O BUFFER                251L670  30
.A1      SET    LSPT_TY/LSPS_TY                                            284L847  54
PSPT_TY  EQU    .A1         PHYSICAL SECTORS PER PHYSICAL TRACK            284L847  55
.A1      SET    F5 0                                                       284L847  56
GS_TY    EQU    .A1         GAP SECTORS PER LOGICAL TRACK                  284L847  57
.A1      SET    F6 0                                                       284L847  58
MCLT_TY  EQU    .A1         LOGICAL TRACK OF TEST MAINTENANCE CYLINDER     284L847  59
.A1      SET    O1 0                                                       284L847  60
SOH1_TY  EQU    .A1         CYLINDER POSITION OVERHEAD TIME (MICROSEC)     284L847  61
.A1      SET    T1 0                                                       284L847  62
SC1_TY   EQU    .A1         SEEK TIME PER CYLINDER (MICROSECONDS)          284L847  63
.A1      SET    O2 0                                                       284L847  64
SOH2_TY  EQU    .A1         CYLINDER POSITION OVERHEAD TIME (MICROSEC)     284L847  65
.A1      SET    T2 0                                                       284L847  66
SC2_TY   EQU    .A1         SEEK TIME PER CYLINDER (MICROSECONDS)          284L847  67
.A1      SET    F7 0                                                       284L847  68
LC_TY    EQU    .A1         FIRST SECTOR OF LABEL COPY                     284L847  69
.A1      SET    PTCY_TY*LSPT_TY/SL_TY                                      284L847  70
LTCY_TY  EQU    .A1         LOGICAL TRACKS/CYLINDER                        284L847  71
.A1      SET    SL_TY+GS_TY                                                284L847  72
.A2      SET    TT_TY+1                                                    284L847  73
.A1      SET    .A1*.A2/LSPS_TY                                            284L847  74
PSLT_TY  EQU    .A1         PHYSICAL SECTORS PER LOGICAL TRACK             284L847  75
.A1      SET    F8 0                                                       284L847  76
SPSC_TY  EQU    .A1         SPARE PHYSICAL SECTORS PER CYLINDER            284L847  77
.A1      SET    F9 1                                                       284L847  78
PNUN_TY  EQU    .A1         PARTITIONS PER PHYSICAL UNIT                   284L847  79
CYPN_TY  EQU    CYUN_TY/.A1 CYLINDERS PER PARTITION                        284L847  80
.A1      SET    BC 0                                                       284L847  81
BCT_TY   EQU    .A1         DEFAULT BUFFER COUNT FOR DEVICE                284L847  82
.A1      SET    RT 0                                                       284L847  83
RAT_TY   EQU    .A1         READ-AHEAD THRESHOLD FOR DEVICE                284L847  84
.A1      SET    RB 0                                                       284L847  85
RBT_TY   EQU    .A1         DEFAULT READ BUFFER THRESHOLD FOR DEVICE       284L847  86
         IFC    NE,*NP**                                                   284L847  87
NPP_TY   MICRO  1,,*NP*     NIO PP DRIVER NAME                             284L847  88
         ELSE   1                                                          284L847  89
NPP_TY   MICRO  1,,*NIL*                                                   284L847  90
         IFC    NE,*CP**                                                   284L847  91
CPP_TY   MICRO  1,,*CP*     CIO PP DRIVER NAME                             284L847  92
         ELSE   1                                                          284L847  93
CPP_TY   MICRO  1,,*NIL*                                                   284L847  94
.A1      SET    MLI 0                                                      284L847  95
MLID_TY  EQU    .A1         MAINTENANCE LOG IDENTIFIER FOR DEVICE          284L847  96
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                                  .A1      SET    MI 0                                       284L847      97
                                  MDL_TY   EQU    .A1         MODEL NUMBER IDENTIFIER FOR DEVICE  284L847      98
                                  .A1      SET    DD 1                                       284L847      99
                                  PDD_TY   EQU    .A1         PARALLEL DATA DRIVES PER DEVICE    284L847     100
                                                                                             251L670      41
                                  .NT      SET    .NT+1       SET NUMBER OF MASS STORAGE TYPES   COMSMSP     134
                                           ENDM                                              COMSMSP     135
                                                                                             271L716       4
                                                                                             271L716       5
                                           IF     DEF,MSP$,1                                 271L716       6


                                 **        DEFINE MASS STORAGE DEVICE CHARACTERISTICS.       COMSMSP     137
                                                                                             COMSMSP     138
                                                                                             COMSMSP     139
                                  MSEQ     MICRO  1,, (       INITIALIZE *MSEQ* MICRO        COMSMSP     140
                                  .1       MICRO  1,,                                        COMSMSP     141
                            0     .NT      SET    0           INITIALIZE NUMBER OF MASS STORAGE TYPES  COMSMSP     142
                                                                                             COMSMSP     143
                                 *         NON-ROTATING MASS STORAGE DEVICES.                COMSMSP     144
                                 *         FOR EXTENDED MEMORY, THE SECTORS PER TRACK IS DETERMINED AT   252L678       1
                                 *         DEADSTART TIME.                                   252L678       2
                                                                                             252L678       3
                                  DE   MSDC  0,0,4,0,1,,,,,,4,,,,,,4001,,,,,0                253L688      22
                                  DP   MSDC  0,0,4,0,1,,,,,,4,,,,,,4001,,,,,0                253L688      23
                                                                                             COMSMSP     148
                                 *         STANDARD ROTATING MASS STORAGE DEVICES.           COMSMSP     149
                                 *                                                           COMSMSP     150
                                 *         NOTE THAT THESE DEVICES CONSIST OF FULL TRACK AND HALF   COMSMSP     151
                                 *         TRACK VARIANTS.  THEREFORE, THEY MUST BE THE FIRST GROUP COMSMSP     152
                                 *         OF *LDAM* DEVICES, AND MUST BE ORDERED SO THAT THE ALGORITHM  COMSMSP     153
                                 *         INDEX FOR A HALF-TRACK DEVICE PLUS *AIHT* EQUALS THE      COMSMSP     154
                                 *         ALGORITHM INDEX FOR THE EQUIVALENT FULL TRACK DEVICE.     COMSMSP     155
                                                                                             COMSMSP     156
                            1    .AI       SET    1           INITIALIZE ALGORITHM INDEX     COMSMSP     157
                                                                                             COMSMSP     158
                                  DI   MSDC  3140,153,40,10,1,HT,100,LHT,LDAM,DI,,630,22,30,,1,7144,7333D,271L716       8
                                 ,7,12200D,4,47,,,,,,,,0002                                  284L847     101
                                  DJ   MSDC  3150,343,40,10,1,HT,100,LHT,LDAM,DI,,1464,23,30,,1,7152,7333D271L716      10
                                 ,,7,12200D,4,47,,,,,,,,0003                                 284L847     102
                                  DM   MSDC  3222,1200,10,3,1,HT,100,LFM,LDAM,DI,,1511,50,40,,0,7224,4666D253L688      28
                                 ,,7,10200D,4,47,,,,,,,,0007                                 284L847     103
                                                                                             COMSMSP     162
                            3     AIHT     EQU    .AI-1       END OF HALF TRACK ALGORITHMS   COMSMSP     163
                                                                                             COMSMSP     164
                                  DK   MSDC  3140,160,40,10,1,FT,100,LFT,LDAM,DI,,630,23,30,,2,7144,7333D,253L688      30
                                 ,7,12200D,4,77,,,,,,,,0004                                  284L847     104
                                  DL   MSDC  3150,343,40,10,1,FT,100,LFT,LDAM,DI,,1464,23,30,,1,7152,7333D271L716      11
                                 ,,7,12200D,4,77,,,,,,,,0005                                 284L847     105
                                  DQ   MSDC  3222,1200,10,3,1,FT,100,LFM,LDAM,DI,,1511,50,40,,0,7224,4666D253L688      34
                                 ,,7,10200D,4,67,,,,,,,,0017                                 284L847     106
                                  DR   MSDC  3777,3600,10,1,1,FT,100,,LDAM,DI,,6000,50,40,,0,7777,4666D,7,NS2776       1
                                 ,10200D,4,67,,,,,,,,0015                                    NS2776        2
                                                                                             COMSMSP     168
                           10     AIIB     EQU    .AI         BEGINNING OF ISMD DEVICES      COMSMSP     169
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                                                                                                   COMSMSP    170
                                   DD  MSDC  3136,240,40,10,1,FT,74,LID,LDAM,DJ,,1457,12,40,,0,7136,11666D253L688   36
                                  ,,7,19400D,3,43,,,,,,,,0110                                      284L847    107
                                   DG  MSDC  2566,1064,10,3,1,FT,74,LID,LDAM,DJ,,1273,30,57,,0,6566,11666D253L688   38
                                  ,,4,14000D,0,57,,,,,,,,0111                                      284L847    108
                                                                                                   COMSMSP    173
                            12     AIIE     EQU    .AI         END OF ISMD DEVICES                 COMSMSP    174
                                                                                                   COMSMSP    175
                                  *         FEDERAL STANDARD CHANNEL MASS STORAGE DEVICES.         284L847    109
                                                                                                   284L847    110
                                   DX  MSDC  3140,142,40,10,1,FT,100,LAD,LDAM,DI,,630,23,25,,2,7144,,,,,35284L847    111
                                  ,,,,,,,,,0010                                                    284L847    112
                                   DY  MSDC  3130,306,40,10,1,FT,100,LAD,LDAM,DI,,1454,23,25,,2,7132,,,,,3284L847    113
                                  ,5,,,,,,,,0011                                                   284L847    114
                                   DZ  MSDC  2134,644,10,4,1,FT,100,LAD,LDAM,DI,,1056,36,34,,0,6134,,,,,35284L847    115
                                  ,,,,,,,,,0012                                                    284L847    116
                                   DA  MSDC  2140,1510,10,2,1,FT,100,LAD,LDAM,DI,,2140,36,34,,0,,,,,,35,,,284L847    117
                                  ,,,,,,0013                                                       284L847    118
                                                                                                   284L847    119
                                                                                                   COMSMSP    176
                                  *         BUFFERED MASS STORAGE DEVICES.                         COMSMSP    177
                                                                                                   COMSMSP    178
                            16     AIBB     EQU    .AI         BEGINNING OF BUFFERED DEVICES       284L847    120
                                                                                                   284L847    121
                                   DB  MSDC  3222,1200,10,3,0,FT,100,LPH,LDAM,DE,6,1511,12,200,2,0,7224,,,NCCDEMA      1
                                  ,,,15,,,4,3,3,1HP,,0014                                          NCCDEMA      2
                                   DC  MSDC  3346,1300,10,2,0,FT,100,LCC,LDAM,DE,6,1563,17,140,5,0,7350,,,284L847    124
                                  ,,,15,1,,4,3,3,1XM,1XY,0115                                      284L847    125
                                                                                                   284L847    126
                            20     AIDS     EQU    .AI         END OF DEVICES USABLE FOR DEADSTART 284L847    127
                                                                                                   284L847    128
                                   DV  MSDC  1456,1440,10,1,0,FT,10,,,DE,6,627,12,240,3,0,,,,,,15,,,4,3,3,284L847    129
                                  ,,,0006                                                          284L847    130
                                   DW  MSDC  3144,1440,10,1,0,FT,10,,,DE,6,1462,12,240,3,0,,,,,,15,,,4,3,3284L847    131
                                  ,,,,0006                                                         284L847    132
                                   DF  MSDC  3344,1140,10,3,0,FT,10,,,DE,6,1562,4,460,3,0,7344,,,,,15,,,6,284L847    133
                                  ,4,5,,1HY,0120                                                   284L847    134
                                   DH  MSDC  3344,1300,10,2,0,FT,10,,,DE,6,1562,4,540,5,0,7344,,,,,15,,,6,284L847    135
                                  ,4,5,,1HY,0121                                                   284L847    136
                                   DN  MSDC  3727,2140,10,1,0,FT,10,,,DE,6,2601,23,124,2,0,7730,,,,,15,,,4284L847    137
                                  ,,3,3,,1XD,0124                                                  284L847    138
                                                                                                   284L847    139
                            25     AIAB     EQU    .AI         BEGINNING OF DAS ARRAY DEVICES      284L847    140
                                                                                                   284L847    141
                                  *         DAS SOLID-STATE DEVICES.                               284L847    142
                                                                                                   284L847    143
                                   EA  MSDC  3746,240,10,10,1,FT,40,,,DE,6,1514,4,140,5,0,7746,,,,,15,,,4,284L847    144
                                  ,3,3,,1DA,0130,0#3137,1                                          284L847    145
                                   EB  MSDC  3746,500,10,6,1,FT,10,,,DE,6,1514,4,300,5,0,7746,,,,,15,,,4,3284L847    146
                                  ,,3,,1DA,0131,0#3137,2                                           284L847    147
                                                                                                   284L847    148
                                  *         DAS SABRE DEVICES                                      284L847    149
                                                                                                   284L847    150
                                   EC  MSDC  3776,1740,10,2,1,FT,40,,,DE,6,3135,7,300,5,0,7776,,,,,15,2,,4284L847    151
                                  ,,3,3,,1DA,0132,0#4C32,1                                         284L847    152
                                   ED  MSDC  3776,1740,10,2,1,FT,10,,EC,DE,7,3135,7,300,5,0,7776,,,,,15,2,284L847    153
                                  ,,4,3,3,,1DA,0133,0#4C32,1                                       284L847    154
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                                EE  MSDC  3762,3600,10,1,1,FT,10,,,DE,6,3135,7,540,5,0,7762,,,,,15,2,,4284L847   155
,,3,3,,1DA,0134,0#4C32,2                                                                                284L847   156
                                EF  MSDC  3762,3600,10,1,1,FT,10,,EE,DE,7,3135,7,540,5,0,7762,,,,,15,2,284L847   157
,,4,3,3,,1DA,0137,0#4C32,2                                                                              284L847   158
                                                                                                        284L847   159
                               *         DAS SABRE MULTI-PARTITION DEVICES.                             284L847   160
                                                                                                        284L847   161
                                EM  MSDC  3747,2740,10,1,1,FT,10,,,DE,7,3135,7,1040,5,0,7747,,,,,15,2,2284L847   162
,,4,3,3,,1DA,0135,0#4C32,3                                                                              284L847   163
                                EN  MSDC  3751,3640,10,1,1,FT,10,,,DE,6,3135,7,1300,5,0,7751,,,,,15,2,2284L847   164
,,4,3,3,,1DA,0136,0#4C32,4                                                                              284L847   165
                                                                                                        284L847   166
                               *         DAS ELITE II DEVICES.                                          284L847   167
                                                                                                        284L847   168
                                EG  MSDC  3751,3240,10,1,1,FT,40,,,DE,6,5074,11,240,5,0,7751,,,,,15,4,,284L847   169
,4,3,3,,1DA,0142,0#4C31,1                                                                               284L847   170
                                EH  MSDC  3751,3240,10,1,1,FT,10,,EG,DE,7,5074,11,240,5,0,7751,,,,,15,4284L847   171
,,,4,3,3,,1DA,0143,0#4C31,1                                                                             284L847   172
                                                                                                        NS2768      3
                               *         DAS ELITE II MULTI-PARTITION DEVICES.                          284L847   173
                                                                                                        284L847   174
                                EI  MSDC  3737,3100,10,1,1,FT,10,,,DE,6,5074,11,440,5,0,7737,,,,,15,4,2284L847   175
,,4,3,3,,1DA,0144,0#4C31,2                                                                              284L847   176
                                EJ  MSDC  3737,3100,10,1,1,FT,10,,EI,DE,7,5074,11,440,5,0,7737,,,,,15,4284L847   177
,,2,4,3,3,,1DA,0147,0#4C31,2                                                                            284L847   178
                                EK  MSDC  3727,3240,10,1,1,FT,10,,,DE,7,5074,11,700,5,0,7727,,,,,15,4,3284L847   179
,,4,3,3,,1DA,0145,0#4C31,3                                                                              284L847   180
                                EL  MSDC  3752,3140,10,1,1,FT,10,,,DE,6,5074,11,1100,5,0,7752,,,,,15,4,284L847   181
,4,4,3,3,,1DA,0146,0#4C31,4                                                                             284L847   182
                                                                                                        284L847   183
                               *         DAS 3.5IN DEVICES.                                             284L847   184
                                                                                                        284L847   185
                                EO  MSDC  3755,3240,10,1,1,FT,40,,,DE,6,4362,17,150,3,0,7755,,,,,15,7,,284L847   186
,4,3,3,,1DA,0162,0#3153,1                                                                               284L847   187
                                EP  MSDC  3755,3240,10,1,1,FT,10,,EO,DE,7,4362,17,150,3,0,7755,,,,,15,7284L847   188
,,,4,3,3,,1DA,0163,0#3153,1                                                                             284L847   189
                                                                                                        284L847   190
                               *         DAS 3.5IN MULTI-PARTITION DEVICES.                             284L847   191
                                                                                                        284L847   192
                                ES  MSDC  3754,3240,10,1,1,FT,10,,,DE,6,4362,17,320,4,0,7754,,,,,15,7,2284L847   193
,,4,3,3,,1DA,0164,0#3153,2                                                                              284L847   194
                                EU  MSDC  3754,3240,10,1,1,FT,10,,ES,DE,7,4362,17,320,4,0,7754,,,,,15,7284L847   195
,,2,4,3,3,,1DA,0167,0#3153,2                                                                            284L847   196
                                EV  MSDC  3764,3200,10,1,1,FT,10,,,DE,7,4362,17,460,4,0,7764,,,,,15,7,3284L847   197
,,4,3,3,,1DA,0165,0#3153,3                                                                              284L847   198
                                EW  MSDC  3744,3200,10,1,1,FT,10,,,DE,6,4362,17,620,4,0,7744,,,,,15,7,4284L847   199
,,4,3,3,,1DA,0166,0#3153,4                                                                              284L847   200
                                                                                                        284L847   201
                    43          AIAE      EQU     .AI           END OF DAS ARRAY DEVICES                284L847   202
                    43          AIBD      EQU     .AI           END OF BUFFERED DEVICES                 284L847   203
                                                                                                        284L847   204
                                          PURGMAC   MSDC                                                COMSMSP   191
                                                                                                        COMSMSP   192
                                MSEQ      MICRO   1,, "MSEQ") TERMINATE *MSEQ* MICRO                    COMSMSP   193
                    43          AIMX      EQU     .AI                                                   COMSMSP   194
                                                                                                        COMSMSP   195
                    53          MXNT      EQU     .NT+1         MAXIMUM NUMBER OF MASS STORAGE TYPES    COMSMSP   196
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                                                                                                        271L716     15
                                                                                                        271L716     16
                                          IF     DEF,MSP$,1                                             271L716     17




                                **        DRIVER OPERATION CODES.                                       COMSMSP    198
                                                                                                        COMSMSP    199
                           0     REDP     EQU    0           READ                                       COMSMSP    200
                           1     WRIP     EQU    1           WRITE                                      COMSMSP    201




                                **        *DSWM* TIMEOUT INDICES.                                       253L688     54
                                                                                                        253L688     55
                           1     IXST     EQU    1           SEEK TIMEOUT INDEX                         253L688     56
                           2     IXUR     EQU    2           UNIT RESERVE INDEX                         253L688     57
                           3     IXIW     EQU    3           ISD WRITE TIMEOUT INDEX                    253L688     58
                           4     IXCR     EQU    4           CONTROLLER RESERVE TIMEOUT INDEX           253L688     59
                           4     IXMX     EQU    4           MAXIMUM TIMEOUT INDEX                      253L688     60
                                                                                                        COMSMSP    202
                                                                                                        COMSMSP    203
                                **        RETRY COUNTS AND THRESHOLDS.                                  COMSMSP    204
                                                                                                        COMSMSP    205
                           7     CRTH     EQU    7           CONTROLWARE RELOAD THRESHOLD               COMSMSP    206
                          10     CRTO     EQU    10          MAXIMUM TIME (IN SECONDS) FOR C/W RELOAD   251L664      3
                          17     IWTO     EQU    15D         MAXIMUM 834/836 WRITE WAIT TIME (SECONDS)  253L688     61
                           5     RSTO     EQU    5           MAX UNIT/CONTROLLER WAIT TIME (SECONDS)    253L688     62
                          17     SKTO     EQU    15D         MAXIMUM SEEK WAIT TIME (SECONDS)           253L688     63
                           4     CHRT     EQU    4           CHANNEL PARITY ERROR RETRY LIMIT           251L664      5
                           2     CSRT     EQU    2           CONTROLLER STOP RETRY LIMIT                NS2632       1
                           2     RART     EQU    2           7155 RAM PARITY ERROR RETRY LIMIT          251L664      7
                           4     FTRT     EQU    4           FUNCTION TIMEOUT RETRY LIMIT               251L664      8
                           2     SURT     EQU    2           NUMBER OF RETRIES BEFORE SETTING SUSPECT   NS2507       2
                                                                                                        COMSMSP    220
                                                                                                        COMSMSP    221
                                **        MISCELLANEOUS CONSTANTS.                                      COMSMSP    222
                                                                                                        COMSMSP    223
                          37     CNAC     EQU    31D         CYLINDER NUMBER OF *LDAM* ALGORITHM CHANGE 253L688     64
                           5     DBSV     EQU    5           *DSWM* BASE SHIFT VALUE                    253L688     65
                         102     ECBL     EQU    102         EXTENDED MEMORY BUFFER LENGTH              COMSMSP    224
                          24     MXSL     EQU    24          MAXIMUM DETAILED STATUS LENGTH             COMSMSP    225
                          12     SCDT     EQU    10D         SWEEP CYCLING DELAY TIME (IN MINUTES)      NS2494       1
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                           **        LOCATION SYMBOLS.                                           COMSMSP    227
                                                                                                 COMSMSP    228
                    100     DRSW     EQU    100          DRIVER SCRATCH                          COMSMSP    229
                     71     D1       EQU    HN           INDIRECT REFERENCE TO *DRSW*            COMSMSP    230
                    101     WDSE     EQU    101          WRITE ERROR PROCESSING BUFFER           COMSMSP    231
                    102     ERXA     EQU    102          EXIT ADDRESS SAVED FOR *7ES*            COMSMSP    232
                    103     RDCT     EQU    103          DRIVER INTERFACE WORD                   COMSMSP    233
                    104     STSA     EQU    104          DEVICE STATUS                           COMSMSP    234
                    105     STSB     EQU    105          DEVICE CHANNEL STATUS BYTE              COMSMSP    235
                    106     UERR     EQU    106          USER ERROR PROCESSING OPTIONS           COMSMSP    236
                    107     SLM      EQU    107          SECTOR LIMIT                            COMSMSP    237
                    110     MSD      EQU    110          MASS STORAGE DESIGNATOR                 COMSMSP    238
                    111     CHRV     EQU    111          CHANNEL RESERVATION STATUS              COMSMSP    239
                                                                                                 COMSMSP    240
                    410     BEP      EQU    410          MS ERROR PROCESSOR TRAP                 271L716     19
                    413     LEP      EQU    413          *7EP* ERROR PROCESSOR CALL              271L716     20
                    414     LEP1     EQU    414          GENERAL ERROR PROCESSOR LOADER          271L716     21
                                                                                                 COMSMSP    243
                    473     SMSX     EQU    473          EXIT FROM DRIVER PRESET                 271L716     22
                                                                                                 COMSMSP    245
                    556     .RDS2    EQU    556          *LDA* EXIT ADDRESS, NEEDED BY *LDAM*    NS2776       3
                    625     .DST1    EQU    625          *DST* ENTRY ADDRESS, NEEDED BY *1MS*    NS2776       4
                                                                                                 COMSMSP    248
                                                                                                 COMSMSP    249
                           **        *RDCT* - ERROR PROCESSING INTERFACE WORD.                   COMSMSP    250
                           *                                                                     COMSMSP    251
                           *         CELL *RDCT* IS USED FOR RETURNING STATUS TO THE CALLER OF   COMSMSP    252
                           *         *RDS* AND *WDS*.  ITS FORMAT IS AS FOLLOWS -                COMSMSP    253
                           *                                                                     COMSMSP    254
                           *         BIT(S)                           MEANING                    COMSMSP    255
                           *                                                                     COMSMSP    256
                           *          13     SET IF THE OPERATION IS A READ AND THE LINKAGE BYTES  COMSMSP    257
                           *                 ARE BAD.  SET ALSO FOR A WRITE OPERATION WHEN NO DATA COMSMSP    258
                           *                 WAS WRITTEN TO DISK.                                COMSMSP    259
                           *                                                                     COMSMSP    260
                           *          12     SET IF THE ERROR IS NON-RECOVERABLE. AN ERROR IS    COMSMSP    261
                           *                 CONSIDERED TO BE NON-RECOVERABLE IF ONE OF THE      COMSMSP    262
                           *                 FOLLOWING CONDITIONS IS TRUE -                      COMSMSP    263
                           *                    1. THE CAUSE OF THE ERROR IS NOT SOMETHING THAT  COMSMSP    264
                           *                       CAN BE REPAIRED.  FOR EXAMPLE, A MEDIA ERROR IS COMSMSP  265
                           *                       NON-RECOVERABLE SINCE NO HARDWARE REPAIR ACTION COMSMSP  266
                           *                       CAN BE PERFORMED TO CORRECT THE BAD SPOT ON THE COMSMSP  267
                           *                       DISK SURFACE.                                 COMSMSP    268
                           *                    2. IT IS IMPOSSIBLE TO RESUME THE I/O SEQUENCE AT  COMSMSP  269
                           *                       THE POINT OF FAILURE FOLLOWING REPAIR OF THE  COMSMSP    270
                           *                       HARDWARE.  AN EXAMPLE OF THIS CASE IS AN ERROR  COMSMSP  271
                           *                       OCCURRING ON AN ISD DISK DURING A MULTI-SECTOR  COMSMSP  272
                           *                       WRITE OPERATION.  THE DATA BUFFERING IN THE   COMSMSP    273
                           *                       ISD DISK SUBSYSTEM ALLOWS THE PP TO SEND DATA  COMSMSP   274
                           *                       TO THE 7255 ADAPTER AND UPDATE FET POINTERS   COMSMSP    275
                           *                       PRIOR TO TRANSMISSION OF THE DATA TO THE DISK.  COMSMSP  276
                           *                       IN THIS CASE, EVEN THOUGH THE HARDWARE MAY BE  COMSMSP   277
                           *                       REPAIRABLE, THE JOB MUST NOT BE ALLOWED TO    COMSMSP    278
                           *                       CONTINUE WITH ITS I/O SEQUENCE FOLLOWING THE  COMSMSP    279
                           *                       REPAIR SINCE DATA THAT WAS IN TRANSIT BETWEEN  COMSMSP   280
                           *                       THE PP AND THE DISK WILL HAVE BEEN LOST.      COMSMSP    281
                           *          11     SET IF A BUFFER TO DISK ERROR OCCURRED AND WAS      COMSMSP    282
```

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*                 RECOVERED BUT NO WRITE ERROR PROCESSING BUFFER WAS    COMSMSP   283
*                 SPECIFIED ON THE *SETMS* CALL.  IN RESPONSE TO THIS   COMSMSP   284
*                 BIT BEING SET, THE CALLER SHOULD REISSUE THE WRITE    COMSMSP   285
*                 OF THE CURRENT SECTOR.                                COMSMSP   286
*          10     SET IF THE DEVICE MAY HAVE MULTIPLE SECTORS IN        COMSMSP   287
*                 TRANSIT TO THE DISK.  THIS BIT IS USED BY PP PROGRAMS COMSMSP   288
*                 THAT MUST KNOW HOW MUCH DATA WAS WRITTEN TO DISK      COMSMSP   289
*                 BEFORE AN ERROR OCCURRED.  THIS BIT IS SET FOR ISD    251L664     9
*                 DEVICES AND FOR DEVICES BUFFERED THROUGH EXTENDED     251L664    10
*                 MEMORY.                                               251L664    11
*           7     UNUSED.                                               253L688    67
*                 FLAG IS FOR INTERNAL USE AND IS NOT RETURNED TO THE   COMSMSP   294
*                 CALLER.                                               COMSMSP   295
*           6     SET IF THE RECOVERY PROCESS IS IN PROGRESS.  THIS     253L688    68
*         5-0     ERROR CODE.                                           253L688    69
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```
**        *CHRV* - DRIVER CONTROL WORD.                                 COMSMSP   298
*                                                                       COMSMSP   299
*         CELL *CHRV* IS USED FOR VARIOUS DRIVER CONTROL FUNCTIONS SUCH COMSMSP   300
*         AS RESOURCE RESERVATION (CHANNEL/CONTROLLER/BUFFER) AND       COMSMSP   301
*         CONTROL OF THE OPERATION.                                     COMSMSP   302
*                                                                       COMSMSP   303
*         BIT(S)                        MEANING                       COMSMSP   304
*                                                                       COMSMSP   305
*          13     UNUSED.  THIS BIT MUST REMAIN UNUSED UNTIL ROUTINE    COMSMSP   306
*                 *DSW* IN *6DI* IS CHANGED TO DO *LDN 0* BEFORE        COMSMSP   307
*                 JUMPING TO *DSW1* AFTER ISSUING *DSWM*.               251L664    12
*          12     UNUSED.                                               COMSMSP   309
*          11     SET IF STREAMING DATA ON A PRU READ OPERATION.        COMSMSP   310
*                 (BUFFERED DEVICES ONLY).                              COMSMSP   311
*          10     SET IF DIRECT TRANSFER CONTINUATION CALL.             COMSMSP   312
*                 (BUFFERED DEVICES ONLY).                              COMSMSP   313
*           7     SET IF BUFFERED I/O LINK SET.                         COMSMSP   314
*                 (BUFFERED DEVICES ONLY).                              COMSMSP   315
*           6     SET IF PP IS IN RECALL DUE TO BUFFER FLUSH DURING     251L664    13
*                 DEVICE VERIFICATION OPERATION.  (BUFFERED DEVICES     251L664    14
*                 ONLY).                                                251L664    15
*           5     SET IF SYSTEM FILE READ OPERATION.                    COMSMSP   318
*           4     SET IF CHANNEL SELECTED BY CALLER.                    COMSMSP   319
*           3     SET IF CONTROLLER RESERVED.                           COMSMSP   320
*           2     SET IF ACCESS SHOULD BE ALLOWED ON *OFF* OR *SUSPECT* COMSMSP   321
*                 DEVICE.                                               COMSMSP   322
*           1     SET IF ACCESS SHOULD BE ALLOWED ON *DOWN* DEVICE.     COMSMSP   323
*           0     SET IF CHANNEL RESERVED (NON-BUFFERED DEVICES).       251L664    16
*                 SET IF PP BUFFER RESERVED (BUFFERED DEVICES).         251L664    17
                                                                        NS2364     1
      0          ERRNZ  EPAD-2      DRIVERS AND *CPUMTR* ASSUME BIT 1  NS2364     2
      0          ERRNZ  EPNS-4      DRIVERS AND *CPUMTR* ASSUME BIT 2  NS2364     3
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                                **        DRIVER ERROR PROCESSOR COMMUNICATION AREAS.                      COMSMSP   326
                                *                                                                         COMSMSP   327
                                *         DATA USED BY THE ERROR PROCESSOR DURING RECOVERY ATTEMPTS       COMSMSP   328
                                *         IS LOCATED IN TWO AREAS.  THE *LONG TERM DATA AREA*             COMSMSP   329
                                *         LOCATED IN THE DRIVER PRESET AREA, HOLDS DATA                   COMSMSP   330
                                *         THAT MUST REMAIN INTACT THROUGHOUT THE RECOVERY PROCESS.        COMSMSP   331
                                *         THIS DATA MUST NOT BE DESTROYED BY THE ERROR PROCESSOR          COMSMSP   332
                                *         OVERLAY LOADS.  THE OTHER DATA AREA, CALLED *THE SHORT          COMSMSP   333
                                *         TERM DATA AREA*, IS LOCATED BEGINNING AT *EPFW*.                COMSMSP   334
                                *         DATA IN THIS AREA IS REGENERATED DURING EACH RETRY              COMSMSP   335
                                *         ATTEMPT.  THIS DATA DOES NOT NEED TO BE PRESERVED ACROSS        COMSMSP   336
                                *         RETRY ATTEMPTS.                                                 COMSMSP   337
                                                                                                          COMSMSP   338
                                                                                                          COMSMSP   339
                                *         LONG TERM DATA AREA.                                            COMSMSP   340
                                                                                                          COMSMSP   341
                                          IFPP                                                            COMSMSP   342
        L    6                   BEGIN    BSSB   PPFW-5-3                                                COMSMSP   343
        L 1070                   DENR     BSSB   1          *NON-RECOVERABLE ERROR* FLAG                 COMSMSP   346
        L 1067                   DERC     BSSB   1          RETRY COUNT                                  COMSMSP   347
        L 1066                   DEWR     BSSB   1          *DATA WRITTEN/READ* FLAG                     COMSMSP   348
        L 1065                   DEFW     BSSB   0          FWA OF LONG TERM DATA AREA                   NS2483      1
        L 1065                   END      BSSB                                                           COMSMSP   353
                                          ENDIF                                                           COMSMSP   354
                                                                                                          COMSMSP   355
                                *         LONG TERM DATA AREA FORMAT AND CONTROL.                         COMSMSP   356
                                *                                                                         COMSMSP   357
                                *         ALL CELLS IN THE *LONG TERM DATA AREA* ARE INITIALIZED          COMSMSP   358
                                *         BY THE DRIVER ERROR PROCESSORS (*7DE*, *7BI*, *7DP*, *7DX*).    COMSMSP   359
                                *                                                                         COMSMSP   360
                                *         DENR   *NON-RECOVERABLE ERROR* FLAG.                            COMSMSP   361
                                *                = 1 IF THE ERROR IS NON-RECOVERABLE.                     COMSMSP   362
                                *                ONCE THIS FLAG IS SET DURING A PARTICULAR RETRY          COMSMSP   363
                                *                ATTEMPT, IT WILL REMAIN SET THROUGH ALL SUBSEQUENT       COMSMSP   364
                                *                RETRIES.  *DENR* IS SET BY *7EI*, *7FI*, AND *7EN*.      COMSMSP   365
                                *                                                                         COMSMSP   366
                                *         DERC   RETRY COUNT.                                             COMSMSP   367
                                *                *DERC* IS INCREMENTED BY *7EN*.  IT IS ALSO CHANGED BY   COMSMSP   368
                                *                *7CI* WHEN AN UNRECOVERED CHANNEL PARITY ERROR OCCURS    COMSMSP   369
                                *                WHILE INPUTTING STATUS.  *DERC* IS MODIFIED BY *7FI*,    COMSMSP   370
                                *                *7GI* AND *7EP* ALSO.                                    COMSMSP   371
                                *                                                                         COMSMSP   372
                                *         DEWR   *DATA WRITTEN/READ* FLAG.                                COMSMSP   373
                                *                = 0 IF THE OPERATION IS A READ AND THE DATA IN THE       COMSMSP   374
                                *                BUFFER HAS INCORRECT LINKAGE BYTES.  *DEWR* IS           COMSMSP   375
                                *                ALSO 0 WHEN ATTEMPTING TO RECOVER A WRITE ERROR          COMSMSP   376
                                *                AND DATA MAY HAVE BEEN WRITTEN TO DISK, EITHER           COMSMSP   377
                                *                BEFORE THE ERROR WAS DETECTED OR DURING THE RECOVERY     COMSMSP   378
                                *                ATTEMPT(S).  SUCH INFORMATION IS USEFUL TO PP-S THAT     COMSMSP   379
                                *                NEED TO KNOW IF A DATA SECTOR MAY HAVE BEEN CORRUPTED    COMSMSP   380
                                *                DUE TO AN ERROR.  ONCE THIS FLAG BECOMES SET, IT WILL    COMSMSP   381
                                *                REMAIN SET THROUGH ALL SUBSEQUENT RETRIES.               COMSMSP   382
                                *                *DEWR* IS SET BY *7DI*, *7EI*, *7FI* AND *7EM*.          COMSMSP   383
                                                                                                          COMSMSP   384
                                                                                                          COMSMSP   385
                                *         SHORT TERM DATA AREA.                                           COMSMSP   386
                                                                                                          COMSMSP   387
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         0                             BEGIN    BSSN   EPFW                                            COMSMSP    388
      L 7500                           DEAI     BSSN   1            ALGORITHM INDEX                    COMSMSP    391
      L 7501                           DEDT     BSSN   1            BML MESSAGE CONTROL WORD           COMSMSP    392
      L 7502                           DEEC     BSSN   1            ERROR CODE                         COMSMSP    393
      L 7503                           DEGS     BSSN   1            LAST GENERAL STATUS TAKEN          COMSMSP    394
      L 7504                           DELF     BSSN   1            LAST FUNCTION ISSUED BEFORE TIMEOUT COMSMSP   395
      L 7505                           DERW     BSSN   1            READ/WRITE FLAG                    COMSMSP    396
      L 7506                           DEST     BSSN   1            ERROR PROCESSING CONTROL WORD      COMSMSP    397
      L 7507                           DEXA     BSSN   1            ERROR PROCESSOR EXIT ADDRESS       COMSMSP    398
      L 7510                           MSGH     BSSN   1*5          *EMB* MESSAGE HEADER               252L678      6
      L 7515                           HEDR     BSSN   2*5          BML MESSAGE HEADER                 252L678      7
      L 7527                           DDMD     BSSN   1*5          DRIVER DEPENDENT MESSAGE DATA      252L678      8
      L 7534                           DSFA     BSSN   4*5          BML MESSAGE TEXT (DETAILED STATUS) COMSMSP    400
      L 7560                           DEPL     BSSN   1            PARAMETER LIMIT                    COMSMSP    401
      L 7561                           END      BSSN                                                   COMSMSP    404
                                                                                                       COMSMSP    405
                                       *        SHORT TERM DATA AREA FORMAT AND CONTROL.               COMSMSP    406
                                       *                                                               COMSMSP    407
                                       *        DEAI   ALGORITHM INDEX.                                COMSMSP    408
                                       *               SET BY *7BI*.                                   COMSMSP    409
                                       *                                                               COMSMSP    410
                                       *        DEDT   ERROR PROCESSING CONTROL WORD (*DEST* EXTENSION). 252L678    9
                                       *               BIT(S)       MEANING                            252L678     10
                                       *                13-5        UNUSED.                            252L678     11
                                       *                  4         = 1 IF RETURN TO ERROR PROCESSOR   252L678     12
                                       *                              VIA (*ERXA*).  SET BY *7MP*.     252L678     13
                                       *                3-0         DRIVER TYPE.                       252L678     14
                                       *                              VALUE     DRIVER     SET BY      COMSMSP    422
                                       *                                0       *6DI*      *7BI*       COMSMSP    423
                                       *                                0       *6DJ*      *7BI*       COMSMSP    424
                                       *                                1       *6DP*      *7DP*       COMSMSP    425
                                       *                                2       *6DE*      *7DE*       COMSMSP    426
                                       *                                3       *6DX*      *7DX*       COMSMSP    427
                                       *                                                               COMSMSP    428
                                       *        DEEC   ERROR CODE.                                     COMSMSP    429
                                       *               SET BY *7CI*, *7EI*, *7DP*, *7DE*, *7DX*.       COMSMSP    430
                                       *                                                               COMSMSP    431
                                       *        DEGS   LAST GENERAL STATUS.                            COMSMSP    432
                                       *               SET BY *7CI*.                                   COMSMSP    433
                                       *                                                               COMSMSP    434
                                       *        DELF   LAST FUNCTION ISSUED BEFORE TIMEOUT.            COMSMSP    435
                                       *               SET BY *7CI*.                                   COMSMSP    436
                                       *                                                               COMSMSP    437
                                       *        DERW   READ/WRITE FLAG.                                COMSMSP    438
                                       *                  0   IF READ.                                 COMSMSP    439
                                       *                  1   IF WRITE.                                COMSMSP    440
                                       *               SET BY *7BI*, *7DE*, *7DP*, *7DX*.              COMSMSP    441
                                       *                                                               COMSMSP    442
                                       *        DEST   ERROR PROCESSING CONTROL WORD.                  COMSMSP    443
                                       *               BIT(S)       MEANING                            COMSMSP    444
                                       *                13          = 1 IF MST RECOVERED/UNRECOVERED ERROR COMSMSP  445
                                       *                              COUNTER SHOULD BE INCREMENTED FOR THIS COMSMSP 446
                                       *                              ERROR TYPE AND A BML MESSAGE SHOULD BE COMSMSP 447
                                       *                              ISSUED.  SET BY *7EN*.           COMSMSP    448
                                       *                12          = 1 IF UNRECOVERED ERROR.  SET BY *7DE*, COMSMSP 449
                                       *                              *7EI*, *7GI*, *7EM*, *7EN*, *7EP* COMSMSP   450
                                       *                              AND *7MP*.                       COMSMSP    451
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                *          11        = 1 IF IMMEDIATE RETURN TO CALLER WAS      COMSMSP   452
                *                      SELECTED.  SET BY *7EM* AND *7EP*.       COMSMSP   453
                *          10        = 1 IF DEVICE CAN HAVE MULTIPLE SECTORS    251L664    18
                *                      IN TRANSIT DURING A WRITE OPERATION.     251L664    19
                *                      SET BY *7DE* AND *7EI*.                  251L664    20
                *           7        = 1 IF ISD DEVICE.  SET BY *7EI*.          COMSMSP   455
                *           6        = 1 IF RAM PARITY ERROR.  SET BY *7FI*.    COMSMSP   456
                *           5        = 1 IF *7EO* SHOULD CALL *7KI* TO EXECUTE  COMSMSP   457
                *                      LEVEL 1 CONTROL MODULE DIAGNOSTICS WHEN  COMSMSP   458
                *                      AN ISD DRIVE FAULT IS SUSPECTED.  SET BY COMSMSP   459
                *                      *7DI*.                                   COMSMSP   460
                *           4        = 1 IF *7SI* SHOULD BE CALLED IMMEDIATELY  COMSMSP   461
                *                      TO CORRECT THE ERROR AND/OR ISSUE A      COMSMSP   462
                *                      CONTINUE FUNCTION.  SET BY *7EI* IF BIT  COMSMSP   463
                *                      2**8 OF GENERAL STATUS IS SET UNLESS THE COMSMSP   464
                *                      CONTROLLER IS A 7X54 AND THE BUFFER IS   COMSMSP   465
                *                      OVERLAYED BY THE ERROR PROCESSOR AND THE COMSMSP   466
                *                      OPERATION IS A READ.                     COMSMSP   467
                *           3        = 1 IF THE BUFFER READBACK FAILED DURING   COMSMSP   468
                *                      THE RECOVERY OF A PREVIOUS SECTOR WRITE  COMSMSP   469
                *                      ERROR.                                   COMSMSP   470
                *                      SET BY *7EI*.                            COMSMSP   471
                *         2-1        CONTROLLER TYPE.  SET BY *7FI*.            COMSMSP   472
                *                      VALUE     TYPE                           COMSMSP   473
                *                        0       7155 MODEL A.                  COMSMSP   474
                *                        1       7155 MODEL B OR C.             COMSMSP   475
                *                        2       7255 ADAPTER.                  COMSMSP   476
                *                        3       CONTROL MODULE.                COMSMSP   477
                *           0        = 1 IF BUFFER TO DISK ERROR.  SET BY       COMSMSP   478
                *                      *7DI*.                                   COMSMSP   479
                *                      *7DI*.                                   COMSMSP   479
                *                *DEST* IS INITIALIZED BY *7BI*, *7DE*, *7DP*, *7DX*.  COMSMSP  480
                *                                                               COMSMSP   481
                *        DEXA    ERROR PROCESSOR EXIT ADDRESS.                  COMSMSP   482
                *                SET BY *7BI*, *7EI*, *7DE*, *7DP*, *7DX*.      COMSMSP   483
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                **       ERROR PROCESSING OPTIONS.                              COMSMSP   485
                *                                                               COMSMSP   486
                *        IT IS POSSIBLE TO SELECT RETURN ON ANY TYPE OF ERROR VIA COMSMSP   487
                *        THE ERROR PROCESSING OPTIONS ON THE *SETMS* MACRO.  THE COMSMSP   488
                *        FOLLOWING IS A DEFINITION OF THESE OPTIONS.  THE PARTICULAR COMSMSP 489
                *        ERRORS WHICH ARE RETURNED FOR EACH ERROR OPTION ARE DEFINED COMSMSP 490
                *        BY THE *DMSE* MACRO.  WHEN AN ERROR IS INITIALLY DETECTED COMSMSP   491
                *        A CHECK IS MADE TO SEE IF THE ERROR PROCESSING OPTION IS COMSMSP   492
                *        SELECTED WHICH CORRESPONDS TO THAT ERROR TYPE.  IF ERROR COMSMSP   493
                *        PROCESSING IS SELECTED FOR THAT ERROR TYPE CONTROL IS    COMSMSP   494
                *        RETURNED TO THE CALLER WITHOUT RETRYING THE ERROR.       COMSMSP   495
                                                                                 COMSMSP   496
          1     EPNR     EQU    1          RETURN WHEN DEVICE NOT READY          COMSMSP   497
          2     EPAD     EQU    2          ALLOW ACCESS OF *DOWN* DEVICE         COMSMSP   498
          4     EPNS     EQU    4          ALLOW ACCESS OF *OFF* OR *SUSPECT* DEVICE COMSMSP 499
         10     EPRR     EQU    10         RETURN ON RESERVE STATUS              COMSMSP   500
         20     EPSM     EQU    20         SUPPRESS *1DD* LOAD INTO THIS PP      COMSMSP   501
         40     EPER     EQU    40         RETURN ON NORMAL ERRORS               COMSMSP   502
        100     EPRW     EQU    100        REWRITE DATA OPERATION                COMSMSP   503
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                  200     EPNF    EQU   200         NO ESM/LCM/UEM BUFFER FLUSH ON *WLSF*     251L664    21
                  420     EPDE    EQU   400+EPSM    DISABLE *ENDMS*                           COMSMSP   505
                 1000     EPND    EQU   1000        NO LEVEL 1 DIAGNOSTICS                    COMSMSP   506
                 2000     EPDF    EQU   2000        DISABLE FAILURE EVALUATION                COMSMSP   507
                   51     EPAR    EQU   EPER+EPNR+EPRR  RETURN ON ALL ERRORS                 COMSMSP   508



                          **      CPU MASS STORAGE ERROR CODES.                               COMSMSP   510
                          *                                                                   COMSMSP   511
                          *             THE FOLLOWING MASS STORAGE ERROR CODES CAN BE PASSED  COMSMSP   512
                          *       TO A CPU PROGRAM BY *1MS* WHEN THE CALLING PROGRAM SETS THE COMSMSP   513
                          *       ERROR PROCESSING BIT IN THE *FET* AND AN UNRECOVERABLE MASS COMSMSP   514
                          *       STORAGE ERROR OCCURS.  MASS STORAGE ERRORS AT THE DRIVER    COMSMSP   515
                          *       LEVEL ARE MAPPED INTO ONE OF THESE CPU LEVEL ERROR CODES BY COMSMSP   516
                          *       *1MS* IN ORDER TO INSULATE CPU PROGRAMS FROM CHANGES AT THE COMSMSP   517
                          *       DRIVER LEVEL.                                               COMSMSP   518
                          *             BIT 13 OF THE ERROR STATUS IS SET BY *1MS* TO REFLECT COMSMSP   519
                          *       BIT 13 OF THE DRIVER REPLY WORD, *RDCT*.  FOR READ OPERATIONS COMSMSP 520
                          *       THIS BIT IS CLEAR IF DATA IS IN THE BUFFER AND THE SECTOR   COMSMSP   521
                          *       LINKAGE BYTES ARE VALID.  FOR WRITE OPERATIONS THIS BIT IS  COMSMSP   522
                          *       CLEAR IF NO DATA IS WRITTEN TO DISK ON THE CURRENT DRIVER   COMSMSP   523
                          *       CALL AND A COUPLER TO DISK ERROR DID NOT OCCUR ON THE       COMSMSP   524
                          *       PREVIOUS SECTOR (IF ANY).  IN ALL OTHER CASES THE BIT WILL  COMSMSP   525
                          *       BE SET.                                                     COMSMSP   526
                                                                                              COMSMSP   527
                                                                                              COMSMSP   528
                    1     PTYE    EQU   1           PARITY ERROR                              COMSMSP   529
                    2     ADRE    EQU   2           ADDRESS ERROR                             COMSMSP   530
                    3     STSE    EQU   3           DEVICE STATUS ERROR                       COMSMSP   531
                    4     COME    EQU   4           COMMUNICATION ERROR                       COMSMSP   532
                    5     RSVE    EQU   5           DEVICE RESERVED ERROR                     COMSMSP   533
                    6     NORE    EQU   6           DEVICE NOT READY ERROR                    COMSMSP   534
                 4007     TLME    EQU   4007        TRACK LIMIT ERROR                         COMSMSP   535



                          **      DMSE - DEFINE MASS STORAGE ERROR.                           COMSMSP   537
                          *                                                                   COMSMSP   538
                          *ERRC   DMSE    NM,RT,TY,ER,MN,IC,IM,RC,SS,DC,CR,SY,TX            251L664    22
                          *             ERRC = ERROR CODE NAME.                               COMSMSP   540
                          *       NM = TWO CHARACTER NAME DEFINING ERROR TYPE.                COMSMSP   541
                          *       RT = RETRY COUNT TO DECLARE ERROR UNRECOVERED.              COMSMSP   542
                          *       TY = ERROR TYPE TO RETURN TO CPU PROGRAMS.                  COMSMSP   543
                          *       ER = ERROR PROCESSING OPTION WHICH RETURNS FOR              COMSMSP   544
                          *            THIS ERROR TYPE.                                       COMSMSP   545
                          *       MN = ERROR MNEMONIC WHICH APPEARS ON ERROR MESSAGES.        COMSMSP   546
                          *       IC = INCREMENT MST ERROR COUNT/ISSUE BML MESSAGE INDICATOR. COMSMSP   547
                          *              N = DO NOT INCREMENT MST ERROR COUNT AND DO NOT ISSUE COMSMSP   548
                          *                  BML MESSAGE.                                    COMSMSP   549
                          *              Y = INCREMENT MST ERROR COUNT AND ISSUE BML MESSAGE. COMSMSP   550
                          *              M = INCREMENT MST ERROR COUNT AND ISSUE BML MESSAGE IF COMSMSP  551
                          *                  THE ERROR IS UNRECOVERED.                       COMSMSP   552
                          *       IM = ERROR LOG MESSAGE INDICATOR.                          251L664    23
                          *              N = DO NOT ISSUE ERROR LOG MESSAGE.                 251L664    24
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*               L = ISSUE ERROR LOG MESSAGE WITH DETAILED STATUS.      251L664    25
*               S = ISSUE ERROR LOG MESSAGE WITHOUT DETAILED STATUS.   251L664    26
*         RC = RECOVERABILITY TYPE.                                    COMSMSP   553
*               N = NON-RECOVERABLE.                                   COMSMSP   554
*               R = RECOVERABLE.                                       COMSMSP   555
*               C = RECOVERABLE ON A READ REQUEST.                     COMSMSP   556
*         SS = *S* IF THIS ERROR CAN CAUSE THE SUSPECT FLAG TO BE SET. 251L664    27
*         DC = *D* IF THIS ERROR CAN CAUSE A CHANNEL TO BE DOWNED.     251L664    28
*         CR = *R* IF THIS ERROR CAN CAUSE A CONTROLWARE RELOAD.       251L664    29
*         SY = *SYM* THE HARDWARE SYMPTOM CODE FOR THE ERROR.          COMSMSP   559
*         TX = *TXT* THE TEXTUAL DESCRIPTION OF THE ERROR.             COMSMSP   560
                                                                       COMSMSP   561
                                                                       COMSMSP   562
         PURGMAC DMSE                                                  COMSMSP   563
         MACRO  DMSE,ERRC,NM,RT,TY,ER,MN,IC,IM,RC,SS,DC,CR,SY,TX       251L664    30
DREC     MICRO  1,, "DREC"".1"_NM                                      COMSMSP   565
.1       MICRO  1,, ,                                                  COMSMSP   566
ERRC     BSSN   1                                                      COMSMSP   567
RTC._NM  EQU    RT                                                     COMSMSP   568
CEC._NM  EQU    TY                                                     COMSMSP   569
EPO._NM  EQU    EP_ER                                                  COMSMSP   570
EMN._NM  EQU    2R_MN                                                  COMSMSP   571
IEC._NM  SET    0                                                      COMSMSP   572
         IFC    EQ,*IC*Y*,1                                            COMSMSP   573
IEC._NM  SET    1                                                      COMSMSP   574
         IFC    EQ,*IC*M*,1                                            COMSMSP   575
IEC._NM  SET    2                                                      COMSMSP   576
IEM._NM  SET    0                                                      251L664    31
         IFC    EQ,*IM*L*,1                                            251L664    32
IEM._NM  SET    1                                                      251L664    33
         IFC    EQ,*IM*S*,1                                            251L664    34
IEM._NM  SET    2                                                      251L664    35
REC._NM  SET    0                                                      COMSMSP   577
         IFC    EQ,*RC*R*,1                                            COMSMSP   578
REC._NM  SET    1                                                      COMSMSP   579
         IFC    EQ,*RC*C*,1                                            COMSMSP   580
REC._NM  SET    2                                                      COMSMSP   581
SUS._NM  SET    0                                                      COMSMSP   582
         IFC    NE,*SS**,1                                             COMSMSP   583
SUS._NM  SET    1                                                      COMSMSP   584
IDC._NM  SET    0                                                      COMSMSP   585
         IFC    NE,*DC**,1                                             COMSMSP   586
IDC._NM  SET    1                                                      COMSMSP   587
CWR._NM  SET    0                                                      251L664    36
         IFC    NE,*CR**,1                                             251L664    37
CWR._NM  SET    1                                                      251L664    38
.2       OCTMIC SY,4                                                   COMSMSP   588
.2       MICRO  1,, /COMSDFS/HS".2"                                    COMSMSP   589
         IF     DEF,".2"                                               COMSMSP   590
SYM._NM  EQU    ".2"                                                   COMSMSP   591
         ELSE   1                                                      COMSMSP   592
SYM._NM  SET    0                                                      COMSMSP   593
TXT._NM  MICRO  1,,*TX*                                               COMSMSP   594
         ENDM                                                          COMSMSP   595
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                **      DRIVER MASS STORAGE ERROR CODES.                                COMSMSP   597
                *                                                                       COMSMSP   598
                *             TWO TYPES OF DRIVER MASS STORAGE ERRORS ARE DEFINED       COMSMSP   599
                *       AS FOLLOWS.                                                     COMSMSP   600
                *       1)     NORMAL ERRORS ARE DEFINED AS THOSE LESS THAN *RESE*,     COMSMSP   601
                *       THE RESERVE ERROR THRESHOLD. NORMAL ERRORS ARE RETRIED UP TO     COMSMSP   602
                *       THE DEFINED MAXIMUM FOR THE PARTICULAR ERROR AND ARE THEN        COMSMSP   603
                *       CONSIDERED UNRECOVERED.  AN ERROR MESSAGE IS PLACED IN           COMSMSP   604
                *       CONTROL POINT AREA WORD *MS2W* IMMEDIATELY UPON DETECTING        COMSMSP   605
                *       THE ERROR.  IT IS CLEARED AFTER RECOVERING FROM THE ERROR        COMSMSP   606
                *       OR UPON DETERMINING THE ERROR IS UNRECOVERED.  AT THIS           COMSMSP   607
                *       TIME A BML MESSAGE IS ALSO ISSUED.  ADDITIONALLY, IF THE         COMSMSP   608
                *       ERROR IS FOUND TO BE NON-RECOVERABLE, AN ERROR LOG MESSAGE       COMSMSP   609
                *       IS ISSUED AND SYSTEM DAYFILE AND JOB DAYFILE MESSAGES ARE        COMSMSP   610
                *       ALSO ISSUED.                                                    COMSMSP   611
                *       FOR ERRORS DEFINED LESS THAN *NRVE* NO ATTEMPT IS MADE TO        COMSMSP   612
                *       REVERSE THE ORDER OF DUAL ACCESS CHANNELS.  SUCH ERRORS,         COMSMSP   613
                *       WHEN UNRECOVERED, ALSO CAUSE THE ERROR PROCESSOR TO              COMSMSP   614
                *       ATTEMPT TO RELOAD CONTROLWARE OR DOWN THE CHANNEL ON THE         COMSMSP   615
                *       DEVICE.                                                         COMSMSP   616
                *       2)     RESERVE ERRORS ARE THOSE GREATER THAN OR EQUAL TO        COMSMSP   617
                *       *RESE*.  RESERVE ERRORS APPEAR IN *MS2W* BUT NO DAYFILE          COMSMSP   618
                *       MESSAGES ARE ISSUED UNTIL THE RETRY COUNT LIMIT HAS BEEN         COMSMSP   619
                *       REACHED.  THEN THE ERROR IS PROCESSED AS A NORMAL UNRECOVERED    COMSMSP   620
                *       ERROR.                                                          COMSMSP   621
                *                                                                       COMSMSP   622
                *       THE MICRO *DREC* DEFINES THE TWO CHARACTER NAME                 COMSMSP   623
                *       ASSOCIATED WITH ALL DRIVER ERROR CODES.  THIS MICRO              COMSMSP   624
                *       IS USED TO GENERATE TABLES OF DRIVER ERROR CODE                  COMSMSP   625
                *       PARAMETERS.  ALL TAGS DEFINING CHARACTERISTICS OF                COMSMSP   626
                *       THE ERROR CODE ARE OF THE FORMAT *TAG.NM* WHERE *NM*             COMSMSP   627
                *       IS THE ERROR CODE NAME CONTAINED IN THE MICRO *DREC*.            COMSMSP   628
                *       THIS ALLOWS AUTOMATIC EASY MAINTENANCE OF ERROR CODES            COMSMSP   629
                *       BY ONLY MODIFYING *COMSMSP*.                                    COMSMSP   630
                *       THE FOLLOWING IS A LIST OF TAGS GENERATED AND THEIR MEANING.     COMSMSP   631
                *       RTC.NM = RETRY COUNT FOR ERROR TYPE *NM*.                        COMSMSP   632
                *       CEC.NM = CPU PROGRAM ERROR CODE.  THIS IS THE CODE RETURNED      COMSMSP   633
                *                TO CPU PROGRAMS WHEN AN UNRECOVERED ERROR OCCURS.       COMSMSP   634
                *       EPO.NM = ERROR PROCESSING OPTION WHICH WHEN SELECTED WILL        COMSMSP   635
                *                RETURN CONTROL TO THE CALLING PP PROGRAM.  NOTE         COMSMSP   636
                *                THAT NO ERROR MESSAGE IS ISSUED TO THE ERROR LOG        COMSMSP   637
                *                WHEN RETURN TO CALLER IS EXECUTED.  THE ERROR           COMSMSP   638
                *                PROCESSING OPTIONS ARE THOSE SELECTED ON THE            COMSMSP   639
                *                *SETMS* MACRO AND DEFINED BY TAGS OF THE FORM           COMSMSP   640
                *                *ERP.XX*.                                               COMSMSP   641
                *       EMN.NM = ERROR MNEMONIC EXPRESSED AS A 12 BIT DISPLAY            COMSMSP   642
                *                CODE CONSTANT.                                          COMSMSP   643
                *       IEC.NM = INCREMENT MST ERROR COUNT/ISSUE BML MESSAGE             COMSMSP   644
                *                INDICATOR.                                              COMSMSP   645
                *                0    DO NOT INCREMENT MST ERROR COUNT AND DO NOT        251L664    39
                *                     ISSUE BML MESSAGE.                                 251L664    40
                *                1    INCREMENT MST ERROR COUNT AND ISSUE BML            251L664    41
                *                     MESSAGE.                                           251L664    42
                *                2    INCREMENT MST ERROR COUNT AND ISSUE BML MESSAGE    251L664    43
                *                     IF THE ERROR IS UNRECOVERED.                       251L664    44
                *       IEM.NM = ERROR LOG MESSAGE INDICATOR.                            251L664    45
                *                0    DO NOT ISSUE ERROR LOG MESSAGE.                    251L664    46
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                                *              1    ISSUE ERROR LOG MESSAGE WITH DETAILED STATUS.   251L664    47
                                *              2    ISSUE ERROR LOG MESSAGE WITHOUT DETAILED        251L664    48
                                *                   STATUS.                                         251L664    49
                                *       REC.NM = RECOVERABILITY INDICATOR.                          COMSMSP    651
                                *                0    NON-RECOVERABLE.                              COMSMSP    652
                                *                1    RECOVERABLE.                                  COMSMSP    653
                                *                2    RECOVERABLE IF READ REQUEST.                  COMSMSP    654
                                *       SUS.NM = 1 IF AN EQUIPMENT MAY BE SET SUSPECT FOR THIS ERROR COMSMSP    655
                                *                TYPE.                                             COMSMSP    656
                                *       IDC.NM = 1 IF A CHANNEL MAY BE DOWNED AS A RESULT OF THIS    COMSMSP    657
                                *                ERROR TYPE.                                       COMSMSP    658
                                *       CWR.NM = 1 IF CONTROLWARE MAY BE RELOADED AS A RESULT OF THIS 251L664    50
                                *                ERROR TYPE.                                       251L664    51
                                *       SYM.NM = THE SYMPTOM CODE VALUE FROM *COMSDFS*.             COMSMSP    659
                                *       TXT.NM = TEXTUAL DESCRIPTION OF ERROR TYPE.                 251L664    52
                                                                                                    COMSMSP    661
                                                                                                    COMSMSP    662
          0                      BEGIN    BSSN   1          INITIALIZE ERROR TYPE                 COMSMSP    663
                                                                                                    COMSMSP    665
                                 DREC     MICRO  1,,                                               COMSMSP    666
                                 .1       MICRO  1,,                                               COMSMSP    667
                                                                                                    COMSMSP    668
     L    1                    CHPE     DMSE   CP,CHRT,COME,ER,CP,Y,S,C,S,D,,24,(CHANNEL PARITY)    251L664    53
     L    2                    CSTE     DMSE   CS,CSRT,COME,ER,CS,Y,S,C,S,D,,51,(CONTROLLER STOP)    251L664    54
     L    3                    RAME     DMSE   RA,RART,COME,ER,RA,Y,S,C,S,D,R,63,(CONTROLLER MEMORY)  SMSP4      1
     L    4                    FTOE     DMSE   FT,FTRT,COME,ER,FT,Y,S,C,S,D,R,50,(FUNCTION TIMEOUT)  251L664    56
     L    5                    CHFE     DMSE   CF,12,COME,ER,CF,Y,S,C,S,D,R,23,(CHANNEL FAILURE)      NS2475     1
     L    6                    IDTE     DMSE   ID,12,COME,ER,ID,Y,S,C,S,D,R,5,(DATA TRANSFER)        NS2475     2
     L    7                    DDFE     DMSE   DF,0,STSE,ER,DF,,,N,,,,64,(DIAGNOSTIC FAILURE)      251L670    62
     L   10                    NRVE     BSSN   0                                                    COMSMSP    673
     L   10                    PARE     DMSE   ME,12,PTYE,ER,ME,Y,L,N,S,,,40,(MEDIA)                251L664    59
     L   11                    ADDE     DMSE   AD,0,ADRE,ER,AD,Y,S,N,S,,,100,(ADDRESS)               251L664    60
     L   12                    DSTE     DMSE   ST,12,STSE,ER,ST,Y,L,R,S,,,102,(DEVICE STATUS)       251L664    61
     L   13                    SKTE     DMSE   SK,FTRT,STSE,ER,SK,Y,S,N,S,,,106,(SEEK TIMEOUT)      253L688    70
     L   14                    IWTE     DMSE   IW,FTRT,COME,ER,IW,Y,S,N,S,,,107,(ISD WRITE TIMEOUT)  253L688    71
     L   15                    LNRE     DMSE   LN,0,NORE,NR,LN,N,N,R,,,,,(LOGICAL NOT READY)        251L664    62
     L   16                    NRDE     DMSE   NR,12,NORE,NR,NR,M,L,R,S,,,43,(HARDWARE NOT READY)   251L664    63
     L   17                    RESE     BSSN   0                                                    COMSMSP    679
     L   17                    DRVE     DMSE   RS,76,RSVE,RR,RS,M,S,R,,,,56,(DRIVE RESERVE)         SMSP3      1
     L   20                    CRSE     DMSE   CR,76,RSVE,RR,CR,M,S,R,,,,103,(CONTROLLER RESERVE)     SMSP3      2
     L   21                    IRTE     BSSN   0                                                    NS2480     1
     L   21                    RDFE     DMSE   RD,77,0,NR,RD,N,N,R,,,,,(REDEFINE)                   NS2480     2
     L   22                    STAE     DMSE   SA,77,0,ER,SA,Y,N,R,,,,102,(STATISTICAL DATA)        253L688    72
     L   23                    MXDE     BSSN   0          MAXIMUM ERROR TYPE                        COMSMSP    682
                                                                                                    NS2480     3
                         -56               ERRPL  MXDE-1-100B  ERROR CODE EXCEEDS FIELD SIZE        253L688    73
     L   23                    END      BSSN                                                         COMSMSP    685
                                        PURGMAC  DMSE                                               COMSMSP    686
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                **      ENTRY - DEFINE OVERLAY ENTRY POINT.                     COMSMSP   688
                *                                                               COMSMSP   689
                *       ENTRY IS USED TO DEFINE THE OVERLAY ENTRY POINT FOR MASS COMSMSP   690
                *       STORAGE OVERLAYS.                                       COMSMSP   691
                *                                                               COMSMSP   692
                * TAG   ENTRY                                                   COMSMSP   693
                *                                                               COMSMSP   694
                *       ENTRY  TAG = OVERLAY ENTRY POINT ADDRESS.               COMSMSP   695
                                                                                COMSMSP   696
                                                                                COMSMSP   697
                        PURGMAC  ENTRY                                          COMSMSP   698
                        MACRO  ENTRY,TAG                                        COMSMSP   699
                        MACREF ENTRY                                            COMSMSP   700
                 TAG    BSS    0           OVERLAY ENTRY POINT                  COMSMSP   701
                        RJM    BEP                                              253L688    74
                        ENDM                                                    COMSMSP   704
```

```
                **      MSERR - LOAD MASS STORAGE ERROR PROCESSOR.              COMSMSP   706
                *                                                               COMSMSP   707
                *       MSERR  NAM,C                                            COMSMSP   708
                *                                                               COMSMSP   709
                *       ENTRY  NAM = OVERLAY NAME.                              COMSMSP   710
                *              C = (*) IF NO JUMP TO *LEP1* IS DESIRED.         COMSMSP   711
                *              C = (=) IF NO CODE SHOULD BE GENERATED.          COMSMSP   712
                                                                                COMSMSP   713
                                                                                COMSMSP   714
                        PURGMAC  MSERR                                          COMSMSP   715
                MSERR   MACRO  NAM,C                                            COMSMSP   716
                        MACREF MSERR                                            COMSMSP   717
                        QUAL                                                    COMSMSP   718
                (NAM)   SET    0                                                COMSMSP   719
                        QUAL   *                                                COMSMSP   720
                        IFC    NE,$C$=$                                         COMSMSP   721
                .1      SET    3R7DQ&3R_NAM                                     COMSMSP   722
                        IFLT   .1,100B,1                                        COMSMSP   723
                        LDN    .1                                               COMSMSP   724
                        IFEQ   .1,100B,1                                        COMSMSP   725
                        LDD    HN                                               COMSMSP   726
                        IFGT   .1,100B,1                                        COMSMSP   727
                        LDC    .1                                               COMSMSP   728
                        IFC    NE,.C.*.,1                                       COMSMSP   729
                        LJM    LEP1                                             COMSMSP   730
                        ENDIF                                                   COMSMSP   731
                MSERR   ENDM                                                    COMSMSP   732
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                        **      MSOVL - GENERATE NEW MASS STORAGE OVERLAY.                      COMSMSP   734
                        *                                                                      COMSMSP   735
                        * NAME   MSOVL  ORIGIN,LIMIT,MINM,(TEXT)                               COMSMSP   736
                        *                                                                      COMSMSP   737
                        *       ENTRY  NAME   = OVERLAY NAME.                                  COMSMSP   738
                        *              ORIGIN = OVERLAY LOAD ADDRESS.                          COMSMSP   739
                        *              LIMIT  = ADDRESS OF LAST CELL IN THIS OVERLAY.          COMSMSP   740
                        *              MINM   = ADDRESS OF THE LAST CELL WHICH MUST NOT BE     COMSMSP   741
                        *                       DESTROYED WHEN THIS OVERLAY IS LOADED.         COMSMSP   742
                        *              TEXT   = TEXT FOR SUBTITLE AND COMMENT DIRECTIVES.      COMSMSP   743
                        *                                                                      COMSMSP   744
                        *       NOTE   WHEN THIS MACRO IS USED, AN (ERRNZ  LN-*) INSTRUCTION   COMSMSP   745
                        *              MUST BE ADDED TO THE END OF THE OVERLAY IN ORDER TO      COMSMSP   746
                        *              VERIFY THAT THE OVERLAY ENDS AT THE RIGHT LOCATION.     COMSMSP   747
                        *                                                                      NS2741      1
                        *       NOTE   IF *MSOVL* IS USED TO CREATE A NEW MASS STORAGE ERROR   NS2741      2
                        *              PROCESSOR, AN ENTRY MUST BE ADDED TO THE APPROPRIATE    NS2741      3
                        *              TABLE IN *SLL* TO ENSURE THAT THE NEW OVERLAY RESIDES   NS2741      4
                        *              IN CENTRAL MEMORY UNDER THE CORRECT CIRCUMSTANCES.      NS2741      5
                                                                                               COMSMSP   748
                                                                                               COMSMSP   749
                               PURGMAC  MSOVL                                                  COMSMSP   750
                               MACRO  MSOVL,NAM,ORIGIN,LIMIT,MINM,(TEXT)                       COMSMSP   751
                               MACREF MSOVL                                                    COMSMSP   752
                               TITLE  "DEC"/NAM - TEXT                                         COMSMSP   753
                               QUAL   NAM                                                      COMSMSP   754
                               IDENT  NAM,ORIGIN  TEXT                                         252L678    15
                         COMMENT 86/06/05. 94/05/11. "DEC" - TEXT                              253L688    75
                               COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.             281L803     2
                               ORG    ORIGIN                                                   COMSMSP   758
                          LN   EQU    10001+LIMIT                                             COMSMSP   759
                          LEN  SET    LN-*                                                    COMSMSP   760
                               ERRNZ  LEN-LEN/5*5 *NAM* LENGTH MUST BE DIVISIBLE BY FIVE      COMSMSP   761
                          OFFW EQU    MINM+1                                                  COMSMSP   762
                               ERRNG  OFFW-EPFW   *NAM* CANNOT BE LOADED BELOW EPFW           COMSMSP   763
                               LIST   M                                                        COMSMSP   764
                               ERRNG  *-OFFW      *NAM* WILL LOAD ON TOP OF PARAMETERS        COMSMSP   765
                               LIST   *                                                        COMSMSP   766
                               ENDM                                                            COMSMSP   767

                        **      NUMBER OF DIRECT ACCESS FILES TO PROCESS BEFORE PAUSING FOR    COMSMSP   769
                        *       STORAGE RELOCATION WHEN RECOVERING A PF DEVICE.                COMSMSP   770
                                                                                               COMSMSP   771
                                                                                               COMSMSP   772
                          24   NFTP   EQU    20D         NUMBER OF FILES TO PROCESS BEFORE *PAUSE*  COMSMSP   773
                                                                                               COMSMSP   774
                        M_M            BASE   *                                                COMSMSP   775
                                       ENDX                                                    COMSMSP   776
                                       LIST   *                                                1HP       104
                   0                   CTEXT  COMSPIM - PP INSTRUCTION MNEMONICS.              COMSPIM     1
                   0                   CTEXT  COMS1DS - 1DS FUNCTION CODE DEFINITIONS.         COMS1DS     1
```

