```
                 OPERATING SYSTEM =  NOS 2.8.7 871/871.   23/09/20. PRINTED = 24/05/29. 15.10.28.

                 UJN           =  6DI871      FAMILY    = CYBER         JOB ORIGIN    = INTERACTIVE.
                 CREATING JSN =  AABY        USER NAME = INSTALL       SERVICE CLASS = INTERACTIVE.




    AAAAAAAAAA    AAAAAAAAAA    AAAAAAAAAA   IIIIIIIIIIII   AAAAAAAAAA    AAAAAAAAAA    CCCCCCCCCC    CCCCCCCCCC
   AAAAAAAAAAAA  AAAAAAAAAAAA  AAAAAAAAAAAA  IIIIIIIIIIII  AAAAAAAAAAAA  AAAAAAAAAAAA  CCCCCCCCCCCC  CCCCCCCCCCCC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC        CC  CC        CC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC        CC  CC        CC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC            CC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC            CC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC            CC
   AAAAAAAAAAAA  AAAAAAAAAAAA  AAAAAAAAAAAA       II       AAAAAAAAAAAA  AAAAAAAAAAAA  CC            CC
   AAAAAAAAAAAA  AAAAAAAAAAAA  AAAAAAAAAAAA       II       AAAAAAAAAAAA  AAAAAAAAAAAA  CC            CC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC            CC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC            CC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC            CC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC            CC
   AA        AA  AA        AA  AA        AA       II       AA        AA  AA        AA  CC        CC  CC        CC
   AA        AA  AA        AA  AA        AA  IIIIIIIIIIII  AA        AA  AA        AA  CCCCCCCCCCCC  CCCCCCCCCCCC
   AA        AA  AA        AA  AA        AA  IIIIIIIIIIII  AA        AA  AA        AA  CCCCCCCCCCC   CCCCCCCCCCC



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


    1   *EDIT 6DI
```

DECK - COPYRT

COPYRT MODIFIERS.

NS2796

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

6DI MODIFIERS.

NS2352	NS2364	6DI19	251L670	NS2494	NS2546	6DI26	271L716	6DI25A	NS2741	284L847
6DI12	6DI16	6DI20	6DI22	NS2509	NS2584	6DI27	NS2682	272L774	6DI33	NS2776
6DI13	NS2387	251L664	252L678	6DI23	6DI24	6DI28	6DI29	6DI31	281L803	0PIMSFX
6DI14	6DI17	6DI21	NS2507	253L688	6DI25	NS2632	6DI30	6DI32	NS2750	

*CALL	COMPMAC	6DI	245		
*CALL	COMPCHI	6DI	246		
*CALL	COMPCHL	6DI	247		
*CALL	COMPREL	6DI	248		
*CALL	COMSCPS	6DI	249		
*CALL	COMSDFS	6DI	250		
*CALL	COMSEVT	6DI	251		
*CALL	COMSMSP	6DI	253		
*CALL	COMSPIM	6DI	255		
*CALL	COMSZOL	NS2494	1	255	
*CALL	COMS1DS	252L678	1	255	
*CALL	COMS1DS	6DI	2252		
*CALL	COMSDFS	6DI	3737		
*CALL	COMPC2D	6DI	4078		
*CALL	COMSDFS	6DI	4300		
*CALL	COMSHIO	251L670	13	4592	