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                          **        DIRECT CELL ASSIGNMENTS.                                 1HP          109
                                                                                             1HP          110
                                                                                             1HP          111
                     16     RS      EQU     16          ERROR RECOVERY STATUS                1HP          112
                     17     ER      EQU     17          ERROR RECOVERY IN PROGRESS           1HP          113
                     20     CC      EQU     20          COMPLETION REQUEST COUNT             1HP          114
                     21     S1      EQU     21          SCRATCH                              1HP          115
                     22     EC      EQU     22          ERROR CODE                           1HP          116
                     23     RW      EQU     23          READ/WRITE FLAG                      1HP          117
                     24     IL      EQU     24          *PUT* INTERLOCK FLAG                 1HP          118
                     25     SR      EQU     25 - 31     SCRATCH                              1HP          119
                     25     WB      EQU     SR - SR+4   FOR *COMPIMB* COMPATIBILITY          NS2769         1
                     32     PI      EQU     32          *PADN* WORD INDEX                    1HP          120
                     33     CN      EQU     33 - 37     SCRATCH (5 CELLS)                    1HP          121
                     40     CD      EQU     40 - 45     CURRENT DATA (6 CELLS)               1HP          122
                     46     CS      EQU     46          CHANNEL STATUS                       1HP          123
                     47     NB      EQU     47          NEXT BUFFER ORDINAL                  1HP          124
                     50     PB      EQU     50          PREVIOUS BUFFER ORDINAL              1HP          125
                     51     CB      EQU     51          CURRENT BUFFER ORDINAL               1HP          126
                     52     TB      EQU     52          TOTAL CBT COUNT                      1HP          127
                     53     GS      EQU     53          GENERAL STATUS                       1HP          128
                          *         EQU     54          CHANNEL NUMBER (FROM INPUT REGISTER) 1HP          129
                     57     TI      EQU     57          *TPOR* INDEX                         1HP          130
                     60     CA      EQU     60 - 64     CURRENT PHYSICAL ADDRESS (5 CELLS)   1HP          131
                     65     RC      EQU     65          RETRY COUNT                          1HP          132
                     66     PO      EQU     66          *PUT* ORDINAL                        1HP          133
                     67     S2      EQU     67          SCRATCH                              1HP          134


                          **        DRIVER FUNCTION CODES.                                   1HP          136
                                                                                             1HP          137
                                                                                             1HP          138
                      1     FCSK    EQU     1           SEEK 1 TO 1 INTERLACE                1HP          139
                      4     FCRD    EQU     4           READ                                 1HP          140
                      5     FCWR    EQU     5           WRITE                                1HP          141
                     10     FCOC    EQU     10          OPERATION COMPLETE                   1HP          142
                     14     FCCO    EQU     14          CONTINUE                             1HP          143
                     23     FCDS    EQU     23          DETAILED STATUS                      1HP          144
                     66     FCES    EQU     66          EXTENDED GENERAL STATUS              1HP          145
                    414     FCAL    EQU     414         AUTOLOAD                             1HP          146


                          **        STATUS AND CONTROL REGISTER FUNCTION CODE(S).            1HP          148
                                                                                             1HP          149
                   3000     FCTC    EQU     3000        TEST AND CLEAR *SCR* BIT             1HP          150
```

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                               **        ASSEMBLY CONSTANTS.                                      1HP          152
                                                                                                  1HP          153
                                                                                                  1HP          154
                        10      BFRL      EQU    10           *EMB* FLUSH RETRY COUNT             1HP          155
                         0      CH        EQU    0            MASS STORAGE CHANNEL                1HP          156
                       400      EMAI      EQU    400          EXTENDED MEMORY ADDRESS INCREMENT   1HP          157
                         5      FCESL     EQU    5            LENGTH OF EXTENDED GENERAL STATUS   1HP          158
                         2      FCRDL     EQU    2            NUMBER OF PARAMETER BYTES FOR READ  1HP          159
                         4      FCSKL     EQU    4            NUMBER OF PARAMETER BYTES FOR SEEK  1HP          160
                         6      FCWRL     EQU    6            NUMBER OF PARAMETER BYTES FOR WRITE 1HP          161
                        20      MAXU      EQU    16D          MAXIMUM NUMBER OF UNITS PER CHANNEL 1HP12          1
                        10      PCRL      EQU    10           PP CALL RETRY LIMIT                 NS2446         1
                        10      MFRL      EQU    10           MONITOR FUNCTION RETRY LIMIT        1HP          163
                        10      PPSLB     EQU    10           PHYSICAL SECTORS PER BUFFER         1HP          164
                        40      PSPT      EQU    40           PHYSICAL SECTORS PER PHYSICAL TRACK 1HP          165
                       100      SOSF      EQU    100          SEEK OPTION SELECT FLAGS            1HP          166
                         1      TPORE     EQU    1            LENGTH OF *TPOR* ENTRY              1HP          167



                               **        MACROS.                                                  1HP          169



                               **        TBLM - CREATE TABLE ENTRY MACRO.                         NS2769         3
                               *                                                                  NS2769         4
                               *NAM      TBLM                                                     NS2769         5
                               *                                                                  NS2769         6
                               *         ENTRY  NAM = TABLE NAME.                                 NS2769         7
                               *                                                                  NS2769         8
                               *         EXIT   NAM_E MACRO DEFINED.                              NS2769         9
                                                                                                  NS2769        10
                                                                                                  NS2769        11
                                         PURGMAC  TBLM                                            NS2769        12
                                                                                                  NS2769        13
                                         MACRO  TBLM,NAM                                          NS2769        14
                                         PURGMAC  NAM_E                                           NS2769        15
                                NAM_E    MACRO  ADDR                                              NS2769        16
                                         LOCAL  A                                                 NS2769        17
                                         MACREF NAM_E                                             NS2769        18
                                         NOREF  A                                                 NS2769        19
                                A        EQU    ADDR                                              NS2769        20
                                T_NAM    RMT                                                      NS2769        21
                                         CON    A                                                 NS2769        22
                                         RMT                                                      NS2769        23
                                TBLM     ENDM                                                     NS2769        24
```

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                        **      CBTE - CONTROL BUFFER TABLE ENTRY.                      NS2769  26
                        *                                                               NS2769  27
                        *       THIS MACRO GENERATES AN ENTRY IN REMOTE LIST *TCBT*      NS2769  28
                        *       THAT CONTAINS THE ADDRESS OF AN INSTRUCTION WHICH       NS2769  29
                        *       REQUIRES THE FWA OF THE CONTROL BUFFER TABLE.           NS2769  30
                        *                                                               NS2769  31
                        *       CBTE   ADDR                                             NS2769  32
                        *                                                               NS2769  33
                        *       ENTRY  (ADDR) = ADDRESS OF INSTRUCTION.                 NS2769  34
                        *                                                               NS2769  35
                        *       EXIT   ADDRESS IS ADDED TO THE REMOTE BLOCK *TCBT*.     NS2769  36
                                                                                        NS2769  37
                                                                                        NS2769  38
          0              CBT    TBLM                                                   NS2769  39


                        **      CCBA - COMPUTE *CBT* ENTRY ADDRESS.                     1HP     171
                        *                                                               1HP     172
                        *       THIS MACRO SETS (A) TO THE REQUESTED *CBT* ENTRY ADDRESS. NS2769 40
                        *                                                               NS2769  41
                        *       CCBA   W,A                                              1HP     173
                        *                                                               1HP     174
                        *             W - OPTIONAL WORD OFFSET TO BE ADDED TO ADDRESS.   1HP     175
                        *             A - IF NON-BLANK, BUFFER ORDINAL IS IN ACCUMULATOR. 1HP   176
                        *                                                               1HP     177
                        *       ENTRY  (A) = BUFFER ORDINAL IF *A* PARAMETER IS NON-BLANK. 1HP  178
                        *              (CB) = CURRENT BUFFER ORDINAL.                   1HP     179
                        *                                                               1HP     180
                        *       EXIT   (A) = *CBT* ENTRY ADDRESS + WORD OFFSET.         1HP     181
                                                                                        1HP     182
                                                                                        1HP     183
                               PURGMAC  CCBA                                            1HP     184
                                                                                        1HP     185
                         CCBA  MACRO  W,A                                               1HP     186
                               MACREF CCBA                                              1HP     188
                               IFC    EQ,$A$$,1                                         1HP     189
                               LDD    CB                                                1HP     190
                               SHN    CBTLS                                             1HP     191
                               CBTE   *                                                 NS2769  42
                               ADC    W                                                 NS2769  43
                         CCBA  ENDM                                                     1HP     196


                        **      PUTE - PHYSICAL UNIT TABLE ENTRY.                       NS2769  45
                        *                                                               NS2769  46
                        *       THIS MACRO GENERATES AN ENTRY IN REMOTE LIST *TPUT*      NS2769  47
                        *       THAT CONTAINS THE ADDRESS OF AN INSTRUCTION WHICH       NS2769  48
                        *       REQUIRES THE FWA OF THE PHYSICAL UNIT TABLE.            NS2769  49
                        *                                                               NS2769  50
                        *       PUTE   ADDR                                             NS2769  51
                        *                                                               NS2769  52
                        *       ENTRY  (ADDR) = ADDRESS OF INSTRUCTION.                 NS2769  53
                        *                                                               NS2769  54
```

```
                    *       EXIT   ADDRESS IS ADDED TO THE REMOTE BLOCK *TPUT*.          NS2769    55
                                                                                        NS2769    56
                                                                                        NS2769    57
          0          PUT    TBLM                                                       NS2769    58
                    **      CPTA - COMPUTE *PUT* ENTRY ADDRESS.                        1HP       198
                    *                                                                  1HP       199
                    *       THIS MACRO SETS (A) TO THE REQUESTED *PUT* ENTRY ADDRESS.  NS2769     59
                    *                                                                  NS2769    60
                    *       CPTA   W,A                                                 1HP       200
                    *                                                                  1HP       201
                    *              W - OPTIONAL WORD OFFSET TO BE ADDED TO ADDRESS.     1HP       202
                    *              A - IF NON-BLANK, *PUT* ORDINAL IS IN ACCUMULATOR.  1HP       203
                    *                                                                  1HP       204
                    *       ENTRY  (A) = *PUT* ORDINAL IF *A* PARAMETER IS NON-BLANK.  1HP       205
                    *              (PO) = *PUT* ORDINAL.                               1HP       206
                    *                                                                  1HP       207
                    *       EXIT   (A) = *PUT* ENTRY ADDRESS + WORD OFFSET.            1HP       208
                                                                                       1HP       209
                                                                                       1HP       210
                           PURGMAC  CPTA                                               1HP       211
                                                                                       1HP       212
                     CPTA  MACRO  W,A                                                  1HP       213
                           MACREF CPTA                                                 1HP       215
                           IFC    EQ,$A$$,1                                            1HP       216
                           LDD    PO                                                   1HP       217
                           SHN    PUTLS                                                1HP       218
                           PUTE   *                                                    NS2769    61
                           ADC    W                                                    NS2769    62
                     CPTA  ENDM                                                        1HP       223
                    **      EMBE - ERROR MESSAGE TABLE ENTRY.                          NS2769    64
                    *                                                                  NS2769    65
                    *       THIS MACRO GENERATES AN ENTRY IN REMOTE LIST *TEMB*         NS2769    66
                    *       THAT CONTAINS THE ADDRESS OF AN INSTRUCTION WHICH          NS2769    67
                    *       REQUIRES THE FWA OF THE ERROR MESSAGE TABLE.               NS2769    68
                    *                                                                  NS2769    69
                    *       EMBE   ADDR                                                NS2769    70
                    *                                                                  NS2769    71
                    *       ENTRY  (ADDR) = ADDRESS OF INSTRUCTION.                    NS2769    72
                    *                                                                  NS2769    73
                    *       EXIT   ADDRESS IS ADDED TO THE REMOTE BLOCK *TEMB*.        NS2769    74
                                                                                       NS2769    75
                                                                                       NS2769    76
          0          EMB    TBLM                                                       NS2769    77
```

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**        MONITOR - ISSUE MONITOR FUNCTION.                       1HP         225
*                                                                 1HP         226
*         THIS MACRO PROVIDES FUNCTIONALITY IDENTICAL TO THAT OF THE   1HP    227
*         *MONITOR* MACRO DEFINED IN *COMPMAC*, WHILE ENSURING ANY    1HP     228
*         PENDING *BIOM* MONITOR FUNCTION IS COMPLETED BEFORE THE NEXT  1HP   229
*         MONITOR FUNCTION IS ISSUED.                             1HP         230
*                                                                 1HP         231
*         MONITOR  F                                              1HP         232
*                                                                 1HP         233
*                  F - MONITOR FUNCTION CODE.                     1HP         234
*                                                                 1HP         235
*         EXIT   (A) = 0.                                         1HP         236
*                (CM - CM+4) = COMPLETED PP OUTPUT REGISTER IMAGE.  1HP       237
*                                                                 1HP         238
*         CALLS  IMF.                                             1HP         239
                                                                  1HP         240
                                                                  1HP         241
          PURGMAC  MONITOR                                        1HP         242
                                                                  1HP         243
 MONITOR  MACRO  F                                                1HP         244
          MACREF MONITOR                                          1HP         245
          LDK    F                                                1HP         246
          RJM    IMF                                              1HP         247
 MONITOR  ENDM                                                    1HP         248
```

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                                **        FHP - 885-42 DRIVER.                                1HP         252
                                                                                              1HP         253
                                                                                              1HP         254
1100                                      ORG    PPFW                                         1HP         255
1100          0200 4256          FHP      RJM    PRS          PRESET                          1HP         256


                                **        MST - MAIN PROGRAM.                                 1HP         258
                                                                                              1HP         259
                                                                                              1HP         260
1102          0200 1166          MST      RJM    CCR          CHECK FOR CHANNEL REQUESTED/DOWN 1HP        261
1104          0712                        MJN    MST1         IF CHANNEL GLOBALLY DOWN        1HP         262
1105          0200 3510                   RJM    SUQ          SCAN UNIT QUEUE                 1HP         263
1107          0472                        ZJN    MST          IF NO ELIGIBLE ENTRY FOUND      1HP         264
1110          0200 2435                   RJM    ISF          ISSUE SEEK FUNCTION             1HP         265
1112          0567                        NJN    MST          IF UNIT NOT ON CYLINDER         1HP         266
1113          0200 2642                   RJM    PDT          PERFORM DATA TRANSFER           1HP         267
1115          0364                        UJN    MST          LOOP                            1HP         268
                                                                                              1HP         269
1116          0200 1570          MST1     RJM    DCH          RELEASE CHANNEL                 1HP         270
1120          1461                        MONITOR  DPPM       DROP PP                         1HP         271
1123          0100 0257                   LJM    PPR          ENTER IDLE LOOP                 1HP         272