5028 ACTIVE LINE(S). 553 INACTIVE LINE(S). 768 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.

 6DI

   102600B STORAGE USED.           12312 LINES WRITTEN ON COMPILE FILE.
```

THE 2141

```
                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                    527      340              IDENT  6DI,MSFW    7155-7154-7054/885-844  MAIN DRIVER.
                   1067      (56)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                    527      327              IDENT  6DJ,MSFW    ISD DISK DRIVER.
                   1056      (54)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                   7651      132              IDENT  7BI,7651  *LDAM* DEVICE INITIAL ERROR PROCESSOR.
                  10003      (23)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                   7637      144              IDENT  7CI,7637  OBTAIN GENERAL AND DETAILED STATUS.
                  10003      (25)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                   7550      233              IDENT  7DI,7550  DETAILED STATUS PROCESSOR.
                  10003      (40)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                   7542      240              IDENT  7EI,7542  SET ERROR CODE.
                  10002      (41)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                   7517      264              IDENT  7FI,7517  FUNCTION TIMEOUT PROCESSOR.
                  10003      (45)
```

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                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                  7613      170               IDENT  7GI,7613  CHANNEL/CONTROLLER ERROR PROCESSOR.
                 10003      (31)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                  7574      207               IDENT  7HI,7574  CONTROLWARE RELOAD PROCESSOR.
                 10003      (34)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                  7613      170               IDENT  7II,7613  INITIATE CONTROLWARE RELOAD.
                 10003      (31)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                  7702      101               IDENT  7JI,7702  ISSUE RELOAD MESSAGE.
                 10003      (16)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                  7567      214               IDENT  7KI,7567  EXECUTE LEVEL 1 DIAGNOSTICS.
                 10003      (35)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                  7733       50               IDENT  7SI,7733  STATUS PROCESSOR.
                 10003      (11)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.

                  7732       50               IDENT  7WI,7732  WRITE ERROR PROCESSOR.
                 10002      (11)

                ADDRESS   LENGTH              BINARY CONTROL CARDS.
```

```
                    5       441             IDENT  0TI,FFIX   *LDAM* DEVICE TRACK FLAW PROCESSOR.
                  446       (73)

                ADDRESS   LENGTH            BINARY CONTROL CARDS.

                    5       266             IDENT  0TJ,FFIX   *LDAM* DEVICE TRACK FLAW PROCESSOR.
                  273       (46)

                ADDRESS   LENGTH            BINARY CONTROL CARDS.

                    5       464             IDENT  0PI,PRSX   *LDAM* DEVICE PACK SERIAL PROCESSOR.
                  471       (77)

                ADDRESS   LENGTH            BINARY CONTROL CARDS.

                    5        37             IDENT  0RI,PRSX   *LDAM* DEVICE UNIT RESERVE PROCESSOR.
                   44       (10)

                ADDRESS   LENGTH            BINARY CONTROL CARDS.

                    5       131             IDENT  0SI,PRSX   *LDAM* DEVICE SERVO TIMING PROCESSOR.
                  136       (23)

                ADDRESS   LENGTH            BINARY CONTROL CARDS.

                    5       373             IDENT  0CI,PRSX   *LDAM* DEVICE FIRMWARE IDENT PROCESSOR.
                  400       (64)

                ADDRESS   LENGTH            BINARY CONTROL CARDS.

                    5       233             IDENT  0SC,SCPX
                  240       (40)

                          BLOCKS    TYPE      ADDRESS    LENGTH

                          PROGRAM*  ABSOLUTE        0       240
                          OVERFLOW  ABSOLUTE      240         0
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STORAGE ALLOCATION.

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                ADDRESS   LENGTH            BINARY CONTROL CARDS.

                      5      353            IDENT  0SD,PRSX    *LDAM* DEVICE SPIN UP/DOWN MS DRIVES.
                    360      (60)           END


                                            IDENT  6DI,MSFW    7155-7154-7054/885-844  MAIN DRIVER.       6DI          1
                                      HN    MICRO  1,,+*LDAM* DEVICE+                                       6DI          2
                                            PERIPH J                                                        6DI          3
                                    D_M     BASE   MIXED                                                    6DI          4
                                            SST                                                             6DI          5
                                    COMMENT 85/07/29. 24/05/19. 6DI - "HN" MAIN DRIVER.                     6DI          6
                                            COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.             281L803      1


                                      ***   6DI - 7155-7154-7054/885-844 DRIVER.                            6DI         10
                                      *     R. J. THIELEN.     75/11/20.                                    6DI         11
                                      *     W. E. GOEBEL.      78/01/24.                                    6DI         12


                                      ***           6DI PROVIDES THE CAPABILITY TO ACCESS THE 885 AND     6DI         14
                                      *     844-44 OR 844-41 DRIVES THROUGH THE 7155 CONTROLLER.          6DI         15
                                      *     6DI ALSO PROVIDES THE CAPABILITY TO ACCESS 844-21, 844-44,    6DI         16
                                      *     844-41 DISK DRIVES THROUGH EITHER A 7054 OR 7154 CONTROLLER.  6DI         17
                                      *     FULL TRACKING OPERATIONS ARE ALLOWED ONLY THROUGH THE 7155    6DI         18
                                      *     AND 7154 CONTROLLERS.                                         6DI         19
                                      *                                                                   6DI         20
                                      *           ACCESS TO FSC 3330 AND 3350 DRIVES IN FULL TRACK MODE   6DI         21
                                      *     IS PROVIDED THROUGH THE FSC CHANNEL ADAPTOR.                  6DI         22
                                      *                                                                   6DI         23
                                      *           834 AND 836 DRIVES ARE ACCESSED THROUGH A 7255          6DI         24
                                      *     CHANNEL ADAPTOR WHICH HAS A 7155 COMPATIBLE INTERFACE.  THEY  6DI         25