                                **        TPOR - TABLE OF *PUT* ORDINALS.                     1HP         274
                                *                                                             1HP         275
                                *         THIS TABLE CONTAINS THE ORDINALS OF THE *PUT* ENTRIES FOR ALL 1HP   276
                                *         UNITS ACCESSED BY THIS DRIVER-S CHANNEL.            1HP         277
                                *                                                             1HP         278
                                *         ENTRY = 1 WORD.                                     1HP         279
                                *                                                             1HP         280
                                *T        5/ 0, 1/ I, 6/ *PUT* ORDINAL                        252L678       2
                                *                I    EST CHANNEL BYTE INDEX.                 252L678       3
                                *                                                             1HP         282
                                *         TABLE IS TERMINATED BY A ZERO BYTE.                 1HP         283
                                                                                              1HP         284
                                                                                              1HP         285
1125                        20   TPOR     BSSZ   TPORE*MAXU                                   1HP         286
1145          0000                        CON    0            TERMINATE *TPOR* TABLE          1HP         287
```

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                                **        CCP - CHECK FOR CHANNEL PARITY ERROR.                          1HP        290
                                *                                                                        1HP        291
                                *         EXIT   (A) .EQ. 0 IF NO CHANNEL PARITY ERROR.                  1HP        292
                                *                    .LT. 0 = COMPLEMENT OF *CHPE* ERROR CODE IF         1HP        293
                                *                         CHANNEL PARITY ERROR.                          1HP        294
                                                                                                         1HP        295
                                                                                                         1HP        296
      1146        1400           CCP1      LDN    0                                                    1HP        297
                                                                                                         1HP        298
      1147        0100 1147      CCP       SUBR               ENTRY/EXIT                              1HP        299
      1151        2000 3030                 LDC    FCTC+30     TEST AND CLEAR SCR BIT                  1HP        300
                             1152 CCPA      EQU    *-1         (BIT NUMBER)                            1HP        301
      1153        6616 1146                 FJM    CCP1,CHSC   IF MAINTENANCE CHANNEL IN USE           1HP10        1
                             1153 CCPB      EQU    *-2                                                 1HP10        2
      1155        7216                      OAN    CHSC        ISSUE REQUEST                           1HP        303
                             1155 CCPC      EQU    *-1                                                 1HP10        3
      1156        7016                      IAN    CHSC        INPUT RESULT                            1HP        305
                             1156 CCPD      EQU    *-1                                                 1HP10        4
      1157        0467                      ZJN    CCPX        IF NO CHANNEL PARITY ERROR              1HP        307
      1160        1501                      LCN    CHPE                                                1HP        308
      1161        0365                      UJN    CCPX        RETURN                                  1HP        309
                                                                                                         1HP        311
      1162                                  RICHI              REDEFINE CHANNEL INSTRUCTIONS
                                                                                                         1HP        313
                                **        CCR - CHECK FOR CHANNEL REQUESTED OR DOWN.                     1HP        314
                                *                                                                        1HP        315
                                *         THIS ROUTINE CHECKS TO SEE IF THE CHANNEL TO WHICH THIS PP IS  1HP        316
                                *         DEDICATED IS BEING REQUESTED BY ANOTHER PP OR IS GLOBALLY      1HP        317
                                *         DOWN.  IF THE CHANNEL IS REQUESTED BY ANOTHER PP, IT WILL BE   1HP        318
                                *         RELEASED AND WILL BE REQUESTED AGAIN FOLLOWING A ONE SECOND    1HP        319
                                *         DELAY.  IF THE CHANNEL IS GLOBALLY DOWN, THE DRIVER DROP FLAG  1HP        320
                                *         WILL BE SET IN THE CONTROLWARE TABLE AND THE CHANNEL WILL BE   1HP        321
                                *         RELEASED.                                                      1HP        322
                                *                                                                        1HP        323
                                *         EXIT   (A) .LT. 0 IF CHANNEL IS GLOBALLY DOWN.                 1HP        324
                                *                                                                        1HP        325
                                *         USES   CM - CM+4.                                              1HP        326
                                *                                                                        1HP        327
                                *         CALLS  DCH, RCH, SCD.                                          1HP        328
                                *                                                                        1HP        329
                                *         MACROS DELAY.                                                  1HP        330
                                                                                                         1HP        331
      1162        0200 3421      CCR2      RJM    SCD         SET DRIVER DROP FLAG                    1HP        332
      1164        1500                      LCN    0           SET DROPOUT REPLY                       1HP        333
                                                                                                         1HP        334
      1165        0100 1165      CCR       SUBR               ENTRY/EXIT                              1HP        335
      1167        2000 0000                 LDC    **          READ CHANNEL TABLE                      1HP        336
                             1170 CCRA      EQU    *-1         (CM ADDRESS OF ENTRY)                   1HP        337
      1171        6010                      CRD    CM                                                  1HP        338
      1172        3010                      LDD    CM+**       CHECK REQUESTED FLAG                    1HP        339
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                        1172     CCRB     EQU    *-1          (BYTE ADDRESS OF ENTRY)                  1HP        340
1173          1014                        SHN    21-5                                                  1HP        341
1174          0765                        MJN    CCR2         IF CHANNEL IS GLOBALLY DOWN              1HP        342
1175          1014                        SHN    22+5-13                                               1HP        343
1176          0666                        PJN    CCRX         IF CHANNEL NOT REQUESTED                 1HP        344
1177          0200 1570                   RJM    DCH          RELEASE CHANNEL                          1HP        345
1201          5000 0255           CCR1    DELAY                                                        252L678      4
1205          0200 2772                   RJM    RCH          REQUEST CHANNEL                          1HP        357
1207          0471                        ZJN    CCR1         IF CHANNEL NOT ASSIGNED                  1HP        358
1210          0354                        UJN    CCRX         RETURN                                   1HP        359
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                                  **     CCS - CHECK CONSECUTIVE SECTORS.                                 1HP        361
                                  *                                                                     1HP        362
                                  *      THIS ROUTINE CHECKS THE NEXT BUFFER IN THE I/O QUEUE TO        1HP        363
                                  *      DETERMINE IF IT IS CONSECUTIVE WITH THE REQUEST CURRENTLY      1HP        364
                                  *      BEING PROCESSED.                                               1HP        365
                                  *                                                                     1HP        366
                                  *      ENTRY  (CB) = CURRENT BUFFER ORDINAL.                          1HP        367
                                  *             (NB) = NEXT BUFFER ORDINAL IF CONSECUTIVE REQUEST       1HP        368
                                  *                    ALREADY FOUND.                                   1HP        369
                                  *             (TB) = TOTAL BUFFER COUNT.                              1HP        370
                                  *                                                                     1HP        371
                                  *      EXIT   (NB) = NEXT BUFFER ORDINAL.                             1HP        372
                                  *                  = 0 IF CONSECUTIVE TRANSFER NOT POSSIBLE.          1HP        373
                                  *             (TB) = TOTAL BUFFER COUNT.                              1HP        374
                                  *                                                                     1HP        375
                                  *      USES   NB, TB, CM - CM+4, CN - CN+4, T0 - T4.                  1HP        376
                                  *                                                                     1HP        377
                                  *      MACROS CCBA.                                                   1HP        378
                                                                                                        1HP        379
                                                                                                        1HP        380
1211          1400                CCS3    LDN    0            INDICATE NO CONSECUTIVE REQUEST          1HP        381
1212          3447                        STD    NB                                                    1HP        382
                                                                                                        1HP        383
1213          0100 1213           CCS     SUBR                ENTRY/EXIT                           1HP        384
1215          3047                        LDD    NB                                                    1HP        385
1216          0574                        NJN    CCSX         IF NEXT REQUEST ALREADY FOUND            1HP        386
1217          3051                        CCBA   PAD4         READ CURRENT *CBT* ENTRY                 1HP        387
1223          6010                        CRD    CM                                                    1HP        388
1224          1602                        ADK    IOLK-PAD4                                             1HP        389
1225          6033                        CRD    CN                                                    1HP        390
1226          3035                        LDD    CN+2         NEXT BUFFER ORDINAL                      1HP        391
1227          0463                        ZJN    CCSX         IF NO BUFFER                             1HP        392
1230          3447                        STD    NB           STORE BUFFER ORDINAL OF NEXT REQUEST     1HP        393
1231          1003                        CCBA   PAD1,A       GET DISK ADDRESS FOR THIS BUFFER         1HP        394
1234          6033                        CRD    CN                                                    1HP        395
1235          1605                        ADK    IOLK-PAD1    GET WRITE FLAG                           1HP        396
1236          6000                        CRD    T0                                                    1HP        397
1237          3000                        LDD    T0                                                    1HP        398
1240          1066                        SHN    0-11                                                  1HP        399
1241          1201                        LPN    1                                                     1HP        400
1242          3323                        LMD    RW                                                    1HP        401
1243          0545                        NJN    CCS3         IF TRANSFER NOT IN SAME DIRECTION        1HP        402
1244          3011                        LDD    CM+1                                                  1HP        403
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1245          3334                 LMD    CN+1                                  1HP         404
1246          0542            CCS1 NJN    CCS3        IF NO CYLINDER MATCH      1HP         405
1247          3012                 LDD    CM+2                                  1HP         406
1250          1602                 ADN    2                                     1HP         407
1251          3335                 LMD    CN+2                                  1HP         408
1252          0412                 ZJN    CCS2        IF CONSECUTIVE SECTOR ON SAME TRACK       1HP         409
1253          3012                 LDD    CM+2                                  1HP         410
1254          3171                 ADD    HN                                    1HP         411
1255          1377                 SCN    77                                    1HP         412
1256          3335                 LMD    CN+2                                  1HP         413
1257          0566                 NJN    CCS1        IF NOT FIRST SECTOR ON CONSECUTIVE TRACK  1HP         414
1260          3012                 LDD    CM+2                                  1HP         415
1261          1277                 LPN    77                                    1HP         416
1262          1736                 SBN    PSPT-2                                1HP         417
1263          0562                 NJN    CCS1        IF NOT CONSECUTIVE REQUEST                1HP         418
1264          3652            CCS2 AOD    TB          INCREMENT TOTAL BUFFER COUNT              1HP         419
1265          0100 1213            LJM    CCSX        RETURN                    1HP         420


                             **    CDS - CRACK DETAILED STATUS.                                 1HP         422
                             *                                                                  1HP         423
                             *     THIS ROUTINE DETERMINES WHAT ERROR CODE TO SET BY EXAMINING  1HP         424
                             *     DETAILED STATUS.  IT WILL ALSO ATTEMPT TO RECOVER BY ISSUING 1HP         425
                             *     A *CONTINUE* FUNCTION IF GENERAL STATUS INDICATES THE ERROR  1HP         426
                             *     IS RECOVERABLE BY THE CONTROLLER.                            1HP         427
                             *                                                                  1HP         428
                             *     ENTRY  (EC) = ERROR CODE.                                    1HP         429
                             *            (GS) = GENERAL STATUS.                                1HP         430
                             *            (RW) = READ/WRITE FLAG.                               1HP         431
                             *            (T7) = SECTOR COUNT.                                  1HP         432
                             *                                                                  1HP         433
                             *     EXIT   (A)  .EQ. 0 IF ERROR WAS RECOVERED BY CONTROLLER.     1HP         434
                             *                 .LT. 0 IF A FUNCTION TIMEOUT, CHANNEL PARITY     1HP         435
                             *                        ERROR, OR DATA TRANSFER ERROR OCCURRED    1HP         436
                             *                        WHILE TRYING TO OBTAIN STATUS.            1HP         437
                             *                 .GT. 0 OTHERWISE.                                1HP         438
                             *            (EC) = ERROR CODE.                                    1HP         439
                             *                                                                  1HP         440
                             *     USES   CB, EC, PB, RS.                                       1HP         441
                             *                                                                  1HP         442
                             *     CALLS  GDS, GGS, PCH.                                        1HP         443
                                                                                                1HP         444
                                                                                                1HP         445
1267          0100 1267       CDS  SUBR               ENTRY/EXIT                1HP         446
1271          0200 2133       CDS1 RJM    GDS         GET DETAILED STATUS       1HP         447
1273          0773                 MJN    CDSX        IF ERROR                  1HP         448
1274          3053                 LDD    GS                                    1HP         452
1275          1006                 SHN    21-13                                 1HP         453
1276          0703                 PJP    CDS6        IF NOT ABNORMAL TERMINATION               NS2509        1
1301          1003                 SHN    13-10                                 1HP         455
1302          0615                 PJN    CDS3        IF ERROR NOT RECOVERABLE BY CONTROLLER    1HP         456
                                                                                                1HP         457
                             *     ATTEMPT CONTROLLER RECOVERY.                                 1HP         458
                                                                                                1HP         459
1303          1414                 LDK    FCCO        ISSUE *CONTINUE* FUNCTION 1HP         460
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1304          0200 2617                RJM   PCH                          1HP         461
1306          0760                     MJN   CDSX        IF TIMEOUT/DATA TRANSFER ERROR   1HP         462
1307          0200 2164                RJM   GGS         GET GENERAL STATUS   1HP         463
1311          0755                     MJN   CDSX        IF STATUS NOT OBTAINED   1HP         464
1312          0556                     NJN   CDS1        IF NOT YET RECOVERED   1HP         465
1313          1501                     LCN   1           INDICATE CONTROLLER RECOVERY   1HP         466
1314          3416                     STD   RS                           1HP         467
1315          1400                     LDN   0                            1HP         468
1316          0350                     UJN   CDSX        RETURN           1HP         469
                                                                          1HP         470
                             *         CHECK FOR *NOT READY* CONDITION.   1HP         471
                                                                          1HP         472
1317          1004            CDS3     SHN   10-4                         1HP         473
1320          0614                     PJN   CDS4        IF NOT *NOT READY*   1HP         474
1321          5000 2366                LDM   DST+7                        1HP         475
1323          1201                     LPN   1                            1HP         476
1324          0510                     NJN   CDS4        IF NOT *NOT READY*   1HP         477
1325          5000 2367                LDM   DST+10                       1HP         478
1327          1070                     SHN   0-7                          1HP         479
1330          1201                     LPN   1                            1HP         480
1331          0503                     ZJP   CDS8        IF DRIVE *NOT READY*   1HP         481
                                                                          1HP         482
                             *         DURING SPINUP, THE STATUS OF THE DRIVE CHANGES SO AS TO   1HP         483
                             *         APPEAR NOT TO BE A *NOT READY* CONDITION.  TO AVOID   1HP         484
                             *         MISHANDLING THIS SITUATION THE ERROR PROCESSOR CHECKS FOR   1HP         485
                             *         PRIOR DETECTION OF *NOT READY* AND ASSUMES NO CHANGE IN   1HP         486
                             *         THE SITUATION UNTIL GENERAL STATUS BECOMES ZERO.   1HP         487
                                                                          1HP         488
1334          3022            CDS4     LDD   EC                           1HP         489
1335          1116                     LMK   NRDE                         1HP         490
1336          0503                     ZJP   CDS8        IF *NOT READY* ALREADY DETECTED   1HP         491
                                                                          1HP         492
                             *         CHECK FOR *BUFFER TO DISK* ERROR.   1HP         493
                                                                          1HP         494
1341          3023                     LDD   RW                           1HP         495
1342          0415                     ZJN   CDS5        IF READ OPERATION   1HP         496
1343          5000 2373                LDM   DST+14                       1HP         497
1345          1006                     SHN   21-13                        1HP         498
1346          0611                     PJN   CDS5        IF NOT ERROR ON PREVIOUS SECTOR   1HP         499
1347          3007                     LDD   T7                           1HP         500
1350          1107                     LMK   PPSLB-1                      1HP         501
1351          0506                     NJN   CDS5        IF NOT AT BUFFER BOUNDARY   1HP         502
1352          3050                     LDD   PB          BACKUP TO PREVIOUS BUFFER   1HP         503
1353          3451                     STD   CB                           1HP         504
1354          1400                     LDN   0                            1HP         505
1355          3450                     STD   PB                           1HP         506
1356          0330                     UJN   CDS6        SET ERROR CODE   1HP         507
                                                                          1HP         508
                             *         CHECK FOR MEDIA ERROR.             1HP         509
                                                                          1HP         510
1357          5000 2376       CDS5     LDM   DST+17                       1HP         511
1361          1240                     LPN   40                           1HP         512
1362          0524                     NJN   CDS6        IF PROCESSOR INSTRUCTION TIMEOUT   1HP         513
1363          5000 2357                LDM   DST                          1HP         514
1365          1217                     LPN   17                           1HP         515
1366          1110                     LMN   10                           1HP         516
1367          0421                     ZJN   CDS7        IF MEDIA ERROR   1HP         517
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1370         5000 2360            LDM    DST+1                                      1HP        518
1372         1006                 SHN    21-13                                      1HP        519
1373         0715                 MJN    CDS7         IF MEDIA ERROR                1HP        520
1374         1002                 SHN    13-11                                      1HP        521
1375         0713                 MJN    CDS7         IF MEDIA ERROR                1HP        522
1376         5000 2377            LDM    DST+20                                     1HP        523
1400         1011                 SHN    21-10                                      1HP        524
1401         0707                 MJN    CDS7         IF MEDIA ERROR                1HP        525
1402         5000 2376            LDM    DST+17                                     1HP        526
1404         1013                 SHN    21-6                                       1HP        527
1405         0706                 MJN    CDS9         IF CHANNEL PARITY ERROR ON OUTPUT 1HP     528
1406         1412          CDS6   LDN    DSTE                                       1HP        529
1407         0305                 UJN    CDS10        SET ERROR CODE                1HP        530
                                                                                    1HP        531
1410         1406          CDS7   LDK    PARE&NRDE                                  1HP        532
1411         1116          CDS8   LMK    NRDE                                       1HP        533
1412         0302                 UJN    CDS10        SET ERROR CODE                1HP        534
                                                                                    1HP        535
1413         1401          CDS9   LDN    CHPE         SET ERROR CODE                1HP        536
1414         3422          CDS10  STD    EC                                         1HP        537
1415         0100 1267            LJM    CDSX         RETURN                        1HP        538


                           **     CRL - CHECK FOR ERROR RETRY LIMIT REACHED.        1HP        580
                           *                                                        1HP        581
                           *      ENTRY  (EC) = ERROR CODE.                         1HP        582
                           *             (ER) = *RECOVERY IN PROGRESS* FLAG.        1HP        583
                           *             (RC) = RETRY COUNT.                        1HP        584
                           *             (T5) = EST ORDINAL.                        NS2769      78
                           *                                                        1HP        585
                           *      EXIT   (A) .GE. 0 IF RETRY LIMIT REACHED.         1HP        586
                           *                 .LT. 0 IF NOT AT RETRY LIMIT.          1HP        587
                           *             (RC) INCREMENTED.                          NS2732B      1
                           *             MESSAGE ISSUED TO *MS2W* OF SYSTEM CONTROL POINT FOR   NS2769      79
                           *             B-DISPLAY PRESENTATION IF HALF WAY TO RETRY LIMIT.    NS2769      80
                           *                                                        NS2732A      2
                           *      USES   RC.                                        NS2732A      3
                                                                                    1HP        591
                                                                                    1HP        592
1417         0100 1417     CRL    SUBR                ENTRY/EXIT                    1HP        593
1421         3017                 LDD    ER                                         1HP        594
1422         2300 1001            LMC    SHNI+1                                     1HP        595
1424         5400 1462            STM    CRLA                                       1HP        596
1426         3665                 AOD    RC           INCREMENT RETRY COUNT         NS2732B      2
1427         5022 2022            LDM    TREC,EC                                    NS2769      81
1431         1076                 SHN    -1                                         NS2769      82
1432         3265                 SBD    RC                                         NS2769      83
1433         0626                 PJN    CRL1         IF TOO EARLY TO NOTIFY OPERATOR NS2769      84
1434         3005                 LDD    T5           STORE EST ORDINAL IN MESSAGE  NS2769      85
1435         1074                 SHN    -3                                         NS2769      86
1436         0200 4062            RJM    C2D                                        NS2769      87
1440         5400 1471            STM    CRLB+1                                     NS2769      88
1442         3005                 LDD    T5                                         NS2769      89
1443         1207                 LPN    7                                          NS2769      90
1444         1006                 SHN    6                                          NS2769      91
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1445          2100 3355                ADC    2R0                                             NS2769       92
1447          5400 1472                STM    CRLB+2                                          NS2769       93
1451          5022 2000                LDM    TMNE,EC     STORE ERROR MNEMONIC IN MESSAGE     NS2769       94
1453          5400 1473                STM    CRLB+3                                          NS2769       95
1455          3074                     LDD    CP                                              NS2769       96
1456          1636                     ADK    MS2W                                            NS2769       97
1457          6373 1470                CWM    CRLB,TR                                         NS2769       98
1461          3065               CRL1  LDD    RC                                              NS2769       99
                                                                                              1HP         598
                               *       IF *RECOVERY IN PROGRESS* IS NOT SET, THE RETRY COUNT IS   1HP         599
                               *       SHIFTED SO THAT THE LIMIT CHECK IS MADE AGAINST N/2 (WHERE N 1HP         600
                               *       IS THE RETRY LIMIT FOR THE ERROR TYPE IN CELL *EC*).  THIS 1HP         601
                               *       CAUSES HALF OF THE RETRY ATTEMPTS TO BE PERFORMED ON EACH  1HP         602
                               *       CHANNEL, IF AN ALTERNATE ACCESS IS AVAILABLE.  IF NO       1HP         603
                               *       ALTERNATE ACCESS IS AVAILABLE, ALL RETRIES WILL BE PERFORMED 1HP         604
                               *       ON THIS CHANNEL.                                        1HP         605
                                                                                              1HP         606
1462          1000                     SHN    0                                               1HP         607
                               *       SHN    1           (RECOVERY NOT IN PROGRESS)          1HP         608
                       1462      CRLA  EQU    *-1                                             1HP         609
1463          5222 2022                SBM    TREC,EC                                         1HP         610
1465          1701                     SBN    1                                               NS2732B       3
1466          0100 1417                UJP    CRLX        RETURN                              NS2769      100
                                                                                              NS2769      101
                                                                                              NS2769      102
1470          0521               CRLB  DATA   C*EQ000 XX ERROR RETRY UNDERWAY.*               NS2769      103


                               **      CRQ - CHECK REQUEST QUEUE.                             1HP         613
                               *                                                              1HP         614
                               *       THIS ROUTINE ATTEMPTS TO CALL *CPUMTR* TO COMPLETE REQUESTS 1HP         615
                               *       IN THE UNIT QUEUE THAT HAVE ALREADY BEEN PROCESSED.     1HP         616
                               *                                                              1HP         617
                               *       ENTRY  (CC) = COMPLETION REQUEST COUNT.                1HP         618
                               *              (PO) = *PUT* ORDINAL.                           1HP         619
                               *                                                              1HP         620
                               *       EXIT   (A) .EQ. 0 IF NO REQUESTS PRESENT.              1HP         621
                               *                  .NE. 0 IF *CPUMTR* IS STILL BUSY WITH PREVIOUS 1HP         622
                               *                         FUNCTION OR AN EXCHANGE WAS JUST ISSUED 1HP         623
                               *                         FOR THE CURRENT FUNCTION.            1HP         624
                               *                                                              1HP         625
                               *       USES   CC, CN - CN+4, T0 - T4.                         1HP         626
                                                                                              1HP         627
                                                                                              1HP         628
1510          0100 1510          CRQ   SUBR               ENTRY/EXIT                          1HP         629
1512          2000 0000                LDC    **          READ XP                             1HP         630
                       1513      CRQA  EQU    *-1         FWA OF XP                           1HP         631
1514          6000                     CRD    T0                                              1HP         632
1515          3076                     LDD    OA          READ OUTPUT REGISTER                1HP         633
1516          6033                     CRD    CN                                              1HP         634
1517          3004                     LDD    T0+4        (B0)                                1HP         635
1520          0522                     NJN    CRQ1        IF MISSED EXCHANGE                  1HP         636
1521          3436                     STD    CN+3                                            1HP         637
1522          3033                     LDD    CN                                              1HP         638
1523          1006                     SHN    21-13                                           NS2454        1
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1524         0716                     MJN   CRQ1        IF REISSUE REQUIRED                     NS2454      2
1525         0562                     NJN   CRQX        IF FUNCTION NOW BEING PROCESSED         1HP       639
1526         3020                     LDD   CC                                                  1HP       640
1527         0460                     ZJN   CRQX        IF NO PENDING COMPLETION REQUESTS       1HP       641
1530         2000 0000                LDC   **                                                  1HP       642
                        1531    CRQE  EQU   *-1                                                 1HP       643
1532         6000                     CRD   T0                                                  1HP       644
1533         3000                     LDD   T0                                                  1HP       645
1534         3101                     ADD   T0+1                                                1HP       646
1535         0552                     NJN   CRQX        IF FUNCTION IN PROGRESS                 1HP       647
1536         1401                     LDN   DCBS        SET *BIOM* SUBFUNCTION                  1HP       648
1537         3434                     STD   CN+1                                                1HP       649
1540         3066                     LDD   PO                                                  1HP       650
1541         3435                     STD   CN+2                                                1HP       651
1542         3020               CRQ1  LDD   CC                                                  1HP       652
1543         3536                     RAD   CN+3                                                1HP       653
1544         1400                     LDN   0                                                   1HP       654
1545         3420                     STD   CC                                                  1HP       655
1546         1450                     LDK   BIOM                                                1HP       656
1547         3433                     STD   CN                                                  1HP       657
1550         3076                     LDD   OA                                                  1HP       658
1551         6233                     CWD   CN                                                  1HP       659
1552         2000 0000                LDC   **                                                  1HP       660
                        1553    CRQB  EQU   *-1         ADDRESS OF EXCHANGE PACKAGE             1HP       661
1554         6370 1562                CWM   CRQD,ON     WRITE FIRST WORD                        1HP       662
1556         1701                     SBN   1           SET EXCHANGE ADDRESS                    1HP       663
1557         2610                     MXN   0           EXCHANGE CPU                            1HP       664
                        1557    CRQC  EQU   *-1         CPU NUMBER                              1HP       665
1560         0100 1510                UJP   CRQX        RETURN                                  1HP       666
                                                                                                1HP       667
1562         0000               CRQD  VFD   24/0        (P)                                     1HP       668
1563         0000
1564         0000                     VFD   18/0        (A0)                                    1HP       669
1565         00
               00                     VFD   18/0        (B0)                                    1HP       670
1566         0000



                               **     DCH - RELEASE CHANNEL.                                    1HP       699
                               *                                                                1HP       700
                               *      THIS ROUTINE RELEASES THE CHANNEL IF IT IS CURRENTLY      1HP       701
                               *      RESERVED.                                                 1HP       702
                               *                                                                1HP       703
                               *      ENTRY  (IR+4) = CHANNEL NUMBER.                           1HP       704
                               *             (CS) = CHANNEL RESERVATION STATUS.                 1HP       705
                               *                                                                1HP       706
                               *      EXIT   (A) = (CS) = 0.                                    1HP       707
                               *                                                                1HP       708
                               *      USES   CM+1, CS.                                          1HP       709
                               *                                                                1HP       710
                               *      MACROS MONITOR.                                           1HP       711
                                                                                                1HP       712
                                                                                                1HP       713
1567         0100 1567          DCH   SUBR              ENTRY/EXIT                              1HP       714
1571         3046                     LDD   CS                                                  1HP       715
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1572          1201                          LPN     1                                             1HP         716
1573          0473                          ZJN     DCHX        IF CHANNEL NOT RESERVED           1HP         717
1574          3054                          LDD     IR+4        RELEASE CHANNEL                   1HP         718
1575          3411                          STD     CM+1                                          1HP         719
1576          1404                          MONITOR  DCHM                                         1HP         720
1601          3746                          SOD     CS                                            1HP         721
1602          0364                          UJN     DCHX        RETURN                            1HP         722


                                  **        ERR - PROCESS ERROR.                                  1HP         724
                                  *                                                               1HP         725
                                  *         THIS ROUTINE IS CALLED TO PERFORM ERROR PROCESSING.   1HP         726
                                  *                                                               1HP         727
                                  *         ENTRY  (EC) = 0 IF THIS IS THE FIRST RETRY OF A RECOVERY   1HP    728
                                  *                       SEQUENCE AND THE CALLER DID NOT SET THE ERROR  1HP  729
                                  *                       CODE.                                   1HP         730
                                  *                     = ERROR CODE IF NOT THE FIRST RETRY OF A RECOVERY 1HP  731
                                  *                       SEQUENCE AND NOT A CALLER SPECIFIED ERROR CODE. 1HP  732
                                  *                     = COMPLEMENT OF ERROR CODE IF SPECIFIED BY THE    1HP  733
                                  *                       CALLER.                                 1HP         734
                                  *                (RC) = RETRY COUNT.                            1HP         735
                                  *                                                               1HP         736
                                  *         EXIT   (EC) = 0.                                      1HP         737
                                  *                (RC) = 0.                                      1HP         738
                                  *                TO THE POINT OF CALL IF THE ERROR WAS RECOVERED BY THE 1HP  739
                                  *                CONTROLLER.                                    1HP         740
                                  *                TO *MST* IN ALL OTHER CASES.                   1HP         741
                                  *                                                               1HP         742
                                  *         USES   EC, RC, RS, T1.                                1HP         743
                                  *                                                               1HP         744
                                  *         CALLS  CDS, CRL, CRQ, GGS, IBM, ISF, PDT, PFR, PRE,   NS2769      104
                                  *                RLC, SSF, TEP.                                 NS2507        1
                                                                                                  1HP         747
                                                                                                  1HP         748
1603          0100 1603           ERR       SUBR                ENTRY/EXIT                        1HP         749
1605          0200 2740                     RJM     PRE         PRESET ERROR PROCESSOR            1HP         750
1607          0403                          NJP     ERR11       IF INTERLOCK/VERIFICATION FAILURE 1HP         751
1612          3022                          LDD     EC                                            1HP         752
1613          1006                          SHN     21-13                                         1HP         753
1614          0605                          PJN     ERR3        IF ERROR CODE NOT SET BY CALLER   1HP         754
1615          1500                ERR2      LCN     0           STORE ERROR CODE                  1HP         755
1616          3322                          LMD     EC                                            1HP         756
1617          3422                          STD     EC                                            1HP         757
1620          0307                          UJN     ERR3.1      CHECK FOR RETRY LIMIT             1HP13         1
                                                                                                  1HP         759
1621          0200 2164           ERR3      RJM     GGS         GET GENERAL STATUS                1HP         760
1623          0771                          MJN     ERR2        IF STATUS NOT OBTAINED            1HP         761
1624          0200 1270                     RJM     CDS         CRACK DETAILED STATUS             1HP13         2
1626          0766                          MJN     ERR2        IF STATUS NOT OBTAINED            1HP         767
1627          3065                ERR3.1    LDD     RC                                            1HP13         3
1630          0504                          NJN     ERR4        IF NOT FIRST RETRY                1HP13         4
1631          3053                          LDD     GS          SAVE INITIAL GENERAL STATUS       1HP13         5
1632          5400 2356                     STM     BMLGS                                         1HP13         6
1634          3072                ERR4      LDD     TH          FORCE IMMEDIATE COMPLETION        1HP         768
                             0              ERRNZ   SHNI-1000   CODE DEPENDS ON VALUE             1HP         769
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1635          5400 2413          STM    IICA                            1HP          770
1637          0200 2404          RJM    IIC          ISSUE I/O COMPLETION REQUEST       1HP          771
1641          0200 1511    ERR4.1 RJM   CRQ          ENSURE NO PENDING MONITOR FUNCTION 1HP          772
1643          0575               NJN    ERR4.1       IF FUNCTION STILL PENDING          1HP          773
1644          0200 2222          RJM    IBM          ISSUE BML MESSAGE IF FIRST RETRY   1HP          774
1646          3616               AOD    RS                                              1HP          775
1647          1006               SHN    21-13                                           1HP          776
1650          0714               MJN    ERR6.1       IF ERROR RECOVERED BY CONTROLLER   1HP          777
1651          0200 1420          RJM    CRL          CHECK FOR RETRY LIMIT REACHED      1HP          778
1653          0712               MJN    ERR7         IF RETRY LIMIT NOT REACHED         1HP          779
                                                                                        1HP          781
                           *     ATTEMPT TO RELOAD THE CONTROLLER IF THE ERROR TYPE IS  1HP          782
                           *     APPROPRIATE FOR SUCH AN ACTION.                        1HP          783
                                                                                        1HP          784
1654          5022 1734          LDM    TEPF,EC                                         1HP          785
1656          1014               SHN    21-5                                            1HP          786
1657          0603               PJN    ERR5         IF RELOAD INAPPROPRIATE FOR ERROR TYPE 1HP      787
1660          0200 3137          RJM    RLC          RELOAD CONTROLLER                  1HP          788
1662          3765         ERR5  SOD    RC           ADJUST FINAL RETRY COUNT           NS2732B        4
1663          3616               AOD    RS           SET RECOVERY STATUS                NS2732B        5
1664          0333         ERR6.1 UJN   ERR11        TERMINATE ERROR PROCESSING         1HP          800
                                                                                        1HP          801
                           *     SET THE SUSPECT FLAG IF APPROPRIATE FOR THIS ERROR TYPE. 1HP        802
                                                                                        1HP          803
1665          0200 3451    ERR7  RJM    SSF          SET SUSPECT FLAG (IF APPROPRIATE)  1HP          804
                                                                                        1HP          806
                           *     RETRY I/O SEQUENCE.                                    1HP          807
                                                                                        1HP          808
1667          0200 2435    ERR9  RJM    ISF          ISSUE SEEK FUNCTION                1HP          809
1671          0422               ZJN    ERR10        IF ON CYLINDER AND NO ERROR        1HP          810
1672          3053               LDD    GS                                              1HP          811
1673          1102               LMN    2                                               1HP          812
1674          0472               ZJN    ERR9         IF POSITIONER BUSY                 1HP          813
1675          1112               LMN    10&2                                            1HP          814
1676          0506               NJN    ERR9.1       IF DRIVE NOT RESERVED ON OTHER CHANNEL NS2446     2
1677          2000 4000          LDC    4000         CAUSE PRIORITY OVERRIDE ON SEEK    NS2446         3
1701          5500 2445          RAM    ISFA                                            NS2446         4
1703          0363               UJN    ERR9         REISSUE SEEK                       NS2446         5
                                                                                        NS2446         6
1704          3046         ERR9.1 LDD   CS                                              NS2446         7
1705          1210               LPN    10                                              1HP          817
1706          0411               ZJN    ERR11        IF CONTROLLER WAS NOT CONNECTED    1HP          818
1707          1412               LDK    DSTE         SET ERROR CODE FOR LOST CONTROLLER RESERVE 1HP  819
1710          3422               STD    EC                                              1HP          820
1711          0100 1634          UJP    ERR4         RETRY OPERATION                    1HP          821
                                                                                        1HP          822
1713          0200 2715    ERR10 RJM    PFR          PREPARE FOR RETRY ATTEMPT          1HP          823
1715          0200 2642          RJM    PDT          PERFORM READ/WRITE OPERATION       1HP          824
                                                                                        1HP          825
                           *     CONTROL RETURNS TO THIS POINT ONLY IF THE ERROR WAS    1HP          826
                           *     RECOVERED.                                             1HP          827
                                                                                        1HP          828
1717          3616         ERR11 AOD    RS           SET RECOVERY STATUS                1HP          829
1720          1006               SHN    6                                               NS2732A        7
1721          3565               RAD    RC           ADJUST FOR CONTROLLER RECOVERY     NS2732A        8
                                                                                        1HP          830
                           *     TERMINATE ERROR PROCESSING.  INSTRUCTIONS MODIFIED FOR ERROR 1HP    831
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                    *       PROCESSING WILL BE RESTORED TO THEIR ORIGINAL VALUES, VARIOUS 1HP        832
                    *       DATA CELLS WILL BE RESTORED TO THEIR INITIAL STATES, ETC.     1HP        833
                                                                                          1HP        834
      1722          0200 3652             RJM   TEP         TERMINATE ERROR PROCESSING    1HP        835
      1724          5016 1731             LDM   ERRA,RS                                   1HP        836
      1726          3401                  STD   T1                                        1HP        837
      1727          0101 0000             LJM   0,T1        EXIT ERROR PROCESSOR          1HP        838
                                                                                          1HP        839
      1731                          ERRA    INDEX             TABLE OF EXIT ADDRESSES     1HP        840
    L    0          1603                  INDEX 0,ERRX                                    1HP        841
    L    1          1102                  INDEX 1,MST                                     1HP        842
    L    2          1102                  INDEX 2,MST                                     1HP        843
    L    3          1102                  INDEX 3,MST                                     1HP        844
      1735                                INDEX 4                                         1HP        845


                    **      TEPF - TABLE OF ERROR PROCESSING FLAGS.                       1HP        847
                    *                                                                     1HP        848
                    *       THIS TABLE CONTAINS INFORMATION RELATED TO EACH ERROR TYPE.   1HP        849
                    *       EACH ENTRY HAS THE FOLLOWING FORMAT -                         1HP        850
                    *             VFD    2/ERROR COUNT INCREMENT, BML MESSAGE INDICATOR   1HP        851
                    *                          0   DO NOT INCREMENT ERROR COUNTS AND DO   1HP        852
                    *                              NOT ISSUE BML MESSAGE.                 1HP        853
                    *                          1   INCREMENT ERROR COUNTS AND ISSUE BML   1HP        854
                    *                              MESSAGE.                               1HP        855
                    *                          2   INCREMENT ERROR COUNTS AND ISSUE BML   1HP        856
                    *                              MESSAGE IF UNRECOVERED ERROR.          1HP        857
                    *             VFD    2/ERROR LOG MESSAGE INDICATOR                    1HP        858
                    *                          0   DO NOT ISSUE ERROR LOG MESSAGE.        1HP        859
                    *                          1   ISSUE ERROR LOG MESSAGE WITH DETAILED  1HP        860
                    *                              STATUS.                                1HP        861
                    *                          2   ISSUE ERROR LOG MESSAGE WITHOUT        1HP        862
                    *                              DETAILED STATUS.                       1HP        863
                    *             VFD    1/SUSPECT FLAG                                   1HP        864
                    *                          0   DO NOT SET SUSPECT FLAG.               1HP        865
                    *                          1   SET SUSPECT FLAG.                      1HP        866
                    *             VFD    1/DOWN CHANNEL FLAG                              1HP        867
                    *                          0   DO NOT DOWN CHANNEL.                  1HP        868
                    *                          1   DOWN CHANNEL.                         1HP        869
                    *             VFD    1/CONTROLLER RELOAD FLAG                         1HP        870
                    *                          0   DO NOT RELOAD CONTROLLER.              1HP        871
                    *                          1   RELOAD CONTROLLER.                     1HP        872
                    *             VFD    5/UNUSED (ZERO)                                  1HP        873
                                                                                          1HP        874
                                  LIST    G                                               1HP        875
                          1734    EQU     *-1                                             1HP        876
                                  ECHO    1,EC=("DREC")                                   1HP        877
                                  VFD     2/IEC._EC,2/IEM._EC,1/SUS._EC,1/IDC._EC,1/CWR._EC,5/0  1HP  878
      1735          3300          VFD     2/IEC.CP,2/IEM.CP,1/SUS.CP,1/IDC.CP,1/CWR.CP,5/0       *ECHO*  .1
      1736          3300          VFD     2/IEC.CS,2/IEM.CS,1/SUS.CS,1/IDC.CS,1/CWR.CS,5/0       *ECHO*  .1
      1737          3340          VFD     2/IEC.RA,2/IEM.RA,1/SUS.RA,1/IDC.RA,1/CWR.RA,5/0       *ECHO*  .1
      1740          3340          VFD     2/IEC.FT,2/IEM.FT,1/SUS.FT,1/IDC.FT,1/CWR.FT,5/0       *ECHO*  .1
      1741          3340          VFD     2/IEC.CF,2/IEM.CF,1/SUS.CF,1/IDC.CF,1/CWR.CF,5/0       *ECHO*  .1
      1742          3340          VFD     2/IEC.ID,2/IEM.ID,1/SUS.ID,1/IDC.ID,1/CWR.ID,5/0       *ECHO*  .1
      1743          0000          VFD     2/IEC.DF,2/IEM.DF,1/SUS.DF,1/IDC.DF,1/CWR.DF,5/0       *ECHO*  .1
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1744    2600                    VFD   2/IEC.ME,2/IEM.ME,1/SUS.ME,1/IDC.ME,1/CWR.ME,5/0     *ECHO*  .1
1745    3200                    VFD   2/IEC.AD,2/IEM.AD,1/SUS.AD,1/IDC.AD,1/CWR.AD,5/0     *ECHO*  .1
1746    2600                    VFD   2/IEC.ST,2/IEM.ST,1/SUS.ST,1/IDC.ST,1/CWR.ST,5/0     *ECHO*  .1
1747    3200                    VFD   2/IEC.SK,2/IEM.SK,1/SUS.SK,1/IDC.SK,1/CWR.SK,5/0     *ECHO*  .1
1750    3200                    VFD   2/IEC.IW,2/IEM.IW,1/SUS.IW,1/IDC.IW,1/CWR.IW,5/0     *ECHO*  .1
1751    0000                    VFD   2/IEC.LN,2/IEM.LN,1/SUS.LN,1/IDC.LN,1/CWR.LN,5/0     *ECHO*  .1
1752    4600                    VFD   2/IEC.NR,2/IEM.NR,1/SUS.NR,1/IDC.NR,1/CWR.NR,5/0     *ECHO*  .1
1753    5000                    VFD   2/IEC.RS,2/IEM.RS,1/SUS.RS,1/IDC.RS,1/CWR.RS,5/0     *ECHO*  .1
1754    5000                    VFD   2/IEC.CR,2/IEM.CR,1/SUS.CR,1/IDC.CR,1/CWR.CR,5/0     *ECHO*  .1
1755    0000                    VFD   2/IEC.RD,2/IEM.RD,1/SUS.RD,1/IDC.RD,1/CWR.RD,5/0     *ECHO*  .1
1756    2000                    VFD   2/IEC.SA,2/IEM.SA,1/SUS.SA,1/IDC.SA,1/CWR.SA,5/0     *ECHO*  .1
                                LIST  *                                                    1HP       879



                        **      TEPO - TABLE OF IMMEDIATE RETURN ERROR PROCESSING OPTIONS.  1HP       881
                                                                                           1HP       882
                                LIST  G                                                    1HP       883
                1756    TEPO    EQU   *-1                                                  1HP       884
                                ECHO  1,ERRCODE=("DREC")                                   1HP       885
                                CON   EPO._ERRCODE          "TXT._ERRCODE" ERROR           1HP       886
1757    0040                    CON   EPO.CP          CHANNEL PARITY ERROR                 *ECHO*  .1
1760    0040                    CON   EPO.CS          CONTROLLER STOP ERROR                *ECHO*  .1
1761    0040                    CON   EPO.RA          CONTROLLER MEMORY ERROR              *ECHO*  .1
1762    0040                    CON   EPO.FT          FUNCTION TIMEOUT ERROR               *ECHO*  .1
1763    0040                    CON   EPO.CF          CHANNEL FAILURE ERROR                *ECHO*  .1
1764    0040                    CON   EPO.ID          DATA TRANSFER ERROR                  *ECHO*  .1
1765    0040                    CON   EPO.DF          DIAGNOSTIC FAILURE ERROR             *ECHO*  .1
1766    0040                    CON   EPO.ME          MEDIA ERROR                          *ECHO*  .1
1767    0040                    CON   EPO.AD          ADDRESS ERROR                        *ECHO*  .1
1770    0040                    CON   EPO.ST          DEVICE STATUS ERROR                  *ECHO*  .1
1771    0040                    CON   EPO.SK          SEEK TIMEOUT ERROR                   *ECHO*  .1
1772    0040                    CON   EPO.IW          ISD WRITE TIMEOUT ERROR              *ECHO*  .1
1773    0001                    CON   EPO.LN          LOGICAL NOT READY ERROR              *ECHO*  .1
1774    0001                    CON   EPO.NR          HARDWARE NOT READY ERROR             *ECHO*  .1
1775    0010                    CON   EPO.RS          DRIVE RESERVE ERROR                  *ECHO*  .1
1776    0010                    CON   EPO.CR          CONTROLLER RESERVE ERROR             *ECHO*  .1
1777    0001                    CON   EPO.RD          REDEFINE ERROR                       *ECHO*  .1
2000    0040                    CON   EPO.SA          STATISTICAL DATA ERROR               *ECHO*  .1
                                LIST  *                                                    1HP       887



                        **      TMNE - TABLE OF ERROR CODE MNEMONICS.                      1HP       889
                                                                                           1HP       890
                                LIST  G                                                    1HP       891
                2000    TMNE    EQU   *-1                                                  1HP       892
                                ECHO  1,ERRCODE=("DREC")                                   1HP       893
                                CON   EMN._ERRCODE          "TXT._ERRCODE" ERROR           1HP       894
2001    0320                    CON   EMN.CP          CHANNEL PARITY ERROR                 *ECHO*  .1
2002    0323                    CON   EMN.CS          CONTROLLER STOP ERROR                *ECHO*  .1
2003    2201                    CON   EMN.RA          CONTROLLER MEMORY ERROR              *ECHO*  .1
2004    0624                    CON   EMN.FT          FUNCTION TIMEOUT ERROR               *ECHO*  .1
2005    0306                    CON   EMN.CF          CHANNEL FAILURE ERROR                *ECHO*  .1
2006    1104                    CON   EMN.ID          DATA TRANSFER ERROR                  *ECHO*  .1
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2007  0406  CON   EMN.DF  DIAGNOSTIC FAILURE ERROR  *ECHO*  .1
2010  1505  CON   EMN.ME  MEDIA ERROR  *ECHO*  .1
2011  0104  CON   EMN.AD  ADDRESS ERROR  *ECHO*  .1
2012  2324  CON   EMN.ST  DEVICE STATUS ERROR  *ECHO*  .1
2013  2313  CON   EMN.SK  SEEK TIMEOUT ERROR  *ECHO*  .1
2014  1127  CON   EMN.IW  ISD WRITE TIMEOUT ERROR  *ECHO*  .1
2015  1416  CON   EMN.LN  LOGICAL NOT READY ERROR  *ECHO*  .1
2016  1622  CON   EMN.NR  HARDWARE NOT READY ERROR  *ECHO*  .1
2017  2223  CON   EMN.RS  DRIVE RESERVE ERROR  *ECHO*  .1
2020  0322  CON   EMN.CR  CONTROLLER RESERVE ERROR  *ECHO*  .1
2021  2204  CON   EMN.RD  REDEFINE ERROR  *ECHO*  .1
2022  2301  CON   EMN.SA  STATISTICAL DATA ERROR  *ECHO*  .1
      LIST  *  1HP  895
```

```
**  TREC - TABLE OF RETRY COUNTS.  1HP  897
                                   1HP  898
      LIST  G                      1HP  899
2022  TREC  EQU   *-1              1HP  900
      ECHO  1,ERRCODE=("DREC")     1HP  901
      CON   RTC._ERRCODE  "TXT._ERRCODE" ERROR  1HP  902
2023  0004  CON   RTC.CP  CHANNEL PARITY ERROR  *ECHO*  .1
2024  0002  CON   RTC.CS  CONTROLLER STOP ERROR  *ECHO*  .1
2025  0002  CON   RTC.RA  CONTROLLER MEMORY ERROR  *ECHO*  .1
2026  0004  CON   RTC.FT  FUNCTION TIMEOUT ERROR  *ECHO*  .1
2027  0012  CON   RTC.CF  CHANNEL FAILURE ERROR  *ECHO*  .1
2030  0012  CON   RTC.ID  DATA TRANSFER ERROR  *ECHO*  .1
2031  0000  CON   RTC.DF  DIAGNOSTIC FAILURE ERROR  *ECHO*  .1
2032  0012  CON   RTC.ME  MEDIA ERROR  *ECHO*  .1
2033  0000  CON   RTC.AD  ADDRESS ERROR  *ECHO*  .1
2034  0012  CON   RTC.ST  DEVICE STATUS ERROR  *ECHO*  .1
2035  0004  CON   RTC.SK  SEEK TIMEOUT ERROR  *ECHO*  .1
2036  0004  CON   RTC.IW  ISD WRITE TIMEOUT ERROR  *ECHO*  .1
2037  0000  CON   RTC.LN  LOGICAL NOT READY ERROR  *ECHO*  .1
2040  0012  CON   RTC.NR  HARDWARE NOT READY ERROR  *ECHO*  .1
2041  0076  CON   RTC.RS  DRIVE RESERVE ERROR  *ECHO*  .1
2042  0076  CON   RTC.CR  CONTROLLER RESERVE ERROR  *ECHO*  .1
2043  0077  CON   RTC.RD  REDEFINE ERROR  *ECHO*  .1
2044  0077  CON   RTC.SA  STATISTICAL DATA ERROR  *ECHO*  .1
      LIST  *  1HP  903
```

```
**  TSYM - TABLE OF BML SYMPTOM CODES.  1HP  905
                                        1HP  906
      LIST  G                           1HP  907
2044  TSYM  EQU   *-1                   1HP  908
      ECHO  1,ERRCODE=("DREC")          1HP  909
      CON   SYM._ERRCODE  "TXT._ERRCODE" ERROR  1HP  910
2045  0024  CON   SYM.CP  CHANNEL PARITY ERROR  *ECHO*  .1
2046  0051  CON   SYM.CS  CONTROLLER STOP ERROR  *ECHO*  .1
2047  0063  CON   SYM.RA  CONTROLLER MEMORY ERROR  *ECHO*  .1
2050  0050  CON   SYM.FT  FUNCTION TIMEOUT ERROR  *ECHO*  .1
2051  0023  CON   SYM.CF  CHANNEL FAILURE ERROR  *ECHO*  .1
```

```
2052          0005                         CON    SYM.ID          DATA TRANSFER ERROR                 *ECHO*  .1
2053          0064                         CON    SYM.DF          DIAGNOSTIC FAILURE ERROR            *ECHO*  .1
2054          0040                         CON    SYM.ME          MEDIA ERROR                         *ECHO*  .1
2055          0100                         CON    SYM.AD          ADDRESS ERROR                       *ECHO*  .1
2056          0102                         CON    SYM.ST          DEVICE STATUS ERROR                 *ECHO*  .1
2057          0106                         CON    SYM.SK          SEEK TIMEOUT ERROR                  *ECHO*  .1
2060          0107                         CON    SYM.IW          ISD WRITE TIMEOUT ERROR             *ECHO*  .1
2061          0000                         CON    SYM.LN          LOGICAL NOT READY ERROR             *ECHO*  .1
2062          0043                         CON    SYM.NR          HARDWARE NOT READY ERROR            *ECHO*  .1
2063          0056                         CON    SYM.RS          DRIVE RESERVE ERROR                 *ECHO*  .1
2064          0103                         CON    SYM.CR          CONTROLLER RESERVE ERROR            *ECHO*  .1
2065          0000                         CON    SYM.RD          REDEFINE ERROR                      *ECHO*  .1
2066          0102                         CON    SYM.SA          STATISTICAL DATA ERROR              *ECHO*  .1
                                           LIST   *                                                   1HP         911


                                 **        FNC - FUNCTION CHANNEL.                                    1HP         913
                                 *                                                                    1HP         914
                                 *         ENTRY  (A) = FUNCTION CODE.                                1HP         915
                                 *                                                                    1HP         916
                                 *         EXIT   (A)  .LT. 0 IF CHANNEL ACTIVE UPON ENTRY OR FUNCTION  1HP         917
                                 *                            TIMEOUT.  (EC) = COMPLEMENT OF ERROR CODE.  1HP         918
                                 *                     .GE. 0 IF NO ERROR.                            1HP         919
                                 *                                                                    1HP         920
                                 *         USES   EC.                                                 1HP         921
                                                                                                      1HP         922
                                                                                                      1HP         923
2067          7400                FNC6     ACN    CH            ACTIVATE CHANNEL                      1HP         924
2070          1400                         LDN    0             SET REPLY STATUS                      1HP         925
                                                                                                      1HP         926
2071          0100 2071           FNC      SUBR                 ENTRY/EXIT                            1HP         927
2073          5400 2120                    STM    FNCA          SAVE FUNCTION CODE                    1HP         928
2075          6400 2116                    AJM    FNC5,CH       IF CHANNEL IS STILL ACTIVE            1HP         929
2077          7600                         FAN    CH            FUNCTION CHANNEL                      1HP         930
                                                                                                      1HP         931
                                 *         THE DRIVER MUST WAIT AT LEAST 300 MS BEFORE TIMING OUT THE  1HP         932
                                 *         FUNCTION.                                                  1HP         933
                                                                                                      1HP         934
2100          3170                FNC1     ADD    ON                                                  1HP         935
2101          6500 2067                    IJM    FNC6,CH       IF FUNCTION ACCEPTED                  1HP         936
2103          0574                         NJN    FNC1          IF NOT TIMEOUT YET                    1HP         937
2104          1504                FNC2     LCN    FTOE          SET COMPLEMENT OF *FTOE* ERROR CODE   1HP         938
2105          3422                FNC3     STD    EC                                                  1HP         939
2106          6700 2113                    EJM    FNC4,CH       IF CHANNEL IS EMPTY                   1HP         940
2110          1401                         LDN    1             SAVE LAST FUNCTION ISSUED             1HP         941
2111          7100 2120                    IAM    FNCA,CH                                             1HP         942
2113          1500                FNC4     LCN    0             SET ERROR REPLY STATUS                1HP         943
2114          7540                         DCN    CH+40                                               1HP         944
2115          0353                         UJN    FNCX          RETURN                                1HP         945
                                                                                                      1HP         946
2116          1505                FNC5     LCN    CHFE          SET *CHANNEL FAILURE* ERROR CODE      1HP         947
2117          0365                         UJN    FNC3          INPUT DATA/FUNCTION FROM CHANNEL      1HP         948
                                                                                                      1HP         949
                                                                                                      1HP         950
2120          7777                FNCA     CON    -0            CURRENT FUNCTION                      1HP         951
```

```
                                      **      GDS - GET DETAILED STATUS.                                    1HP         953
                                      *                                                                     1HP         954
                                      *       THIS ROUTINE OBTAINS THE DETAILED STATUS FROM THE CONTROLLER. 1HP         955
                                      *                                                                     1HP         956
                                      *       EXIT   (A) .EQ. 0 IF STATUS OBTAINED.                         1HP         957
                                      *                  .LT. 0 IF STATUS NOT OBTAINED.                     1HP         958
                                      *              (EC) = COMPLEMENT OF *IDTE* ERROR CODE IF INCOMPLETE   1HP         959
                                      *                     TRANSFER OCCURS.                                1HP         960
                                      *                                                                     1HP         961
                                      *       USES   EC, T1.                                                1HP         962
                                      *                                                                     1HP         963
                                      *       CALLS  CCP, FNC.                                              1HP         964
                                                                                                            1HP         965
                                                                                                            1HP         966
 2121          1506                    GDS1   LCN    IDTE         SET *INCOMPLETE DATA TRANSFER* ERROR CODE 1HP         967
 2122          3422                    GDS2   STD    EC                                                     1HP         968
 2123          1423                    GDS3   LDN    MXSL-1       INVALIDATE DETAILED STATUS                1HP         969
 2124          3401                           STD    T1                                                     1HP         970
 2125          1500                    GDS4   LCN    0                                                      1HP         971
 2126          5401 2357                      STM    DST,T1                                                 1HP         972
 2130          3701                           SOD    T1                                                     1HP         973
 2131          0673                           PJN    GDS4         IF MORE BYTES                             1HP         974
                                                                                                            1HP         975
 2132          0100 2132               GDS    SUBR                ENTRY/EXIT                                1HP         976
 2134          1423                           LDN    FCDS         ISSUE DETAILED STATUS FUNCTION            1HP         977
 2135          0200 2072                      RJM    FNC                                                    1HP         978
 2137          0763                           MJN    GDS3         IF ERROR                                  1HP         979
 2140          1424                           LDN    MXSL                                                   1HP         980
 2141          7100 2357                      IAM    DST,CH       INPUT DETAILED STATUS                     1HP         981
 2143          0555                           NJN    GDS1         IF INCOMPLETE DATA TRANSFER               1HP         982
 2144          0200 1150                      RJM    CCP          CHECK FOR CHANNEL PARITY ERROR            1HP         983
 2146          0463                           ZJN    GDSX         IF NO CHANNEL PARITY ERROR                1HP         984
 2147          0352                           UJN    GDS2         INVALIDATE STATUS AND RETURN              1HP         985


                                      **      GGS - GET GENERAL STATUS.                                     1HP         987
                                      *                                                                     1HP         988
                                      *       THIS ROUTINE OBTAINS THE EXTENDED GENERAL STATUS FROM THE     1HP         989
                                      *       CONTROLLER.                                                   1HP         990
                                      *                                                                     1HP         991
                                      *       EXIT   (A) .GE. 0 IF GENERAL STATUS OBTAINED.  (GS) = STATUS. 1HP         992
                                      *                  .LT. 0 IF STATUS NOT OBTAINED.  (GS) = 7777.       1HP         993
                                      *              (EC) = COMPLEMENT OF *IDTE* ERROR CODE IF INCOMPLETE   1HP         994
                                      *                     TRANSFER OCCURRED.                              1HP         995
                                      *                   = COMPLEMENT OF *CHPE* ERROR CODE IF CHANNEL      1HP         996
                                      *                     ERROR OCCURRED.                                 1HP         997
                                      *                                                                     1HP         998
                                      *       USES   EC, GS, T1.                                            1HP         999
                                      *                                                                     1HP        1000
                                      *       CALLS  CCP, FNC.                                              1HP        1001
                                                                                                            1HP        1002
                                                                                                            1HP        1003
 2150          1506                    GGS1   LCN    IDTE         SET *INCOMPLETE DATA TRANSFER* ERROR CODE 1HP        1004
 2151          3422                    GGS2   STD    EC                                                     1HP        1005
 2152          1404                    GGS3   LDN    FCESL-1      INVALIDATE EXTENDED GENERAL STATUS        1HP        1006
```