                                      *     MAY ONLY BE ACCESSED IN FULL TRACK MODE.                      6DI         26
                                      *                                                                 NS2776       1
                                      *           CDSS SUBSYSTEMS ARE ACCESSED THROUGH A 7155 COMPATIBLE NS2776       2
                                      *     CONTROLLER WHICH IS INCLUDED IN THE SUBSYSTEM.  THEY MAY ONLY NS2776       3
                                      *     BE ACCESSED IN FULL TRACK MODE.                               NS2776       4


                                      ***   ORGANIZATION OF 7155/885.                                     6DI         28
                                      *                                                                   6DI         29
                                      *     UP TO THREE 885 UNITS CAN BE COMBINED TO FORM A               6DI         30
                                      *     LOGICAL DEVICE.                                               6DI         31
                                      *                                                                   6DI         32
                                      *     EQUIPMENT TYPE = *DM*.                                        6DI         33
                                      *                                                                   6DI         34
                                      *     SECTORS/TRACK = 640.                                          6DI         35
                                      *                                                                   6DI         36
                                      *     TRACKS/UNIT = 1682.                                           6DI         37
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                    *                                                          6DI        38
                    *          WORDS/UNIT = 68,894,720.                        6DI        39
                    *                                                          6DI        40
                    *          UNITS/DEVICE = 1-3.                             6DI        41
                    *                                                          6DI        42
                    *          WORDS/DEVICE = 68,894,720 - 206,684,160.        6DI        43
                    *                                                          6DI        44
                    *          MAXIMUM DATA RATE = 61.44 K WORDS/SECOND.       6DI        45
                    *                                                          6DI        46
                    *                                                          6DI        47
                    *          EQUIPMENT TYPE = *DQ*.                          6DI        48
                    *                                                          6DI        49
                    *          SECTORS/TRACK = 640.                            6DI        50
                    *                                                          6DI        51
                    *          TRACKS/UNIT = 1682.                             6DI        52
                    *                                                          6DI        53
                    *          WORDS/UNIT = 68,894,720.                        6DI        54
                    *                                                          6DI        55
                    *          UNITS/DEVICE = 1-3.                             6DI        56
                    *                                                          6DI        57
                    *          WORDS/DEVICE = 68,894,720 - 206,684,160.        6DI        58
                    *                                                          6DI        59
                    *          MAXIMUM DATA RATE = 122.88 K WORDS/SECOND.      6DI        60



                    ***        ORGANIZATION OF 7X5X/844-XX.                    6DI        62
                    *                                                          6DI        63
                    *          UP TO EIGHT 844-XX UNITS CAN BE COMBINED TO FORM A  6DI    64
                    *          LOGICAL DEVICE.                                 6DI        65
                    *                                                          6DI        66
                    *          EQUIPMENT TYPE = *DI*.                          6DI        67
                    *                                                          6DI        68
                    *          SECTORS/TRACK = 107.                            6DI        69
                    *                                                          6DI        70
                    *          TRACKS/UNIT = 1632.                             6DI        71
                    *                                                          6DI        72
                    *          WORDS/UNIT = 11,175,936.                        6DI        73
                    *                                                          6DI        74
                    *          UNITS/DEVICE = 1-8.                             6DI        75
                    *                                                          6DI        76
                    *          WORDS/DEVICE = 11,175,936 - 89,407,488.         6DI        77
                    *                                                          6DI        78
                    *          MAXIMUM DATA RATE = 46.08 K WORDS/SECOND.       6DI        79
                    *                                                          6DI        80
                    *                                                          6DI        81
                    *          EQUIPMENT TYPE = *DJ*.                          6DI        82
                    *                                                          6DI        83
                    *          SECTORS/TRACK = 227.                            6DI        84
                    *                                                          6DI        85
                    *          TRACKS/UNIT = 1640.                             6DI        86
                    *                                                          6DI        87
                    *          WORDS/UNIT = 23,825,920.                        6DI        88
                    *                                                          6DI        89
                    *          UNITS/DEVICE = 1-8.                             6DI        90
                    *                                                          6DI        91
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                    *          WORDS/DEVICE = 23,825,920 - 190,607,360.                6DI         92
                    *                                                                  6DI         93
                    *          MAXIMUM DATA RATE = 46.08 K WORDS/SECOND.               6DI         94
                    *                                                                  6DI         95
                    *                                                                  6DI         96
                    *          EQUIPMENT TYPE = *DK*.                                  6DI         97