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2153         3401                      STD   T1                                            1HP         1007
2154         1500             GGS4     LCN   0                                             1HP         1008
2155         5401 2213                 STM   GGSA,T1                                       1HP         1009
2157         3701                      SOD   T1                                            1HP         1010
2160         0673                      PJN   GGS4         IF MORE BYTES                    1HP         1011
2161         1500                      LCN   0            INVALIDATE GENERAL STATUS        1HP         1012
2162         3453             GGS5     STD   GS                                            1HP         1013
                                                                                           1HP         1014
2163         0100 2163        GGS      SUBR               ENTRY/EXIT                       1HP         1015
2165         5000 2120                 LDM   FNCA         SAVE FUNCTION BEFORE GENERAL STATUS  1HP     1016
2167         5400 2220                 STM   GGSB                                          1HP         1017
2171         1466                      LDN   FCES         ISSUE EXTENDED GENERAL STATUS FUNCTION  1HP  1018
2172         0200 2072                 RJM   FNC                                           1HP         1019
2174         0755                      MJN   GGS3         IF ERROR                         1HP         1020
2175         1405                      LDN   FCESL                                         1HP         1021
2176         7100 2213                 IAM   GGSA,CH                                       1HP         1022
2200         0547                      NJN   GGS1         IF INCOMPLETE TRANSFER           1HP         1023
2201         0200 1150                 RJM   CCP          CHECK FOR CHANNEL PARITY ERROR   1HP         1024
2203         0745                      MJN   GGS2         IF CHANNEL PARITY ERROR          1HP         1025
2204         5000 2220                 LDM   GGSB         RESTORE LAST FUNCTION FOR ERROR PROCESSOR  1HP  1026
2206         5400 2120                 STM   FNCA                                          1HP         1027
2210         5000 2213                 LDM   GGSA                                          1HP         1028
2212         0347                      UJN   GGS5         SAVE FIRST STATUS BYTE           1HP         1029
                                                                                           1HP         1030
2213                        5 GGSA     BSS   FCESL        EXTENDED GENERAL STATUS BUFFER   1HP         1031
2220                        1 GGSB     BSS   1            LAST FUNCTION BEFORE GENERAL STATUS  1HP     1032


                             **        IBM - ISSUE BML MESSAGE.                            1HP         1072
                             *                                                             1HP         1073
                             *         THIS ROUTINE BUILDS A BML MESSAGE AND CALLS ROUTINE *IMB* TO  NS2769   105
                             *         ISSUE THE MESSAGE TO THE BML.                       1HP         1075
                             *                                                             1HP         1076
                             *         ENTRY  (CA - CA+3) = SEEK PARAMETERS.               252L678       6
                             *                (EC) = ERROR CODE.                           1HP         1078
                             *                (ER) = RECOVERY IN PROGRESS FLAG.            1HP         1079
                             *                (RC) = RETRY COUNT.                          1HP         1080
                             *                (RS) = RECOVERY STATUS.                      1HP         1081
                             *                       777X INITIAL RETRY.                   1HP         1082
                             *                       0    RECOVERED BY CONTROLLER.         1HP         1083
                             *                       1    RECOVERED BY DRIVER.             1HP         1084
                             *                       2    UNRESOLVED.                      1HP         1085
                             *                       3    UNRECOVERED.                     1HP         1086
                             *                (RW) = READ/WRITE FLAG.                      1HP         1087
                             *                (T5) = EST ORDINAL.                          1HP         1088
                             *                (BMLGS) = GENERAL STATUS.                    1HP         1089
                             *                (DST - DST+23) = DETAILED STATUS IF APPLICABLE.  1HP     1090
                             *                                                             1HP         1091
                             *         EXIT   (RC) INCREMENTED IF FIRST RETRY.             NS2732A       9
                             *                                                             NS2732        3
                             *         USES   RC, T1, CM+1 - CM+3.                         NS2769      106
                             *                                                             1HP         1093
                             *         CALLS  IMB.                                         NS2769      107
                             *                                                             NS2769      108
                             *         MACROS MONITOR.                                     NS2769      109
```

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                                                                                        1HP       1095
                                                                                        1HP       1096
2221        0100 2221        IBM      SUBR                ENTRY/EXIT                    1HP       1097
2223        5022 1734                 LDM    TEPF,EC                                    1HP       1098
2225        1065                      SHN    0-12                                       1HP       1099
2226        0472                      ZJN    IBMX         IF NO BML MESSAGE/ERROR COUNT INCREMENT  1HP  1100
2227        3016                      LDD    RS                                         NS2519       3
2230        1102                      LMN    2                                          1HP       1107
2231        0467                      ZJN    IBMX         IF UNRESOLVED ERROR           1HP       1108
2232        1006                      SHN    21-13                                      1HP       1109
2233        0605                      PJN    IBM2         IF FINAL RETRY                1HP       1110
2234        3065                      LDD    RC                                         1HP       1111
2235        0563                      NJN    IBMX         IF NOT INITIAL RETRY          1HP       1112
2236        3665                      AOD    RC           INCREMENT RETRY COUNT         NS2732A     10
2237        0314                      UJN    IBM3         CONTINUE                      1HP       1113
                                                                                        1HP       1114
                             *        INCREMENT ERROR COUNTER.                          NS2769     110
                                                                                        NS2769     111
2240        3005             IBM2     LDD    T5           SET EST ORDINAL               NS2769     112
2241        3411                      STD    CM+1                                       NS2769     113
2242        3016                      LDD    RS           SET BYTE NUMBER               NS2769     114
2243        1076                      SHN    -1                                         NS2769     115
2244        1603                      ADN    3                                          NS2769     116
2245        3412                      STD    CM+2                                       NS2769     117
2246        1415                      LDK    ICTS         SET SUBFUNCTION               NS2769     118
2247        3413                      STD    CM+3                                       NS2769     119
2250        1442                      MONITOR  SMDM                                     NS2769     120
2253        3016             IBM3     LDD    RS           SET RECOVERED/UNRECOVERED FLAG  1HP     1116
2254        1605                      ADN    5                                          1HP       1117
2255        1074                      SHN    -3                                         1HP       1118
2256        1201                      LPN    1                                          1HP       1119
2257        3401                      STD    T1                                         1HP       1121
2260        2000 3000                 LDC    /COMSDFS/D1HP*400  STORE SYMPTOM CODE      1HP       1122
2262        5322 2044                 LMM    TSYM,EC                                    1HP       1123
2264        5400 2341                 STM    BMLSC                                      1HP       1124
2266        2300 3040                 LMK    /COMSDFS/HS0040+/COMSDFS/D1HP*400          1HP       1125
2270        0504                      NJN    IBM4         IF NOT A MEDIA ERROR          1HP       1126
2271        3023                      LDD    RW           SET WRITE MEDIA ERROR SYMPTOM CODE  1HP  1127
                          0           ERRNZ  /COMSDFS/HS0041-/COMSDFS/HS0040-1  ERROR   1HP       1128
2272        5500 2341                 RAM    BMLSC                                      1HP       1129
2274        3065             IBM4     LDD    RC           STORE RETRY COUNT             1HP       1130
2275        1005                      SHN    6-1                                        1HP       1131
2276        3123                      ADD    RW           ADD READ/WRITE FLAG           1HP       1132
2277        1001                      SHN    1                                          1HP       1133
2300        3101                      ADD    T1           ADD RECOVERY STATUS           1HP       1134
2301        5400 2346                 STM    BMLRC                                      1HP       1135
2303        3060                      LDD    CA           UNIT NUMBER                   1HP       1136
2304        1277                      LPN    77                                         1HP       1137
2305        5400 2343                 STM    BMLUN                                      1HP       1138
2307        3005                      LDD    T5           EST ORDINAL                   1HP       1139
2310        5400 2345                 STM    BMLEO                                      1HP       1140
2312        3022                      LDD    EC           ERROR CODE                    252L678      9
2313        5400 2352                 STM    BMLEC                                      252L678     10
2315        3061                      LDD    CA+1         CYLINDER                      252L678     11
2316        5400 2353                 STM    BMLCY                                      252L678     12
2320        3062                      LDD    CA+2         TRACK AND SECTOR              252L678     13
2321        1006                      SHN    6                                          252L678     14
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2322         3363                     LMD    CA+3                                                252L678     15
2323         5400 2354                STM    BMLTS                                               252L678     16
2325         2000 2333                LDC    BML         ISSUE *BML* MESSAGE                     NS2769     121
2327         0200 4074                RJM    IMB         ISSUE MESSAGE TO BUFFER                 NS2769     122
2331         0100 2221                UJP    IBMX        RETURN                                  1HP       1152


                                *     BINARY MAINTENANCE LOG MESSAGE.                            1HP       1154
                                                                                                 1HP       1155
2333                             BML      BSS    0                                               1HP       1156
                                                                                                 1HP       1162
2333         0000                HDR1     VFD    36/0        RESERVED                            1HP       1163
2334         0000
2335         0000
2336         0010                         VFD    12/BMS1LC   LENGTH OF MESSAGE                   252L678     19
2337         0003                         VFD    12/MLDY     MESSAGE TYPE                        252L678     20
                                                                                                 1HP       1166
2340         0014                         VFD    12//COMSDFS/RM0014   MESSAGE ID                 1HP       1167
                                                                                                 1HP       1168
2341         30                  BMLSC    VFD    4//COMSDFS/D1HP      DRIVER TYPE                1HP       1169
              0                           VFD    1/0         RESERVED                            1HP       1170
              000                         VFD    7/0         SYMPTOM CODE                        1HP       1171
                                                                                                 1HP       1172
2342         00                  BMLPP    VFD    6/          PP NUMBER                           1HP       1173
               00                         VFD    6/          CHANNEL NUMBER                      1HP       1174
                                                                                                 1HP       1175
2343         00                  BMLUN    VFD    6/0         EQUIPMENT NUMBER                    1HP       1176
               00                         VFD    6/          UNIT NUMBER                         1HP       1177
                                                                                                 1HP       1178
2344         0000                         VFD    12/0        RESERVED                            1HP       1179
                                                                                                 1HP       1180
2345         0000                BMLEO    VFD    12/         EST ORDINAL                         1HP       1181
                                                                                                 1HP       1182
2346         00                  BMLRC    VFD    6/          RETRY COUNT                         1HP       1183
               00                         VFD    4/0         RESERVED                            252L678     21
                0                         VFD    1/0         READ OPERATION                      1HP       1187
                                *         VFD    1/1         WRITE OPERATION                     1HP       1188
                0                         VFD    1/0         RECOVERED ERROR                     1HP       1189
                                *         VFD    1/1         UNRECOVERED ERROR                   1HP       1190
                                                                                                 1HP       1191
2347         00                  BMLCR    VFD    6/          CHANNEL USED FOR RECOVERY           1HP       1192
               00                         VFD    6/0         RESERVED                            1HP       1193
                                                                                                 1HP       1194
2350         0000                BMLMF    VFD    12/         MAINFRAME ID                        1HP       1195
                                                                                                 1HP       1196
2351         0000                         VFD    12/0        RESERVED                            1HP       1197
                                                                                                 1HP       1198
                          17     HDR1L    EQU    *-HDR1      HEADER LENGTH (PP WORDS)            1HP       1199
                           3     HDR1LC   EQU    HDR1L/5     HEADER LENGTH (CM WORDS)            1HP       1200
                                                                                                 252L678     22
2352         0000                BMLEC    VFD    12/         ERROR CODE                          252L678     23
                                                                                                 252L678     24
2353         0000                BMLCY    VFD    12/         CYLINDER                            252L678     25
                                                                                                 252L678     26
2354         0000                BMLTS    VFD    12/         TRACK AND SECTOR                    252L678     27
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                                                                                       252L678     28
2355         0000                    BMLLF    VFD    12/         LAST FUNCTION         252L678     29
                                                                                       252L678     30
2356         0000                    BMLGS    VFD    12/         GENERAL STATUS        252L678     31
                                                                                       1HP       1201
                                    *         DETAILED STATUS.                         1HP       1202
                                                                                       1HP       1203
2357                        24       DST      BSS    MXSL                              1HP       1204
                                                                                       1HP       1205
                            50       BMS1L    EQU    *-BML       LENGTH OF MESSAGE (PP WORDS)  252L678     32
                            54       .A       SET    BMS1L+4                           252L678     33
                            10       BMS1LC   EQU    .A/5        LENGTH OF MESSAGE (CM WORDS)  252L678     34


                                    **        IIC - ISSUE I/O COMPLETION REQUEST.      1HP       1548
                                    *                                                  1HP       1549
                                    *         ENTRY  (CC) = COMPLETION COUNT.          1HP       1550
                                    *                (PB) = PREVIOUS BUFFER ORDINAL, IF ANY.  1HP       1551
                                    *                                                  1HP       1552
                                    *         EXIT   (PB) = 0.                         1HP       1553
                                    *                                                  1HP       1554
                                    *         USES   CC ,PB.                           1HP       1555
                                    *                                                  1HP       1556
                                    *         CALLS  CRQ.                              1HP       1557
                                                                                       1HP       1558
                                                                                       1HP       1559
2403         0100 2403               IIC      SUBR               ENTRY/EXIT            1HP       1560
2405         3050                             LDD    PB                                1HP       1561
2406         0404                             ZJN    IIC1        IF NO PREVIOUS BUFFER ORDINAL  1HP       1562
2407         3620                             AOD    CC          INCREMENT COMPLETION COUNT     1HP       1563
2410         1400                             LDN    0           CLEAR PREVIOUS BUFFER ORDINAL  1HP       1564
2411         3450                             STD    PB                                1HP       1565
2412         3020                    IIC1     LDD    CC                                1HP       1566
2413         1000                             SHN    **                                1HP       1567
                          2413       IICA     EQU    *-1                               1HP       1568
2414         0466                             ZJN    IICX        IF NOT AT THRESHOLD   1HP       1569
2415         0200 1511                        RJM    CRQ         ISSUE COMPLETION REQUEST  1HP       1570
2417         0363                             UJN    IICX        RETURN                1HP       1571
                                                                                       1HP       1572
                                                                                       1HP       1573
2420                                 IICB     BSS    0                                 NS2446       8
2420         1077                             CON    SHNI+77-0                         NS2446       9
2421         1076                             CON    SHNI+77-1                         NS2446      10
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                                **      IMF - ISSUE MONITOR FUNCTION.                                   1HP       1577
                                *                                                                     1HP       1578
                                *       ENTRY  (A) = MONITOR FUNCTION CODE.                           1HP       1579
                                *                                                                     1HP       1580
                                *       EXIT   (A) = 0.                                               1HP       1581
                                *              (CM - CM+4) = COMPLETED PP OUTPUT REGISTER IMAGE.       1HP       1582
                                *                                                                     1HP       1583
                                *       USES   S1.                                                    1HP       1584
                                *                                                                     1HP       1585
                                *       CALLS  CRQ, FTN.                                              1HP       1586
                                                                                                      1HP       1587
                                                                                                      1HP       1588
2422            0100 2422        IMF    SUBR                ENTRY/EXIT                            1HP       1589
2424            3421                    STD    S1           SAVE MONITOR FUNCTION CODE            1HP       1590
2425            0200 1511        IMF1   RJM    CRQ          CHECK FOR FUNCTION REISSUE REQUIRED   1HP       1591
2427            0575                    NJN    IMF1         IF PREVIOUS FUNCTION NOT YET COMPLETE 1HP       1592
2430            3021                    LDD    S1                                                 1HP       1593
2431            0200 0165               RJM    FTN          ISSUE MONITOR FUNCTION                1HP       1594
2433            0366                    UJN    IMFX         RETURN                                1HP       1595


                                **      ISF - ISSUE SEEK OPERATION.                                     1HP       1675
                                *                                                                     1HP       1676
                                *       THIS ROUTINE ISSUES THE SEEK FUNCTION.                        1HP       1677
                                *                                                                     1HP       1678
                                *       ENTRY  (CB) = BUFFER ORDINAL.                                 1HP       1679
                                *              (CS) = CHANNEL RESERVATION STATUS.                     1HP       1680
                                *                                                                     1HP       1681
                                *       EXIT   (A) .EQ. 0 IF UNIT ON-CYLINDER.                        1HP       1682
                                *                  .NE. 0 IF CONTROLLER RESERVED TO OPPOSITE ACCESS,   1HP       1683
                                *                         DRIVE RESERVED TO OTHER CONTROLLER, OR      1HP       1684
                                *                         POSITIONER BUSY.                            1HP       1685
                                *              (CA - CA+2) = PHYSICAL ADDRESS OF FIRST SECTOR IN       1HP       1686
                                *                            BUFFER.                                  1HP       1687
                                *              (CS) = BIT 3 SET IF CONTROLLER HARDWARE RESERVE IS     1HP       1688
                                *                     HELD.  BIT 3 IS CLEAR IF *OPERATION COMPLETE*   1HP       1689
                                *                     FUNCTION WAS ISSUED.                            1HP       1690
                                *              TO *ERR* IF ERROR.                                     1HP       1691
                                *                                                                     1HP       1692
                                *       USES   CS, EC, CA - CA+4, CM - CM+4.                          1HP       1693
                                *                                                                     1HP       1694
                                *       CALLS  ERR, FNC, GGS, RHR.                                    1HP       1695
                                *                                                                     1HP       1696
                                *       MACROS CCBA.                                                  1HP       1697
                                                                                                      1HP       1698
                                                                                                      1HP       1699
2434            0100 2434        ISF    SUBR                ENTRY/EXIT                            1HP       1700
2436            3051                    CCBA   PAD1         GET DISK ADDRESS FROM CBT ENTRY       NS2454       4
2442            6060                    CRD    CA                                                 1HP       1711
2443            3060                    LDD    CA           SET OPTION SELECT FLAGS               1HP       1712
2444            2300 0100               LMC    SOSF                                               NS2446      21
                                *       LMC    SOSF+4000    (PRIORITY OVERRIDE REQUIRED)          NS2446      22
                        2445    ISFA    EQU    *-1                                                NS2446      23
2446            3460                    STD    CA                                                 1HP       1715
2447            3062                    LDD    CA+2         SET HEAD NUMBER                       1HP       1716
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2450         1014                  SHN   14                                        1HP       1717
2451         3462                  STD   CA+2                                      1HP       1718
2452         1063                  SHN   -14         SET SECTOR NUMBER             1HP       1719
2453         3463                  STD   CA+3                                      1HP       1720
2454         3046                  LDD   CS                                        NS2454       5
2455         1210                  LPN   10                                        NS2454       6
2456         0510                  NJN   ISF1        IF CONTROLLER ALREADY CONNECTED  NS2454    7
2457         0200 2164             RJM   GGS         GET GENERAL STATUS            NS2454       8
2461         0710                  MJN   ISF2        IF GENERAL STATUS WAS NOT OBTAINED  NS2454 9
2462         1007                  SHN   21-12                                     NS2454      10
2463         0750                  MJP   ISFX        IF COUPLER RESERVED ON OTHER ACCESS  NS2454 11
2464         1410                  LDN   10          SET HARDWARE RESERVE FLAG     NS2454      12
2465         3546                  RAD   CS                                        NS2454      13
2466         1401           ISF1   LDN   FCSK        ISSUE SEEK FUNCTION           NS2454      14
2467         0200 2072             RJM   FNC                                       1HP       1722
2471         0715           ISF2   MJN   ISF5        IF ERROR                      1HP       1723
2472         1404                  LDN   FCSKL       OUTPUT SEEK PARAMETERS        1HP       1724
2473         7300 0060             OAM   CA,CH                                     1HP       1725
2475         0403                  ZJN   ISF3        IF ALL DATA WAS TAKEN         1HP       1726
2476         1506                  LCN   IDTE        SET *INCOMPLETE DATA TRANSFER* ERROR CODE  1HP  1727
2477         0306                  UJN   ISF4        PROCESS ERROR                 1HP       1728
                                                                                   1HP       1729
2500         6700 2510      ISF3   EJM   ISF6,CH     IF LAST BYTE TRANSFERRED      1HP       1730
2502         1701                  SBN   1                                         1HP       1731
2503         0574                  NJN   ISF3        IF NOT TIMEOUT                1HP       1732
2504         1505                  LCN   CHFE        SET *CHANNEL FAILURE* ERROR CODE  1HP   1733
2505         3422           ISF4   STD   EC                                        1HP       1734
2506         0200 1604      ISF5   RJM   ERR         CALL ERROR PROCESSOR          1HP       1735
                                                                                   1HP       1736
2510         7540           ISF6   DCN   CH+40                                     1HP       1737
2511         0200 2164             RJM   GGS         GET GENERAL STATUS            1HP       1738
2513         0412                  ZJN   ISF8        IF NO ERROR AND ON-CYLINDER   1HP       1739
2514         0771                  MJN   ISF5        IF STATUS WAS NOT OBTAINED    1HP       1740
2515         1016                  SHN   21-3                                      1HP       1741
2516         0703                  MJN   ISF7        IF UNIT IS RESERVED TO OTHER ACCESS  1HP 1742
2517         1002                  SHN   3-1                                       1HP       1743
2520         0665                  PJN   ISF5        IF ERROR                      1HP       1744
2521         0200 3010      ISF7   RJM   RHR         RELEASE HARDWARE RESERVES     1HP       1745
2523         0562                  NJN   ISF5        IF ERROR                      1HP       1746
2524         1401                  LDN   1           INDICATE NOT ON CYLINDER      1HP       1747
2525         0100 2434      ISF8   LJM   ISFX        RETURN                        1HP       1748
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                                **        OVI - OBTAIN AND VERIFY *PUT* INTERLOCK.                        1HP       1750
                                *                                                                       1HP       1751
                                *         THIS ROUTINE ATTEMPTS TO OBTAIN THE *PUT* INTERLOCK AND IF     1HP       1752
                                *         SUCCESSFUL, VERIFIES THAT THE BUFFER FOR WHICH THE SEEK WAS    1HP       1753
                                *         ISSUED IS STILL CURRENT IN THE QUEUE.                         1HP       1754
                                *                                                                       1HP       1755
                                *         ENTRY  (CA+1 - CA+3) = ADDRESS USED FOR SEEK.                 1HP       1756
                                *                (CB) = BUFFER ORDINAL.                                 1HP       1757
                                *                (ER) = RECOVERY IN PROGRESS FLAG.                      1HP       1758
                                *                (IL) = NONZERO IF THE *PUT* INTERLOCK IS ALREADY HELD. 1HP       1759
                                *                (PO) = *PUT* ORDINAL.                                  1HP       1760
                                *                                                                       1HP       1761
                                *         EXIT   (A) = 0 IF *PUT* ENTRY IS INTERLOCKED AND BUFFER IS     1HP       1762
                                *                      STILL CURRENT IN QUEUE.                          1HP       1763
                                *                  = NONZERO IF *PUT* ENTRY IS INTERLOCKED BY OTHER   1HP       1764
                                *                      DRIVER OR THE BUFFER FOR WHICH THE SEEK WAS    1HP       1765
                                *                      PERFORMED HAS ALREADY BEEN PROCESSED BY THE    1HP       1766
                                *                      OTHER DRIVER.                                  1HP       1767
                                *                (IL) = 1 IF (A) = 0.                                   1HP       1768
                                *                                                                       1HP       1769
                                *         USES   IL, CM+1 - CM+2, CN - CN+4.                            1HP       1770
                                *                                                                       1HP       1771
                                *         CALLS  RPI.                                                   1HP       1772
                                *                                                                       1HP       1773
                                *         MACROS CCBA, CPTA, MONITOR.                                   NS2468       1
                                                                                                        1HP       1775
                                                                                                        1HP       1776
2527            1400            OVI2    LDN    0           INDICATE *PUT* INTERLOCKED AND BUFFER OK    1HP       1777
                                                                                                        1HP       1778
2530            0100 2530       OVI     SUBR               ENTRY/EXIT                               1HP       1779
2532            3024                    LDD    IL                                                      1HP       1780
2533            0573                    NJN    OVI2        IF THIS DRIVER ALREADY HAS *PUT* INTERLOCK  1HP       1781
                                *       LDK    SUIS                                                    1HP10        5
                              0         ERRNZ  SUIS        CODE DEPENDS ON VALUE                       1HP10        6
2534            3411                    STD    CM+1                                                    1HP       1783
2535            3066                    LDD    PO                                                      1HP       1784
2536            3412                    STD    CM+2                                                    1HP       1785
2537            1450                    MONITOR  BIOM      ISSUE INTERLOCK REQUEST                     1HP       1786
2542            3011                    LDD    CM+1                                                    1HP       1787
2543            0564                    NJN    OVIX        IF *PUT* IS INTERLOCKED BY OTHER DRIVER     1HP       1788
2544            3624                    AOD    IL          SET *PUT* INTERLOCK FLAG                    1HP       1789
2545            2000 0000               LDC    CREQ        UPDATE *CCT* TABLE                          1HP       1790
                          2545  OVIA    EQU    *-2         (*CCT* FWA SET BY *PRS*)                    1HP       1791
2547            6224                    CWD    IL                                                      1HP       1792
2550            3017                    LDD    ER                                                      1HP       1793
2551            0555                    NJN    OVI2        IF RECOVERY IN PROGRESS                     1HP       1794
                                                                                                        1HP       1795
                                *       VERIFY THAT THE BUFFER FOR WHICH THE SEEK WAS ISSUED IS STILL 1HP       1796
                                *       CURRENT IN THE QUEUE.                                           1HP       1797
                                                                                                        1HP       1798
2552            3066                    CPTA   UNCT                                                    NS2468       2
2556            6033                    CRD    CN                                                      NS2468       3
2557            3036                    LDD    CN+3                                                    NS2468       4
2560            3351                    LMD    CB                                                      NS2468       5
2561            0526                    NJN    OVI1        IF CURRENT CBT ORDINAL CHANGED              NS2468       6
2562            3051                    CCBA   HSLK        GET *PUT* ORDINAL FROM CBT ENTRY            1HP       1799
2566            6033                    CRD    CN                                                      1HP       1800
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2567          3037                       LDD    CN+4                                      1HP        1801
2570          3366                       LMD    PO                                        1HP        1802
2571          0516                       NJN    OVI1         IF *PUT* ORDINALS DO NOT MATCH 1HP      1803
2572          3051                       CCBA   PAD1         GET PHYSICAL ADDRESS FROM CBT ENTRY 1HP  1804
2576          6033                       CRD    CN                                        1HP        1805
2577          3034                       LDD    CN+1                                      1HP        1806
2600          3361                       LMD    CA+1                                      1HP        1807
2601          0506                       NJN    OVI1         IF NO CYLINDER MATCH         1HP        1808
2602          3062                       LDD    CA+2         TRACK                        1HP        1809
2603          1006                       SHN    6                                         1HP        1810
2604          3363                       LMD    CA+3         SECTOR                       1HP        1811
2605          3335                       LMD    CN+2                                      1HP        1812
2606          0404                       ZJN    OVI1.1       IF BUFFER OK                 1HP        1813
2607          0200 3242        OVI1      RJM    RPI          RELEASE *PUT* INTERLOCK      1HP        1814
2611          1401                       LDN    1            INDICATE VERIFICATION FAILURE 1HP       1815
2612          0100 2530        OVI1.1    UJP    OVIX         RETURN                       1HP        1816


                              **         PCH - PROCESS CHANNEL REQUEST.                   1HP        1818
                              *                                                           1HP        1819
                              *          THIS ROUTINE IS CALLED TO ISSUE A READ, WRITE OR CONTINUE 1HP 1820
                              *          FUNCTION TO THE CONTROLLER.                      1HP        1821
                              *                                                           1HP        1822
                              *          ENTRY  (A) = FUNCTION CODE.                      1HP        1823
                              *                 (CD - CD+1) = EXTENDED MEMORY ADDRESS.    1HP        1824
                              *                 (CD+2 - CD+5) = SHORT PRU FLAGS IF WRITE REQUEST. 1HP 1825
                              *                 (RW) = READ/WRITE FLAG.                   1HP        1826
                              *                                                           1HP        1827
                              *          EXIT   (A) .EQ. 0 IF COMPLETED SUCCESSFULLY.     1HP        1828
                              *                     .LT. 0 IF FUNCTION TIMEOUT, INCOMPLETE DATA 1HP  1829
                              *                            TRANSFER OR CHANNEL FAILURE.   1HP        1830
                              *                 (EC) = COMPLEMENT OF *IDTE* ERROR CODE IF DATA 1HP   1831
                              *                        TRANSFER ERROR.                    1HP        1832
                              *                                                           1HP        1833
                              *          USES   EC.                                       1HP        1834
                              *                                                           1HP        1835
                              *          CALLS  FNC.                                      1HP        1836
                                                                                          1HP        1837
                                                                                          1HP        1838
2614          1506             PCH3      LCN    IDTE         SET *INCOMPLETE DATA TRANSFER* ERROR CODE 1HP 1839
2615          3422             PCH4      STD    EC                                        1HP        1840
                                                                                          1HP        1841
2616          0100 2616        PCH       SUBR                ENTRY/EXIT                   1HP        1842
2620          0200 2072                  RJM    FNC          FUNCTION CHANNEL             1HP        1843
2622          0773                       MJN    PCHX         IF ERROR                     1HP        1844
2623          2000 0000                  LDC    **           OUTPUT PARAMETERS            1HP        1845
                        2624   PCHA      EQU    *-1          (PARAMETER BLOCK SIZE)       1HP        1846
2625          7300 0040                  OAM    CD,CH                                     1HP        1847
2627          0564                       NJN    PCH3         IF INCOMPLETE DATA TRANSFER  1HP        1848
2630          6700 2636        PCH1      EJM    PCH2,CH      IF LAST BYTE ACCEPTED        1HP        1849
2632          1701                       SBN    1                                         1HP        1850
2633          0574                       NJN    PCH1         IF NOT TIMEOUT               1HP        1851
2634          1505                       LCN    CHFE         SET *CHANNEL FAILURE* ERROR CODE 1HP    1852
2635          0357                       UJN    PCH4         SET ERROR CODE               1HP        1853
                                                                                          1HP        1854
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2636      7540           PCH2      DCN    CH+40B                           1HP       1855
2637      1400                     LDN    0           SET REPLY = SUCCESSFUL 1HP     1856
2640      0355                     UJN    PCHX        RETURN               1HP       1857


                        **         PDT - PROCESS DATA TRANSFER.            1HP       1859
                        *                                                  1HP       1860
                        *          THIS ROUTINE PREPARES FOR AND STARTS THE DATA TRANSFER WHEN A 1HP 1861
                        *          REQUEST IS FOUND IN THE *PUT* AND THE SEEK HAS COMPLETED.  IT 1HP 1862
                        *          WILL CALL THE PROPER ROUTINE FOR THE DIRECTION OF THE I/O.    1HP 1863
                        *          THIS ROUTINE WILL RETURN TO THE MAIN LOOP ONLY WHEN THE       1HP 1864
                        *          TRANSFER CANNOT CONTINUE ON THE CURRENT UNIT.                 1HP 1865
                        *                                                  1HP       1866
                        *          ENTRY  (EC) = ERROR CODE, IF RECOVERY IS IN PROGRESS.         1HP 1867
                        *                 (PO) = *PUT* ORDINAL.            1HP       1868
                        *                 (RW) = READ/WRITE FLAG.          1HP       1869
                        *                                                  1HP       1870
                        *          USES   NB, PB, PI, T1, T7, CD - CD+1, CN+2 - CN+4.    1HP 1871
                        *                                                  1HP       1872
                        *          CALLS  ERR, OVI, RHR, RIO, RPI, WIO.    1HP       1873
                        *                                                  1HP       1874
                        *          MACROS CCBA.                            1HP       1875
                                                                           1HP       1876
                                                                           1HP       1877
2641      0100 2641      PDT       SUBR               ENTRY/EXIT           1HP       1878
2643      5023 2712                LDM    PDTB,RW     STORE PARAMETER BLOCK LENGTH       1HP 1879
2645      5400 2624                STM    PCHA                             1HP       1880
2647      0200 2531                RJM    OVI         OBTAIN *PUT* INTERLOCK AND VERIFY BUFFER   1HP 1881
2651      0524                     NJN    PDT1        IF UNABLE TO INTERLOCK *PUT*/WRONG BUFFER  1HP 1882
2652      3447                     STD    NB          CLEAR NEXT BUFFER ORDINAL          1HP 1883
2653      3450                     STD    PB          CLEAR PREVIOUS BUFFER ORDINAL      1HP 1884
2654      3432                     STD    PI          SET *PADN* WORD OFFSET             1HP 1885
2655      5023 2420                LDM    IICB,RW                          1HP       1886
2657      5400 2413                STM    IICA                             1HP       1887
2661      5023 2710                LDM    PDTA,RW     STORE SUBROUTINE ADDRESS           1HP 1888
2663      3401                     STD    T1                               1HP       1889
2664      3051                     CCBA   IOLK                             1HP       1890
2670      6035                     CRD    CD-3                             1HP       1891
                    0              ERRNZ  CD-CN-5     CODE IS VALUE DEPENDENT            1HP 1892
2671      1410                     LDN    PPSLB       SET SECTOR COUNT     1HP       1893
2672      3407                     STD    T7                               1HP       1894
2673      0201 0000                RJM    0,T1        ENTER DATA TRANSFER ROUTINE        1HP 1895
                                                                           1HP       1896
                        *          CONTROL RETURNS HERE AFTER THE DATA TRANSFER IS COMPLETED.    1HP 1897
                                                                           1HP       1898
2675      0200 3010      PDT1      RJM    RHR         RELEASE HARDWARE RESERVES          1HP 1899
2677      0405                     ZJN    PDT2        IF NO ERROR          1HP       1900
2700      3022                     LDD    EC                               1HP       1901
2701      0503                     NJN    PDT2        IF ERROR RECOVERY IN PROGRESS      1HP 1902
2702      0200 1604                RJM    ERR         CALL ERROR PROCESSOR 1HP       1903
                                                                           1HP       1904
2704      0200 3242      PDT2      RJM    RPI         RELEASE *PUT* INTERLOCK            1HP 1905
2706      0100 2641                UJP    PDTX        RETURN               1HP       1906
                                                                           1HP       1907
2710                     PDTA      BSS    0           PROCESSOR ADDRESS TABLE            1HP 1908
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2710          3027                    CON    RIO                                                 1HP        1909
2711          3744                    CON    WIO                                                 1HP        1910
                                                                                                 1HP        1911
2712                         PDTB     BSS    0             PARAMETER BLOCK LENGTH TABLE          1HP        1912
2712          0002                    CON    FCRDL                                               1HP        1913
2713          0006                    CON    FCWRL                                               1HP        1914



                            **        PFR - PREPARE FOR RETRY ATTEMPT.                           1HP        1916
                            *                                                                    1HP        1917
                            *         THIS ROUTINE DOES WHATEVER IS NECESSARY TO PREPARE FOR THE    1HP        1918
                            *         NEXT RETRY ATTEMPT.  ITS DUTIES INCLUDE PLUGGING INSTRUCTIONS 1HP        1919
                            *         TO FORCE RETURN TO THE ERROR PROCESSOR FOLLOWING RECOVERY.    1HP        1920
                            *                                                                    1HP        1921
                            *         ENTRY  (RW) = READ/WRITE FLAG.                             1HP        1922
                            *                                                                    1HP        1923
                            *         USES   T1, T2.                                             1HP        1924
                                                                                                 1HP        1925
                                                                                                 1HP        1926
2714          0100 2714      PFR      SUBR                 ENTRY/EXIT                            1HP        1927
2716          3023                    LDD    RW                                                  1HP        1928
2717          1001                    SHN    1                                                   1HP        1929
2720          3401                    STD    T1                                                  1HP        1930
2721          5001 2730               LDM    PFRA,T1                                             1HP        1931
2723          3402                    STD    T2                                                  1HP        1932
2724          5001 2731               LDM    PFRA+1,T1                                           1HP        1933
2726          4402                    STI    T2                                                  1HP        1934
2727          0364                    UJN    PFRX          RETURN                                1HP        1935
                                                                                                 1HP        1936
2730                         PFRA     BSS    0                                                   1HP        1937
2730          3134 3026               CON    RIOA,RIOX                                           1HP        1938
2732          4042 4046               CON    WIOA,WIO6.1                                         NS2454       15



                            **        PRE - PRESET ERROR PROCESSOR.                              1HP        1941
                            *                                                                    1HP        1942
                            *         THIS ROUTINE PERFORMS OPERATIONS NECESSARY TO PREPARE THE   1HP        1943
                            *         DRIVER FOR ERROR PROCESSOR EXECUTION.                      1HP        1944
                            *                                                                    1HP        1945
                            *         EXIT   (A) = 0 IF ERROR PROCESSING SHOULD CONTINUE.        1HP        1946
                            *                (RS) = RECOVERY STATUS.                             1HP        1947
                            *                (T5) = EST ORDINAL.                                 1HP        1948
                            *                (TEPA) = 1 IF VERIFICATION/INTERLOCK REJECT.        1HP        1949
                            *                                                                    1HP        1950
                            *         USES   RS, T5, CM - CM+4.                                  1HP        1951
                            *                                                                    1HP        1952
                            *         CALLS  CRQ, OVI.                                           1HP        1953
                            *                                                                    1HP        1954
                            *         MACROS CPTA.                                               1HP        1955
                                                                                                 1HP        1956
                                                                                                 1HP        1957
2734          5600 3665      PRE2     AOM    TEPA          SET VERIFICATION/INTERLOCK REJECT FLAG  1HP        1958
2736          3416                    STD    RS            FORCE EXIT TO *MST*                   1HP        1959
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                                                                                          1HP       1960
 2737         0100 2737         PRE      SUBR                 ENTRY/EXIT                  1HP       1961
 2741         7540                       DCN    CH+40         DISCONNECT CHANNEL IN CASE STILL ACTIVE  1HP  1962
 2742         5000 2120                  LDM    FNCA          SAVE CURRENT FUNCTION       1HP       1963
 2744         5400 2355                  STM    BMLLF                                     1HP       1964
 2746         1500                       LCN    0             INITIALIZE RECOVERY STATUS  1HP       1965
 2747         3416                       STD    RS                                        1HP       1966
 2750         3071                       LDD    HN                                        NS2446      24
                             0           ERRNZ  SOSF-100      CODE DEPENDS ON VALUE       NS2446      25
 2751         5400 2445                  STM    ISFA                                      NS2446      26
 2753         0200 2531                  RJM    OVI           GET *PUT* INTERLOCK (IF NOT ALREADY HELD)  1HP  1967
 2755         0556                       NJN    PRE2          IF INTERLOCK NOT OBTAINED   1HP       1968
 2756         3066                       CPTA   UNCT          GET EST ORDINAL             1HP       1969
 2762         6010                       CRD    CM                                        1HP       1970
 2763         3011                       LDD    CM+1                                      1HP       1971
 2764         3405                       STD    T5                                        1HP       1972
 2765         0200 1511         PRE1     RJM    CRQ           ENSURE NO PENDING MONITOR FUNCTIONS  1HP  1973
 2767         0575                       NJN    PRE1          IF FUNCTION STILL PENDING   1HP       1974
 2770         0346                       UJN    PREX          RETURN                      1HP       1975



                                **       RCH - REQUEST CHANNEL.                           1HP       1977
                                *                                                         1HP       1978
                                *        ENTRY  (IR+4) = CHANNEL NUMBER.                  1HP       1979
                                *               (CS) = CHANNEL RESERVATION STATUS.        1HP       1980
                                *                                                         1HP       1981
                                *        EXIT   (A)  .NE. 0 IF CHANNEL ASSIGNED.          1HP       1982
                                *                    .EQ. 0 IF CHANNEL NOT ASSIGNED.      1HP       1983
                                *                                                         1HP       1984
                                *        USES   CM+1, CS.                                 1HP       1985
                                *                                                         1HP       1986
                                *        MACROS MONITOR.                                  1HP       1987
                                                                                          1HP       1988
                                                                                          1HP       1989
 2771         0100 2771         RCH      SUBR                 ENTRY/EXIT                  1HP       1990
 2773         3046                       LDD    CS                                        1HP       1991
 2774         1201                       LPN    1                                         1HP       1992
 2775         0573                       NJN    RCHX          IF CHANNEL ALREADY ASSIGNED 1HP       1993
 2776         3054                       LDD    IR+4                                      1HP       1994
 2777         3411                       STD    CM+1                                      1HP       1995
 3000         1403                       MONITOR  CCHM                                    1HP       1996
 3003         3012                       LDD    CM+2                                      1HP       1997
 3004         0464                       ZJN    RCHX          IF CHANNEL NOT ASSIGNED     1HP       1998
 3005         3646                       AOD    CS            SET CHANNEL RESERVATION FLAG  1HP     1999
 3006         0362                       UJN    RCHX          RETURN                      1HP       2000
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                                         **         RHR - RELEASE HARDWARE RESERVES.                          1HP        2055
                                         *                                                                    1HP        2056
                                         *          ENTRY  (CS) = CHANNEL STATUS.                             1HP        2057
                                         *                                                                    1HP        2058
                                         *          EXIT   (A) = 0 IF NO ERROR.                               1HP        2059
                                         *                                                                    1HP        2060
                                         *          USES   CS, S1.                                            1HP        2061
                                         *                                                                    1HP        2062
                                         *          CALLS  FNC.                                               1HP        2063
                                                                                                              1HP        2064
                                                                                                              1HP        2065
 3007             0100 3007               RHR       SUBR                   ENTRY/EXIT                         1HP        2066
 3011             3046                              LDD    CS                                                 1HP        2067
 3012             1210                              LPN    10                                                 1HP        2068
 3013             0473                              ZJN    RHRX            IF CONTROLLER NOT RESERVED         1HP        2069
 3014             1410                              LDN    FCOC            ISSUE *OPERATION COMPLETE* FUNCTION 1HP       2070
 3015             0200 2072                         RJM    FNC                                                1HP        2071
 3017             1056                              SHN    0-21            SAVE ERROR STATUS                  1HP        2072
 3020             3421                              STD    S1                                                 1HP        2073
 3021             7540                              DCN    CH+40                                              1HP        2074
 3022             1510                              LCN    10              CLEAR CONTROLLER RESERVE FLAG      1HP        2075
 3023             3546                              RAD    CS                                                 1HP        2076
 3024             3021                              LDD    S1              SET REPLY STATUS                   1HP        2077
 3025             0361                              UJN    RHRX            RETURN                             1HP        2078


                                         **         RIO - PERFORM READ OPERATION.                             1HP        2080
                                         *                                                                    1HP        2081
                                         *          ENTRY  (CB) = CURRENT BUFFER ORDINAL.                     1HP        2082
                                         *                 (CD - CD+1) = BUFFER ADDRESS.                      1HP        2083
                                         *                 (NB) = 0.                                          1HP        2084
                                         *                 (PB) = 0.                                          1HP        2085
                                         *                 (PI) = 0.                                          1HP        2086
                                         *                 (T7) = *PPSLB*.                                    1HP        2087
                                         *                                                                    1HP        2088
                                         *          EXIT   (PB) = ORDINAL OF LAST BUFFER PROCESSED.           1HP        2089
                                         *                                                                    1HP        2090
                                         *          USES   CB, PB, PI, T7, CD - CD+1, CM - CM+4, CN+2 - CN+4. 1HP        2091
                                         *                                                                    1HP        2092
                                         *          CALLS  CCS, CRQ, ERR, GGS, IIC, PCH.                      1HP        2093
                                         *                                                                    1HP        2094
                                         *          MACROS CCBA.                                              1HP        2095
                                                                                                              1HP        2096
                                                                                                              1HP        2097
 3026             0100 3026               RIO       SUBR                   ENTRY/EXIT                         1HP        2098
 3030             1404                    RIO1      LDN    FCRD            ISSUE READ FUNCTION                1HP        2099
 3031             0200 2617                         RJM    PCH                                                1HP        2100
 3033             0736                              MJN    RIO4            IF ERROR                           1HP        2101
 3034             0200 2404                         RJM    IIC             CHECK FOR NEED TO ISSUE COMPLETION REQUEST 1HP 2102
 3036             3007                              LDD    T7                                                 1HP        2103
 3037             1201                              LPN    1                                                  1HP        2104
 3040             0424                              ZJN    RIO3            IF FIRST SECTOR OF CONTROL WORD    1HP        2105
 3041             3051                              CCBA   PAD1            UPDATE PRU FLAGS                   1HP        2106
 3045             3132                              ADD    PI                                                 1HP        2107
 3046             6010                              CRD    CM                                                 1HP        2108
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3047          5000 2216                 LDM    GGSA+3                                      1HP        2109
3051          3413                      STD    CM+3                                        1HP        2110
3052          5000 2217                 LDM    GGSA+4        UPDATE LINKAGE BYTE           1HP        2111
3054          3414                      STD    CM+4                                        1HP        2112
3055          3051                      CCBA   PAD1                                        1HP        2113
3061          3132                      ADD    PI                                          1HP        2114
3062          6210                      CWD    CM                                          1HP        2115
3063          3632                      AOD    PI            INCREMENT *PADN* WORD OFFSET  1HP        2116
3064          0200 1214          RIO3   RJM    CCS           CHECK FOR CONSECUTIVE REQUEST 1HP        2117
3066          0200 2164                 RJM    GGS           GET GENERAL STATUS            1HP        2118
3070          0403                      ZJN    RIO5          IF NO ERROR                   1HP        2119
3071          0200 1604          RIO4   RJM    ERR           PROCESS ERROR                 1HP        2120
3073          3663               RIO5   AOD    CA+3          ADVANCE CURRENT POSITION      1HP        2121
3074          1140                      LMN    PSPT                                        1HP        2122
3075          0503                      NJN    RIO6          IF NOT END OF TRACK           1HP        2123
3076          3463                      STD    CA+3          RESET TO SECTOR 0             1HP        2124
3077          3662                      AOD    CA+2          ADVANCE TO NEXT TRACK         1HP        2125
3100          3707               RIO6   SOD    T7            DECREMENT SECTOR COUNT        1HP        2126
3101          0410                      ZJN    RIO7          IF FINISHED WITH BUFFER       1HP        2127
3102          2000 0400                 LDC    EMAI          INCREMENT EXTENDED MEMORY ADDRESS 1HP    2128
3104          3541                      RAD    CD+1                                        1HP        2129
3105          1063                      SHN    -14                                         1HP        2130
3106          3540                      RAD    CD                                          1HP        2131
3107          0100 3030                 LJM    RIO1          READ NEXT SECTOR              1HP        2132
                                                                                           1HP        2133
3111          3432               RIO7   STD    PI            RESET *PADN* WORD OFFSET      1HP        2134
3112          0200 1214                 RJM    CCS           CHECK FOR CONSECUTIVE REQUEST 1HP        2135
3114          3051                      LDD    CB            ADVANCE BUFFER POINTERS       1HP        2136
3115          3450                      STD    PB                                          1HP        2137
3116          3047                      LDD    NB                                          1HP        2138
3117          3451                      STD    CB                                          1HP        2139
3120          0503                      ZJP    RIOX          IF NO CONSECUTIVE REQUEST FOUND 1HP      2140
3123          1003                      CCBA   IOLK,A        INITIALIZE EXTENDED MEMORY ADDRESS 1HP   2141
3126          6035                      CRD    CD-3                                        1HP        2142
                             0          ERRNZ  CD-CN-5       CODE IS VALUE DEPENDENT       1HP        2143
3127          1410                      LDN    PPSLB         RESET SECTOR COUNT            1HP        2144
3130          3407                      STD    T7                                          1HP        2145
3131          1400                      LDN    0             CLEAR NEXT BUFFER ORDINAL     1HP        2146
3132          3447                      STD    NB                                          1HP        2147
3133          0100 3030                 LJM    RIO1          CONTINUE TRANSFER             1HP        2148
                                  *     LJM    RIOX          (ERROR RECOVERY IN PROGRESS)  1HP        2149
                          3134   RIOA   EQU    *-1                                         1HP        2150
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                                **        RLC - RELOAD CONTROLWARE.                                 1HP       2152
                                *                                                                   1HP       2153
                                *         THIS ROUTINE CALLS *1DS* TO INITIATE THE CONTROLWARE RELOAD.  NS2507       5
                                *                                                                   1HP       2156
                                *         EXIT   (A) = 0 IF CONTROLWARE RELOADED.                   1HP       2157
                                *                                                                   1HP       2158
                                *         USES   S2, CM - CM+4, CN - CN+4.                          NS2446      33
                                *                                                                   1HP       2160
                                *         CALLS  *1DS*.                                             1HP       2161
                                *                                                                   1HP       2162
                                *         MACROS DELAY, EXECUTE, MONITOR.                           1HP       2163
                                                                                                    1HP       2164
                                                                                                    1HP       2165
      3135      1401             RLC6     LDN    1            INDICATE CONTROLWARE NOT RELOADED     1HP       2166
                                                                                                    1HP       2167
      3136      0100 3136        RLC      SUBR                ENTRY/EXIT                            1HP       2168
      3140      2000 0000                 LDC    **                                                 NS2507       6
                           3141  RLCJ     EQU    *-1                                                NS2507       7
      3142      0573                      NJN    RLCX         IF RELOAD WAS ALREADY ATTEMPTED       NS2507       8
      3143      1472                      LDK    DSSL         AVOID CONTROLWARE LOAD DURING DEADSTART  1HP    2169
      3144      6010                      CRD    CM                                                 1HP       2170
      3145      3014                      LDD    CM+4                                               1HP       2171
      3146      1204                      LPN    4                                                  1HP       2172
      3147      0566                      NJN    RLCX         IF DEADSTART IN PROGRESS              1HP       2173
      3150      2000 0000                 LDC    **           READ CONTROLWARE TABLE                1HP       2174
                           3151  RLCA     EQU    *-1          CM ADDRESS OF TABLE ENTRY             1HP       2175
      3152      6010                      CRD    CM                                                 1HP       2176
      3153      3010                      LDD    CM+**                                              1HP       2177
                           3153  RLCB     EQU    *-1          BYTE ADDRESS OF TABLE ENTRY           1HP       2178
      3154      1006                      SHN    21-13                                              NS2507       9
      3155      0760                      MJN    RLCX         IF RELOAD IN PROGRESS                 NS2507      10
      3156      1063                      SHN    13-21-6                                            NS2507      11
      3157      1207                      LPN    7            CONTROLWARE LOAD COUNT                1HP       2180
      3160      1107                      LMK    CRTH                                               1HP       2181
      3161      0453                      ZJN    RLC6         IF RELOAD LIMIT REACHED               1HP       2182
      3162      5600 3141                 AOM    RLCJ         SET RELOAD ATTEMPTED FLAG             NS2507      12
                                                                                                    1HP       2183
                                *         SET RELOAD REQUEST BIT IN CONTROLWARE TABLE.              1HP       2184
                                                                                                    1HP       2185
      3164      1400                      LDN    0                                                  1HP       2186
      3165      3412                      STD    CM+2                                               1HP       2187
      3166      3077                      LDD    MA           MESSAGE BUFFER ADDRESS                1HP       2188
      3167      6370 3227                 CWM    RLCG,ON      REQUEST WORD                          1HP       2189
      3171      2000 0000                 LDC    **                                                 1HP       2190
                           3172  RLCC     EQU    *-1          ADDRESS OF CONTROLWARE TABLE ENTRY    1HP       2191
      3173      3414                      STD    CM+4                                               1HP       2192
      3174      1063                      SHN    -14                                                1HP       2193
      3175      3413                      STD    CM+3                                               1HP       2194
      3176      1401                      LDN    1            NUMBER OF REQUESTS TO PROCESS         1HP       2195
      3177      3411                      STD    CM+1                                               1HP       2196
      3200      2000 0115                 MONITOR  UTEM                                             1HP       2197
                                *         LDN    0            INITIALIZE RETRY COUNT                NS2446      34
      3204      3467                      STD    S2                                                 NS2446      35
                                                                                                    1HP       2198
                                *         CALL *1DS* TO INITIATE CONTROLWARE LOAD JOB.              1HP       2199
                                                                                                    1HP       2200
      3205      5000 0255        RLC1     DELAY                                                     1HP       2201
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 3211          3077                 LDD    MA           MESSAGE BUFFER ADDRESS              1HP       2202
 3212          6370 3234            CWM    RLCH,ON      *1DS* REQUEST                       1HP       2203
                                    EXECUTE  1DS,=                                          1HP       2204
 3214          2000 0100            MONITOR  RPPM       REQUEST PP                          1HP       2205
 3220          3011                 LDD    CM+1                                             1HP       2206
 3221          0504                 NJN    RLC2         IF PP ASSIGNED                      NS2507      13
 3222          3667                 AOD    S2           INCREMENT RETRY COUNT               NS2446      37
 3223          1110                 LMK    PCRL                                             NS2446      38
 3224          0560                 NJN    RLC1         IF NOT RETRY LIMIT                  NS2507      14
 3225          0100 3136   RLC2     LJM    RLCX         RETURN                              NS2507      15
                                                                                            1HP       2234
                                                                                            1HP       2235
 3227          0001        RLCG     VFD    1/0,5/0,6/1,6/,42/1 *UTEM* REQUEST               1HP       2236
 3230          0000
 3231          0000
 3232          0000
 3233          0001
 3234          3404        RLCH     VFD    18/3L1DS,6/,12/ILJF,24/0  *1DS* REQUEST          1HP       2237
 3235          2300
 3236          0023
 3237          0000
 3240          0000


                           **       RPI - RELEASE *PUT* INTERLOCK.                          1HP       2239
                           *                                                                1HP       2240
                           *        ENTRY  (CC) = COMPLETION COUNT.                         1HP       2241
                           *               (IL) = *PUT* INTERLOCK FLAG.                     1HP       2242
                           *               (PB) = PREVIOUS BUFFER ORDINAL.                  1HP       2243
                           *               (PO) = *PUT* ORDINAL.                            1HP       2244
                           *               (TB) = TOTAL CBT COUNT.                          1HP       2245
                           *                                                                1HP       2246
                           *        USES   CC, IL, PB, CM - CM+4.                           1HP       2247
                           *                                                                1HP       2248
                           *        MACROS MONITOR.                                         1HP       2249
                                                                                            1HP       2250
                                                                                            1HP       2251
 3241          0100 3241   RPI      SUBR                ENTRY/EXIT                          1HP       2252
 3243          3024                 LDD    IL                                               1HP       2253
 3244          0474                 ZJN    RPIX         IF *PUT* NOT INTERLOCKED            1HP       2254
 3245          3052                 LDD    TB           SET TOTAL BUFFER COUNT              1HP       2255
 3246          3414                 STD    CM+4                                             1HP       2256
 3247          3050                 LDD    PB                                               1HP       2257
 3250          0402                 ZJN    RPI1         IF NO PREVIOUS BUFFER               1HP       2258
 3251          1401                 LDN    1            ACCOUNT FOR PREVIOUS BUFFER         1HP       2259
 3252          3120        RPI1     ADD    CC                                               1HP       2260
 3253          2300 4000            LMC    4000         SET *RELEASE INTERLOCK* FLAG        1HP       2261
 3255          3413                 STD    CM+3                                             1HP       2262
 3256          3066                 LDD    PO                                               1HP       2263
 3257          3412                 STD    CM+2                                             1HP       2264
 3260          1401                 LDN    DCBS         CLEAR UNIT INTERLOCK                1HP       2265
 3261          3411                 STD    CM+1                                             1HP       2266
 3262          1400                 LDN    0            CLEAR COMPLETION COUNT BEFORE *CRQ* CALL   1HP       2267
 3263          3420                 STD    CC                                               1HP       2268
 3264          1450                 MONITOR  BIOM                                           1HP       2269
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                                       *        LDN    0                                              1HP        2270
3267          3424                              STD    IL           CLEAR *PUT* INTERLOCK FLAG        1HP        2271
3270          3450                              STD    PB           CLEAR PREVIOUS BUFFER ORDINAL     1HP        2272
3271          2000 0000                         LDC    CREQ         UPDATE *CCT* TABLE                1HP        2273
                         3271           RPIA    EQU    *-2          (*CCT* FWA SET BY *PRS*)          1HP        2274
3273          6224                              CWD    IL                                             1HP        2275
3274          0344                              UJP    RPIX         RETURN                            1HP        2276


                                       **       RTM - REQUEST TRACK FLAW IF MEDIA ERROR.              252L678      47
                                       *                                                              252L678      48
                                       *        THIS ROUTINE DETERMINES IF THE ERROR RESULTED FROM A MEDIA    252L678      49
                                       *        FAILURE.  IF IT DID, *CPUMTR* WILL BE CALLED TO PLACE THE     252L678      50
                                       *        LOGICAL TRACK NUMBER IN THE MST SO *1MV* CAN PERFORM A MEDIA  252L678      51
                                       *        VERIFICATION WHEN THE TRACK IS RELEASED.  AN ERROR LOG        252L678      52
                                       *        MESSAGE IS ISSUED INFORMING THE OPERATOR THAT A MEDIA FAILURE 252L678      53
                                       *        OCCURRED BUT THE TRACK HAS NOT YET BEEN FLAWED BY THE SYSTEM. 252L678      54
                                       *                                                              252L678      55
                                       *        ENTRY  (CA - CA+3) = PHYSICAL ADDRESS.                252L678      56
                                       *               (CB) = BUFFER ORDINAL.                         252L678      57
                                       *               (EC) = ERROR CODE.                             252L678      58
                                       *               (T5) = EST ORDINAL.                            252L678      59
                                       *                                                              252L678      60
                                       *        USES   T1, CM - CM+4.                                 252L678      61
                                       *                                                              252L678      62
                                       *        CALLS C2D, IMB.                                       NS2769      123
                                       *                                                              252L678      64
                                       *        MACROS MONITOR.                                       252L678      65
                                                                                                      252L678      66
                                                                                                      252L678      67
3275          0100 3275                 RTM     SUBR                ENTRY/EXIT                        252L678      68
3277          3022                              LDD    EC                                             252L678      69
3300          1110                              LMK    PARE                                           252L678      70
3301          0573                              NJN    RTMX         IF NOT MEDIA ERROR                252L678      71
3302          3005                              LDD    T5           CONVERT AND STORE EST ORDINAL IN MESSAGE   252L678      72
3303          1074                              SHN    -3                                             252L678      73
3304          0200 4062                         RJM    C2D                                            252L678      74
3306          5400 3374                         STM    RTMB+1                                         252L678      75
3310          3005                              LDD    T5                                             252L678      76
3311          3411                              STD    CM+1         STORE EST ORDINAL FOR *SMDM*      253L688       2
3312          1207                              LPN    7                                              252L678      77
3313          1006                              SHN    6                                              252L678      78
3314          2100 3356                         ADC    2R0,                                           252L678      79
3316          5400 3375                         STM    RTMB+2                                         252L678      80
3320          3061                              LDD    CA+1         COMPUTE LOGICAL TRACK             252L678      81
3321          1001                              SHN    1                                              252L678      82
3322          2100 4000                         ADC    4000                                           252L678      83
3324          3412                              STD    CM+2                                           252L678      84
3325          3062                              LDD    CA+2         PHYSICAL TRACK                    252L678      85
3326          1277                              LPN    77                                             252L678      86
3327          1005                              SHN    5                                              252L678      87
                             0                  ERRNZ  PSPT-40      CODE DEPENDS ON VALUE             252L678      88
3330          3163                              ADD    CA+3                                           252L678      89
3331          2177 7537                         SBK    PSLTDB                                         252L678      90
3333          0702                              MJN    RTM1         IF FIRST LOGICAL TRACK OF CYLINDER   252L678      91
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3334          3612                        AOD    CM+2                                     252L678     92
3335          3012               RTM1     LDD    CM+2                                     NS2769     124
3336          1071                        SHN    -6          CONVERT UPPER 6 BITS         NS2769     125
3337          0200 4062                   RJM    C2D                                      NS2769     126
3341          5400 3377                   STM    RTMB+4      STORE RESULT IN DISPLAY BUFFER  NS2769  127
3343          3012                        LDD    CM+2        CONVERT LOWER 6 BITS         NS2769     128
3344          1277                        LPN    77                                       NS2769     129
3345          0200 4062                   RJM    C2D                                      NS2769     130
3347          5400 3400                   STM    RTMB+5      STORE RESULT IN DISPLAY BUFFER  NS2769  131
3351          1412                        LDK    SFTS        SET SUBFUNCTION              252L678     97
3352          3413                        STD    CM+3                                     252L678     98
3353          1442                        MONITOR  SMDM                                   253L688      3
3356          3011                        LDD    CM+1                                     252L678    100
3357          0505                        NJN    RTM2        IF THIS TRACK FLAW ALREADY REQUESTED  252L678  101
3360          2000 3366                   LDC    RTMA        ISSUE ERROR LOG MESSAGE      NS2769     132
3362          0200 4074                   RJM    IMB                                      NS2769     133
3364          0100 3275          RTM2     UJP    RTMX        RETURN                       252L678    104
                                                                                          252L678    105
                                                                                          252L678    106
3366          0000               RTMA     VFD    24/0        RESERVED                     271L716      4
3367          0000
3370          0001                        VFD    12/1        ERRLOG ALERT FLAG            271L716      5
3371          0006                        VFD    12/RTMAL    MESSAGE LENGTH               271L716      6
3372          0002                        VFD    12/ELDY     ERRLOG DAYFILE               271L716      7
                                                                                          271L716      8
3373          0521               RTMB     DATA   C*EQXXX,TKNNNN, MEDIA DEFECT ENCOUNTERED.*  271L716   9
                                                                                          271L716     10
                          36     .1       SET    *-RTMA+4                                 271L716     11
                           6     RTMAL    EQU    .1/5                                     271L716     12



                                **        SCD - SET DRIVER DROPPED FLAG.                  1HP       2278
                                *                                                         1HP       2279
                                *         THIS ROUTINE SETS A FLAG IN THE CONTROLWARE TABLE INDICATING  1HP  2280
                                *         THAT THE DRIVER OF THIS CHANNEL HAS DROPPED.    1HP       2281
                                *                                                         1HP       2282
                                *         EXIT   (A) = 0.                                 1HP       2283
                                *                                                         1HP       2284
                                *         USES   CM+1 - CM+4.                             1HP       2285
                                *                                                         1HP       2286
                                *         MACROS MONITOR.                                 1HP       2287
                                                                                          1HP       2288
                                                                                          1HP       2289
3420          0100 3420          SCD      SUBR               ENTRY/EXIT                   1HP       2290
3422          3077                        LDD    MA          STORE *UTEM* PARAMETERS      1HP       2291
3423          6370 3443                   CWM    SCDB,ON                                  1HP       2292
3425          2000 0000                   LDC    **                                       1HP       2293
                        3426     SCDA     EQU    *-1         (CONTROLWARE TABLE ADDRESS)  1HP       2294
3427          3414                        STD    CM+4                                     1HP       2295
3430          1063                        SHN    -14                                      1HP       2296
3431          3413                        STD    CM+3                                     1HP       2297
3432          1401                        LDN    1                                        1HP       2298
3433          3411                        STD    CM+1                                     1HP       2299
3434          1400                        LDN    0                                        1HP       2300
3435          3412                        STD    CM+2                                     1HP       2301
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3436          2000 0115                MONITOR  UTEM      SET DRIVER DROP FLAG                    1HP       2302
3442          0355                     UJN    SCDX        RETURN                                  1HP       2303
                                                                                                    1HP       2304
3443          0001               SCDB  VFD    1/0,5/0,6/1,6/,42/1                                  1HP       2305
3444          0000
3445          0000
3446          0000
3447          0001
                                 **    SSF - SET SUSPECT FLAG.                                      1HP       2307
                                 *                                                                  1HP       2308
                                 *     THIS ROUTINE SETS THE SUSPECT FLAG IN THE MST ENTRY VIA       1HP       2309
                                 *     AN *SEQM* MONITOR FUNCTION IF CERTAIN CRITERIA ARE MET.  IT  1HP       2310
                                 *     ALSO SETS AN ERROR CODE IN THE MST THAT APPEARS ON THE *E,M* 1HP       2311
                                 *     DISPLAY.                                                     1HP       2312
                                 *                                                                  1HP       2313
                                 *     ENTRY  (EC) = ERROR CODE.                                    1HP       2314
                                 *            (RC) = RETRY COUNT.                                   1HP       2315
                                 *            (T5) = EST ORDINAL.                                   1HP       2316
                                 *                                                                  1HP       2317
                                 *     USES   CM+1 - CM+3.                                          1HP       2318
                                 *                                                                  1HP       2319
                                 *     CALLS  RTM.                                                  252L678    117
                                 *                                                                  252L678    118
                                 *     MACROS MONITOR.                                              1HP       2320
                                                                                                    1HP       2321
                                                                                                    1HP       2322
3450          0100 3450          SSF   SUBR               ENTRY/EXIT                              1HP       2323
3452          3065                     LDD    RC                                                   1HP       2324
3453          1102                     LMK    SURT                                                 1HP       2325
3454          0573                     NJN    SSFX        IF NOT TIME TO SET SUSPECT FLAG          1HP       2326
3455          0200 3276                RJM    RTM         CHECK FOR MEDIA FAILURE                  252L678    119
3457          5022 1734                LDM    TEPF,EC                                              1HP       2327
3461          1012                     SHN    21-7                                                 1HP       2328
3462          0665                     PJN    SSFX        IF SUSPECT FLAG NOT TO BE SET            1HP       2329
3463          3005                     LDD    T5          SET SUSPECT FLAG                         1HP       2330
3464          3411                     STD    CM+1                                                 1HP       2331
3465          1422                     LDN    SSES                                                 1HP       2332
3466          3412                     STD    CM+2                                                 1HP       2333
3467          1420                     MONITOR  SEQM                                               1HP       2334
3472          3005                     LDD    T5          SET ERROR CODE IN MST                    1HP       2335
3473          3411                     STD    CM+1                                                 1HP       2336
3474          1421                     LDN    STDE                                                 1HP       2337
3475          3412                     STD    CM+2                                                 1HP       2338
3476          1404                     LDN    SERS                                                 1HP       2339
3477          3413                     STD    CM+3                                                 1HP       2340
3500          1442                     MONITOR  SMDM                                               253L688      4
3503          0344                     UJN    SSFX        RETURN                                   1HP       2342
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                                **        SUQ - SCAN UNIT QUEUE.                                  1HP        2344
                                *                                                                 1HP        2345
                                *         THIS ROUTINE SCANS THE *PUT* ENTRIES OF UNITS ACCESSED BY 1HP      2346
                                *         THIS CHANNEL UNTIL IT HAS SCANNED THE ENTIRE TABLE OR FINDS 1HP    2347
                                *         AN ENTRY ELIGIBLE FOR PROCESSING.                       1HP        2348
                                *                                                                 1HP        2349
                                *         ENTRY  (TI) = CURRENT *TPOR* INDEX.                     1HP        2350
                                *                                                                 1HP        2351
                                *         EXIT   (A) .EQ. 0 IF ENTIRE TABLE SCANNED AND NO ELIGIBLE 1HP      2352
                                *                                  ENTRY FOUND.                   1HP        2353
                                *                           .NE. 0 IF ENTRY SELECTED.             1HP        2354
                                *                (CB) = CURRENT BUFFER ORDINAL.                   1HP        2355
                                *                (ER) = 1 IF ERROR RECOVERY IS IN PROGRESS.       1HP        2356
                                *                (PO) = ORDINAL OF SELECTED *PUT* ENTRY.          1HP        2357
                                *                (RC) = 0 IF ELIGIBLE ENTRY FOUND AND *RECOVERY IN 1HP       2358
                                *                         PROGRESS* FLAG IS CLEAR.                1HP        2359
                                *                     = N/2 WHERE N IS THE RETRY LIMIT FOR THE ERROR 1HP     2360
                                *                         CODE SET IN *EC* IF *RECOVERY IN PROGRESS* 1HP     2361
                                *                         FLAG IS SET.                            1HP        2362
                                *                (RW) = READ/WRITE FLAG.                          1HP        2363
                                *                TO *ERR* IF ERROR RECOVERY IS IN PROGRESS FOR    1HP        2364
                                *                   SELECTED BUFFER.                              1HP        2365
                                *                (TB) = TOTAL BUFFER COUNT.                       1HP        2366
                                *                                                                 1HP        2367
                                *         USES   CB, EC, ER, PO, RC, RW, S1, TB, TI, CM - CM+4,   252L678     120
                                *                CN - CN+4, T1 - T5.                              252L678     121
                                *                                                                 1HP        2370
                                *         CALLS  ERR.                                             1HP        2371
                                *                                                                 1HP        2372
                                *         MACROS CCBA, CPTA, SFA.                                 1HP        2373
                                                                                                  1HP        2374
                                                                                                  1HP        2375
          3504         3057              SUQ7     LDD    TI                                       1HP        2376
          3505         1101                       LMN    1                                        1HP        2377
                                  3505   SUQA     EQU    *-1                                      1HP        2378
          3506         0503                       NJN    SUQ1          IF NOT FINISHED WITH *PUT* SCAN 1HP   2379
                                                                                                  1HP        2380
          3507         0100 3507         SUQ      SUBR                 ENTRY/EXIT                 1HP        2381
          3511         3657              SUQ1     AOD    TI            ADVANCE *TPOR* INDEX       1HP        2382
                                     0            ERRNZ  TPORE-1       CODE IS VALUE DEPENDENT    1HP        2383
          3512         5057 1124                  LDM    TPOR-1,TI                                1HP        2384
          3514         0503                       NJN    SUQ2          IF NOT END OF *TPOR* TABLE 1HP        2385
          3515         3457                       STD    TI            RESET INDEX                1HP        2386
          3516         0372                       UJN    SUQ1          CONTINUE                   1HP        2387
                                                                                                  1HP        2388
          3517         1014              SUQ2     SHN    14            SET CHANNEL BYTE INDEX     252L678     122
          3520         3421                       STD    S1                                       252L678     123
          3521         1063                       SHN    -14           SET *PUT* ORDINAL          252L678     124
          3522         3466                       STD    PO                                       252L678     125
          3523         1003                       CPTA   UNCT,A        READ *PUT* ENTRY           1HP        2390
          3526         6010                       CRD    CM                                       1HP        2391
          3527         3010                       LDD    CM                                       1HP        2392
          3530         1006                       SHN    21-13                                    1HP        2393
          3531         0752                       MJN    SUQ7          IF UNIT INTERLOCK SET      1HP        2394
          3532         3013                       LDD    CM+3                                     1HP        2395
          3533         0502                       NJN    SUQ3          IF REQUEST IN QUEUE        NS2769      134
          3534         0347              SUQ2.1   UJN    SUQ7          PROCESS NEXT *PUT*         NS2769      135
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                                                                                   NS2769     136
3535        3451                SUQ3     STD     CB            SAVE BUFFER ORDINAL NS2769     137
3536        1003                         CCBA    IOLK,A        READ *CBT* ENTRY    1HP       2398
3541        6033                         CRD     CN                                1HP       2399
3542        1601                         ADK     HSLK-IOLK                         1HP       2400
3543        6001                         CRD     T1                                1HP       2401
3544        3011                         SFA     EST,CM+1      READ EST ENTRY      1HP       2402
                                         ADK     EQDE                              1HP       2403
3547        6010                         CRD     CM                                1HP       2404
3550        5021 0011                    LDM     CM+1,S1                           252L678    126
3552        1066                         SHN     -11                               252L678    127
3553        1203                         LPN     3                                 252L678    128
3554        3402                         STD     T2            SAVE CHANNEL STATE INDICATOR      NS2502       1
3555        1103                         LMN     3                                 NS2502       2
3556        0502                         NJN     SUQ4          IF CHANNEL NOT DOWN NS2502       3
3557        0354                SUQ3.1   UJN     SUQ2.1        PROCESS NEXT *PUT*  NS2769     138
                                                                                   252L678    133
3560        3001                SUQ4     LDD     T1                                252L678    134
3561        1065                         SHN     0-12                              252L678    135
3562        0412                         ZJN     SUQ4.1        IF NOT CHANNEL SPECIFIC REQUEST   NS2502       4
3563        3051                         CCBA    PAD4          GET CHANNEL FROM CBT ENTRY        253L688      5
3567        6010                         CRD     CM                                253L688      6
3570        3010                         LDD     CM                                253L688      7
3571        1071                         SHN     -6                                253L688      8
3572        3354                         LMD     IR+4                              252L678    139
3573        3402                          STD    T2                                NS2769     139
3574        3002                SUQ4.1   LDD     T2                                NS2502       7
3575        0561                         NJN     SUQ3.1        IF IDLE STATE OR OTHER CHANNEL SPECIFIED  NS2769     140
3576        3033                         LDD     CN            SET/CLEAR READ/WRITE FLAG         NS2769     141
3577        1066                         SHN     0-11                              1HP       2416
3600        1201                         LPN     1                                 1HP       2417
3601        3423                         STD     RW                                1HP       2418
3602        1013                         SHN     13-0          SET TOTAL BUFFER COUNT            1HP       2419
3603        1601                         ADN     1                                 1HP       2420
3604        3452                         STD     TB                                1HP       2421
3605        3001                         LDD     T1                                1HP       2429
3606        1064                         SHN     0-13                              1HP       2430
3607        3417                         STD     ER            SET/CLEAR RECOVERY IN PROGRESS FLAG  1HP       2431
3610        0417                         ZJN     SUQ6          IF NOT ERROR RECOVERY             1HP       2432
3611        3001                         LDD     T1            SAVE ERROR CODE     1HP       2433
3612        1277                         LPN     77                                253L688      9
3613        3401                         STD     T1                                1HP       2436
3614        2300 7777                    LMC     7777          COMPLEMENT ERROR CODE             1HP       2437
3616        3422                         STD     EC                                1HP       2438
3617        5001 2022                    LDM     TREC,T1       SET RETRY COUNT = LIMIT/2         1HP       2439
3621        1076                         SHN     -1                                1HP       2440
3622        3465                         STD     RC                                1HP       2442
3623        0200 1604                    RJM     ERR           CALL ERROR PROCESSOR              1HP       2443
3625        0100 3511                    LJM     SUQ1          CONTINUE SCAN       1HP       2444
                                                                                   1HP       2445
3627        3057                SUQ6     LDD     TI            SET SCAN LIMIT      1HP       2446
3630        2300 1100                    LMC     LMNI                              1HP       2447
3632        5400 3505                    STM     SUQA                              1HP       2448
3634        0100 3507                    LJM     SUQX          RETURN              1HP       2449
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                                          **      TEP - TERMINATE ERROR PROCESSING.                           1HP        2451
                                          *                                                                   1HP        2452
                                          *       THIS ROUTINE PERFORMS OPERATIONS NECESSARY TO RESTORE THE   1HP        2453
                                          *       DRIVER TO ITS NORMAL STATE (NON-ERROR PROCESSING).          1HP        2454
                                          *                                                                   1HP        2455
                                          *       ENTRY  (EC) = ERROR CODE.                                   1HP        2456
                                          *              (PO) = *PUT* ORDINAL.                                1HP        2457
                                          *              (RS) = RECOVERY STATUS.                              1HP        2458
                                          *              (RW) = READ/WRITE FLAG.                              1HP        2459
                                          *                                                                   1HP        2460
                                          *       EXIT   (EC) = 0.                                            1HP        2461
                                          *              (ER) = 0.                                            1HP        2462
                                          *              (RC) = 0.                                            1HP        2463
                                          *              (RS) = RECOVERY STATUS.                              1HP        2464
                                          *                     0    RECOVERED BY CONTROLLER.                 1HP        2465
                                          *                     1    RECOVERED BY DRIVER.                     1HP        2466
                                          *                     2    UNRESOLVED.                              1HP        2467
                                          *                     3    UNRECOVERED.                             1HP        2468
                                          *                                                                   1HP        2469
                                          *       USES   EC, ER, IL, RC, RS, S2, T1, T2, CM - CM+4.           1HP        2470
                                          *                                                                   1HP        2471
                                          *       CALLS  IBM, RHR, RPI.                                       252L678     141
                                          *                                                                   1HP        2473
                                          *       MACROS MONITOR.                                             1HP        2474
                                                                                                              1HP        2475
                                                                                                              1HP        2476
        3636      1400                     TEP4    LDN    0                                                   NS2769      142
        3637      3422                             STD    EC            CLEAR ERROR CODE                      NS2769      143
        3640      3417                             STD    ER            CLEAR RECOVERY IN PROGRESS FLAG       NS2769      144
        3641      3465                             STD    RC            CLEAR RETRY COUNT                     NS2769      145
        3642      5400 3141                        STM    RLCJ          CLEAR RELOAD ATTEMPTED FLAG           NS2769      146
        3644      5400 3665                        STM    TEPA          CLEAR VERIFICATION/INTERLOCK REJECT FLAG  NS2769  147
        3646      3071                             LDD    HN            RESET SEEK SELECTION OPTIONS          NS2769      148
                                0                  ERRNZ  SOSF-100      CODE DEPENDS ON VALUE                 NS2769      149
        3647      5400 2445                        STM    ISFA                                                NS2769      150
                                                                                                              NS2769      151
        3651      0100 3651                TEP     SUBR                 ENTRY/EXIT                            1HP        2477
        3653      3023                             LDD    RW                                                  1HP        2478
        3654      1001                             SHN    1                                                   1HP        2479
        3655      3401                             STD    T1                                                  1HP        2480
        3656      5001 3737                        LDM    TEPB,T1       RESTORE INSTRUCTIONS                  1HP        2481
        3660      3402                             STD    T2                                                  1HP        2482
        3661      5001 3740                        LDM    TEPB+1,T1                                           1HP        2483
        3663      4402                             STI    T2                                                  1HP        2484
        3664      2000 0000                        LDC    **                                                  1HP        2485
                             3665          TEPA    EQU    *-1                                                 1HP        2486
        3666      0547                             NJP    TEP4          IF OTHER DRIVER HANDLING ERROR        NS2769      152
        3667      3016                             LDD    RS                                                  1HP        2488
        3670      0410                             ZJN    TEP1          IF RECOVERED BY CONTROLLER            1HP        2489
        3671      3022                             LDD    EC            SAVE ERROR CODE IN CASE FUNCTION TIMEOUT  1HP    2490
        3672      3467                             STD    S2                                                  1HP        2491
        3673      0200 3010                        RJM    RHR           RELEASE HARDWARE RESERVES             1HP        2492
        3675      3067                             LDD    S2            RESTORE ERROR CODE                    1HP        2493
        3676      3422                             STD    EC                                                  1HP        2494
        3677      3016                             LDD    RS                                                  1HP        2495
        3700      1102                     TEP1    LMN    2                                                   1HP        2496
        3701      0520                             NJN    TEP2          IF NOT UNRESOLVED ERROR               1HP        2497
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                                                                                                 1HP      2498
                                *      ISSUING SUBFUNCTION *SETS* OF THE *BIOM* MONITOR FUNCTION  1HP      2499
                                *      CAUSES ONE OF THE FOLLOWING TO OCCUR -                     1HP      2500
                                *             A. IF THE RECOVERY IN PROGRESS FLAG IS SET IN THE CBT  1HP   2501
                                *                ENTRY, THE REQUEST WILL BE TERMINATED WITH STATUS   1HP   2502
                                *                RETURNED TO THE PROGRAM THAT ISSUED THE REQUEST.    1HP   2503
                                *                IN THIS CASE IT IS THE RESPONSIBILITY OF THIS       1HP   2504
                                *                DRIVER TO ISSUE MESSAGES TO THE BML, ERROR LOG, JOB 1HP   2505
                                *                DAYFILE AND SYSTEM DAYFILE INDICATING AN            1HP   2506
                                *                UNRECOVERED ERROR OCCURRED.                         1HP   2507
                                *             B. IF THE RECOVERY IN PROGRESS FLAG IS CLEAR AND AN    1HP   2508
                                *                ALTERNATE CHANNEL EXISTS (WITH AN ACTIVE DRIVER),   1HP   2509
                                *                THE REQUEST WILL BE MODIFIED TO FORCE CONTINUATION  1HP   2510
                                *                OF ERROR RECOVERY BY THE OTHER DRIVER.              1HP   2511
                                *             C. IF THE RECOVERY IN PROGRESS FLAG IS CLEAR BUT       1HP   2512
                                *                EITHER THERE IS NO ALTERNATE ACCESS PATH OR IT HAS  1HP   2513
                                *                BEEN DOWNED, THE REQUEST WILL BE MODIFIED TO FORCE  1HP   2514
                                *                CONTINUATION OF ERROR PROCESSING ON THIS CHANNEL.   1HP   2515
                                                                                                 1HP      2516
          3702          1402                   LDN    SETS         SET SUBFUNCTION               1HP      2517
          3703          3411                   STD    CM+1                                       1HP      2518
          3704          3066                   LDD    PO           SET *PUT* ORDINAL             1HP      2519
          3705          3412                   STD    CM+2                                       1HP      2520
          3706          1401                   LDN    1            SET BUFFER COUNT              1HP      2521
          3707          3413                   STD    CM+3                                       1HP      2522
          3710          3022                   LDD    EC           SET ERROR CODE                1HP      2523
          3711          3414                   STD    CM+4                                       1HP      2524
          3712          1450                   MONITOR  BIOM                                     1HP      2525
          3715          3424                   STD    IL           CLEAR *PUT* INTERLOCK FLAG    1HP      2526
          3716          3011                   LDD    CM+1                                       1HP      2527
          3717          0402                   ZJN    TEP2         IF PROCESSING WILL RESUME ON OTHER CHANNEL 1HP 2528
          3720          3616                   AOD    RS           SET UNRECOVERED STATUS        1HP      2529
                                                                                                 252L678   142
                                                                                                 1HP      2535
                                *      ISSUE THE BML MESSAGE AND INCREMENT ERROR COUNTERS IF     1HP      2536
                                *      APPROPRIATE FOR THIS ERROR TYPE AND RESOLUTION OF THE ERROR  1HP   2537
                                *      HAS BEEN DETERMINED.                                      1HP      2538
                                                                                                 1HP      2539
          3721          3016            TEP2   LDD    RS                                         1HP      2540
          3722          1201                   LPN    1                                          1HP      2541
          3723          0403                   ZJN    TEP3         IF UNRESOLVED OR RECOVERED BY CONTROLLER  1HP  2542
          3724          0200 3242              RJM    RPI          RELEASE *PUT* INTERLOCK       1HP      2543
          3726          0200 2222       TEP3   RJM    IBM          ISSUE BML MESSAGE             1HP      2544
                                                                                                 1HP      2545
                                *      CLEAR B-DISPLAY MESSAGE.                                  1HP      2546
                                                                                                 1HP      2547
          3730          1466                   LDK    ZERL                                       1HP      2548
          3731          6010                   CRD    CM                                         1HP      2549
          3732          3074                   LDD    CP                                         1HP      2550
          3733          1636                   ADK    MS2W                                       1HP      2551
          3734          6210                   CWD    CM                                         1HP      2552
          3735          0100 3636              UJP    TEP4         CONTINUE CLEARING AND RETURN  NS2769    153
                                                                                                 NS2769    154
                                                                                                 1HP      2559
          3737                          TEPB   BSS    0                                          1HP      2560
          3737          3134 3030              CON    RIOA,RIO1                                  1HP      2561
          3741          4042 3745              CON    WIOA,WIO1                                  1HP      2562
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                                  **        WIO - PERFORM WRITE OPERATION.                       1HP        2564
                                  *                                                              1HP        2565
                                  *         ENTRY  (CB) = CURRENT BUFFER ORDINAL.                1HP        2566
                                  *                (CD - CD+1) = BUFFER ADDRESS.                 1HP        2567
                                  *                (NB) = 0.                                     1HP        2568
                                  *                (PB) = 0.                                     1HP        2569
                                  *                (PI) = 0.                                     1HP        2570
                                  *                (T7) = *PPSLB*.                               1HP        2571
                                  *                                                              1HP        2572
                                  *         EXIT   (PB) = ORDINAL OF LAST BUFFER PROCESSED.      1HP        2573
                                  *                                                              1HP        2574
                                  *         USES   CB, PB, PI, T1, T7, CA+2 - CA+3, CD - CD+5,   1HP        2575
                                  *                CN+2 - CN+4.                                  1HP        2576
                                  *                                                              1HP        2577
                                  *         CALLS  CCS, CRQ, ERR, GGS, IIC, PCH.                 1HP        2578
                                  *                                                              1HP        2579
                                  *         MACROS CCBA.                                         1HP        2580
                                                                                                 1HP        2581
                                                                                                 1HP        2582
        3743      0100 3743        WIO      SUBR                   ENTRY/EXIT                    1HP        2583
        3745      3007             WIO1     LDD    T7                                            1HP        2584
        3746      1201                      LPN    1                                             1HP        2585
        3747      0514                      NJN    WIO2            IF NOT FIRST SECTOR OF CONTROL WORD  1HP 2586
        3750      3041                      LDD    CD+1            SAVE EXTENDED MEMORY ADDRESS BYTE    1HP 2587
        3751      3401                      STD    T1                                            1HP        2588
        3752      3051                      CCBA   PAD1            GET LINKAGE BYTES FROM *CBT* ENTRY   1HP 2589
        3756      3132                      ADD    PI                                            1HP        2590
        3757      6041                      CRD    CD+1                                          1HP        2591
        3760      3001                      LDD    T1              RESTORE EXTENDED MEMORY ADDRESS BYTE 1HP 2592
        3761      3441                      STD    CD+1                                          1HP        2593
        3762      3632                      AOD    PI              INCREMENT *PADN* INDEX        1HP        2594
        3763      1405             WIO2     LDN    FCWR            ISSUE WRITE FUNCTION          NS2502        9
        3764      0200 2617                 RJM    PCH                                           1HP        2596
        3766      0730                      MJN    WIO4.1          IF ERROR                      1HP        2597
        3767      3663                      AOD    CA+3            ADVANCE CURRENT POSITION      1HP        2598
        3770      1140                      LMN    PSPT                                          1HP        2599
        3771      0503                      NJN    WIO3            IF NOT END OF TRACK           1HP        2600
        3772      3463                      STD    CA+3            RESET TO SECTOR ZERO          1HP        2601
        3773      3662                      AOD    CA+2            ADVANCE TO NEXT TRACK         1HP        2602
        3774      3707             WIO3     SOD    T7              DECREMENT SECTOR COUNT        1HP        2603
        3775      0422                      ZJN    WIO5            IF FINISHED WITH BUFFER       1HP        2604
        3776      1107                      LMK    PPSLB-1                                       1HP        2605
        3777      0403                      ZJN    WIO4            IF FIRST SECTOR OF BUFFER     1HP        2606
        4000      0200 2404                 RJM    IIC             ISSUE I/O COMPLETION REQUEST IF REQUIRED  1HP  2607
        4002      2000 0400        WIO4     LDC    EMAI            INCREMENT EXTENDED MEMORY ADDRESS  1HP   2608
        4004      3541                      RAD    CD+1                                          1HP        2609
        4005      1063                      SHN    -14                                           1HP        2610
        4006      3540                      RAD    CD                                            1HP        2611
        4007      0200 1214                 RJM    CCS             CHECK FOR CONSECUTIVE REQUEST 1HP        2612
        4011      0200 2164                 RJM    GGS             GET GENERAL STATUS            1HP        2613
        4013      0503                      ZJP    WIO1            IF NO ERROR                   1HP        2614
        4016      0337             WIO4.1   UJN    WIO8            CALL ERROR PROCESSOR          1HP        2615
                                                                                                 1HP        2616
        4017      3432             WIO5     STD    PI              RESET *PADN* WORD INDEX       1HP        2617
        4020      0200 1214                 RJM    CCS             CHECK FOR CONSECUTIVE REQUEST 1HP        2618
        4022      3051                      LDD    CB              ADVANCE BUFFER POINTERS       1HP        2619
        4023      3450                      STD    PB                                            1HP        2620
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4024          3047                     LDD    NB                                               1HP       2621
4025          3451                     STD    CB                                               1HP       2622
4026          0415                     ZJN    WIO6        IF NO CONSECUTIVE REQUEST            1HP       2623
4027          1003                     CCBA   IOLK,A      SET EXTENDED MEMORY ADDRESS          1HP       2624
4032          6035                     CRD    CD-3                                             1HP       2625
                         0             ERRNZ  CD-CN-5     CODE IS VALUE DEPENDENT              1HP       2626
4033          1410                     LDN    PPSLB       RESET SECTOR COUNT                   1HP       2627
4034          3407                     STD    T7                                               1HP       2628
4035          0200 2164                RJM    GGS         GET GENERAL STATUS                   1HP       2629
4037          0512                     NJN    WIO7        IF ERROR                             1HP       2630
4040          3447                     STD    NB          CLEAR NEXT BUFFER ORDINAL            1HP       2631
4041          0100 3745                LJM    WIO1        CONTINUE TRANSFER                    1HP       2632
                              *        LJM    WIO6.1      (ERROR RECOVERY IN PROGRESS)         NS2454      16
                      4042   WIOA      EQU    *-1                                              1HP       2634
                                                                                               1HP       2635
4043          0200 2164      WIO6      RJM    GGS         GET GENERAL STATUS                   1HP       2636
4045          0504                     NJN    WIO7        IF ERROR ON LAST SECTOR              1HP       2637
4046          0200 2164      WIO6.1    RJM    GGS         GET GENERAL STATUS                   NS2454      17
4050          0407                     ZJN    WIO9        IF NO ERROR                          1HP       2639
4051          3050           WIO7      LDD    PB          BACKUP TO PREVIOUS BUFFER            1HP       2640
4052          3451                     STD    CB                                               1HP       2641
4053          1400                     LDN    0           AVOID BUFFER COMPLETION              1HP       2642
4054          3450                     STD    PB                                               1HP       2643
4055          0200 1604      WIO8      RJM    ERR         CALL ERROR PROCESSOR                 1HP       2644
4057          0100 3743      WIO9      LJM    WIOX        RETURN                               1HP       2645



                              *        COMMON DECKS.                                           1HP       2647
                                                                                               1HP       2648
                                                                                               1HP       2649
4061                                   CTEXT  COMPC2D - CONVERT 2 OCTAL DIGITS TO DISPLAY CODE.    COMPC2D      1
4073                                   CTEXT  COMPIMB - ISSUE MESSAGE TO BUFFER.               COMPIMB      1
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                                   **        PRS - PRESET *1HP*.                                        1HP         2654
                                   *                                                                    1HP         2655
                                   *         EXIT    (CC) = 0.                                          1HP         2656
                                   *                 (CS) = 0.                                          1HP         2657
                                   *                 (EC) = 0.                                          1HP         2658
                                   *                 (ER) = 0.                                          1HP         2659
                                   *                 (IL) = 0.                                          1HP         2660
                                   *                 (PB) = 0.                                          NS2481         1
                                   *                 (RC) = 0.                                          1HP         2661
                                   *                 (TI) = 0.                                          1HP         2662
                                   *                 (BMLCR) = 6/ CHANNEL, 6/0.                         1HP         2663
                                   *                 (BMLMF) = MAINFRAME ID.                            1HP         2664
                                   *                 (BMLPP) = 6/ PP NUMBER, 6/ CHANNEL.                1HP         2665
                                   *                 (CCPA) = *SCR* CHANNEL PARITY BIT + FCTC + 30B.    1HP         2666
                                   *                 (CCPB) = *SCR* CHANNEL OUTPUT INSTRUCTION (OAN).   1HP         2667
                                   *                 (CCPC) = *SCR* CHANNEL INPUT INSTRUCTION (IAN).    1HP         2668
                                   *                 (CCRA) = WORD ADDRESS OF CHANNEL TABLE ENTRY.      1HP         2669
                                   *                 (CCRB) = BYTE ADDRESS OF CHANNEL TABLE ENTRY + LDDI. 1HP       2670
                                   *                 (CHRV) = 1.                                        1HP         2671
                                   *                 (CRQA) = FWA OF PP EXCHANGE PACKAGE.               1HP         2672
                                   *                 (CRQB) = FWA OF PP EXCHANGE PACKAGE.               1HP         2673
                                   *                 (CRQC) = CPU EXCHANGE INSTRUCTION (MXN).           1HP         2674
                                   *                 (CRQD) = FIRST WORD OF PP EXCHANGE PACKAGE.        1HP         2675
                                   *                 (RLCA) = WORD ADDRESS OF CONTROLWARE TABLE ENTRY.  1HP         2682
                                   *                 (RLCB) = BYTE ADDRESS OF CONTROLWARE TABLE ENTRY.  1HP         2683
                                   *                 (RLCC) = WORD ADDRESS OF CONTROLWARE TABLE ENTRY.  1HP         2684
                                   *                 (RLCG) = BIT NUMBER OF LOAD REQUESTED FLAG.        1HP         2687
                                   *                 (SCDA) = WORD ADDRESS OF CONTROLWARE TABLE ENTRY.  1HP         2688
                                   *                 (SCDB) = BIT NUMBER OF DRIVER DROP FLAG.           1HP         2689
                                   *                 ALL *CCBA* REFERENCES TO *CBT* PLUGGED.            1HP         2690
                                   *                 ALL *CPTA* REFERENCES TO *PUT* PLUGGED.            1HP         2691
                                   *                 ALL *EMBE* REFERENCES TO *EMB* PLUGGED.            NS2769       156
                                   *                                                                    1HP         2692
                                   *         USES    CC, CS, EC, ER, IL, PB, RC, TI, CM - CM+4, CN - CN+4, NS2481      2
                                   *                 T0 - T7.                                           1HP         2694
                                   *                                                                    1HP         2695
                                   *         CALLS   DFM, RCH.                                          1HP         2696
                                   *                                                                    1HP         2697
                                   *         MACROS  CPTA, MONITOR, SFA.                                1HP         2698
                                                                                                        1HP         2699
                                                                                                        1HP         2700
          4255          0100 4255           PRS      SUBR                ENTRY/EXIT                     1HP         2701
          4257          1470                         LDK     NCPL        VALIDATE CALLER                1HP         2702
          4260          6010                         CRD     CM                                         1HP         2703
          4261          3611                         AOD     CM+1        NUMBER OF CONTROL POINTS       1HP         2704
          4262          1007                         SHN     7                                          1HP         2705
          4263          3374                         LMD     CP                                         1HP         2706
          4264          0412                         ZJN     PRS1        IF SYSTEM CONTROL POINT        1HP         2707
          4265          2000 4767                    LDC     =C* 1HP - UNAUTHORIZED CALL.*              1HP         2708
          4267          0200 0423                    RJM     DFM         ISSUE DAYFILE MESSAGE          1HP         2709
          4271          1447                         MONITOR  ABTM       ABORT CONTROL POINT            1HP         2710
          4274          0100 0257                    LJM     PPR         RETURN                         1HP         2711
                                                                                                        1HP         2712
          4276          3420                PRS1     STD     CC          CLEAR COMPLETION REQUEST COUNT 1HP         2713
          4277          3446                         STD     CS          CLEAR CHANNEL/CONTROLLER STATUS 1HP        2714
          4300          3422                         STD     EC          CLEAR ERROR CODE               1HP         2715
          4301          3417                         STD     ER          CLEAR RECOVERY IN PROGRESS FLAG 1HP        2716
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4302          3424                          STD     IL          CLEAR *PUT* INTERLOCK FLAG                  1HP       2717
4303          3450                          STD     PB          CLEAR PREVIOUS BUFFER ORDINAL               NS2481       3
4304          3465                          STD     RC          CLEAR RETRY COUNT                           1HP       2718
4305          3457                          STD     TI          INITIALIZE *TPOR* INDEX                     1HP       2719
4306          3054                          LDD     IR+4        CHANNEL NUMBER                              1HP       2720
4307          5400 2342                     STM     BMLPP                                                   1HP       2721
4311          0200 2772           PRS2      RJM     RCH         REQUEST CHANNEL                             1HP       2723
4313          0475                          ZJN     PRS2        IF CHANNEL NOT ASSIGNED                     1HP       2724
                                                                                                            1HP       2725
                                  *         PLUG CHANNEL INSTRUCTIONS.                                      1HP       2726
                                                                                                            1HP       2727
4314          2000 4723                     LDC     PRSD        SET FWA OF CHANNEL TABLE                    NS2769     157
4316          3401                          STD     T1                                                      1HP       2729
4317          4001                PRS3      LDI     T1                                                      1HP       2730
4320          0406                          ZJN     PRS4        IF END OF CHANNEL TABLE                     1HP       2731
4321          3402                          STD     T2                                                      1HP       2732
4322          3054                          LDD     IR+4        CHANNEL                                     1HP       2733
4323          4502                          RAI     T2          STORE CHANNEL IN INSTRUCTION                1HP       2734
4324          3601                          AOD     T1          ADVANCE CHANNEL TABLE POINTER               1HP       2735
4325          0371                          UJN     PRS3        CONTINUE                                    1HP       2736
                                                                                                            1HP       2737
4326          1464                PRS4      LDK     PXPP        READ PPU STATUS                             1HP       2738
4327          6033                          CRD     CN                                                      1HP       2739
4330          1601                          ADN     1                                                       1HP       2740
4331          6170 1562                     CRM     CRQD,ON     READ FIRST WORD OF PP XP                    1HP       2741
4333          5600 1566                     AOM     CRQD+4                                                  1HP       2742
4335          1477                          LDK     PPCP        READ PP COMMUNICATIONS AREA POINTER         1HP       2743
4336          6010                          CRD     CM                                                      1HP       2744
4337          1623                          ADK     MMFL-PPCP                                               1HP       2745
4340          6001                          CRD     T1                                                      1HP       2746
4341          3001                          LDD     T1          SAVE MAINFRAME ID                           1HP       2747
4342          5400 2350                     STM     BMLMF                                                   1HP       2748
4344          3075                          LDD     IA          GET ((PP NUMBER - 2) * 10B)                 1HP       2749
4345          3214                          SBD     CM+4                                                    1HP       2750
4346          1720                          SBN     20                                                      1HP       2751
4347          1074                          SHN     -3                                                      1HP       2752
4350          3401                          STD     T1          PP NUMBER - 2                               1HP       2753
4351          1710                          SBN     10                                                      NS2732       6
4352          0702                          MJN     PRS4.1      IF PP 0-11                                  NS2732       7
4353          1606                          ADN     6           ADJUST FOR PP 20-31                         NS2732       8
4354          1612                PRS4.1    ADN     12                                                      NS2732       9
4355          1006                          SHN     6                                                       1HP       2755
4356          5500 2342                     RAM     BMLPP       SET PP NUMBER                               1HP       2756
4360          1006                          SHN     6                                                       1HP       2757
4361          5400 2347                     STM     BMLCR       SET RECOVERY CHANNEL                        1HP       2758
4363          3054                          LDD     IR+4                                                    1HP       2759
4364          3402                          STD     T2                                                      1HP       2760
4365          1720                          SBN     20                                                      1HP       2761
4366          0606                          PJN     PRS5        IF IN SECOND PPS                            1HP       2762
4367          1620                          ADN     20                                                      1HP       2763
4370          5500 1152                     RAM     CCPA        SET *SCR* BIT NUMBER                        1HP       2764
4372          1416                          LDK     CHSC        *SCR* - FIRST PPS                           1HP       2765
4373          0304                          UJN     PRS6        CONTINUE                                    1HP       2766
                                                                                                            1HP       2767
4374          5500 1152           PRS5      RAM     CCPA        SET *SCR* BIT NUMBER                        1HP       2768
4376          1436                          LDK     CHSC+20     *SCR* - SECOND PPS                          1HP       2769
4377          2100 6600           PRS6      ADC     FJMI                                                    1HP10        7
```