                    *                                                                  6DI         98
                    *          SECTORS/TRACK = 112.                                    6DI         99
                    *                                                                  6DI        100
                    *          TRACKS/UNIT = 1632.                                     6DI        101
                    *                                                                  6DI        102
                    *          WORDS/UNIT = 11,698,176.                                6DI        103
                    *                                                                  6DI        104
                    *          UNITS/DEVICE = 1-8.                                     6DI        105
                    *                                                                  6DI        106
                    *          WORDS/DEVICE = 11,698,176 - 93,585,408.                 6DI        107
                    *                                                                  6DI        108
                    *          MAXIMUM DATA RATE = 92.16 K WORDS/SECOND.               6DI        109
                    *                                                                  6DI        110
                    *                                                                  6DI        111
                    *          EQUIPMENT TYPE = *DL*.                                  6DI        112
                    *                                                                  6DI        113
                    *          SECTORS/TRACK = 227.                                    6DI        114
                    *                                                                  6DI        115
                    *          TRACKS/UNIT = 1640.                                     6DI        116
                    *                                                                  6DI        117
                    *          WORDS/UNIT = 23,825,920.                                6DI        118
                    *                                                                  6DI        119
                    *          UNITS/DEVICE = 1-8.                                     6DI        120
                    *                                                                  6DI        121
                    *          WORDS/DEVICE = 24,825,920 - 190,607,360.                6DI        122
                    *                                                                  6DI        123
                    *          MAXIMUM DATA RATE = 92.16 K WORDS/SECOND.               6DI        124


                    ***        ORGANIZATION OF FSC DEVICES.                            6DI        126
                    *                                                                  6DI        127
                    *                                                                  6DI        128
                    *          MODEL = 3330-1.                                         6DI        129
                    *                                                                  6DI        130
                    *          EQUIPMENT TYPE = *DX*.                                  6DI        131
                    *                                                                  6DI        132
                    *          SECTORS/TRACK = 98.                                     6DI        133
                    *                                                                  6DI        134
                    *          TRACKS/UNIT = 1632.                                     6DI        135
                    *                                                                  6DI        136
                    *          WORDS/UNIT = 10,235,904.                                6DI        137
                    *                                                                  6DI        138
                    *          UNITS/DEVICE = 1-8.                                     6DI        139
                    *                                                                  6DI        140
                    *          WORDS/DEVICE = 10,235,904 - 81,887,232.                 6DI        141
                    *                                                                  6DI        142
                    *          MAXIMUM DATA RATE = 80.64 K WORDS/SECOND.               6DI        143
                    *                                                                  6DI        144
                    *                                                                  6DI        145
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                *          MODEL = 3330-11.                                    6DI       146
                *                                                              6DI       147
                *          EQUIPMENT TYPE = *DY*.                              6DI       148
                *                                                              6DI       149
                *          SECTORS/TRACK = 198.                                6DI       150
                *                                                              6DI       151
                *          TRACKS/UNIT = 1624.                                 6DI       152
                *                                                              6DI       153
                *          WORDS/UNIT = 20,579,328.                            6DI       154
                *                                                              6DI       155
                *          UNITS/DEVICE = 1-8.                                 6DI       156
                *                                                              6DI       157
                *          WORDS/DEVICE = 20,579,328 - 164,634,624.            6DI       158
                *                                                              6DI       159
                *          MAXIMUM DATA RATE = 80.64 K WORDS/SECOND.           6DI       160
                *                                                              6DI       161
                *                                                              6DI       162
                *          MODEL = 3350.                                       6DI       163
                *                                                              6DI       164
                *          EQUIPMENT TYPE = *DZ*.                              6DI       165
                *                                                              6DI       166
                *          SECTORS/TRACK = 420.                                6DI       167
                *                                                              6DI       168
                *          TRACKS/MODULE = 1116.                               6DI       169
                *                                                              6DI       170
                *          WORDS/MODULE = 30,051,840.                          6DI       171
                *                                                              6DI       172