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4401          5400 1153                 STM    CCPB                                            1HP10        8
4403          2100 0200                 ADC    IANI-FJMI                                       1HP10        9
4405          5400 1156                 STM    CCPD                                            1HP10       10
4407          2100 0200                 ADC    OANI-IANI                                       1HP       2772
4411          5400 1155                 STM    CCPC                                            1HP10       11
4413          3001                      LDD    T1          PP NUMBER - 2                       1HP       2774
4414          1004                      SHN    4                                               1HP       2775
4415          3101                      ADD    T1          (PP NUMBER - 2) * 21B               1HP       2776
4416          3537                      RAD    CN+4        SET EXCHANGE ADDRESS                1HP       2777
4417          5400 1513                 STM    CRQA                                            1HP       2778
4421          5400 1553                 STM    CRQB                                            1HP       2779
4423          1063                      SHN    -14                                             1HP       2780
4424          3536                      RAD    CN+3                                            1HP       2781
4425          5500 1512                 RAM    CRQA-1                                          1HP       2782
4427          5400 1552                 STM    CRQB-1                                          1HP       2783
4431          3037                      LDD    CN+4        SET *MA* ADDRESS                    1HP       2784
4432          1606                      ADN    6                                               1HP       2785
4433          5400 1531                 STM    CRQE                                            1HP       2786
4435          1063                      SHN    -14                                             1HP       2787
4436          3136                      ADD    CN+3                                            1HP       2788
4437          5500 1530                 RAM    CRQE-1                                          1HP       2789
4441          1460                      LDK    ACPL        CHECK CPU STATUS                    1HP       2790
4442          6010                      CRD    CM                                              1HP       2791
4443          1500                      LCN    0                                               1HP       2792
4444          3401                      STD    T1          PRESET CHANNEL TABLE WORD INDEX     1HP       2793
4445          1474                      LDN    60D         PRESET BIT POSITION FOR LOAD REQUEST 1HP      2794
4446          3403                      STD    T3                                              1HP       2795
4447          3010                      LDD    CM                                              1HP       2796
4450          1006                      SHN    6                                               1HP       2797
4451          0606                      PJN    PRS7        IF CPU 0 ON                         1HP       2798
4452          5600 1557                 AOM    CRQC        SET EXCHANGE TO CPU 1               1HP       2799
4454          3071                      LDD    HN                                              1HP       2800
4455          5500 1565                 RAM    CRQD+3      SET (A0) TO 1                       1HP       2801
4457          3601             PRS7     AOD    T1          ADVANCE CM TABLE INDEX              1HP       2802
4460          1505                      LCN    5                                               1HP       2803
4461          3502                      RAD    T2                                              1HP       2804
4462          0674                      PJN    PRS7        IF NOT TO PROPER INDEX              1HP       2805
4463          1605                      ADN    5                                               1HP       2806
4464          5500 1172                 RAM    CCRB        PRESET CHANNEL TABLE BYTE INDEX     1HP       2807
4466          5400 3153                 STM    RLCB        PRESET CONTROLWARE TABLE BYTE INDEX 1HP       2808
4470          1207                      LPN    7           BYTE ADDRESS                        1HP       2810
4471          3402                      STD    T2                                              1HP       2811
4472          1514             PRS8     LCN    12D                                             1HP       2812
4473          3503                      RAD    T3          DECREMENT POSITION                  1HP       2813
4474          3702                      SOD    T2                                              1HP       2814
4475          0674                      PJN    PRS8        IF NOT TO PROPER POSITION           1HP       2815
4476          3003                      LDD    T3          BIT POSITION                        1HP       2816
4477          1613                      ADN    13          ADD OFFSET WITHIN BYTE              1HP       2817
4500          1006                      SHN    6                                               1HP       2818
4501          5400 3230                 STM    RLCG+1                                          1HP       2819
4503          2177 7577                 SBK    200                                             1HP       2820
4505          5400 3444                 STM    SCDB+1                                          1HP       2821
4507          2000 0141                 LDK    CHTP        CHANNEL TABLE(S) POINTER            1HP       2822
4511          6010                      CRD    CM                                              1HP       2823
4512          3012                      LDD    CM+2        FWA OF CHANNEL TABLE                1HP       2824
4513          1014                      SHN    14                                              1HP       2825
4514          3313                      LMD    CM+3                                            1HP       2826
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4515        3101                 ADD    T1         ADD WORD INDEX                      1HP       2827
4516        5400 1170            STM    CCRA       CM ADDRESS OF CHANNEL TABLE ENTRY   1HP       2828
4520        1063                 SHN    -14                                            1HP       2829
4521        5500 1167            RAM    CCRA-1                                         1HP       2830
4523        3012                 LDD    CM+2       COMPUTE FWA OF CONTROLWARE TABLE    1HP       2831
4524        1014                 SHN    14                                             1HP       2832
4525        3313                 LMD    CM+3                                           1HP       2833
4526        1622                 ADN    CTALL*2                                        1HP       2834
4527        3101                 ADD    T1         ADD WORD INDEX                      1HP       2835
4530        5400 3151            STM    RLCA       CM ADDRESS OF CONTROLWARE TABLE ENTRY 1HP     2836
4532        5400 3172            STM    RLCC                                           1HP       2837
4534        5400 3426            STM    SCDA                                           1HP       2839
4536        1063                 SHN    -14                                            1HP       2840
4537        5500 3150            RAM    RLCA-1                                         1HP       2841
4541        5400 3171            STM    RLCC-1                                         1HP       2842
4543        5400 3425            STM    SCDA-1                                         1HP       2844
                                                                                       NS2769     158
                          *      PLUG *EMB* ADDRESSES.                                 NS2769     159
                                                                                       NS2769     160
4545        1456                 LDN    EMBP       FETCH *EMB* POINTER                 NS2769     161
4546        6010                 CRD    CM                                             NS2769     162
                      11   .CM1  EQU    CM+1                                           NS2769     163
4547        2011 4713            LDC    .CM1*10000+PRSC                                NS2769     164
4551        0200 4762            RJM    STA        SET *EMB* ADDRESSES                 NS2769     165
                                                                                       NS2769     166
                          *      GET BUFFERED I/O TABLE POINTERS.                      NS2769     167
                                                                                       NS2769     168
4553        2000 0147            LDK    BIOL       READ BUFFERED I/O TABLE POINTERS    1HP       2845
4555        6010                 CRD    CM                                             1HP       2846
4556        3011                 LDD    CM+1                                           1HP       2847
4557        1014                 SHN    14                                             1HP       2848
4560        3312                 LMD    CM+2                                           1HP       2849
4561        1602                 ADK    CCTP       GET *CCT* DESCRIPTOR                1HP       2850
4562        6060                 CRD    CA                                             1HP       2851
4563        1601                 ADK    PUTP-CCTP  GET *PUT* DESCRIPTOR                1HP       2852
4564        6003                 CRD    T3                                             1HP       2853
4565        1603                 ADN    CBTP-PUTP  GET *CBT* DESCRIPTOR                252L678    143
4566        6033                 CRD    CN                                             1HP       2857
4567        3603                 AOD    T3                                             1HP       2858
                                                                                       1HP       2859
                          *      PLUG *CCT* ADDRESS.                                   1HP       2860
                                                                                       1HP       2861
4570        3052                 LDD    IR+2       SET ADDRESS OF *CCT*                1HP       2862
4571        1073                 SHN    CCTLS-6                                        1HP       2863
4572        3164                 ADD    CA+4                                           1HP       2864
4573        5500 2546            RAM    OVIA+1                                         1HP       2865
4575        5400 3272            STM    RPIA+1                                         1HP       2866
4577        1063                 SHN    -14                                            1HP       2867
4600        3163                 ADD    CA+3                                           1HP       2868
4601        5500 2545            RAM    OVIA                                           1HP       2869
4603        5400 3271            STM    RPIA                                           1HP       2870
                                                                                       1HP       2871
                          *      PLUG *CBT* ADDRESSES.                                 NS2769     169
                                                                                       1HP       2873
                      36   .CN3  EQU    CN+3                                           NS2769     170
4605        2036 4670            LDC    .CN3*10000+PRSA                                NS2769     171
4607        0200 4762            RJM    STA        SET *CBT* ADDRESSES                 NS2769     172
```

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                                                                                              1HP        2886
                          *         PLUG *PUT* ADDRESSES.                                     NS2769      173
                                                                                              1HP        2888
4611          2006 4706             LDC     T6*10000+PRSB                                     NS2769      174
4613          0200 4762             RJM     STA            SET *PUT* ADDRESSES                NS2769      175
                                                                                              1HP        2922
                          *         BUILD *TPOR* TABLE.                                       1HP        2923
                                                                                              1HP        2924
4615          3401         PRS12    STD     T1             INITIALIZE *TPOR* INDEX            1HP        2925
4616          3703         PRS13    SOD     T3             DECREMENT *PUT* ORDINAL            1HP        2926
4617          0503                  ZJP     PRSX           IF SCAN COMPLETE                   1HP        2927
4622          1003                  CPTA    UNCT,A         READ *PUT* ENTRY                   1HP        2928
4625          6010                  CRD     CM                                                1HP        2929
4626          3011                  SFA     EST,CM+1       READ EST ENTRY                     1HP        2930
                                    ADK     EQDE                                              1HP        2931
4631          6010                  CRD     CM                                                1HP        2932
4632          1400                  LDN     0              INITIALIZE EST CHANNEL BYTE INDEX  252L678     148
4633          3402                  STD     T2                                                252L678     149
4634          3011                  LDD     CM+1                                              1HP        2933
4635          1237                  LPN     37                                                1HP        2934
4636          3354                  LMD     IR+4                                              1HP        2935
4637          0407                  ZJN     PRS14          IF DEVICE SUPPORTED BY THIS DRIVER 1HP        2936
4640          3012                  LDD     CM+2                                              252L678     150
4641          0454                  ZJN     PRS13          IF SINGLE ACCESS DEVICE            1HP        2939
4642          1237                  LPN     37                                                1HP        2940
4643          3354                  LMD     IR+4                                              1HP        2941
4644          0551                  NJN     PRS13          IF DEVICE NOT SUPPORTED BY THIS DRIVER 1HP    2942
4645          3602                  AOD     T2             INCREMENT CHANNEL BYTE INDEX       252L678     151
4646          3601         PRS14    AOD     T1             INCREMENT *TPOR* INDEX             252L678     152
                       0            ERRNZ   TPORE-1        CODE DEPENDS ON VALUE              252L678     153
4647          1121                  LMK     MAXU+1                                            252L678     154
4650          0410                  ZJN     PRS14.1        IF TOO MANY UNITS ON CHANNEL       252L678     155
4651          3002                  LDD     T2             POSITION CHANNEL BYTE INDEX        252L678     156
4652          1006                  SHN     6                                                 252L678     157
4653          3303                  LMD     T3             SET *PUT* ORDINAL                  252L678     158
4654          5401 1124             STM     TPOR-1,T1                                         252L678     159
4656          0100 4616             UJP     PRS13          CONTINUE SCAN                      1HP        2947
                                                                                              252L678     160
4660          2000 5005    PRS14.1  LDC     =C* 1HP - TOO MANY UNITS ON CHANNEL.*             252L678     161
4662          0200 0423             RJM     DFM            ISSUE SYSTEM DAYFILE MESSAGE       252L678     162
4664          1422                  MONITOR  HNGM                                             252L678     163
4667          0300                  UJN     *              HANG                               252L678     164
                                                                                              1HP        2948
4670                       PRSA     BSS     0              TABLE OF *CBT* ADDRESSES           1HP        2949
                           TCBT     HERE                                                      NS2769      176
4705          0000                  CON     0              TERMINATE TABLE                    1HP        2951
                                                                                              1HP        2952
4706                       PRSB     BSS     0              TABLE OF *PUT* ADDRESSES           1HP        2953
                           TPUT     HERE                                                      NS2769      177
4712          0000                  CON     0              TERMINATE TABLE                    1HP        2955
                                                                                              1HP        2956
4713                       PRSC     BSS     0              TABLE OF *EMB* ADDRESSES           NS2769      178
                                    QUAL    COMPIMB                                           NS2769      179
                           TEMB     HERE                                                      NS2769      180
                                    QUAL    *                                                 NS2769      181
4722          0000                  CON     0              TERMINATE TABLE                    NS2769      182
                                                                                              NS2769      183
```

```
4723                        PRSD    BSS    0          TABLE OF CHANNEL INSTRUCTION ADDRESSES     NS2769    184
4723                        CHTB                                                                  1HP      2958


                            **      STA - SET TABLE ADDRESSES.                                    NS2769    186
                            *                                                                     NS2769    187
                            *       ENTRY  (A) = 6/ TP, 12/ TA                                    NS2769    188
                            *                    TP = TABLE POINTER.                              NS2769    189
                            *                    TA = INSTRUCTION TABLE ADDRESS.                  NS2769    190
                            *                                                                     NS2769    191
                            *       EXIT   (A) = 0.                                               NS2769    192
                            *                                                                     NS2769    193
                            *       USES   T0, T1, T2.                                            NS2769    194
                                                                                                  NS2769    195
                                                                                                  NS2769    196
4745        3402            STA1    STD    T2         SET INSTRUCTION ADDRESS                    NS2769    197
4746        5001 0001               LDM    1,T1                                                  NS2769    198
4750        5502 0001               RAM    1,T2       SET LOWER 12 BITS OF ADDRESS               NS2769    199
4752        1063                    SHN    -14                                                   NS2769    200
4753        4101                    ADI    T1         SET UPPER 6 BITS OF ADDRESS                NS2769    201
4754        1237                    LPN    37                                                    NS2769    202
4755        4502                    RAI    T2                                                    NS2769    203
4756        3600                    AOD    T0         ADVANCE INSTRUCTION LIST                   NS2769    204
4757        4000            STA2    LDI    T0                                                    NS2769    205
4760        0564                    NJN    STA1       IF NOT END OF TABLE                        NS2769    206
                                                                                                  NS2769    207
4761        0100 4761       STA     SUBR               ENTRY/EXIT                                 NS2769    208
4763        3400                    STD    T0                                                    NS2769    209
4764        1063                    SHN    -14        SET ADDRESS POINTER                        NS2769    210
4765        3401                    STD    T1                                                    NS2769    211
4766        0370                    UJN    STA2       ENTER LOOP                                 NS2769    212


                                    OVERFLOW                                                      1HP      2960

                                                                                                  OVERFLOW.1
                             2405   ERRNG  .2-.1+5-.3/500B*500B   BYTES LEFT AFTER LAST SECTOR   OVERFLOW.1
                              344   ERRNG  .3/500B*500B-*+.1-5    BYTES LEFT IN LAST SECTOR      OVERFLOW.1
                             2744   ERRNG  .4/500B*500B-*+.1-5    BYTES CAN BE ADDED TO OVERLAY  OVERFLOW.1
                                7   ERRNG  .3/500B                SECTORS NEEDED FOR OVERLAY     OVERFLOW.1
                                                                                                  OVERFLOW.1
                                    LIST   *                                                      OVERFLOW.1
```

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5027                                END                                                        1HP       2962

                    101600B CM  STORAGE USED            14345 STATEMENTS     3796 SYMBOLS      000058 INVENTED SYMBOLS
                       PARALLEL CPU ASSEMBLY            7.271 SECONDS        6780 REFERENCES
```

SYMBOLIC REFERENCE TABLE.

```
ABTM            47   NOSTEXT        79/51
ACPL            60   NOSTEXT        81/22
ACRJ             4                  10/29 D   10/30
ACST             5                  10/30 D   10/31
ADDE            11                  32/32 L
ADRE             2                  29/30 D   32/32
AIAB            25                  21/43 D
AIAE            43                  22/49 D
AIBB            16                  21/23 D
AIBD            43                  22/50 D
AIDA            15                  21/17 D
AIDB            16                  21/25 D
AIDC            17                  21/27 D
AIDD            10                  21/02 D
AIDE             0                  20/26 D
AIDF            22                  21/36 D
AIDG            11                  21/04 D
AIDH            23                  21/38 D
AIDI             1                  20/39 D
AIDJ             2                  20/41 D
AIDK             4                  20/48 D
AIDL             5                  20/50 D
AIDM             3                  20/43 D
AIDN            24                  21/40 D
AIDP             0                  20/27 D
AIDQ             6                  20/52 D
AIDR             7                  20/54 D
AIDS            20                  21/30 D
AIDV            20                  21/32 D
AIDW            21                  21/34 D
AIDX            12                  21/11 D
AIDY            13                  21/13 D
AIDZ            14                  21/15 D
AIEA            25                  21/47 D
AIEB            26                  21/49 D
AIEC            27                  21/54 D   21/56
AIED            27                  21/56 D
AIEE            30                  22/01 D   22/03
AIEF            30                  22/03 D
AIEG            33                  22/15 D   22/17
AIEH            33                  22/17 D
AIEI            34                  22/22 D   22/24
AIEJ            34                  22/24 D
AIEK            35                  22/26 D
AIEL            36                  22/28 D
AIEM            31                  22/08 D
AIEN            32                  22/10 D
AIEO            37                  22/33 D   22/35
```

SYMBOLIC REFERENCE TABLE.

AIEP	37	22/35 D	
AIES	40	22/40 D	22/42
AIEU	40	22/42 D	
AIEV	41	22/44 D	
AIEW	42	22/46 D	
AIHT	3	20/46 D	
AIIB	10	20/57 D	
AIIE	12	21/07 D	
AIMX	43	22/55 D	
BCTDA	0	21/17 D	
BCTDB	4	21/25 D	
BCTDC	4	21/27 D	
BCTDD	0	21/02 D	
BCTDE	0	20/26 D	
BCTDF	6	21/36 D	
BCTDG	0	21/04 D	
BCTDH	6	21/38 D	
BCTDI	0	20/39 D	
BCTDJ	0	20/41 D	
BCTDK	0	20/48 D	
BCTDL	0	20/50 D	
BCTDM	0	20/43 D	
BCTDN	4	21/40 D	
BCTDP	0	20/27 D	
BCTDQ	0	20/52 D	
BCTDR	0	20/54 D	
BCTDV	4	21/32 D	
BCTDW	4	21/34 D	
BCTDX	0	21/11 D	
BCTDY	0	21/13 D	
BCTDZ	0	21/15 D	
BCTEA	4	21/47 D	
BCTEB	4	21/49 D	
BCTEC	4	21/54 D	
BCTED	4	21/56 D	
BCTEE	4	22/01 D	
BCTEF	4	22/03 D	
BCTEG	4	22/15 D	
BCTEH	4	22/17 D	
BCTEI	4	22/22 D	
BCTEJ	4	22/24 D	
BCTEK	4	22/26 D	
BCTEL	4	22/28 D	
BCTEM	4	22/08 D	
BCTEN	4	22/10 D	
BCTEO	4	22/33 D	
BCTEP	4	22/35 D	
BCTES	4	22/40 D	
BCTEU	4	22/42 D	
BCTEV	4	22/44 D	
BCTEW	4	22/46 D	
BDTL	15	5/42 D	
BEP	410	24/15 D	
BFDA	0	21/17 D	21/17
BFDB	6	21/25 D	21/25
BFDC	6	21/27 D	21/27
BFDD	0	21/02 D	21/02

SYMBOLIC REFERENCE TABLE.

BFDE	4		20/26 D	20/26				
BFDF	6		21/36 D	21/36				
BFDG	0		21/04 D	21/04				
BFDH	6		21/38 D	21/38				
BFDI	0		20/39 D	20/39				
BFDJ	0		20/41 D	20/41				
BFDK	0		20/48 D	20/48				
BFDL	0		20/50 D	20/50				
BFDM	0		20/43 D	20/43				
BFDN	6		21/40 D	21/40				
BFDP	4		20/27 D	20/27				
BFDQ	0		20/52 D	20/52				
BFDR	0		20/54 D	20/54				
BFDV	6		21/32 D	21/32				
BFDW	6		21/34 D	21/34				
BFDX	0		21/11 D	21/11				
BFDY	0		21/13 D	21/13				
BFDZ	0		21/15 D	21/15				
BFEA	6		21/47 D	21/47				
BFEB	6		21/49 D	21/49				
BFEC	6		21/54 D	21/54				
BFED	7		21/56 D	21/56				
BFEE	6		22/01 D	22/01				
BFEF	7		22/03 D	22/03				
BFEG	6		22/15 D	22/15				
BFEH	7		22/17 D	22/17				
BFEI	6		22/22 D	22/22				
BFEJ	7		22/24 D	22/24				
BFEK	7		22/26 D	22/26				
BFEL	6		22/28 D	22/28				
BFEM	7		22/08 D	22/08				
BFEN	6		22/10 D	22/10				
BFEO	6		22/33 D	22/33				
BFEP	7		22/35 D	22/35				
BFES	6		22/40 D	22/40				
BFEU	7		22/42 D	22/42				
BFEV	7		22/44 D	22/44				
BFEW	6		22/46 D	22/46				
BFRL	10		36/04 D					
BIOL	147	NOSTEXT	82/28					
BIOM	50	NOSTEXT	47/19	61/38	69/57	76/28		
BML	2333		57/03	57/12 L	58/10			
BMLCR	2347		57/43 L	80/45 S				
BMLCY	2353		56/55 S	57/55 L				
BMLEC	2352		56/53 S	57/53 L				
BMLEO	2345		56/51 S	57/34 L				
BMLGS	2356		48/55 S	58/04 L				
BMLLF	2355		58/02 L	65/05 S				
BMLMF	2350		57/46 L	80/32 S				
BMLPP	2342		57/26 L	80/06 S	80/43 S			
BMLRC	2346		56/46 S	57/36 L				
BMLSC	2341		56/35 S	56/40 S	57/22 L			
BMLTS	2354		57/02 S	57/57 L				
BMLUN	2343		56/49 S	57/29 L				
BMRL	10		4/27 D					
BMS1L	50		58/10 D	58/11				
BMS1LC	10		57/17	58/12 D				

SYMBOLIC REFERENCE TABLE.

BTSZ	400		4/29 D							
CA	60		35/24 D	57/01	59/57	62/07	67/16 S	70/55	82/34 S	
			56/47	59/51 S	60/02 S	62/09	67/17 S	77/35 S	82/45	
			56/54	59/52	60/04 S	62/11	70/47	77/38 S	82/49	
			56/56	59/56 S	60/18	67/13 S	70/51	77/39 S		
CB	51		35/19 D	59/50	62/04	67/05	74/02 S	77/56		
			42/41	61/54	63/39	67/28	74/21	78/02 S		
			44/44 S	61/56	66/55	67/31 S	77/26	78/21 S		
CBTL	10		12/46 D	15/35						
CBTLS	3		15/34 D	42/48	61/56	63/39	67/05	74/03	77/26	
			42/41	59/50	62/04	66/55	67/33	74/21	78/04	
CBTP	6		5/22 D	5/23	82/37					
CC	20		35/06 D	47/15	58/32 S	69/48	79/54 S			
			47/03	47/18 S	58/35	69/56 S				
CCHM	3	NOSTEXT	65/43							
CCNT	1		7/43 D	7/44						
CCP	1150		41/10 D	54/31	55/18					
CCPA	1152		41/12 D	80/51 S	80/55 S					
CCPB	1153		41/14 D	81/01 S						
CCPC	1155		41/16 D	81/05 S						
CCPD	1156		41/18 D	81/03 S						
CCPX	1147		41/10 L	41/19	41/21					
CCP1	1146		41/08 L	41/13						
CCR	1166		40/13	41/53 D						
CCRA	1170		41/55 D	82/02 S	82/04 S					
CCRB	1172		42/01 D	81/39 S						
CCRX	1165		41/53 L	42/05	42/10					
CCR1	1201		42/07 L	42/09						
CCR2	1162		41/50 L	42/03						
CCS	1214		42/38 D	67/09	67/27	77/49	77/55			
CCSX	1213		42/38 L	42/40	42/46	43/17				
CCS1	1246		43/02 L	43/11	43/15					
CCS2	1264		43/06	43/16 L						
CCS3	1211		42/35 L	42/56	43/02					
CCTH	14		4/28 D							
CCTL	4		7/47 D	15/37						
CCTLS	2		15/36 D	82/44						
CCTP	2		5/18 D	5/19	82/33	82/35				
CD	40		35/15 D	63/40 S	67/21 S	67/34 S	77/24	77/30 S	77/48 S	78/06
			62/50	63/41	67/23 S	67/35	77/28 S	77/46 S	78/05 S	
CDS	1270		43/46 D	48/50						
CDSX	1267		43/46 L	43/48	44/02	44/04	44/09	45/21		
CDS1	1271		43/47 L	44/05						
CDS10	1414		45/13	45/17	45/20 L					
CDS3	1317		43/53	44/13 L						
CDS4	1334		44/14	44/17	44/29 L					
CDS5	1357		44/36	44/39	44/42	44/51 L				
CDS6	1406		43/51	44/47	44/53	45/12 L				
CDS7	1410		44/57	45/03	45/05	45/08	45/15 L			
CDS8	1411		44/21	44/31	45/16 L					
CDS9	1413		45/11	45/19 L						
CEC.AD	2		32/32 D							
CEC.CF	4		32/27 D							
CEC.CP	4		32/23 D							
CEC.CR	5		32/40 D							
CEC.CS	4		32/24 D							
CEC.DF	3		32/29 D							

SYMBOLIC REFERENCE TABLE.

CEC.FT	4	32/26 D						
CEC.ID	4	32/28 D						
CEC.IW	4	32/35 D						
CEC.LN	6	32/36 D						
CEC.ME	1	32/31 D						
CEC.NR	6	32/37 D						
CEC.RA	4	32/25 D						
CEC.RD	0	32/42 D						
CEC.RS	5	32/39 D						
CEC.SA	0	32/43 D						
CEC.SK	3	32/34 D						
CEC.ST	3	32/33 D						
CFSDA	0	21/17 D						
CFSDB	2	21/25 D						
CFSDC	5	21/27 D						
CFSDD	0	21/02 D						
CFSDE	0	20/26 D						
CFSDF	3	21/36 D						
CFSDG	0	21/04 D						
CFSDH	5	21/38 D						
CFSDI	0	20/39 D						
CFSDJ	0	20/41 D						
CFSDK	0	20/48 D						
CFSDL	0	20/50 D						
CFSDM	0	20/43 D						
CFSDN	2	21/40 D						
CFSDP	0	20/27 D						
CFSDQ	0	20/52 D						
CFSDR	0	20/54 D						
CFSDV	3	21/32 D						
CFSDW	3	21/34 D						
CFSDX	0	21/11 D						
CFSDY	0	21/13 D						
CFSDZ	0	21/15 D						
CFSEA	5	21/47 D						
CFSEB	5	21/49 D						
CFSEC	5	21/54 D						
CFSED	5	21/56 D						
CFSEE	5	22/01 D						
CFSEF	5	22/03 D						
CFSEG	5	22/15 D						
CFSEH	5	22/17 D						
CFSEI	5	22/22 D						
CFSEJ	5	22/24 D						
CFSEK	5	22/26 D						
CFSEL	5	22/28 D						
CFSEM	5	22/08 D						
CFSEN	5	22/10 D						
CFSEO	3	22/33 D						
CFSEP	3	22/35 D						
CFSES	4	22/40 D						
CFSEU	4	22/42 D						
CFSEV	4	22/44 D						
CFSEW	4	22/46 D						
CH	0	36/05 D	53/36	53/48	55/16	60/30	63/01	
		53/30	53/42	53/50	60/18	62/50	65/03	
		53/35	53/46	54/29	60/23	62/52	66/20	

SYMBOLIC REFERENCE TABLE.

CHFE	5		32/27 L	53/53	60/26	62/55					
CHPE	1		32/23 L	41/20	45/19						
CHRT	4		23/32 D	32/23							
CHRV	111		24/13 D								
CHSC	16	NOSTEXT	41/13	41/15	41/17	80/52	80/56				
CHTP	141	NOSTEXT	81/53								
CM	10	NOSTEXT	41/56 S	61/35 S	68/21 S	69/52 S	71/55 S	74/09 S	79/44 S	82/21 S	
			41/57	61/37 S	68/22	69/54 S	71/57 S	74/10	79/45 S	82/22	
			42/42 S	61/39	68/27 S	70/42 S	72/40 S	74/22 S	80/28 S	82/29 S	
			42/57	65/14 S	68/28	70/50 S	72/42 S	74/23	80/34	82/30	
			43/03	65/15	68/41 S	71/01 S	72/45 S	76/21 S	81/23 S	82/32	
			43/07	65/42 S	68/46 S	71/02	72/47 S	76/23 S	81/28	83/13 S	
			43/12	65/44	68/48 S	71/06	72/49 S	76/25 S	81/54 S	83/14	
			48/04 S	66/57 S	68/50 S	71/11 S	73/51 S	76/27 S	81/55	83/16 S	
			56/20 S	67/02 S	69/05	71/13	73/52	76/30	81/57	83/19	
			56/24 S	67/04 S	69/44 S	71/51 S	73/55	76/48 S	82/05	83/23	
			56/26 S	67/07	69/50 S	71/53 S	74/07	76/51	82/07		
CN	33		35/14 D	43/05	47/12 S	61/52 S	62/06	74/29	81/16		
			42/44 S	43/10	47/14 S	61/53	62/12	78/06	81/20		
			42/45	46/52 S	47/16 S	61/57 S	63/41	80/23 S	82/38 S		
			42/49 S	46/55 S	47/20 S	62/01	67/35	81/09 S	82/55		
			43/01	46/56	47/22	62/05 S	74/04 S	81/13 S			
CNAC	37		23/41 D								
COME	4		29/32 D	32/23	32/24	32/25	32/26	32/27	32/28	32/35	
CP	74	NOSTEXT	46/05	76/49	79/47						
CREQ	0		7/42 D	7/43	61/42	70/04					
CRL	1420		45/42 D	49/09							
CRLA	1462		45/45 S	46/20 D							
CRLB	1470		45/54 S	46/02 S	46/04 S	46/07	46/26 L				
CRLX	1417		45/42 L	46/23							
CRL1	1461		45/50	46/08 L							
CRQ	1511		46/47 D	49/03	58/39	59/15	65/17				
CRQA	1513		46/49 D	81/10 S	81/14 S						
CRQB	1553		47/24 D	81/11 S	81/15 S						
CRQC	1557		47/28 D	81/31 S							
CRQD	1562		47/25	47/31 L	80/25 S	80/26 S	81/33 S				
CRQE	1531		47/06 D	81/18 S	81/21 S						
CRQX	1510		46/47 L	47/02	47/04	47/10	47/29				
CRQ1	1542		46/54	47/01	47/15 L						
CRSE	20		32/40 L								
CRTH	7		23/27 D	68/34							
CRTO	10		23/28 D								
CS	46		35/16 D	48/06 S	60/05	65/38	66/13	79/55 S			
			47/57	49/40	60/13 S	65/46 S	66/22 S				
CSRT	2		23/33 D	32/24							
CSTE	2		32/24 L								
CTALL	11	NOSTEXT	82/08								
CTDA	10		21/17 D								
CTDB	10		21/25 D								
CTDC	10		21/27 D								
CTDD	40		21/02 D								
CTDE	4		20/26 D								
CTDF	10		21/36 D								
CTDG	10		21/04 D								
CTDH	10		21/38 D								
CTDI	40		20/39 D								
CTDJ	40		20/41 D								

SYMBOLIC REFERENCE TABLE.

CTDK	40	20/48 D	
CTDL	40	20/50 D	
CTDM	10	20/43 D	
CTDN	10	21/40 D	
CTDP	4	20/27 D	
CTDQ	10	20/52 D	
CTDR	10	20/54 D	
CTDV	10	21/32 D	
CTDW	10	21/34 D	
CTDX	40	21/11 D	
CTDY	40	21/13 D	
CTDZ	10	21/15 D	
CTEA	10	21/47 D	
CTEB	10	21/49 D	
CTEC	10	21/54 D	
CTED	10	21/56 D	
CTEE	10	22/01 D	
CTEF	10	22/03 D	
CTEG	10	22/15 D	
CTEH	10	22/17 D	
CTEI	10	22/22 D	
CTEJ	10	22/24 D	
CTEK	10	22/26 D	
CTEL	10	22/28 D	
CTEM	10	22/08 D	
CTEN	10	22/10 D	
CTEO	10	22/33 D	
CTEP	10	22/35 D	
CTES	10	22/40 D	
CTEU	10	22/42 D	
CTEV	10	22/44 D	
CTEW	10	22/46 D	
CUN1	2	7/44 D	7/45
CUN2	3	7/45 D	7/47
CWR.AD	0	32/32 D	50/50
CWR.CF	1	32/27 D	50/50
CWR.CP	0	32/23 D	50/50
CWR.CR	0	32/40 D	50/50
CWR.CS	0	32/24 D	50/50
CWR.DF	0	32/29 D	50/50
CWR.FT	1	32/26 D	50/50
CWR.ID	1	32/28 D	50/50
CWR.IW	0	32/35 D	50/50
CWR.LN	0	32/36 D	50/50
CWR.ME	0	32/31 D	50/50
CWR.NR	0	32/37 D	50/50
CWR.RA	1	32/25 D	50/50
CWR.RD	0	32/42 D	50/50
CWR.RS	0	32/39 D	50/50
CWR.SA	0	32/43 D	50/50
CWR.SK	0	32/34 D	50/50
CWR.ST	0	32/33 D	50/50
CYPNDA	2140	21/17 D	
CYPNDB	1511	21/25 D	
CYPNDC	1563	21/27 D	
CYPNDD	1457	21/02 D	
CYPNDE	0	20/26 D	

SYMBOLIC REFERENCE TABLE.

CYPNDF	1562	21/36 D	
CYPNDG	1273	21/04 D	
CYPNDH	1562	21/38 D	
CYPNDI	630	20/39 D	
CYPNDJ	1464	20/41 D	
CYPNDK	630	20/48 D	
CYPNDL	1464	20/50 D	
CYPNDM	1511	20/43 D	
CYPNDN	2601	21/40 D	
CYPNDP	0	20/27 D	
CYPNDQ	1511	20/52 D	
CYPNDR	6000	20/54 D	
CYPNDV	627	21/32 D	
CYPNDW	1462	21/34 D	
CYPNDX	630	21/11 D	
CYPNDY	1454	21/13 D	
CYPNDZ	1056	21/15 D	
CYPNEA	1514	21/47 D	
CYPNEB	1514	21/49 D	
CYPNEC	3135	21/54 D	
CYPNED	3135	21/56 D	
CYPNEE	3135	22/01 D	
CYPNEF	3135	22/03 D	
CYPNEG	5074	22/15 D	
CYPNEH	5074	22/17 D	
CYPNEI	2436	22/22 D	
CYPNEJ	2436	22/24 D	
CYPNEK	1551	22/26 D	
CYPNEL	1217	22/28 D	
CYPNEM	1456	22/08 D	
CYPNEN	1456	22/10 D	
CYPNEO	4362	22/33 D	
CYPNEP	4362	22/35 D	
CYPNES	2171	22/40 D	
CYPNEU	2171	22/42 D	
CYPNEV	1373	22/44 D	
CYPNEW	1074	22/46 D	
CYUNDA	2140	21/17 D	21/17
CYUNDB	1511	21/25 D	21/25
CYUNDC	1563	21/27 D	21/27
CYUNDD	1457	21/02 D	21/02
CYUNDE	0	20/26 D	20/26
CYUNDF	1562	21/36 D	21/36
CYUNDG	1273	21/04 D	21/04
CYUNDH	1562	21/38 D	21/38
CYUNDI	630	20/39 D	20/39
CYUNDJ	1464	20/41 D	20/41
CYUNDK	630	20/48 D	20/48
CYUNDL	1464	20/50 D	20/50
CYUNDM	1511	20/43 D	20/43
CYUNDN	2601	21/40 D	21/40
CYUNDP	0	20/27 D	20/27
CYUNDQ	1511	20/52 D	20/52
CYUNDR	6000	20/54 D	20/54
CYUNDV	627	21/32 D	21/32
CYUNDW	1462	21/34 D	21/34
CYUNDX	630	21/11 D	21/11

SYMBOLIC REFERENCE TABLE.

CYUNDY	1454		21/13 D	21/13			
CYUNDZ	1056		21/15 D	21/15			
CYUNEA	1514		21/47 D	21/47			
CYUNEB	1514		21/49 D	21/49			
CYUNEC	3135		21/54 D	21/54			
CYUNED	3135		21/56 D	21/56			
CYUNEE	3135		22/01 D	22/01			
CYUNEF	3135		22/03 D	22/03			
CYUNEG	5074		22/15 D	22/15			
CYUNEH	5074		22/17 D	22/17			
CYUNEI	5074		22/22 D	22/22			
CYUNEJ	5074		22/24 D	22/24			
CYUNEK	5074		22/26 D	22/26			
CYUNEL	5074		22/28 D	22/28			
CYUNEM	3135		22/08 D	22/08			
CYUNEN	3135		22/10 D	22/10			
CYUNEO	4362		22/33 D	22/33			
CYUNEP	4362		22/35 D	22/35			
CYUNES	4362		22/40 D	22/40			
CYUNEU	4362		22/42 D	22/42			
CYUNEV	4362		22/44 D	22/44			
CYUNEW	4362		22/46 D	22/46			
C2D	4062		45/53	70/39	71/04	71/08	
DACL	70		4/30 D				
DBSV	5		23/42 D				
DCBS	1		47/11	69/53			
DCH	1570		40/22	42/06	47/56 D		
DCHM	4	NOSTEXT	48/05				
DCHX	1567		47/56 L	48/02	48/07		
DDFE	7		32/29 L				
DDMD	7527		27/12 L				
DEAI	7500		27/02 L				
DEDT	7501		27/03 L				
DEEC	7502		27/04 L				
DEFW	1065		26/22 L				
DEGS	7503		27/05 L				
DELF	7504		27/06 L				
DENR	1070		26/19 L				
DEPL	7560		27/14 L				
DERC	1067		26/20 L				
DERW	7505		27/07 L				
DEST	7506		27/08 L				
DEWR	1066		26/21 L				
DEXA	7507		27/09 L				
DFM	423	NOSTEXT	79/50	83/40			
DIDA	1		21/17 D				
DIDB	4		21/25 D				
DIDC	4		21/27 D				
DIDD	2		21/02 D				
DIDE	4		20/26 D				
DIDF	4		21/36 D				
DIDG	2		21/04 D				
DIDH	4		21/38 D				
DIDI	1		20/39 D				
DIDJ	1		20/41 D				
DIDK	1		20/48 D				
DIDL	1		20/50 D				

SYMBOLIC REFERENCE TABLE.

DIDM	1		20/43 D							
DIDN	4		21/40 D							
DIDP	3		20/27 D							
DIDQ	1		20/52 D							
DIDR	1		20/54 D							
DIDV	4		21/32 D							
DIDW	4		21/34 D							
DIDX	1		21/11 D							
DIDY	1		21/13 D							
DIDZ	1		21/15 D							
DIEA	4		21/47 D							
DIEB	4		21/49 D							
DIEC	4		21/54 D							
DIED	4		21/56 D							
DIEE	4		22/01 D							
DIEF	4		22/03 D							
DIEG	4		22/15 D							
DIEH	4		22/17 D							
DIEI	4		22/22 D							
DIEJ	4		22/24 D							
DIEK	4		22/26 D							
DIEL	4		22/28 D							
DIEM	4		22/08 D							
DIEN	4		22/10 D							
DIEO	4		22/33 D							
DIEP	4		22/35 D							
DIES	4		22/40 D							
DIEU	4		22/42 D							
DIEV	4		22/44 D							
DIEW	4		22/46 D							
DPPM	61	NOSTEXT	40/23							
DRDBC	2		6/10 D	6/11						
DRDP	12		5/35 D	5/36						
DRSW	100		24/03 D							
DRVE	17		32/39 L							
DSFA	7534		27/13 L							
DSSL	72	NOSTEXT	68/20							
DST	2357		44/15	44/37	44/54	45/06	54/20 S	58/08 L		
			44/18	44/51	45/01	45/09	54/29 S			
DSTE	12		32/33 L	45/12	49/43					
DUCF	17		13/17 D							
DUNF	14		13/20 D							
DVDF	20		13/16 D							
DWLT	4		4/31 D							
DWTBC	1		6/09 D	6/10						
DWTP	11		5/34 D	5/35						
D1	71		24/04 D							
E	4744		84/02 L							
EC	22		35/08 D	46/03	48/45 S	54/16 S	56/52	70/34	75/50	
			44/29	46/21	49/15	54/56 S	60/27 S	72/36	75/54 S	
			45/20 S	48/40	49/44 S	56/04	62/43 S	74/44 S	76/26	
			45/47	48/44	53/45 S	56/34	63/50	75/28 S	79/56 S	
ECAF	14		13/38 D	13/47	13/47 D					
ECBL	102		23/43 D							
ELDY	2		71/24							
EMAI	400		36/06 D	67/20	77/45					
EMBP	56	NOSTEXT	82/20							

SYMBOLIC REFERENCE TABLE.

EMN.AD	104		32/32 D	51/51						
EMN.CF	306		32/27 D	51/51						
EMN.CP	320		32/23 D	51/51						
EMN.CR	322		32/40 D	51/51						
EMN.CS	323		32/24 D	51/51						
EMN.DF	406		32/29 D	51/51						
EMN.FT	624		32/26 D	51/51						
EMN.ID	1104		32/28 D	51/51						
EMN.IW	1127		32/35 D	51/51						
EMN.LN	1416		32/36 D	51/51						
EMN.ME	1505		32/31 D	51/51						
EMN.NR	1622		32/37 D	51/51						
EMN.RA	2201		32/25 D	51/51						
EMN.RD	2204		32/42 D	51/51						
EMN.RS	2223		32/39 D	51/51						
EMN.SA	2301		32/43 D	51/51						
EMN.SK	2313		32/34 D	51/51						
EMN.ST	2324		32/33 D	51/51						
EMTBC	0		6/08 D	6/09						
EMTP	10		5/33 D	5/34						
EPAD	2		25/50	28/52 D						
EPAR	51		29/05 D							
EPDE	420		29/02 D							
EPDF	2000		29/04 D							
EPER	40		28/56 D	32/23	32/25	32/27	32/29	32/32	32/34	32/43
			29/05	32/24	32/26	32/28	32/31	32/33	32/35	
EPFW	7500	NOSTEXT	27/01							
EPND	1000		29/03 D							
EPNF	200		29/01 D							
EPNR	1		28/51 D	29/05	32/36	32/37	32/42			
EPNS	4		25/51	28/53 D						
EPO.AD	40		32/32 D	51/22						
EPO.CF	40		32/27 D	51/22						
EPO.CP	40		32/23 D	51/22						
EPO.CR	10		32/40 D	51/22						
EPO.CS	40		32/24 D	51/22						
EPO.DF	40		32/29 D	51/22						
EPO.FT	40		32/26 D	51/22						
EPO.ID	40		32/28 D	51/22						
EPO.IW	40		32/35 D	51/22						
EPO.LN	1		32/36 D	51/22						
EPO.ME	40		32/31 D	51/22						
EPO.NR	1		32/37 D	51/22						
EPO.RA	40		32/25 D	51/22						
EPO.RD	1		32/42 D	51/22						
EPO.RS	10		32/39 D	51/22						
EPO.SA	40		32/43 D	51/22						
EPO.SK	40		32/34 D	51/22						
EPO.ST	40		32/33 D	51/22						
EPRR	10		28/54 D	29/05	32/39	32/40				
EPRW	100		28/57 D							
EPSM	20		28/55 D	29/02						
EQDE	0	NOSTEXT	74/08	83/15						
ER	17		35/05 D	45/43	61/45	74/38 S	75/29 S	79/57 S		
ERR	1604		48/37 D	60/28	63/52	67/12	74/48	78/24		
ERRA	1731		50/05	50/09 L	50/09					
ERRX	1603		48/37 L	50/10						

SYMBOLIC REFERENCE TABLE.

ERR10	1713		49/30	49/47 L					
ERR11	1717		48/39	49/21	49/42	49/53 L			
ERR2	1615		48/43 L	48/49	48/51				
ERR3	1621		48/42	48/48 L					
ERR3.1	1627		48/46	48/52 L					
ERR4	1634		48/53	48/56 L	49/45				
ERR4.1	1641		49/03 L	49/04					
ERR5	1662		49/17	49/19 L					
ERR6.1	1664		49/08	49/21 L					
ERR7	1665		49/10	49/25 L					
ERR9	1667		49/29 L	49/33	49/38				
ERR9.1	1704		49/35	49/40 L					
ERXA	102		24/06 D						
FCAL	414		35/42 D						
FCCO	14		35/39 D	43/57					
FCDS	23		35/40 D	54/25					
FCES	66		35/41 D	55/12					
FCESL	5		36/07 D	54/57	55/15	55/25			
FCOC	10		35/38 D	66/16					
FCRD	4		35/36 D	66/48					
FCRDL	2		36/08 D	64/05					
FCRF	20		13/43 D						
FCSK	1		35/35 D	60/14					
FCSKL	4		36/09 D	60/17					
FCTC	3000		35/49 D	41/11					
FCWR	5		35/37 D	77/32					
FCWRL	6		36/10 D	64/06					
FHP	1100		1/17	40/05 L					
FJMI	6600		80/57	81/02					
FMMC	16		13/27 D						
FNC	2072		53/33 D	54/26	55/13	60/15	62/46	66/17	
FNCA	2120		53/34 S	53/48 S	53/57 L	55/10	55/21 S	65/04	
FNCX	2071		53/33 L	53/51					
FNC1	2100		53/41 L	53/43					
FNC2	2104		53/44 L						
FNC3	2105		53/45 L	53/54					
FNC4	2113		53/46	53/49 L					
FNC5	2116		53/35	53/53 L					
FNC6	2067		53/30 L	53/42					
FSTC	4		12/41 D	12/42					
FTN	165	NOSTEXT	59/18						
FTOE	4		32/26 L	53/44					
FTRT	4		23/35 D	32/26	32/34	32/35			
FTTL	1		10/56 D	15/39					
FTTLS	0		15/38 D						
FTTP	4		5/20 D	5/21					
GDS	2133		43/47	54/24 D					
GDSX	2132		54/24 L	54/32					
GDS1	2121		54/15 L	54/30					
GDS2	2122		54/16 L	54/33					
GDS3	2123		54/17 L	54/27					
GDS4	2125		54/19 L	54/22					
GGS	2164		44/03	55/09 D	60/31	77/50	78/16		
			48/48	60/08	67/10	78/09	78/18		
GGSA	2213		55/03 S	55/16 S	55/22	55/25 L	67/01	67/03	
GGSB	2220		55/11 S	55/20	55/26 L				
GGSX	2163		55/09 L						

SYMBOLIC REFERENCE TABLE.

GGS1	2150		54/55	L	55/17			
GGS2	2151		54/56	L	55/19			
GGS3	2152		54/57	L	55/14			
GGS4	2154		55/02	L	55/05			
GGS5	2162		55/07	L	55/23			
GS	53		35/21	D	43/49	48/54	49/31	55/07 S
GSDA	0		21/17	D	21/17			
GSDB	0		21/25	D	21/25			
GSDC	0		21/27	D	21/27			
GSDD	0		21/02	D	21/02			
GSDE	0		20/26	D	20/26			
GSDF	0		21/36	D	21/36			
GSDG	0		21/04	D	21/04			
GSDH	0		21/38	D	21/38			
GSDI	1		20/39	D	20/39			
GSDJ	1		20/41	D	20/41			
GSDK	2		20/48	D	20/48			
GSDL	1		20/50	D	20/50			
GSDM	0		20/43	D	20/43			
GSDN	0		21/40	D	21/40			
GSDP	0		20/27	D	20/27			
GSDQ	0		20/52	D	20/52			
GSDR	0		20/54	D	20/54			
GSDV	0		21/32	D	21/32			
GSDW	0		21/34	D	21/34			
GSDX	2		21/11	D	21/11			
GSDY	2		21/13	D	21/13			
GSDZ	0		21/15	D	21/15			
GSEA	0		21/47	D	21/47			
GSEB	0		21/49	D	21/49			
GSEC	0		21/54	D	21/54			
GSED	0		21/56	D	21/56			
GSEE	0		22/01	D	22/01			
GSEF	0		22/03	D	22/03			
GSEG	0		22/15	D	22/15			
GSEH	0		22/17	D	22/17			
GSEI	0		22/22	D	22/22			
GSEJ	0		22/24	D	22/24			
GSEK	0		22/26	D	22/26			
GSEL	0		22/28	D	22/28			
GSEM	0		22/08	D	22/08			
GSEN	0		22/10	D	22/10			
GSEO	0		22/33	D	22/33			
GSEP	0		22/35	D	22/35			
GSES	0		22/40	D	22/40			
GSEU	0		22/42	D	22/42			
GSEV	0		22/44	D	22/44			
GSEW	0		22/46	D	22/46			
HATL	1		8/24	D				
HATLE	400		8/26	D				
HATP	5		5/21	D	5/22			
HDR1	2333		57/14	L	57/50			
HDR1L	17		57/50	D	57/51			
HDR1LC	3		57/51	D				
HEDR	7515		27/11	L				
HN	71	NOSTEXT	24/04		43/08	65/08	75/33	81/32
HNGM	22	NOSTEXT	83/41					

SYMBOLIC REFERENCE TABLE.

HSCT	1		10/26	D	10/27					
HSLK	6		12/43	D	12/44	61/56	74/05			
IA	75	NOSTEXT	80/33							
IANI	7000		81/02		81/04					
IBM	2222		49/05		56/03	D	76/43			
IBMX	2221		56/03	L	56/06	56/09	56/13	57/05		
IBM2	2240		56/11		56/19	L				
IBM3	2253		56/15		56/28	L				
IBM4	2274		56/37		56/41	L				
IBSL	4		6/13	D						
IBSP	0		5/16	D	5/17					
ICTS	15		56/25							
IDC.AD	0		32/32	D	50/50					
IDC.CF	1		32/27	D	50/50					
IDC.CP	1		32/23	D	50/50					
IDC.CR	0		32/40	D	50/50					
IDC.CS	1		32/24	D	50/50					
IDC.DF	0		32/29	D	50/50					
IDC.FT	1		32/26	D	50/50					
IDC.ID	1		32/28	D	50/50					
IDC.IW	0		32/35	D	50/50					
IDC.LN	0		32/36	D	50/50					
IDC.ME	0		32/31	D	50/50					
IDC.NR	0		32/37	D	50/50					
IDC.RA	1		32/25	D	50/50					
IDC.RD	0		32/42	D	50/50					
IDC.RS	0		32/39	D	50/50					
IDC.SA	0		32/43	D	50/50					
IDC.SK	0		32/34	D	50/50					
IDC.ST	0		32/33	D	50/50					
IDTE	6		32/28	L	54/15	54/55	60/20	62/42		
IEC.AD	1		32/32	D	50/50					
IEC.CF	1		32/27	D	50/50					
IEC.CP	1		32/23	D	50/50					
IEC.CR	2		32/40	D	50/50					
IEC.CS	1		32/24	D	50/50					
IEC.DF	0		32/29	D	50/50					
IEC.FT	1		32/26	D	50/50					
IEC.ID	1		32/28	D	50/50					
IEC.IW	1		32/35	D	50/50					
IEC.LN	0		32/36	D	50/50					
IEC.ME	1		32/31	D	50/50					
IEC.NR	2		32/37	D	50/50					
IEC.RA	1		32/25	D	50/50					
IEC.RD	0		32/42	D	50/50					
IEC.RS	2		32/39	D	50/50					
IEC.SA	1		32/43	D	50/50					
IEC.SK	1		32/34	D	50/50					
IEC.ST	1		32/33	D	50/50					
IEM.AD	2		32/32	D	50/50					
IEM.CF	2		32/27	D	50/50					
IEM.CP	2		32/23	D	50/50					
IEM.CR	2		32/40	D	50/50					
IEM.CS	2		32/24	D	50/50					
IEM.DF	0		32/29	D	50/50					
IEM.FT	2		32/26	D	50/50					
IEM.ID	2		32/28	D	50/50					

SYMBOLIC REFERENCE TABLE.

IEM.IW	2		32/35 D	50/50								
IEM.LN	0		32/36 D	50/50								
IEM.ME	1		32/31 D	50/50								
IEM.NR	1		32/37 D	50/50								
IEM.RA	2		32/25 D	50/50								
IEM.RD	0		32/42 D	50/50								
IEM.RS	2		32/39 D	50/50								
IEM.SA	0		32/43 D	50/50								
IEM.SK	2		32/34 D	50/50								
IEM.ST	1		32/33 D	50/50								
IIC	2404		49/02	58/29 D	66/51	77/44						
IICA	2413		49/01 S	58/37 D	63/36 S							
IICB	2420		58/43 L	63/35								
IICX	2403		58/29 L	58/38	58/40							
IIC1	2412		58/31	58/35 L								
IL	24		35/10 D	61/41 S	69/41	70/06	80/01 S					
			61/31	61/44	70/02 S	76/29 S						
ILJF	23		69/18									
IMB	4074		57/04	71/16								
IMF	2423		40/23	56/27	61/38	68/51	69/57	72/01	72/50	79/51		
			48/05	59/13 D	65/43	69/04	71/12	72/43	76/28	83/41		
IMFX	2422		59/13 L	59/19								
IMF1	2425		59/15 L	59/16								
INST	6		10/31 D	10/32								
IOLK	5		12/42 D	42/43	63/39	74/03	78/04					
			12/43	42/50	67/33	74/05						
IOQL	2		15/20 D									
IOQP	4		15/21 D									
IOQS	1		15/19 D									
IORQP	14		5/41 D	5/42								
IOSP	7		5/23 D	5/33								
IR	50	NOSTEXT	48/03	74/25	80/17	82/43	83/26					
			65/41	80/05	80/46	83/21						
IRTE	21		32/41 L									
ISF	2435		40/17	49/29	59/49 D							
ISFA	2445		49/37 S	59/55 D	65/10 S	75/35 S						
ISFX	2434		59/49 L	60/11	60/41							
ISF1	2466		60/07	60/14 L								
ISF2	2471		60/09	60/16 L								
ISF3	2500		60/19	60/23 L	60/25							
ISF4	2505		60/21	60/27 L								
ISF5	2506		60/16	60/28 L	60/33	60/37	60/39					
ISF6	2510		60/23	60/30 L								
ISF7	2521		60/35	60/38 L								
ISF8	2525		60/32	60/41 L								
IWTE	14		32/35 L									
IWTO	17		23/29 D									
IXCR	4		23/21 D									
IXIW	3		23/20 D									
IXMX	4		23/22 D									
IXST	1		23/18 D									
IXUR	2		23/19 D									
LA6DE	4		16/49 L	21/32	21/40	21/56	22/10	22/24	22/35	22/46		
			20/26	21/34	21/47	22/01	22/15	22/26	22/40			
			21/25	21/36	21/49	22/03	22/17	22/28	22/42			
			21/27	21/38	21/54	22/08	22/22	22/33	22/44			

SYMBOLIC REFERENCE TABLE.

LA6DI	1	16/46 L	20/41	20/48	20/52	21/11	21/15	
		20/39	20/43	20/50	20/54	21/13	21/17	
LA6DJ	2	16/47 L	21/02	21/04				
LA6DP	3	16/48 L	20/27					
LA6DX	5	16/50 L						
LA6MX	6	16/51 L						
LCDA	35	21/17 D						
LCDB	15	21/25 D						
LCDC	15	21/27 D						
LCDD	43	21/02 D						
LCDE	0	20/26 D						
LCDF	15	21/36 D						
LCDG	57	21/04 D						
LCDH	15	21/38 D						
LCDI	47	20/39 D						
LCDJ	47	20/41 D						
LCDK	77	20/48 D						
LCDL	77	20/50 D						
LCDM	47	20/43 D						
LCDN	15	21/40 D						
LCDP	0	20/27 D						
LCDQ	67	20/52 D						
LCDR	67	20/54 D						
LCDV	15	21/32 D						
LCDW	15	21/34 D						
LCDX	35	21/11 D						
LCDY	35	21/13 D						
LCDZ	35	21/15 D						
LCEA	15	21/47 D						
LCEB	15	21/49 D						
LCEC	15	21/54 D						
LCED	15	21/56 D						
LCEE	15	22/01 D						
LCEF	15	22/03 D						
LCEG	15	22/15 D						
LCEH	15	22/17 D						
LCEI	15	22/22 D						
LCEJ	15	22/24 D						
LCEK	15	22/26 D						
LCEL	15	22/28 D						
LCEM	15	22/08 D						
LCEN	15	22/10 D						
LCEO	15	22/33 D						
LCEP	15	22/35 D						
LCES	15	22/40 D						
LCEU	15	22/42 D						
LCEV	15	22/44 D						
LCEW	15	22/46 D						
LDAMDA	1	21/17 D						
LDAMDB	1	21/25 D						
LDAMDC	1	21/27 D						
LDAMDD	1	21/02 D						
LDAMDE	0	20/26 D						
LDAMDF	0	21/36 D						
LDAMDG	1	21/04 D						
LDAMDH	0	21/38 D						
LDAMDI	1	20/39 D						

SYMBOLIC REFERENCE TABLE.

LDAMDJ	1	20/41	D				
LDAMDK	1	20/48	D				
LDAMDL	1	20/50	D				
LDAMDM	1	20/43	D				
LDAMDN	0	21/40	D				
LDAMDP	0	20/27	D				
LDAMDQ	1	20/52	D				
LDAMDR	1	20/54	D				
LDAMDV	0	21/32	D				
LDAMDW	0	21/34	D				
LDAMDX	1	21/11	D				
LDAMDY	1	21/13	D				
LDAMDZ	1	21/15	D				
LDAMEA	0	21/47	D				
LDAMEB	0	21/49	D				
LDAMEC	0	21/54	D				
LDAMED	0	21/56	D				
LDAMEE	0	22/01	D				
LDAMEF	0	22/03	D				
LDAMEG	0	22/15	D				
LDAMEH	0	22/17	D				
LDAMEI	0	22/22	D				
LDAMEJ	0	22/24	D				
LDAMEK	0	22/26	D				
LDAMEL	0	22/28	D				
LDAMEM	0	22/08	D				
LDAMEN	0	22/10	D				
LDAMEO	0	22/33	D				
LDAMEP	0	22/35	D				
LDAMES	0	22/40	D				
LDAMEU	0	22/42	D				
LDAMEV	0	22/44	D				
LDAMEW	0	22/46	D				
LDIF	17	13/35	D	13/44	D		
LEP	413	24/16	D				
LEP1	414	24/17	D				
LFMI	21	13/24	D	13/33		13/42	
LLCV	4	4/32	D				
LMLF	21	13/33	D	13/42	D		
LMNI	1100	74/52					
LNRE	15	32/36	L				
LPSN	17	13/26	D	13/35		13/44	
LSLB	40	4/33	D	15/41			
LSLBS	5	15/40	D				
LSLK	7	12/44	D	12/46			
LSPSDA	1	21/17	D	21/17			
LSPSDB	4	21/25	D	21/25			
LSPSDC	40	21/27	D	21/27			
LSPSDD	1	21/02	D	21/02			
LSPSDE	1	20/26	D	20/26			
LSPSDF	10	21/36	D	21/36			
LSPSDG	1	21/04	D	21/04			
LSPSDH	40	21/38	D	21/38			
LSPSDI	1	20/39	D	20/39			
LSPSDJ	1	20/41	D	20/41			
LSPSDK	1	20/48	D	20/48			
LSPSDL	1	20/50	D	20/50			

SYMBOLIC REFERENCE TABLE.

LSPSDM	1	20/43 D	20/43
LSPSDN	4	21/40 D	21/40
LSPSDP	1	20/27 D	20/27
LSPSDQ	1	20/52 D	20/52
LSPSDR	1	20/54 D	20/54
LSPSDV	10	21/32 D	21/32
LSPSDW	10	21/34 D	21/34
LSPSDX	1	21/11 D	21/11
LSPSDY	1	21/13 D	21/13
LSPSDZ	1	21/15 D	21/15
LSPSEA	40	21/47 D	21/47
LSPSEB	40	21/49 D	21/49
LSPSEC	40	21/54 D	21/54
LSPSED	40	21/56 D	21/56
LSPSEE	40	22/01 D	22/01
LSPSEF	40	22/03 D	22/03
LSPSEG	40	22/15 D	22/15
LSPSEH	40	22/17 D	22/17
LSPSEI	40	22/22 D	22/22
LSPSEJ	40	22/24 D	22/24
LSPSEK	40	22/26 D	22/26
LSPSEL	40	22/28 D	22/28
LSPSEM	40	22/08 D	22/08
LSPSEN	40	22/10 D	22/10
LSPSEO	10	22/33 D	22/33
LSPSEP	10	22/35 D	22/35
LSPSES	20	22/40 D	22/40
LSPSEU	20	22/42 D	22/42
LSPSEV	20	22/44 D	22/44
LSPSEW	20	22/46 D	22/46
LSPTDA	34	21/17 D	21/17
LSPTDB	200	21/25 D	21/25
LSPTDC	140	21/27 D	21/27
LSPTDD	40	21/02 D	21/02
LSPTDE	0	20/26 D	20/26
LSPTDF	460	21/36 D	21/36
LSPTDG	57	21/04 D	21/04
LSPTDH	540	21/38 D	21/38
LSPTDI	30	20/39 D	20/39
LSPTDJ	30	20/41 D	20/41
LSPTDK	30	20/48 D	20/48
LSPTDL	30	20/50 D	20/50
LSPTDM	40	20/43 D	20/43
LSPTDN	124	21/40 D	21/40
LSPTDP	0	20/27 D	20/27
LSPTDQ	40	20/52 D	20/52
LSPTDR	40	20/54 D	20/54
LSPTDV	240	21/32 D	21/32
LSPTDW	240	21/34 D	21/34
LSPTDX	25	21/11 D	21/11
LSPTDY	25	21/13 D	21/13
LSPTDZ	34	21/15 D	21/15
LSPTEA	140	21/47 D	21/47
LSPTEB	300	21/49 D	21/49
LSPTEC	300	21/54 D	21/54
LSPTED	300	21/56 D	21/56
LSPTEE	540	22/01 D	22/01

SYMBOLIC REFERENCE TABLE.

LSPTEF	540	22/03 D	22/03
LSPTEG	240	22/15 D	22/15
LSPTEH	240	22/17 D	22/17
LSPTEI	440	22/22 D	22/22
LSPTEJ	440	22/24 D	22/24
LSPTEK	700	22/26 D	22/26
LSPTEL	1100	22/28 D	22/28
LSPTEM	1040	22/08 D	22/08
LSPTEN	1300	22/10 D	22/10
LSPTEO	150	22/33 D	22/33
LSPTEP	150	22/35 D	22/35
LSPTES	320	22/40 D	22/40
LSPTEU	320	22/42 D	22/42
LSPTEV	460	22/44 D	22/44
LSPTEW	620	22/46 D	22/46
LTCYDA	1	21/17 D	
LTCYDB	2	21/25 D	
LTCYDC	2	21/27 D	
LTCYDD	2	21/02 D	
LTCYDE	0	20/26 D	
LTCYDF	2	21/36 D	
LTCYDG	2	21/04 D	
LTCYDH	2	21/38 D	
LTCYDI	4	20/39 D	
LTCYDJ	2	20/41 D	
LTCYDK	4	20/48 D	
LTCYDL	2	20/50 D	
LTCYDM	2	20/43 D	
LTCYDN	1	21/40 D	
LTCYDP	0	20/27 D	
LTCYDQ	2	20/52 D	
LTCYDR	0	20/54 D	
LTCYDV	2	21/32 D	
LTCYDW	2	21/34 D	
LTCYDX	4	21/11 D	
LTCYDY	2	21/13 D	
LTCYDZ	2	21/15 D	
LTCYEA	2	21/47 D	
LTCYEB	2	21/49 D	
LTCYEC	1	21/54 D	
LTCYED	1	21/56 D	
LTCYEE	1	22/01 D	
LTCYEF	1	22/03 D	
LTCYEG	0	22/15 D	
LTCYEH	0	22/17 D	
LTCYEI	1	22/22 D	
LTCYEJ	1	22/24 D	
LTCYEK	2	22/26 D	
LTCYEL	3	22/28 D	
LTCYEM	2	22/08 D	
LTCYEN	2	22/10 D	
LTCYEO	0	22/33 D	
LTCYEP	0	22/35 D	
LTCYES	1	22/40 D	
LTCYEU	1	22/42 D	
LTCYEV	2	22/44 D	
LTCYEW	3	22/46 D	

SYMBOLIC REFERENCE TABLE.

MA	77	NOSTEXT	68/42	69/01	71/47
MAXU	20		36/11 D	40/42	83/31
MCLTDA	0		21/17 D		
MCLTDB	7224		21/25 D		
MCLTDC	7350		21/27 D		
MCLTDD	7136		21/02 D		
MCLTDE	4001		20/26 D		
MCLTDF	7344		21/36 D		
MCLTDG	6566		21/04 D		
MCLTDH	7344		21/38 D		
MCLTDI	7144		20/39 D		
MCLTDJ	7152		20/41 D		
MCLTDK	7144		20/48 D		
MCLTDL	7152		20/50 D		
MCLTDM	7224		20/43 D		
MCLTDN	7730		21/40 D		
MCLTDP	4001		20/27 D		
MCLTDQ	7224		20/52 D		
MCLTDR	7777		20/54 D		
MCLTDV	0		21/32 D		
MCLTDW	0		21/34 D		
MCLTDX	7144		21/11 D		
MCLTDY	7132		21/13 D		
MCLTDZ	6134		21/15 D		
MCLTEA	7746		21/47 D		
MCLTEB	7746		21/49 D		
MCLTEC	7776		21/54 D		
MCLTED	7776		21/56 D		
MCLTEE	7762		22/01 D		
MCLTEF	7762		22/03 D		
MCLTEG	7751		22/15 D		
MCLTEH	7751		22/17 D		
MCLTEI	7737		22/22 D		
MCLTEJ	7737		22/24 D		
MCLTEK	7727		22/26 D		
MCLTEL	7752		22/28 D		
MCLTEM	7747		22/08 D		
MCLTEN	7751		22/10 D		
MCLTEO	7755		22/33 D		
MCLTEP	7755		22/35 D		
MCLTES	7754		22/40 D		
MCLTEU	7754		22/42 D		
MCLTEV	7764		22/44 D		
MCLTEW	7744		22/46 D		
MDLDA	0		21/17 D		
MDLDB	0		21/25 D		
MDLDC	0		21/27 D		
MDLDD	0		21/02 D		
MDLDE	0		20/26 D		
MDLDF	0		21/36 D		
MDLDG	0		21/04 D		
MDLDH	0		21/38 D		
MDLDI	0		20/39 D		
MDLDJ	0		20/41 D		
MDLDK	0		20/48 D		
MDLDL	0		20/50 D		
MDLDM	0		20/43 D		

SYMBOLIC REFERENCE TABLE.

MDLDN	0	21/40 D
MDLDP	0	20/27 D
MDLDQ	0	20/52 D
MDLDR	0	20/54 D
MDLDV	0	21/32 D
MDLDW	0	21/34 D
MDLDX	0	21/11 D
MDLDY	0	21/13 D
MDLDZ	0	21/15 D
MDLEA	30467	21/47 D
MDLEB	30467	21/49 D
MDLEC	46062	21/54 D
MDLED	46062	21/56 D
MDLEE	46062	22/01 D
MDLEF	46062	22/03 D
MDLEG	46061	22/15 D
MDLEH	46061	22/17 D
MDLEI	46061	22/22 D
MDLEJ	46061	22/24 D
MDLEK	46061	22/26 D
MDLEL	46061	22/28 D
MDLEM	46062	22/08 D
MDLEN	46062	22/10 D
MDLEO	30523	22/33 D
MDLEP	30523	22/35 D
MDLES	30523	22/40 D
MDLEU	30523	22/42 D
MDLEV	30523	22/44 D
MDLEW	30523	22/46 D
MFRL	10	36/13 D
MLDY	3	57/18
MLIDDA	13	21/17 D
MLIDDB	14	21/25 D
MLIDDC	115	21/27 D
MLIDDD	110	21/02 D
MLIDDE	0	20/26 D
MLIDDF	120	21/36 D
MLIDDG	111	21/04 D
MLIDDH	121	21/38 D
MLIDDI	2	20/39 D
MLIDDJ	3	20/41 D
MLIDDK	4	20/48 D
MLIDDL	5	20/50 D
MLIDDM	7	20/43 D
MLIDDN	124	21/40 D
MLIDDP	0	20/27 D
MLIDDQ	17	20/52 D
MLIDDR	15	20/54 D
MLIDDV	6	21/32 D
MLIDDW	6	21/34 D
MLIDDX	10	21/11 D
MLIDDY	11	21/13 D
MLIDDZ	12	21/15 D
MLIDEA	130	21/47 D
MLIDEB	131	21/49 D
MLIDEC	132	21/54 D
MLIDED	133	21/56 D

SYMBOLIC REFERENCE TABLE.

MLIDEE	134		22/01 D						
MLIDEF	137		22/03 D						
MLIDEG	142		22/15 D						
MLIDEH	143		22/17 D						
MLIDEI	144		22/22 D						
MLIDEJ	147		22/24 D						
MLIDEK	145		22/26 D						
MLIDEL	146		22/28 D						
MLIDEM	135		22/08 D						
MLIDEN	136		22/10 D						
MLIDEO	162		22/33 D						
MLIDEP	163		22/35 D						
MLIDES	164		22/40 D						
MLIDEU	167		22/42 D						
MLIDEV	165		22/44 D						
MLIDEW	166		22/46 D						
MMFL	122	NOSTEXT	80/29						
MMXC	10		4/34 D						
MSD	110	NOSTEXT	24/12 D						
MSGH	7510		27/10 L						
MST	1102		40/13 L	40/16	40/18	40/20	50/11	50/12	50/13
MST1	1116		40/14	40/22 L					
MS2W	36	NOSTEXT	46/06	76/50					
MXCT	10		4/35 D						
MXDE	23		32/44 L	32/46					
MXNT	53		22/57 D						
MXSL	24		23/44 D	54/17	54/28	58/08			
NB	47		35/17 D	42/39	63/32 S	67/39 S	78/11 S		
			42/36 S	42/47 S	67/30	78/01			
NCCT	4		4/36 D						
NCPL	70	NOSTEXT	79/43						
NFTP	24		34/48 D						
NORE	6		29/34 D	32/36	32/37				
NRDE	16		32/37 L	44/30	45/15	45/16			
NRVE	10		32/30 L						
NTDA	2140		21/17 D						
NTDB	3222		21/25 D						
NTDC	3346		21/27 D						
NTDD	3136		21/02 D						
NTDE	0		20/26 D						
NTDF	3344		21/36 D						
NTDG	2566		21/04 D						
NTDH	3344		21/38 D						
NTDI	3140		20/39 D						
NTDJ	3150		20/41 D						
NTDK	3140		20/48 D						
NTDL	3150		20/50 D						
NTDM	3222		20/43 D						
NTDN	3727		21/40 D						
NTDP	0		20/27 D						
NTDQ	3222		20/52 D						
NTDR	3777		20/54 D						
NTDV	1456		21/32 D						
NTDW	3144		21/34 D						
NTDX	3140		21/11 D						
NTDY	3130		21/13 D						
NTDZ	2134		21/15 D						

SYMBOLIC REFERENCE TABLE.

NTEA	3746	21/47 D
NTEB	3746	21/49 D
NTEC	3776	21/54 D
NTED	3776	21/56 D
NTEE	3762	22/01 D
NTEF	3762	22/03 D
NTEG	3751	22/15 D
NTEH	3751	22/17 D
NTEI	3737	22/22 D
NTEJ	3737	22/24 D
NTEK	3727	22/26 D
NTEL	3752	22/28 D
NTEM	3747	22/08 D
NTEN	3751	22/10 D
NTEO	3755	22/33 D
NTEP	3755	22/35 D
NTES	3754	22/40 D
NTEU	3754	22/42 D
NTEV	3764	22/44 D
NTEW	3744	22/46 D
NUDA	100	21/17 D
NUDB	100	21/25 D
NUDC	100	21/27 D
NUDD	74	21/02 D
NUDE	0	20/26 D
NUDF	10	21/36 D
NUDG	74	21/04 D
NUDH	10	21/38 D
NUDI	100	20/39 D
NUDJ	100	20/41 D
NUDK	100	20/48 D
NUDL	100	20/50 D
NUDM	100	20/43 D
NUDN	10	21/40 D
NUDP	0	20/27 D
NUDQ	100	20/52 D
NUDR	100	20/54 D
NUDV	10	21/32 D
NUDW	10	21/34 D
NUDX	100	21/11 D
NUDY	100	21/13 D
NUDZ	100	21/15 D
NUEA	40	21/47 D
NUEB	10	21/49 D
NUEC	40	21/54 D
NUED	10	21/56 D
NUEE	10	22/01 D
NUEF	10	22/03 D
NUEG	40	22/15 D
NUEH	10	22/17 D
NUEI	10	22/22 D
NUEJ	10	22/24 D
NUEK	10	22/26 D
NUEL	10	22/28 D
NUEM	10	22/08 D
NUEN	10	22/10 D
NUEO	40	22/33 D

SYMBOLIC REFERENCE TABLE.

NUEP	10		22/35 D										
NUES	10		22/40 D										
NUEU	10		22/42 D										
NUEV	10		22/44 D										
NUEW	10		22/46 D										
OA	76	NOSTEXT	46/51	47/21									
OANI	7200		81/04										
ON	70	NOSTEXT	47/25	53/41	68/43	69/02	71/48	80/25					
OVI	2531		61/30 D	63/30	65/11								
OVIA	2545		61/43 D	82/46 S	82/50 S								
OVIX	2530		61/30 L	61/40	62/16								
OVI1	2607		61/55	62/03	62/08	62/14 L							
OVI1.1	2612		62/13	62/16 L									
OVI2	2527		61/28 L	61/32	61/46								
PAD1	0		12/37 D	42/48	59/50	66/55	77/26						
			12/38	42/50	62/04	67/05							
PAD2	1		12/38 D	12/39									
PAD3	2		12/39 D	12/40									
PAD4	3		12/40 D	12/41	42/41	42/43	74/21						
PARE	10		32/31 L	45/15	70/35								
PB	50		35/18 D	44/46 S	58/34 S	67/29 S	70/03 S	78/20	80/02 S				
			44/43	58/30	63/33 S	69/45	77/57 S	78/23 S					
PCH	2617		44/01	62/45 D	66/49	77/33							
PCHA	2624		62/49 D	63/29 S									
PCHX	2616		62/45 L	62/47	63/03								
PCH1	2630		62/52 L	62/54									
PCH2	2636		62/52	63/01 L									
PCH3	2614		62/42 L	62/51									
PCH4	2615		62/43 L	62/56									
PCRL	10		36/12 D	69/08									
PDDDA	1		21/17 D										
PDDDB	1		21/25 D										
PDDDC	1		21/27 D										
PDDDD	1		21/02 D										
PDDDE	1		20/26 D										
PDDDF	1		21/36 D										
PDDDG	1		21/04 D										
PDDDH	1		21/38 D										
PDDDI	1		20/39 D										
PDDDJ	1		20/41 D										
PDDDK	1		20/48 D										
PDDDL	1		20/50 D										
PDDDM	1		20/43 D										
PDDDN	1		21/40 D										
PDDDP	1		20/27 D										
PDDDQ	1		20/52 D										
PDDDR	1		20/54 D										
PDDDV	1		21/32 D										
PDDDW	1		21/34 D										
PDDDX	1		21/11 D										
PDDDY	1		21/13 D										
PDDDZ	1		21/15 D										
PDDEA	1		21/47 D										
PDDEB	2		21/49 D										
PDDEC	1		21/54 D										
PDDED	1		21/56 D										
PDDEE	2		22/01 D										

SYMBOLIC REFERENCE TABLE.

PDDEF	2	22/03 D							
PDDEG	1	22/15 D							
PDDEH	1	22/17 D							
PDDEI	2	22/22 D							
PDDEJ	2	22/24 D							
PDDEK	3	22/26 D							
PDDEL	4	22/28 D							
PDDEM	3	22/08 D							
PDDEN	4	22/10 D							
PDDEO	1	22/33 D							
PDDEP	1	22/35 D							
PDDES	2	22/40 D							
PDDEU	2	22/42 D							
PDDEV	3	22/44 D							
PDDEW	4	22/46 D							
PDT	2642	40/19	49/48	63/27 D					
PDTA	2710	63/37	63/57 L						
PDTB	2712	63/28	64/04 L						
PDTX	2641	63/27 L	63/55						
PDT1	2675	63/31	63/48 L						
PDT2	2704	63/49	63/51	63/54 L					
PERR	14	13/29 D							
PFR	2715	49/47	64/22 D						
PFRA	2730	64/26	64/28	64/32 L					
PFRX	2714	64/22 L	64/30						
PI	32	35/13 D	66/56	67/08 S	77/27	77/54 S			
		63/34 S	67/06	67/26 S	77/31 S				
PILL	7	10/32 D	10/33						
PKDA	2	21/17 D							
PKDB	3	21/25 D							
PKDC	2	21/27 D							
PKDD	10	21/02 D							
PKDE	0	20/26 D							
PKDF	3	21/36 D							
PKDG	3	21/04 D							
PKDH	2	21/38 D							
PKDI	10	20/39 D							
PKDJ	10	20/41 D							
PKDK	10	20/48 D							
PKDL	10	20/50 D							
PKDM	3	20/43 D							
PKDN	1	21/40 D							
PKDP	0	20/27 D							
PKDQ	3	20/52 D							
PKDR	1	20/54 D							
PKDV	1	21/32 D							
PKDW	1	21/34 D							
PKDX	10	21/11 D							
PKDY	10	21/13 D							
PKDZ	4	21/15 D							
PKEA	10	21/47 D							
PKEB	6	21/49 D							
PKEC	2	21/54 D							
PKED	2	21/56 D							
PKEE	1	22/01 D							
PKEF	1	22/03 D							
PKEG	1	22/15 D							

SYMBOLIC REFERENCE TABLE.

PKEH	1	22/17 D	
PKEI	1	22/22 D	
PKEJ	1	22/24 D	
PKEK	1	22/26 D	
PKEL	1	22/28 D	
PKEM	1	22/08 D	
PKEN	1	22/10 D	
PKEO	1	22/33 D	
PKEP	1	22/35 D	
PKES	1	22/40 D	
PKEU	1	22/42 D	
PKEV	1	22/44 D	
PKEW	1	22/46 D	
PLTL	36	8/39 D	
PLTP	1	5/17 D	5/18
PNUNDA	1	21/17 D	
PNUNDB	1	21/25 D	
PNUNDC	1	21/27 D	
PNUNDD	1	21/02 D	
PNUNDE	1	20/26 D	
PNUNDF	1	21/36 D	
PNUNDG	1	21/04 D	
PNUNDH	1	21/38 D	
PNUNDI	1	20/39 D	
PNUNDJ	1	20/41 D	
PNUNDK	1	20/48 D	
PNUNDL	1	20/50 D	
PNUNDM	1	20/43 D	
PNUNDN	1	21/40 D	
PNUNDP	1	20/27 D	
PNUNDQ	1	20/52 D	
PNUNDR	1	20/54 D	
PNUNDV	1	21/32 D	
PNUNDW	1	21/34 D	
PNUNDX	1	21/11 D	
PNUNDY	1	21/13 D	
PNUNDZ	1	21/15 D	
PNUNEA	1	21/47 D	
PNUNEB	1	21/49 D	
PNUNEC	1	21/54 D	
PNUNED	1	21/56 D	
PNUNEE	1	22/01 D	
PNUNEF	1	22/03 D	
PNUNEG	1	22/15 D	
PNUNEH	1	22/17 D	
PNUNEI	2	22/22 D	
PNUNEJ	2	22/24 D	
PNUNEK	3	22/26 D	
PNUNEL	4	22/28 D	
PNUNEM	2	22/08 D	
PNUNEN	2	22/10 D	
PNUNEO	1	22/33 D	
PNUNEP	1	22/35 D	
PNUNES	2	22/40 D	
PNUNEU	2	22/42 D	
PNUNEV	3	22/44 D	
PNUNEW	4	22/46 D	

SYMBOLIC REFERENCE TABLE.

PO	66		35/26 D	61/36	62/02	69/51	76/22		
			47/13	61/51	65/13	73/49 S			
PPCP	77	NOSTEXT	80/27	80/29					
PPFW	1100	NOSTEXT	26/18	40/04	84/38				
PPR	257	NOSTEXT	40/24	79/52					
PPSLB	10		36/14 D	44/41	63/42	67/36	77/42	78/07	
PRE	2740		48/38	65/02 D					
PREX	2737		65/02 L	65/19					
PRE1	2765		65/17 L	65/18					
PRE2	2734		64/56 L	65/12					
PRFM	15		13/28 D						
PRS	4256		40/05	79/42 D					
PRSA	4670		82/56	83/44 L					
PRSB	4706		83/04	83/48 L					
PRSC	4713		82/23	83/52 L					
PRSD	4723		80/12	84/01 L					
PRSX	4255		79/42 L	83/11					
PRS1	4276		79/48	79/54 L					
PRS12	4615		83/09 L						
PRS13	4616		83/10 L	83/24	83/27	83/37			
PRS14	4646		83/22	83/29 L					
PRS14.1	4660		83/32	83/39 L					
PRS2	4311		80/07 L	80/08					
PRS3	4317		80/14 L	80/20					
PRS4	4326		80/15	80/22 L					
PRS4.1	4354		80/39	80/41 L					
PRS5	4374		80/49	80/55 L					
PRS6	4377		80/53	80/57 L					
PRS7	4457		81/30	81/34 L	81/37				
PRS8	4472		81/43 L	81/46					
PSBFDB	10		21/25 D						
PSBFDC	1		21/27 D						
PSBFDE	40		20/26 D						
PSBFDF	4		21/36 D						
PSBFDH	1		21/38 D						
PSBFDN	10		21/40 D						
PSBFDP	40		20/27 D						
PSBFDV	4		21/32 D						
PSBFDW	4		21/34 D						
PSBFEA	1		21/47 D						
PSBFEB	1		21/49 D						
PSBFEC	1		21/54 D						
PSBFED	1		21/56 D						
PSBFEE	1		22/01 D						
PSBFEF	1		22/03 D						
PSBFEG	1		22/15 D						
PSBFEH	1		22/17 D						
PSBFEI	1		22/22 D						
PSBFEJ	1		22/24 D						
PSBFEK	1		22/26 D						
PSBFEL	1		22/28 D						
PSBFEM	1		22/08 D						
PSBFEN	1		22/10 D						
PSBFEO	4		22/33 D						
PSBFEP	4		22/35 D						