                *          MODULE/DEVICE = 1-4.                                6DI       173
                *                                                              6DI       174
                *          WORDS/DEVICE = 30,051,840 - 120,207,360.            6DI       175
                *                                                              6DI       176
                *          MAXIMUM DATA RATE = 107.52 K WORDS PER SECOND.      6DI       177
                *                                                              6DI       178
                *                                                              6DI       179
                *          MODEL = 33502.                                      6DI       180
                *                                                              6DI       181
                *          EQUIPMENT TYPE = *DA*.                              6DI       182
                *                                                              6DI       183
                *          SECTORS/TRACK = 840.                                6DI       184
                *                                                              6DI       185
                *          TRACKS/MODULE = 1116.                               6DI       186
                *                                                              6DI       187
                *          WORDS/MODULE = 30,051,840.                          6DI       188
                *                                                              6DI       189
                *          MODULE/DEVICE = 1-2.                                6DI       190
                *                                                              6DI       191
                *          WORDS/DEVICE = 60,103,680 - 120,207,360.            6DI       192
                *                                                              6DI       193
                *          MAXIMUM DATA RATE = 107.52 K WORDS PER SECOND.      6DI       194
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                    ***     ORGANIZATION OF 834 DEVICES.                                    6DI         196
                    *                                                                       6DI         197
                    *       UP TO EIGHT 834 PHYSICAL UNITS MAY BE COMBINED TO FORM A        6DI         198
                    *       LOGICAL DEVICE.                                                 6DI         199
                    *                                                                       6DI         200
                    *       EQUIPMENT TYPE = *DD*.                                          6DI         201
                    *                                                                       6DI         202
                    *       SECTORS/TRACK = 160.                                            6DI         203
                    *                                                                       6DI         204
                    *       TRACKS/UNITS = 1628.                                            6DI         205
                    *                                                                       6DI         206
                    *       WORDS/UNIT = 16,670,720.                                        6DI         207
                    *                                                                       6DI         208
                    *       UNITS/DEVICE = 1-8.                                             6DI         209
                    *                                                                       6DI         210
                    *       WORDS/DEVICE = 16,670,720 - 133,365,760.                        6DI         211
                    *                                                                       6DI         212
                    *       MAXIMUM DATA RATE = 122.88 K WORDS/SECOND.                      6DI         213
                    ***     ORGANIZATION OF 836 DEVICES.                                    6DI         215
                    *                                                                       6DI         216
                    *       UP TO THREE 836 PHYSICAL UNITS MAY BE COMBINED TO FORM A        6DI         217
                    *       LOGICAL DEVICE.                                                 6DI         218
                    *                                                                       6DI         219
                    *       EQUIPMENT TYPE = *DG*.                                          6DI         220
                    *                                                                       6DI         221
                    *       SECTORS/TRACK = 564.                                            6DI         222
                    *                                                                       6DI         223
                    *       TRACKS/UNIT = 1398.                                             6DI         224
                    *                                                                       6DI         225
                    *       WORDS/UNIT = 50,462,208.                                        6DI         226
                    *                                                                       6DI         227
                    *       UNITS/DEVICE = 1-3.                                             6DI         228
                    *                                                                       6DI         229
                    *       WORDS/DEVICE = 50,462,208 - 151,386,624.                        6DI         230
                    *                                                                       6DI         231
                    *       MAXIMUM DATA RATE = 122.88 K WORDS/SECOND.                      6DI         232
                    ***     ORGANIZATION OF CDSS II DEVICES.                                NS2776        5
                    *                                                                       NS2776        6
                    *       ONE CDSS II UNIT FORMS A SINGLE LOGICAL DEVICE.                 NS2776        7
                    *                                                                       NS2776        8
                    *       EQUIPMENT TYPE = *DR*.                                          NS2776        9
                    *                                                                       NS2776       10
                    *       SECTORS/TRACK = 640.                                            NS2776       11
                    *                                                                       NS2776       12
                    *       TRACKS/UNIT = 123,640.                                          NS2776       13
                    *                                                                       NS2776       14
                    *       WORDS/UNIT = 253,229,056.                                       NS2776       15
                    *                                                                       NS2776       16
                    *       UNITS/DEVICE = 1.                                               NS2776       17
```