PSBFES	2		22/40 D						
PSBFEU	2		22/42 D						

SYMBOLIC REFERENCE TABLE.

PSBFEV	2	22/44 D					
PSBFEW	2	22/46 D					
PSLB	4	4/37 D					
PSLTDA	1510	21/17 D					
PSLTDB	240	21/25 D	70/56				
PSLTDC	26	21/27 D					
PSLTDD	240	21/02 D					
PSLTDE	0	20/26 D					
PSLTDF	114	21/36 D					
PSLTDG	1064	21/04 D					
PSLTDH	26	21/38 D					
PSLTDI	330	20/39 D					
PSLTDJ	710	20/41 D					
PSLTDK	162	20/48 D					
PSLTDL	344	20/50 D					
PSLTDM	2400	20/43 D					
PSLTDN	430	21/40 D					
PSLTDP	0	20/27 D					
PSLTDQ	1200	20/52 D					
PSLTDR	3600	20/54 D					
PSLTDV	144	21/32 D					
PSLTDW	144	21/34 D					
PSLTDX	144	21/11 D					
PSLTDY	310	21/13 D					
PSLTDZ	644	21/15 D					
PSLTEA	5	21/47 D					
PSLTEB	12	21/49 D					
PSLTEC	37	21/54 D					
PSLTED	37	21/56 D					
PSLTEE	74	22/01 D					
PSLTEF	74	22/03 D					
PSLTEG	65	22/15 D					
PSLTEH	65	22/17 D					
PSLTEI	62	22/22 D					
PSLTEJ	62	22/24 D					
PSLTEK	65	22/26 D					
PSLTEL	63	22/28 D					
PSLTEM	57	22/08 D					
PSLTEN	75	22/10 D					
PSLTEO	324	22/33 D					
PSLTEP	324	22/35 D					
PSLTES	152	22/40 D					
PSLTEU	152	22/42 D					
PSLTEV	150	22/44 D					
PSLTEW	150	22/46 D					
PSPT	40	36/15 D	43/14	67/14	70/54	77/36	
PSPTDA	34	21/17 D					
PSPTDB	40	21/25 D					
PSPTDC	3	21/27 D					
PSPTDD	40	21/02 D					
PSPTDE	0	20/26 D					
PSPTDF	46	21/36 D					
PSPTDG	57	21/04 D					
PSPTDH	13	21/38 D					
PSPTDI	30	20/39 D					
PSPTDJ	30	20/41 D					
PSPTDK	30	20/48 D					

SYMBOLIC REFERENCE TABLE.

PSPTDL	30	20/50 D	
PSPTDM	40	20/43 D	
PSPTDN	25	21/40 D	
PSPTDP	0	20/27 D	
PSPTDQ	40	20/52 D	
PSPTDR	40	20/54 D	
PSPTDV	24	21/32 D	
PSPTDW	24	21/34 D	
PSPTDX	25	21/11 D	
PSPTDY	25	21/13 D	
PSPTDZ	34	21/15 D	
PSPTEA	3	21/47 D	
PSPTEB	6	21/49 D	
PSPTEC	6	21/54 D	
PSPTED	6	21/56 D	
PSPTEE	13	22/01 D	
PSPTEF	13	22/03 D	
PSPTEG	5	22/15 D	
PSPTEH	5	22/17 D	
PSPTEI	11	22/22 D	
PSPTEJ	11	22/24 D	
PSPTEK	16	22/26 D	
PSPTEL	22	22/28 D	
PSPTEM	21	22/08 D	
PSPTEN	26	22/10 D	
PSPTEO	15	22/33 D	
PSPTEP	15	22/35 D	
PSPTES	15	22/40 D	
PSPTEU	15	22/42 D	
PSPTEV	23	22/44 D	
PSPTEW	31	22/46 D	
PTCYDA	36	21/17 D	21/17
PTCYDB	12	21/25 D	21/25
PTCYDC	17	21/27 D	21/27
PTCYDD	12	21/02 D	21/02
PTCYDE	0	20/26 D	20/26
PTCYDF	4	21/36 D	21/36
PTCYDG	30	21/04 D	21/04
PTCYDH	4	21/38 D	21/38
PTCYDI	22	20/39 D	20/39
PTCYDJ	23	20/41 D	20/41
PTCYDK	23	20/48 D	20/48
PTCYDL	23	20/50 D	20/50
PTCYDM	50	20/43 D	20/43
PTCYDN	23	21/40 D	21/40
PTCYDP	0	20/27 D	20/27
PTCYDQ	50	20/52 D	20/52
PTCYDR	50	20/54 D	20/54
PTCYDV	12	21/32 D	21/32
PTCYDW	12	21/34 D	21/34
PTCYDX	23	21/11 D	21/11
PTCYDY	23	21/13 D	21/13
PTCYDZ	36	21/15 D	21/15
PTCYEA	4	21/47 D	21/47
PTCYEB	4	21/49 D	21/49
PTCYEC	7	21/54 D	21/54
PTCYED	7	21/56 D	21/56

SYMBOLIC REFERENCE TABLE.

PTCYEE	7		22/01 D	22/01				
PTCYEF	7		22/03 D	22/03				
PTCYEG	11		22/15 D	22/15				
PTCYEH	11		22/17 D	22/17				
PTCYEI	11		22/22 D	22/22				
PTCYEJ	11		22/24 D	22/24				
PTCYEK	11		22/26 D	22/26				
PTCYEL	11		22/28 D	22/28				
PTCYEM	7		22/08 D	22/08				
PTCYEN	7		22/10 D	22/10				
PTCYEO	17		22/33 D	22/33				
PTCYEP	17		22/35 D	22/35				
PTCYES	17		22/40 D	22/40				
PTCYEU	17		22/42 D	22/42				
PTCYEV	17		22/44 D	22/44				
PTCYEW	17		22/46 D	22/46				
PTYE	1		29/29 D	32/31				
PUTL	10		10/33 D	15/43				
PUTLS	3		15/42 D	61/51	65/13	73/50	83/12	
PUTP	3		5/19 D	5/20	82/35	82/37		
PXPP	64	NOSTEXT	80/22					
RAME	3		32/25 L					
RART	2		23/34 D	32/25				
RATDA	0		21/17 D					
RATDB	3		21/25 D					
RATDC	3		21/27 D					
RATDD	0		21/02 D					
RATDE	0		20/26 D					
RATDF	4		21/36 D					
RATDG	0		21/04 D					
RATDH	4		21/38 D					
RATDI	0		20/39 D					
RATDJ	0		20/41 D					
RATDK	0		20/48 D					
RATDL	0		20/50 D					
RATDM	0		20/43 D					
RATDN	3		21/40 D					
RATDP	0		20/27 D					
RATDQ	0		20/52 D					
RATDR	0		20/54 D					
RATDV	3		21/32 D					
RATDW	3		21/34 D					
RATDX	0		21/11 D					
RATDY	0		21/13 D					
RATDZ	0		21/15 D					
RATEA	3		21/47 D					
RATEB	3		21/49 D					
RATEC	3		21/54 D					
RATED	3		21/56 D					
RATEE	3		22/01 D					
RATEF	3		22/03 D					
RATEG	3		22/15 D					
RATEH	3		22/17 D					
RATEI	3		22/22 D					
RATEJ	3		22/24 D					
RATEK	3		22/26 D					
RATEL	3		22/28 D					

SYMBOLIC REFERENCE TABLE.

RATEM	3	22/08 D							
RATEN	3	22/10 D							
RATEO	3	22/33 D							
RATEP	3	22/35 D							
RATES	3	22/40 D							
RATEU	3	22/42 D							
RATEV	3	22/44 D							
RATEW	3	22/46 D							
RBTDA	0	21/17 D							
RBTDB	3	21/25 D							
RBTDC	3	21/27 D							
RBTDD	0	21/02 D							
RBTDE	0	20/26 D							
RBTDF	5	21/36 D							
RBTDG	0	21/04 D							
RBTDH	5	21/38 D							
RBTDI	0	20/39 D							
RBTDJ	0	20/41 D							
RBTDK	0	20/48 D							
RBTDL	0	20/50 D							
RBTDM	0	20/43 D							
RBTDN	3	21/40 D							
RBTDP	0	20/27 D							
RBTDQ	0	20/52 D							
RBTDR	0	20/54 D							
RBTDV	3	21/32 D							
RBTDW	3	21/34 D							
RBTDX	0	21/11 D							
RBTDY	0	21/13 D							
RBTDZ	0	21/15 D							
RBTEA	3	21/47 D							
RBTEB	3	21/49 D							
RBTEC	3	21/54 D							
RBTED	3	21/56 D							
RBTEE	3	22/01 D							
RBTEF	3	22/03 D							
RBTEG	3	22/15 D							
RBTEH	3	22/17 D							
RBTEI	3	22/22 D							
RBTEJ	3	22/24 D							
RBTEK	3	22/26 D							
RBTEL	3	22/28 D							
RBTEM	3	22/08 D							
RBTEN	3	22/10 D							
RBTEO	3	22/33 D							
RBTEP	3	22/35 D							
RBTES	3	22/40 D							
RBTEU	3	22/42 D							
RBTEV	3	22/44 D							
RBTEW	3	22/46 D							
RC	65	35/25 D	45/49	48/52	49/55 S	56/14 S	72/32	75/30 S	
		45/46 S	46/08	49/19 S	56/12	56/41	74/47 S	80/03 S	
RCH	2772	42/08	65/37 D	80/07					
RCHX	2771	65/37 L	65/40	65/45	65/47				
RCTH	400	4/38 D							
RDCT	103	24/07 D							
RDFE	21	32/42 L							

SYMBOLIC REFERENCE TABLE.

RDST	2		10/27 D	10/28								
REC.AD	0		32/32 D									
REC.CF	2		32/27 D									
REC.CP	2		32/23 D									
REC.CR	1		32/40 D									
REC.CS	2		32/24 D									
REC.DF	0		32/29 D									
REC.FT	2		32/26 D									
REC.ID	2		32/28 D									
REC.IW	0		32/35 D									
REC.LN	1		32/36 D									
REC.ME	0		32/31 D									
REC.NR	1		32/37 D									
REC.RA	2		32/25 D									
REC.RD	1		32/42 D									
REC.RS	1		32/39 D									
REC.SA	1		32/43 D									
REC.SK	0		32/34 D									
REC.ST	1		32/33 D									
REDP	0		23/10 D									
RESE	17		32/38 L									
RHR	3010		60/38	63/48	66/12 D	75/52						
RHRX	3007		66/12 L	66/15	66/24							
RICHI$	1		3/29 D									
RIO	3027		64/01	66/47 D								
RIOA	3134		64/33	67/42 D	76/56							
RIOX	3026		64/33	66/47 L	67/32							
RIO1	3030		66/48 L	67/24	67/40	76/56						
RIO3	3064		66/54	67/09 L								
RIO4	3071		66/50	67/12 L								
RIO5	3073		67/11	67/13 L								
RIO6	3100		67/15	67/18 L								
RIO7	3111		67/19	67/26 L								
RLC	3137		49/18	68/16 D								
RLCA	3151		68/26 D	82/10 S	82/14 S							
RLCB	3153		68/29 D	81/40 S								
RLCC	3172		68/45 D	82/11 S	82/15 S							
RLCG	3227		68/43	69/13 L	81/50 S							
RLCH	3234		69/02	69/18 L								
RLCJ	3141		68/18 D	68/36 S	75/31 S							
RLCX	3136		68/16 L	68/19	68/24	68/31	69/10					
RLC1	3205		68/57 L	69/09								
RLC2	3225		69/06	69/10 L								
RLC6	3135		68/14 L	68/35								
RPI	3242		62/14	63/54	69/40 D	76/42						
RPIA	3271		70/05 D	82/47 S	82/51 S							
RPIX	3241		69/40 L	69/42	70/07							
RPI1	3252		69/46	69/48 L								
RPPM	100	NOSTEXT	69/04									
RS	16		35/04 D	49/06 S	49/53 S	56/07	56/28	65/07 S	75/55	76/39		
			44/07 S	49/20 S	50/05	56/21	64/57 S	75/48	76/32 S			
RSPF	15		13/46 D									
RSTO	5		23/30 D									
RSVE	5		29/33 D	32/39	32/40							
RTC.AD	0		32/32 D	52/23								
RTC.CF	12		32/27 D	52/23								
RTC.CP	4		32/23 D	52/23								

SYMBOLIC REFERENCE TABLE.

RTC.CR	76	32/40	D	52/23			
RTC.CS	2	32/24	D	52/23			
RTC.DF	0	32/29	D	52/23			
RTC.FT	4	32/26	D	52/23			
RTC.ID	12	32/28	D	52/23			
RTC.IW	4	32/35	D	52/23			
RTC.LN	0	32/36	D	52/23			
RTC.ME	12	32/31	D	52/23			
RTC.NR	12	32/37	D	52/23			
RTC.RA	2	32/25	D	52/23			
RTC.RD	77	32/42	D	52/23			
RTC.RS	76	32/39	D	52/23			
RTC.SA	77	32/43	D	52/23			
RTC.SK	4	32/34	D	52/23			
RTC.ST	12	32/33	D	52/23			
RTM	3276	70/33	D	72/35			
RTMA	3366	71/15		71/20	L	71/28	
RTMAL	6	71/23		71/29	D		
RTMB	3373	70/40	S	70/46	S	71/05 S	71/09 S
RTMX	3275	70/33	L	70/36		71/17	
RTM1	3335	70/57		71/02	L		
RTM2	3364	71/14		71/17	L		
RW	23	35/09	D	44/35		56/43	63/35
		42/55		56/38		63/28	63/37
SCD	3421	41/50		71/46	D		
SCDA	3426	71/50	D	82/12	S	82/16 S	
SCDB	3443	71/48		72/04	L	81/52 S	
SCDT	12	23/45	D				
SCDX	3420	71/46	L	72/02			
SC1DA	0	21/17	D				
SC1DB	0	21/25	D				
SC1DC	0	21/27	D				
SC1DD	7	21/02	D				
SC1DE	0	20/26	D				
SC1DF	0	21/36	D				
SC1DG	4	21/04	D				
SC1DH	0	21/38	D				
SC1DI	7	20/39	D				
SC1DJ	7	20/41	D				
SC1DK	7	20/48	D				
SC1DL	7	20/50	D				
SC1DM	7	20/43	D				
SC1DN	0	21/40	D				
SC1DP	0	20/27	D				
SC1DQ	7	20/52	D				
SC1DR	7	20/54	D				
SC1DV	0	21/32	D				
SC1DW	0	21/34	D				
SC1DX	0	21/11	D				
SC1DY	0	21/13	D				
SC1DZ	0	21/15	D				
SC1EA	0	21/47	D				
SC1EB	0	21/49	D				
SC1EC	0	21/54	D				
SC1ED	0	21/56	D				
SC1EE	0	22/01	D				
SC1EF	0	22/03	D				

SYMBOLIC REFERENCE TABLE.

SC1EG	0	22/15 D
SC1EH	0	22/17 D
SC1EI	0	22/22 D
SC1EJ	0	22/24 D
SC1EK	0	22/26 D
SC1EL	0	22/28 D
SC1EM	0	22/08 D
SC1EN	0	22/10 D
SC1EO	0	22/33 D
SC1EP	0	22/35 D
SC1ES	0	22/40 D
SC1EU	0	22/42 D
SC1EV	0	22/44 D
SC1EW	0	22/46 D
SC2DA	0	21/17 D
SC2DB	0	21/25 D
SC2DC	0	21/27 D
SC2DD	3	21/02 D
SC2DE	0	20/26 D
SC2DF	0	21/36 D
SC2DG	0	21/04 D
SC2DH	0	21/38 D
SC2DI	4	20/39 D
SC2DJ	4	20/41 D
SC2DK	4	20/48 D
SC2DL	4	20/50 D
SC2DM	4	20/43 D
SC2DN	0	21/40 D
SC2DP	0	20/27 D
SC2DQ	4	20/52 D
SC2DR	4	20/54 D
SC2DV	0	21/32 D
SC2DW	0	21/34 D
SC2DX	0	21/11 D
SC2DY	0	21/13 D
SC2DZ	0	21/15 D
SC2EA	0	21/47 D
SC2EB	0	21/49 D
SC2EC	0	21/54 D
SC2ED	0	21/56 D
SC2EE	0	22/01 D
SC2EF	0	22/03 D
SC2EG	0	22/15 D
SC2EH	0	22/17 D
SC2EI	0	22/22 D
SC2EJ	0	22/24 D
SC2EK	0	22/26 D
SC2EL	0	22/28 D
SC2EM	0	22/08 D
SC2EN	0	22/10 D
SC2EO	0	22/33 D
SC2EP	0	22/35 D
SC2ES	0	22/40 D
SC2EU	0	22/42 D
SC2EV	0	22/44 D
SC2EW	0	22/46 D
SDDA	1	21/17 D

SYMBOLIC REFERENCE TABLE.

SDDB	0		21/25 D				
SDDC	0		21/27 D				
SDDD	1		21/02 D				
SDDE	1		20/26 D				
SDDF	0		21/36 D				
SDDG	1		21/04 D				
SDDH	0		21/38 D				
SDDI	1		20/39 D				
SDDJ	1		20/41 D				
SDDK	1		20/48 D				
SDDL	1		20/50 D				
SDDM	1		20/43 D				
SDDN	0		21/40 D				
SDDP	1		20/27 D				
SDDQ	1		20/52 D				
SDDR	1		20/54 D				
SDDV	0		21/32 D				
SDDW	0		21/34 D				
SDDX	1		21/11 D				
SDDY	1		21/13 D				
SDDZ	1		21/15 D				
SDEA	1		21/47 D				
SDEB	1		21/49 D				
SDEC	1		21/54 D				
SDED	1		21/56 D				
SDEE	1		22/01 D				
SDEF	1		22/03 D				
SDEG	1		22/15 D				
SDEH	1		22/17 D				
SDEI	1		22/22 D				
SDEJ	1		22/24 D				
SDEK	1		22/26 D				
SDEL	1		22/28 D				
SDEM	1		22/08 D				
SDEN	1		22/10 D				
SDEO	1		22/33 D				
SDEP	1		22/35 D				
SDES	1		22/40 D				
SDEU	1		22/42 D				
SDEV	1		22/44 D				
SDEW	1		22/46 D				
SEQM	20	NOSTEXT	72/43				
SERS	4		72/48				
SETS	2		76/20				
SFTS	12		71/10				
SHNI	1000		45/44	48/57	58/44	58/45	
SKTE	13		32/34 L				
SKTO	17		23/31 D				
SLDA	1510		21/17 D	21/17			
SLDB	1200		21/25 D	21/25			
SLDC	1300		21/27 D	21/27			
SLDD	240		21/02 D	21/02			
SLDE	0		20/26 D	20/26			
SLDF	1140		21/36 D	21/36			
SLDG	1064		21/04 D	21/04			
SLDH	1300		21/38 D	21/38			
SLDI	153		20/39 D	20/39			

SYMBOLIC REFERENCE TABLE.

SLDJ	343		20/41 D	20/41	
SLDK	160		20/48 D	20/48	
SLDL	343		20/50 D	20/50	
SLDM	1200		20/43 D	20/43	
SLDN	2140		21/40 D	21/40	
SLDP	0		20/27 D	20/27	
SLDQ	1200		20/52 D	20/52	
SLDR	3600		20/54 D	20/54	
SLDV	1440		21/32 D	21/32	
SLDW	1440		21/34 D	21/34	
SLDX	142		21/11 D	21/11	
SLDY	306		21/13 D	21/13	
SLDZ	644		21/15 D	21/15	
SLEA	240		21/47 D	21/47	
SLEB	500		21/49 D	21/49	
SLEC	1740		21/54 D	21/54	
SLED	1740		21/56 D	21/56	
SLEE	3600		22/01 D	22/01	
SLEF	3600		22/03 D	22/03	
SLEG	3240		22/15 D	22/15	
SLEH	3240		22/17 D	22/17	
SLEI	3100		22/22 D	22/22	
SLEJ	3100		22/24 D	22/24	
SLEK	3240		22/26 D	22/26	
SLEL	3140		22/28 D	22/28	
SLEM	2740		22/08 D	22/08	
SLEN	3640		22/10 D	22/10	
SLEO	3240		22/33 D	22/33	
SLEP	3240		22/35 D	22/35	
SLES	3240		22/40 D	22/40	
SLEU	3240		22/42 D	22/42	
SLEV	3200		22/44 D	22/44	
SLEW	3200		22/46 D	22/46	
SLM	107	NOSTEXT	24/11 D		
SMDM	42	NOSTEXT	56/27	71/12	72/50
SMSX	473		24/19 D		
SOH1DA	0		21/17 D		
SOH1DB	0		21/25 D		
SOH1DC	0		21/27 D		
SOH1DD	26622		21/02 D		
SOH1DE	0		20/26 D		
SOH1DF	0		21/36 D		
SOH1DG	26622		21/04 D		
SOH1DH	0		21/38 D		
SOH1DI	16245		20/39 D		
SOH1DJ	16245		20/41 D		
SOH1DK	16245		20/48 D		
SOH1DL	16245		20/50 D		
SOH1DM	11072		20/43 D		
SOH1DN	0		21/40 D		
SOH1DP	0		20/27 D		
SOH1DQ	11072		20/52 D		
SOH1DR	11072		20/54 D		
SOH1DV	0		21/32 D		
SOH1DW	0		21/34 D		
SOH1DX	0		21/11 D		
SOH1DY	0		21/13 D		

SYMBOLIC REFERENCE TABLE.

SOH1DZ	0	21/15 D
SOH1EA	0	21/47 D
SOH1EB	0	21/49 D
SOH1EC	0	21/54 D
SOH1ED	0	21/56 D
SOH1EE	0	22/01 D
SOH1EF	0	22/03 D
SOH1EG	0	22/15 D
SOH1EH	0	22/17 D
SOH1EI	0	22/22 D
SOH1EJ	0	22/24 D
SOH1EK	0	22/26 D
SOH1EL	0	22/28 D
SOH1EM	0	22/08 D
SOH1EN	0	22/10 D
SOH1EO	0	22/33 D
SOH1EP	0	22/35 D
SOH1ES	0	22/40 D
SOH1EU	0	22/42 D
SOH1EV	0	22/44 D
SOH1EW	0	22/46 D
SOH2DA	0	21/17 D
SOH2DB	0	21/25 D
SOH2DC	0	21/27 D
SOH2DD	45710	21/02 D
SOH2DE	0	20/26 D
SOH2DF	0	21/36 D
SOH2DG	33260	21/04 D
SOH2DH	0	21/38 D
SOH2DI	27650	20/39 D
SOH2DJ	27650	20/41 D
SOH2DK	27650	20/48 D
SOH2DL	27650	20/50 D
SOH2DM	23730	20/43 D
SOH2DN	0	21/40 D
SOH2DP	0	20/27 D
SOH2DQ	23730	20/52 D
SOH2DR	23730	20/54 D
SOH2DV	0	21/32 D
SOH2DW	0	21/34 D
SOH2DX	0	21/11 D
SOH2DY	0	21/13 D
SOH2DZ	0	21/15 D
SOH2EA	0	21/47 D
SOH2EB	0	21/49 D
SOH2EC	0	21/54 D
SOH2ED	0	21/56 D
SOH2EE	0	22/01 D
SOH2EF	0	22/03 D
SOH2EG	0	22/15 D
SOH2EH	0	22/17 D
SOH2EI	0	22/22 D
SOH2EJ	0	22/24 D
SOH2EK	0	22/26 D
SOH2EL	0	22/28 D
SOH2EM	0	22/08 D
SOH2EN	0	22/10 D

SOH2EO	0	22/33 D				
SOH2EP	0	22/35 D				
SOH2ES	0	22/40 D				
SOH2EU	0	22/42 D				
SOH2EV	0	22/44 D				
SOH2EW	0	22/46 D				
SOSF	100	36/16 D	59/53	65/09	75/34	
SPDF	15	13/19 D				
SPSCDA	0	21/17 D				
SPSCDB	0	21/25 D				
SPSCDC	1	21/27 D				
SPSCDD	0	21/02 D				
SPSCDE	0	20/26 D				
SPSCDF	0	21/36 D				
SPSCDG	0	21/04 D				
SPSCDH	0	21/38 D				
SPSCDI	0	20/39 D				
SPSCDJ	0	20/41 D				
SPSCDK	0	20/48 D				
SPSCDL	0	20/50 D				
SPSCDM	0	20/43 D				
SPSCDN	0	21/40 D				
SPSCDP	0	20/27 D				
SPSCDQ	0	20/52 D				
SPSCDR	0	20/54 D				
SPSCDV	0	21/32 D				
SPSCDW	0	21/34 D				
SPSCDX	0	21/11 D				
SPSCDY	0	21/13 D				
SPSCDZ	0	21/15 D				
SPSCEA	0	21/47 D				
SPSCEB	0	21/49 D				
SPSCEC	2	21/54 D				
SPSCED	2	21/56 D				
SPSCEE	2	22/01 D				
SPSCEF	2	22/03 D				
SPSCEG	4	22/15 D				
SPSCEH	4	22/17 D				
SPSCEI	4	22/22 D				
SPSCEJ	4	22/24 D				
SPSCEK	4	22/26 D				
SPSCEL	4	22/28 D				
SPSCEM	2	22/08 D				
SPSCEN	2	22/10 D				
SPSCEO	7	22/33 D				
SPSCEP	7	22/35 D				
SPSCES	7	22/40 D				
SPSCEU	7	22/42 D				
SPSCEV	7	22/44 D				
SPSCEW	7	22/46 D				
SPUF	16	13/18 D				
SR	25	35/11 D	35/12			
SSES	22	72/41				
SSF	3451	49/25	72/31 D			
SSFX	3450	72/31 L	72/34	72/38	72/51	
STA	4762	82/24	82/57	83/05	84/29 D	
STAE	22	32/43 L				

SYMBOLIC REFERENCE TABLE.

STAX	4761	84/29 L				
STA1	4745	84/18 L	84/27			
STA2	4757	84/26 L	84/33			
STDE	21	72/46				
STSA	104	24/08 D				
STSB	105	24/09 D				
STSE	3	29/31 D	32/29	32/33	32/34	
SUIS	0	61/34				
SUQ	3510	40/15	73/38 D			
SUQA	3505	73/35 D	74/53 S			
SUQX	3507	73/38 L	74/54			
SUQ1	3511	73/36	73/39 L	73/44	74/49	
SUQ2	3517	73/42	73/46 L			
SUQ2.1	3534	73/57 L	74/16			
SUQ3	3535	73/56	74/02 L			
SUQ3.1	3557	74/16 L	74/28			
SUQ4	3560	74/15	74/18 L			
SUQ4.1	3574	74/20	74/27 L			
SUQ6	3627	74/39	74/51 L			
SUQ7	3504	73/33 L	73/54	73/57		
SURT	2	23/36 D	72/33			
SUS.AD	1	32/32 D	50/50			
SUS.CF	1	32/27 D	50/50			
SUS.CP	1	32/23 D	50/50			
SUS.CR	0	32/40 D	50/50			
SUS.CS	1	32/24 D	50/50			
SUS.DF	0	32/29 D	50/50			
SUS.FT	1	32/26 D	50/50			
SUS.ID	1	32/28 D	50/50			
SUS.IW	1	32/35 D	50/50			
SUS.LN	0	32/36 D	50/50			
SUS.ME	1	32/31 D	50/50			
SUS.NR	1	32/37 D	50/50			
SUS.RA	1	32/25 D	50/50			
SUS.RD	0	32/42 D	50/50			
SUS.RS	0	32/39 D	50/50			
SUS.SA	0	32/43 D	50/50			
SUS.SK	1	32/34 D	50/50			
SUS.ST	1	32/33 D	50/50			
SYM.AD	100	32/32 D	52/52			
SYM.CF	23	32/27 D	52/52			
SYM.CP	24	32/23 D	52/52			
SYM.CR	103	32/40 D	52/52			
SYM.CS	51	32/24 D	52/52			
SYM.DF	64	32/29 D	52/52			
SYM.FT	50	32/26 D	52/52			
SYM.ID	5	32/28 D	52/52			
SYM.IW	107	32/35 D	52/52			
SYM.LN	0	32/36 D	52/52			
SYM.ME	40	32/31 D	52/52			
SYM.NR	43	32/37 D	52/52			
SYM.RA	63	32/25 D	52/52			
SYM.RD	0	32/42 D	52/52			
SYM.RS	56	32/39 D	52/52			
SYM.SA	102	32/43 D	52/52			
SYM.SK	106	32/34 D	52/52			
SYM.ST	102	32/33 D	52/52			

SYMBOLIC REFERENCE TABLE.

S1	21		35/07 D	59/14 S	59/17	66/19 S	66/23	73/47 S	74/10	
S2	67		35/27 D	68/53 S	69/07 S	75/51 S	75/53			
TB	52		35/20 D	43/16 S	69/43	74/35 S				
TEP	3652		50/04	75/37 D						
TEPA	3665		64/56 S	75/32 S	75/46 D					
TEPB	3737		75/41	75/43	76/55 L					
TEPF	1734		49/15	50/48 D	56/04	72/36				
TEPO	1756		51/20 D							
TEPX	3651		75/37 L							
TEP1	3700		75/49	75/56 L						
TEP2	3721		75/57	76/31	76/39 L					
TEP3	3726		76/41	76/43 L						
TEP4	3636		75/27 L	75/47	76/52					
TH	72	NOSTEXT	48/56							
TI	57		35/23 D	73/33	73/39 S	73/41	73/43 S	74/51	80/04 S	
TLDA	430		21/17 D							
TLDB	645		21/25 D							
TLDC	672		21/27 D							
TLDD	630		21/02 D							
TLDE	0		20/26 D							
TLDF	671		21/36 D							
TLDG	536		21/04 D							
TLDH	671		21/38 D							
TLDI	630		20/39 D							
TLDJ	632		20/41 D							
TLDK	630		20/48 D							
TLDL	632		20/50 D							
TLDM	645		20/43 D							
TLDN	766		21/40 D							
TLDP	0		20/27 D							
TLDQ	645		20/52 D							
TLDR	1000		20/54 D							
TLDV	314		21/32 D							
TLDW	631		21/34 D							
TLDX	630		21/11 D							
TLDY	626		21/13 D							
TLDZ	427		21/15 D							
TLEA	772		21/47 D							
TLEB	772		21/49 D							
TLEC	1000		21/54 D							
TLED	1000		21/56 D							
TLEE	775		22/01 D							
TLEF	775		22/03 D							
TLEG	773		22/15 D							
TLEH	773		22/17 D							
TLEI	770		22/22 D							
TLEJ	770		22/24 D							
TLEK	766		22/26 D							
TLEL	773		22/28 D							
TLEM	772		22/08 D							
TLEN	773		22/10 D							
TLEO	774		22/33 D							
TLEP	774		22/35 D							
TLES	773		22/40 D							
TLEU	773		22/42 D							
TLEV	775		22/44 D							
TLEW	771		22/46 D							

SYMBOLIC REFERENCE TABLE.

TLME	4007		29/35 D										
TMNE	2000		46/03		51/49 D								
TPOR	1125		40/42 L		73/41		83/36 S						
TPORE	1		36/17 D		40/42		73/40		83/30				
TR	73	NOSTEXT	46/07										
TREC	2022		45/47		46/21		52/21 D		74/45				
TSYM	2044		52/50 D		56/34								
TTDA	0		21/17 D		21/17								
TTDB	0		21/25 D		21/25								
TTDC	0		21/27 D		21/27								
TTDD	0		21/02 D		21/02								
TTDE	1		20/26 D		20/26								
TTDF	0		21/36 D		21/36								
TTDG	0		21/04 D		21/04								
TTDH	0		21/38 D		21/38								
TTDI	1		20/39 D		20/39								
TTDJ	1		20/41 D		20/41								
TTDK	0		20/48 D		20/48								
TTDL	0		20/50 D		20/50								
TTDM	1		20/43 D		20/43								
TTDN	0		21/40 D		21/40								
TTDP	1		20/27 D		20/27								
TTDQ	0		20/52 D		20/52								
TTDR	0		20/54 D		20/54								
TTDV	0		21/32 D		21/32								
TTDW	0		21/34 D		21/34								
TTDX	0		21/11 D		21/11								
TTDY	0		21/13 D		21/13								
TTDZ	0		21/15 D		21/15								
TTEA	0		21/47 D		21/47								
TTEB	0		21/49 D		21/49								
TTEC	0		21/54 D		21/54								
TTED	0		21/56 D		21/56								
TTEE	0		22/01 D		22/01								
TTEF	0		22/03 D		22/03								
TTEG	0		22/15 D		22/15								
TTEH	0		22/17 D		22/17								
TTEI	0		22/22 D		22/22								
TTEJ	0		22/24 D		22/24								
TTEK	0		22/26 D		22/26								
TTEL	0		22/28 D		22/28								
TTEM	0		22/08 D		22/08								
TTEN	0		22/10 D		22/10								
TTEO	0		22/33 D		22/33								
TTEP	0		22/35 D		22/35								
TTES	0		22/40 D		22/40								
TTEU	0		22/42 D		22/42								
TTEV	0		22/44 D		22/44								
TTEW	0		22/46 D		22/46								
T0	0	NOSTEXT	42/51 S		46/50 S		47/07 S		47/09		84/26		
			42/52		46/53		47/08		84/25 S		84/30 S		
T1	1	NOSTEXT	50/06 S		55/03		64/25 S		74/40		77/25 S	80/31	82/01	84/22
			50/07		55/04 S		64/26		74/42 S		77/29	80/37 S	82/09	84/32 S
			54/18 S		56/32 S		64/28		74/45		80/13 S	81/06	83/09 S	
			54/20		56/45		74/06 S		75/40 S		80/14	81/08	83/29 S	
			54/21 S		63/38 S		74/18		75/41		80/19 S	81/25 S	83/36	
			55/01 S		63/44		74/36		75/43		80/30 S	81/34 S	84/19	

SYMBOLIC REFERENCE TABLE.

T2	2	NOSTEXT	64/27 S	74/26 S	75/44 I	80/47 S	81/45 S	83/33	84/24 I		
			64/29 I	74/27	80/16 S	81/36 S	83/18 S	84/18 S			
			74/13 S	75/42 S	80/18 I	81/42 S	83/28 S	84/20			
T3	3	NOSTEXT	81/27 S	81/44 S	81/47	82/36 S	82/39 S	83/10 S	83/35		
T5	5	NOSTEXT	45/51	56/19	65/16 S	70/41	72/44				
			45/55	56/50	70/37	72/39					
T6	6	NOSTEXT	83/04								
T7	7	NOSTEXT	44/40	63/43 S	66/52	67/18 S	67/37 S	77/21	77/40 S	78/08 S	
UERR	106		24/10 D								
UNCT	0		10/25 D	10/26	61/51	65/13	73/50	83/12			
UTEM	115	NOSTEXT	68/51	72/01							
WB	25		35/12 D								
WDSE	101	NOSTEXT	24/05 D								
WIO	3744		64/02	77/20 D							
WIOA	4042		64/34	76/57	78/14 D						
WIOX	3743		77/20 L	78/25							
WIO1	3745		76/57	77/21 L	77/51	78/12					
WIO2	3763		77/23	77/32 L							
WIO3	3774		77/37	77/40 L							
WIO4	4002		77/43	77/45 L							
WIO4.1	4016		77/34	77/52 L							
WIO5	4017		77/41	77/54 L							
WIO6	4043		78/03	78/16 L							
WIO6.1	4046		64/34	78/18 L							
WIO7	4051		78/10	78/17	78/20 L						
WIO8	4055		77/52	78/24 L							
WIO9	4057		78/19	78/25 L							
WLBC	10		15/14 D								
WLIB	4		15/13 D								
WLLE	1		15/11 D								
WLNL	20		15/15 D								
WLRD	2		15/12 D								
WRIP	1		23/11 D								
WRTBC	3		6/11 D	6/13							
WRTP	13		5/36 D	5/41							
WTST	3		10/28 D	10/29							
XDSR	27		13/04 D								
ZERL	66	NOSTEXT	76/47								
(1DS)	0		69/03 D								
.A	54		58/11 D	58/12							
.AI	43		20/37 D	20/50	21/04 D	21/23	21/36	21/49 D	22/15 D	22/40 D	
			20/39	20/50 D	21/07	21/25	21/36 D	21/54	22/22	22/44	
			20/39 D	20/52	21/11	21/25 D	21/38	21/54 D	22/22 D	22/44 D	
			20/41	20/52 D	21/11 D	21/27	21/38 D	22/01	22/26	22/46	
			20/41 D	20/54	21/13	21/27 D	21/40	22/01 D	22/26 D	22/46 D	
			20/43	20/54 D	21/13 D	21/30	21/40 D	22/08	22/28	22/49	
			20/43 D	20/57	21/15	21/32	21/43	22/08 D	22/28 D	22/50	
			20/46	21/02	21/15 D	21/32 D	21/47	22/10	22/33	22/55	
			20/48	21/02 D	21/17	21/34	21/47 D	22/10 D	22/33 D		
			20/48 D	21/04	21/17 D	21/34 D	21/49	22/15	22/40		

SYMBOLIC REFERENCE TABLE.

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.A1             4                  20/26 D   20/48     21/04 D   21/25     21/40 D   22/01     22/17 D   22/33
                                   20/26     20/48 D   21/04     21/25 D   21/40     22/01 D   22/17     22/33 D
                                   20/26 D   20/48     21/04 D   21/25     21/40 D   22/01     22/17 D   22/33
                                   20/26     20/48 D   21/04     21/25 D   21/40     22/01 D   22/17     22/33 D
                                   20/26 D   20/48     21/04 D   21/25     21/40 D   22/01     22/17 D   22/33
                                   20/26     20/48 D   21/04     21/25 D   21/40     22/01 D   22/17     22/33 D
                                   20/26 D   20/48     21/04 D   21/25     21/40 D   22/01     22/17 D   22/33
                                   20/26     20/48 D   21/04     21/25 D   21/40     22/01 D   22/17     22/33 D
                                   20/26 D   20/48     21/04 D   21/25     21/40 D   22/01     22/17 D   22/33
                                   20/26     20/48 D   21/04     21/25 D   21/40     22/01 D   22/17     22/35 D
                                   20/26 D   20/48     21/04 D   21/25     21/40 D   22/01     22/17 D   22/35
                                   20/26     20/48 D   21/04     21/27 D   21/40     22/01 D   22/17     22/35 D
                                   20/26 D   20/48     21/04 D   21/27     21/40 D   22/01     22/17 D   22/35
                                   20/26     20/48 D   21/04     21/27 D   21/40     22/01 D   22/17     22/35 D
                                   20/26 D   20/48     21/04 D   21/27     21/40 D   22/01     22/17 D   22/35
                                   20/26     20/48 D   21/04     21/27 D   21/40     22/01 D   22/17     22/35 D
                                   20/26 D   20/48     21/04 D   21/27     21/40 D   22/01     22/17 D   22/35
                                   20/26     20/48 D   21/04     21/27 D   21/40     22/01 D   22/17     22/35 D
                                   20/26 D   20/48     21/04 D   21/27     21/40 D   22/01     22/17 D   22/35
                                   20/26     20/48 D   21/04     21/27 D   21/40     22/01 D   22/17     22/35 D
                                   20/26 D   20/48     21/04 D   21/27     21/40 D   22/01     22/17 D   22/35
                                   20/26     20/48 D   21/04     21/27 D   21/40     22/01 D   22/17     22/35 D
                                   20/26 D   20/48     21/04 D   21/27     21/40 D   22/01     22/22 D   22/35
                                   20/26     20/48 D   21/04     21/27 D   21/40     22/01 D   22/22     22/35 D
                                   20/26 D   20/48     21/11 D   21/27     21/40 D   22/01     22/22 D   22/35
                                   20/26     20/48 D   21/11     21/27 D   21/40     22/01 D   22/22     22/35 D
                                   20/26 D   20/48     21/11 D   21/27     21/40 D   22/01     22/22 D   22/35
                                   20/26     20/48 D   21/11     21/27 D   21/40     22/01 D   22/22     22/35 D
                                   20/26 D   20/48     21/11 D   21/27     21/40 D   22/01     22/22 D   22/35
                                   20/26     20/48 D   21/11     21/27 D   21/40     22/01 D   22/22     22/35 D
                                   20/26 D   20/48     21/11 D   21/27     21/40 D   22/01     22/22 D   22/35
                                   20/26     20/48 D   21/11     21/27 D   21/40     22/01 D   22/22     22/35 D
                                   20/26 D   20/48     21/11 D   21/27     21/40 D   22/01     22/22 D   22/35
                                   20/26     20/48 D   21/11     21/27 D   21/40     22/01 D   22/22     22/35 D
                                   20/26 D   20/48     21/11 D   21/27     21/40 D   22/01     22/22 D   22/35
                                   20/26     20/48 D   21/11     21/27 D   21/40     22/03 D   22/22     22/35 D
                                   20/26 D   20/48     21/11 D   21/27     21/40 D   22/03     22/22 D   22/35
                                   20/26     20/50 D   21/11     21/27 D   21/40     22/03 D   22/22     22/35 D
                                   20/26 D   20/50     21/11 D   21/27     21/40 D   22/03     22/22 D   22/35
                                   20/26     20/50 D   21/11     21/27 D   21/40     22/03 D   22/22     22/35 D
                                   20/26 D   20/50     21/11 D   21/27     21/40 D   22/03     22/22 D   22/35
                                   20/26     20/50 D   21/11     21/27 D   21/40     22/03 D   22/22     22/35 D
                                   20/26 D   20/50     21/11 D   21/27     21/40 D   22/03     22/22 D   22/35
                                   20/26     20/50 D   21/11     21/27 D   21/40     22/03 D   22/22     22/35 D
                                   20/26 D   20/50     21/11 D   21/27     21/40 D   22/03     22/22 D   22/35
                                   20/26     20/50 D   21/11     21/27 D   21/40     22/03 D   22/22     22/35 D
                                   20/26 D   20/50     21/11 D   21/27     21/40 D   22/03     22/22 D   22/35
                                   20/26     20/50 D   21/11     21/27 D   21/40     22/03 D   22/22     22/35 D
                                   20/26 D   20/50     21/11 D   21/27     21/47 D   22/03     22/22 D   22/35
                                   20/26     20/50 D   21/11     21/27 D   21/47     22/03 D   22/22     22/35 D
                                   20/27 D   20/50     21/11 D   21/27     21/47 D   22/03     22/22 D   22/35
                                   20/27     20/50 D   21/11     21/27 D   21/47     22/03 D   22/22     22/35 D
                                   20/27 D   20/50     21/11 D   21/27     21/47 D   22/03     22/22 D   22/35
                                   20/27     20/50 D   21/11     21/27 D   21/47     22/03 D   22/22     22/35 D
                                   20/27 D   20/50     21/11 D   21/27     21/47 D   22/03     22/22 D   22/35
                                   20/27     20/50 D   21/11     21/27 D   21/47     22/03 D   22/22     22/35 D
                                   20/27 D   20/50     21/11 D   21/27     21/47 D   22/03     22/22 D   22/35
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20/27	20/50 D	21/11	21/27 D	21/47	22/03 D	22/22	22/35 D
20/27 D	20/50	21/11 D	21/27	21/47 D	22/03	22/22 D	22/35
20/27	20/50 D	21/11	21/27 D	21/47	22/03 D	22/22	22/40 D
20/27 D	20/50	21/11 D	21/27	21/47 D	22/03	22/22 D	22/40
20/27	20/50 D	21/11	21/32 D	21/47	22/03 D	22/22	22/40 D
20/27 D	20/50	21/11 D	21/32	21/47 D	22/03	22/22 D	22/40
20/27	20/50 D	21/11	21/32 D	21/47	22/03 D	22/22	22/40 D
20/27 D	20/50	21/11 D	21/32	21/47 D	22/03	22/22 D	22/40
20/27	20/50 D	21/11	21/32 D	21/47	22/03 D	22/22	22/40 D
20/27 D	20/50	21/11 D	21/32	21/47 D	22/03	22/22 D	22/40
20/27	20/50 D	21/11	21/32 D	21/47	22/03 D	22/22	22/40 D
20/27 D	20/50	21/11 D	21/32	21/47 D	22/03	22/22 D	22/40
20/27	20/50 D	21/11	21/32 D	21/47	22/03 D	22/22	22/40 D
20/27 D	20/50	21/11 D	21/32	21/47 D	22/03	22/22 D	22/40
20/27	20/50 D	21/11	21/32 D	21/47	22/03 D	22/22	22/40 D
20/27 D	20/50	21/11 D	21/32	21/47 D	22/03	22/24 D	22/40
20/27	20/50 D	21/11	21/32 D	21/47	22/03 D	22/24	22/40 D
20/27 D	20/50	21/13 D	21/32	21/47 D	22/03	22/24 D	22/40
20/27	20/50 D	21/13	21/32 D	21/47	22/03 D	22/24	22/40 D
20/27 D	20/50	21/13 D	21/32	21/47 D	22/03	22/24 D	22/40
20/27	20/50 D	21/13	21/32 D	21/47	22/03 D	22/24	22/40 D
20/27 D	20/50	21/13 D	21/32	21/47 D	22/03	22/24 D	22/40
20/27	20/50 D	21/13	21/32 D	21/47	22/03 D	22/24	22/40 D
20/27 D	20/50	21/13 D	21/32	21/47 D	22/03	22/24 D	22/40
20/27	20/50 D	21/13	21/32 D	21/47	22/03 D	22/24	22/40 D
20/27 D	20/50	21/13 D	21/32	21/47 D	22/03	22/24 D	22/40
20/27	20/50 D	21/13	21/32 D	21/47	22/03 D	22/24	22/40 D
20/27 D	20/50	21/13 D	21/32	21/47 D	22/03	22/24 D	22/40
20/27	20/50 D	21/13	21/32 D	21/47	22/08 D	22/24	22/40 D
20/27 D	20/50	21/13 D	21/32	21/47 D	22/08	22/24 D	22/40
20/27	20/52 D	21/13	21/32 D	21/47	22/08 D	22/24	22/40 D
20/27 D	20/52	21/13 D	21/32	21/47 D	22/08	22/24 D	22/40
20/27	20/52 D	21/13	21/32 D	21/47	22/08 D	22/24	22/40 D
20/27 D	20/52	21/13 D	21/32	21/47 D	22/08	22/24 D	22/40
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20/27	20/52 D	21/13	21/32 D	21/47	22/08 D	22/24	22/40 D
20/27 D	20/52	21/13 D	21/32	21/49 D	22/08	22/24 D	22/40
20/27	20/52 D	21/13	21/32 D	21/49	22/08 D	22/24	22/40 D
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20/39	20/52 D	21/13	21/32 D	21/49	22/08 D	22/24	22/42 D
20/39 D	20/52	21/13 D	21/32	21/49 D	22/08	22/24 D	22/42
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20/39 D	20/52	21/13 D	21/34	21/49 D	22/08	22/24 D	22/42
20/39	20/52 D	21/13	21/34 D	21/49	22/08 D	22/24	22/42 D

20/39 D	20/52	21/13 D	21/34	21/49 D	22/08	22/24 D	22/42
20/39	20/52 D	21/13	21/34 D	21/49	22/08 D	22/24	22/42 D
20/39 D	20/52	21/13 D	21/34	21/49 D	22/08	22/24 D	22/42
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20/41 D	20/54	21/15 D	21/36	21/54 D	22/10	22/26 D	22/44
20/41	20/54 D	21/15	21/36 D	21/54	22/10 D	22/26	22/44 D
20/41 D	20/54	21/15 D	21/36	21/54 D	22/10	22/26 D	22/44
20/41	20/54 D	21/15	21/36 D	21/54	22/10 D	22/26	22/44 D
20/41 D	20/54	21/15 D	21/36	21/54 D	22/10	22/26 D	22/44
20/41	20/54 D	21/15	21/36 D	21/54	22/10 D	22/26	22/44 D
20/41 D	20/54	21/15 D	21/36	21/54 D	22/10	22/26 D	22/44

20/41	20/54 D	21/15	21/36 D	21/54	22/10 D	22/26	22/44 D
20/41 D	20/54	21/15 D	21/36	21/54 D	22/10	22/28 D	22/44
20/41	20/54 D	21/15	21/36 D	21/54	22/10 D	22/28	22/44 D
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20/41 D	21/02	21/17 D	21/36	21/54 D	22/15	22/28 D	22/44
20/41	21/02 D	21/17	21/36 D	21/54	22/15 D	22/28	22/44 D
20/41 D	21/02	21/17 D	21/36	21/54 D	22/15	22/28 D	22/44
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20/41 D	21/02	21/17 D	21/36	21/54 D	22/15	22/28 D	22/44
20/41	21/02 D	21/17	21/36 D	21/54	22/15 D	22/28	22/44 D
20/41 D	21/02	21/17 D	21/36	21/54 D	22/15	22/28 D	22/44
20/41	21/02 D	21/17	21/36 D	21/54	22/15 D	22/28	22/44 D
20/41 D	21/02	21/17 D	21/36	21/56 D	22/15	22/28 D	22/44
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20/43 D	21/02	21/17 D	21/36	21/56 D	22/15	22/28 D	22/44
20/43	21/02 D	21/17	21/36 D	21/56	22/15 D	22/28	22/44 D
20/43 D	21/02	21/17 D	21/36	21/56 D	22/15	22/28 D	22/44
20/43	21/02 D	21/17	21/36 D	21/56	22/15 D	22/28	22/44 D
20/43 D	21/02	21/17 D	21/36	21/56 D	22/15	22/28 D	22/44
20/43	21/02 D	21/17	21/36 D	21/56	22/15 D	22/28	22/44 D
20/43 D	21/02	21/17 D	21/36	21/56 D	22/15	22/28 D	22/44
20/43	21/02 D	21/17	21/36 D	21/56	22/15 D	22/28	22/44 D
20/43 D	21/02	21/17 D	21/36	21/56 D	22/15	22/28 D	22/44
20/43	21/02 D	21/17	21/36 D	21/56	22/15 D	22/28	22/46 D
20/43 D	21/02	21/17 D	21/36	21/56 D	22/15	22/28 D	22/46
20/43	21/02 D	21/17	21/38 D	21/56	22/15 D	22/28	22/46 D
20/43 D	21/02	21/17 D	21/38	21/56 D	22/15	22/28 D	22/46
20/43	21/02 D	21/17	21/38 D	21/56	22/15 D	22/28	22/46 D
20/43 D	21/02	21/17 D	21/38	21/56 D	22/15	22/28 D	22/46
20/43	21/02 D	21/17	21/38 D	21/56	22/15 D	22/28	22/46 D
20/43 D	21/02	21/17 D	21/38	21/56 D	22/15	22/28 D	22/46
20/43	21/02 D	21/17	21/38 D	21/56	22/15 D	22/28	22/46 D
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20/43	21/02 D	21/17	21/38 D	21/56	22/15 D	22/28	22/46 D
20/43 D	21/02	21/17 D	21/38	21/56 D	22/15	22/28 D	22/46
20/43	21/02 D	21/17	21/38 D	21/56	22/15 D	22/28	22/46 D
20/43 D	21/02	21/17 D	21/38	21/56 D	22/15	22/33 D	22/46
20/43	21/02 D	21/17	21/38 D	21/56	22/15 D	22/33	22/46 D
20/43 D	21/02	21/25 D	21/38	21/56 D	22/15	22/33 D	22/46
20/43	21/02 D	21/25	21/38 D	21/56	22/15 D	22/33	22/46 D
20/43 D	21/02	21/25 D	21/38	21/56 D	22/15	22/33 D	22/46
20/43	21/02 D	21/25	21/38 D	21/56	22/15 D	22/33	22/46 D

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                                   20/43 D   21/02     21/25 D   21/38     21/56 D   22/15     22/33 D   22/46
                                   20/43     21/02 D   21/25     21/38 D   21/56     22/15 D   22/33     22/46 D
                                   20/43 D   21/02     21/25 D   21/38     21/56 D   22/15     22/33 D   22/46
                                   20/43     21/02 D   21/25     21/38 D   21/56     22/15 D   22/33     22/46 D
                                   20/43 D   21/02     21/25 D   21/38     21/56 D   22/15     22/33 D   22/46
                                   20/43     21/02 D   21/25     21/38 D   21/56     22/15 D   22/33     22/46 D
                                   20/43 D   21/02     21/25 D   21/38     21/56 D   22/15     22/33 D   22/46
                                   20/43     21/02 D   21/25     21/38 D   21/56     22/17 D   22/33     22/46 D
                                   20/43 D   21/02     21/25 D   21/38     21/56 D   22/17     22/33 D   22/46
                                   20/43     21/04 D   21/25     21/38 D   21/56     22/17 D   22/33     22/46 D
                                   20/43 D   21/04     21/25 D   21/38     21/56 D   22/17     22/33 D   22/46
                                   20/43     21/04 D   21/25     21/38 D   21/56     22/17 D   22/33     22/46 D
                                   20/43 D   21/04     21/25 D   21/38     21/56 D   22/17     22/33 D   22/46
                                   20/43     21/04 D   21/25     21/38 D   21/56     22/17 D   22/33     22/46 D
                                   20/43 D   21/04     21/25 D   21/38     21/56 D   22/17     22/33 D   22/46
                                   20/43     21/04 D   21/25     21/38 D   21/56     22/17 D   22/33     22/46 D
                                   20/43 D   21/04     21/25 D   21/38     21/56 D   22/17     22/33 D   22/46
                                   20/43     21/04 D   21/25     21/38 D   21/56     22/17 D   22/33     22/46 D
                                   20/43 D   21/04     21/25 D   21/38     21/56 D   22/17     22/33 D   22/46
                                   20/43     21/04 D   21/25     21/38 D   21/56     22/17 D   22/33     22/46 D
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                                   20/43     21/04 D   21/25     21/38 D   22/01     22/17 D   22/33     22/46 D
                                   20/48 D   21/04     21/25 D   21/38     22/01 D   22/17     22/33 D   22/46
                                   20/48     21/04 D   21/25     21/38 D   22/01     22/17 D   22/33     22/46 D
                                   20/48 D   21/04     21/25 D   21/38     22/01 D   22/17     22/33 D   22/46
                                   20/48     21/04 D   21/25     21/38 D   22/01     22/17 D   22/33     22/46 D
                                   20/48 D   21/04     21/25 D   21/38     22/01 D   22/17     22/33 D   22/46
                                   20/48     21/04 D   21/25     21/38 D   22/01     22/17 D   22/33     22/46 D
                                   20/48 D   21/04     21/25 D   21/38     22/01 D   22/17     22/33 D   22/46
                                   20/48     21/04 D   21/25     21/38 D   22/01     22/17 D   22/33     22/46 D
                                   20/48 D   21/04     21/25 D   21/38     22/01 D   22/17     22/33 D   22/46
                                   20/48     21/04 D   21/25     21/38 D   22/01     22/17 D   22/33
                                   20/48 D   21/04     21/25 D   21/38     22/01 D   22/17     22/33 D
                                   20/48     21/04 D   21/25     21/40 D   22/01     22/17 D   22/33
                                   20/48 D   21/04     21/25 D   21/40     22/01 D   22/17     22/33 D
.A2             1                  20/26 D   20/48     21/11 D   21/27     21/47 D   22/03     22/24 D   22/40
                                   20/26     20/50 D   21/11     21/32 D   21/47     22/08 D   22/24     22/42 D
                                   20/27 D   20/50     21/13 D   21/32     21/49 D   22/08     22/26 D   22/42
                                   20/27     20/52 D   21/13     21/34 D   21/49     22/10 D   22/26     22/44 D
                                   20/39 D   20/52     21/15 D   21/34     21/54 D   22/10     22/28 D   22/44
                                   20/39     20/54 D   21/15     21/36 D   21/54     22/15 D   22/28     22/46 D
                                   20/41 D   20/54     21/17 D   21/36     21/56 D   22/15     22/33 D   22/46
                                   20/41     21/02 D   21/17     21/38 D   21/56     22/17 D   22/33
                                   20/43 D   21/02     21/25 D   21/38     22/01 D   22/17     22/35 D
                                   20/43     21/04 D   21/25     21/40 D   22/01     22/22 D   22/35
                                   20/48 D   21/04     21/27 D   21/40     22/03 D   22/22     22/40 D
.CM1           11                  82/22 D   82/23
.CN3           36                  82/55 D   82/56
.DLY          255   NOSTEXT        42/07     68/57
.DST1         625                  24/22 D
.EST          245   NOSTEXT        74/07     83/14
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SYMBOLIC REFERENCE TABLE.

.NT	52	20/20 D	20/48	21/04 D	21/27	21/40 D	22/03	22/22 D	22/40
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		20/26 D	20/50	21/11 D	21/32	21/47 D	22/08	22/24 D	22/42
		20/27	20/50 D	21/13	21/32 D	21/49	22/08 D	22/26	22/42 D
		20/27 D	20/52	21/13 D	21/34	21/49 D	22/10	22/26 D	22/44
		20/39	20/52 D	21/15	21/34 D	21/54	22/10 D	22/28	22/44 D
		20/39 D	20/54	21/15 D	21/36	21/54 D	22/15	22/28 D	22/46
		20/41	20/54 D	21/17	21/36 D	21/56	22/15 D	22/33	22/46 D
		20/41 D	21/02	21/17 D	21/38	21/56 D	22/17	22/33 D	22/57
		20/43	21/02 D	21/25	21/38 D	22/01	22/17 D	22/35	
		20/43 D	21/04	21/25 D	21/40	22/01 D	22/22	22/35 D	
.RDS2	556	24/21 D							

SYMBOL QUALIFIER = COMSDFS

D1HP	6	56/33	56/36	57/22					
HS0005	5	32/28							
HS0023	23	32/27							
HS0024	24	32/23							
HS0040	40	32/31	56/36	56/39					
HS0041	41	56/39							
HS0043	43	32/37							
HS0050	50	32/26							
HS0051	51	32/24							
HS0056	56	32/39							
HS0063	63	32/25							
HS0064	64	32/29							
HS0100	100	32/32							
HS0102	102	32/33	32/43						
HS0103	103	32/40							
HS0106	106	32/34							
HS0107	107	32/35							
RM0014	14	57/20							

SYMBOL QUALIFIER = MACRO$

CBTE	4030	42/41 D	59/50 D	62/04 D	66/55 D	67/33 D	74/21 D	78/04 D	
		42/48 D	61/56 D	63/39 D	67/05 D	74/03 D	77/26 D		
CCBA	4027	42/41 D	59/50 D	62/04 D	66/55 D	67/33 D	74/21 D	78/04 D	
		42/48 D	61/56 D	63/39 D	67/05 D	74/03 D	77/26 D		
CPTA	4622	61/51 D	65/13 D	73/50 D	83/12 D				
DELAY	4121	42/07 D	68/57 D						
EXECUTE	4237	69/03 D							
MONITOR	4664	40/23 D	56/27 D	65/43 D	69/04 D	71/12 D	72/43 D	76/28 D	83/41 D
		48/05 D	61/38 D	68/51 D	69/57 D	72/01 D	72/50 D	79/51 D	
OVERFLOW	4767	84/38 D							
PUTE	4623	61/51 D	65/13 D	73/50 D	83/12 D				
SFA	4626	74/07 D	83/14 D						

17.40.26.UCLP, 17, 031,   8.896KLNS.

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