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                        *                                                      NS2776      18
                        *         WORDS/DEVICE = 253,229,056.                  NS2776      19


                        **        ENTRY CONDITIONS.                            6DI         234
                        *                                                      6DI         235
                        *                                                      6DI         236
                        *         (T4) = CHANNEL IF PREVIOUSLY RESERVED.       6DI         237
                        *         (T5) = EST ORDINAL.                          6DI         238
                        *         (T6) = TRACK.                                6DI         239
                        *         (T7) = SECTOR.                               6DI         240



                   1     RICHI$   EQU    1          SELECT DEFERRED INSTRUCTION REDEFINITION   6DI         242
                   1     RICHL$   EQU    1                                     6DI         243
                   1     RIREL$   EQU    1                                     6DI         244
       0                          CTEXT  COMPMAC - PP SYSTEM MACROS.           COMPMAC       1
       0                          CTEXT  COMPCHI - REDEFINE I/O INSTRUCTIONS.  COMPCHI       1
       0                          CTEXT  COMPCHL - REDEFINE I/O INSTRUCTIONS.  COMPCHL       1
       0                          CTEXT  COMPREL - LOCATION FREE OVERLAY MACROS.    COMPREL       1
       0                          CTEXT  COMSCPS - CPUMTR SUBFUNCTION CODES.   COMSCPS       1
                                                                             # COMSDFS       1
       0                          CTEXT  COMSDFS - COMMON DAYFILE SYMBOL DEFINITIONS.     COMSDFS       2
       0                          CTEXT  COMSEVT - EVENT DESCRIPTORS.          COMSEVT       1
                                  LIST   X                                     6DI         252
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 46                                  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
                 46                   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,F7253L688     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
                                                                                                      7
                                                                                                      8
                                                                                                      9
                                                                                                     10
                                                                                                     11
                  **        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
                                                                                                     55
                                                                                                     56
                                                                                                     57
                                                                                                     58
                                                                                                     59
                                                                                                     60
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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
```

```
*                 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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                46                      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
                *                    *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
          46                    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
```

```
                                **        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 85/07/29. 24/05/19. "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   *                                                        6DI        254
                     46                  CTEXT  COMSPIM - PP INSTRUCTION MNEMONICS.                     COMSPIM      1
                     46                  CTEXT  COMSZOL - ZERO LEVEL OVERLAY LENGTHS.                   COMSZOL      1
                     46                  CTEXT  COMS1DS - 1DS FUNCTION CODE DEFINITIONS.                COMS1DS      1
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                      **        DRIVER FUNCTION CODES.                                  6DI       257
                                                                                        6DI       258
                                                                                        6DI       259
      0     FCCN    EQU   0         CONNECT FUNCTION CODE                             6DI       260
      1     FCS1    EQU   1         SEEK 1 TO 1 INTERLACE                             6DI       261
      2     FCS2    EQU   2         SEEK 2 TO 1 INTERLACE                             6DI       262
      4     FCRD    EQU   4         READ FUNCTION CODE                                6DI       263
      5     FCWR    EQU   5         WRITE FUNCTION CODE                               6DI       264
     10     FCOC    EQU   10        OPERATION COMPLETE FUNCTION CODE                  6DI       265
     11     FCGR    EQU   11        DISABLE RESERVES - GRENADE                        6DI       266
     12     FCGS    EQU   12        GENERAL STATUS FUNCTION CODE                      6DI       267
     14     FCCO    EQU   14        CONTINUE FUNCTION CODE                            6DI       268
     15     FCDK    EQU   15        DROP SEEKS                                        6DI       269
     20     FCDR    EQU   20        DRIVE RELEASE                                     6DI       270
     23     FCDS    EQU   23        DETAILED STATUS FUNCTION CODE                     6DI       271
     30     FCRF    EQU   30        READ FACTORY DATA FUNCTION CODE                   6DI       272
     31     FCRU    EQU   31        READ UTILITY SECTOR FUNCTION CODE                 6DI       273
     34     FCRP    EQU   34        READ PROTECTED SECTOR                             6DI       274
     35     FCWL    EQU   35        WRITE LAST SECTOR                                 6DI       275
     37     FCWP    EQU   37        WRITE PROTECTED SECTOR                            6DI       276
     43     FCRB    EQU   43        READ BACK COUPLER BUFFER                          6DI       277
     52     FCST    EQU   52        INPUT PROCESSOR STATUS                            6DI       278
     55     FCSU    EQU   55        SPIN UP AN ISD DRIVE                              6DI       279
     56     FCSD    EQU   56        SPIN DOWN AN ISD DRIVE                            6DI       280
     56     FCTD    EQU   56        INPUT TIMING DATA                                 6DI       281
     61     FCDP    EQU   61        AUTODUMP                                          6DI       282
     62     FCMP    EQU   62        MANIPULATE PROCESSOR                              6DI       283
     63     FCID    EQU   63        INPUT DISPLAY DATA                                6DI       284
     64     FCFT    EQU   64        FUNCTION TIMING DIFFERENCE COUNTER                6DI       285
     71     FCLC    EQU   71        AUTOLOAD CONTROL MODULE FROM PP                   6DI       286
    414     FCAL    EQU   414       AUTOLOAD FUNCTION CODE                            6DI       287


                      **        ASSEMBLY CONSTANTS.                                     6DI       289
                                                                                        6DI       290
                                                                                        6DI       291
     24     DSLN    EQU   24        DETAILED STATUS LENGTH                            6DI       292
      3     FRNW    EQU   3         FIRMWARE REVISION NUMBER WORD                     6DI       293
     20     ARNW    EQU   20        FSC ADAPTOR REVISION NUMBER WORD                  6DI       294
     21     CMNW    EQU   21        CONTROL MODULE REVISION NUMBER WORD               6DI       295
      0     CH      EQU   0         MASS STORAGE CHANNEL                              6DI       296
            DEC     MICRO 1,, 6DI   DECK NAME                                         6DI       297
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```
                                *       REDEFINE CHANNEL INSTRUCTIONS TO PRODUCE CHANNEL TABLE.  6DI   299
                                                                                                 6DI   300
 46                                     RICHI           REDEFINE CHANNEL INSTRUCTIONS            6DI   301

 527                                    ORG     MSFW                                             6DI   303

                                *       ENTRY POINT TRANSFERS.                                   6DI   305
                                                                                                 6DI   306
                                                                                                 6DI   307
 527        1052                       CON     PRS     PRESET ADDRESS                           6DI   308
                                                                                                 6DI   309
                                                                                                 6DI   310
 530        0000            RDS        CON     0       ENTRY                                    6DI   311
 531        0313                       UJN     RDS.    READ SECTOR                              6DI   312
                                                                                                 6DI   313
                                                                                                 6DI   314
 532        0000            WDS        CON     0       ENTRY                                    6DI   315
 533        0336                       UJN     WDS.                                             6DI   316

                                **      EMS - END MASS STORAGE PROCESSING.                       6DI   318
                                *                                                                6DI   319
                                *       ENTRY  (T4) = CHANNEL, IF PREVIOUSLY RESERVED.           6DI   320
                                *              (T5) = EQUIPMENT.                                 6DI   321
                                *                                                                6DI   322
                                *       EXIT   (A) = 0.                                          6DI   323
                                *                                                                6DI   324
                                *       NOTE - THE *.EMS* ENTRY POINT IS SUPPORTED ONLY VIA THE  6DI   325
                                *       *ENDMS* MACRO DEFINED IN *COMPMAC*.  IF THIS LOCATION    6DI   326
                                *       CHANGES, THE DEFINITION OF *.EMS* MUST BE CHANGED IN     6DI   327
                                *       *PPCOM* AND ALL PROGRAMS USING THE *ENDMS*               6DI   328
                                *       MACRO MUST BE REASSEMBLED.                               6DI   329
                                                                                                 6DI   330
                                                                                                 6DI   331
 534        0100 0534           .EMS    SUBR            ENTRY/EXIT                               6DI   332
 536        1400                       LDN     0                                                6DI   333
 537        3413                       STD     CM+3                                             6DI   334
 540        4471                       STI     D1      SET POSITION REQUIRED                    6DI   335
 541        0200 0761                  RJM     DSW     DROP CHANNEL VIA *DSWM*                  6DI   336
 543        0370                       UJN     .EMSX   RETURN                                   6DI   337

                                **      RDS - READ SECTOR.                                       6DI   339
                                *                                                                6DI   340
                                *       ENTRY  (A) = BUFFER ADDRESS FOR SECTOR.                  6DI   341
                                *                                                                6DI   342
                                *       EXIT   (A) .LT. 0 IF UNRECOVERED ERROR AND READ ERROR    6DI   343
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                                *               PROCESSING SELECTED.                                                6DI       344
                                *                                                                                   6DI       345
                                *          CALLS  DST, FNC, LDA.                                                    6DI       346
                                                                                                                    6DI       347
                                                                                                                    6DI       348
 544          5400 0562           RDS.     STM    RDSB         SET BUFFER ADDRESS                                  6DI       349
                                                                                                                    6DI       350
                                *          THE CODE BETWEEN *RDSC* AND *RDSA* IS OVERLAID TO MEASURE            6DI       351
                                *          THE SERVO TIMING.  *0SI* MEASURES THE SERVO                          6DI       352
                                *          TIMING AND OVERLAYS *RDS*.                                           6DI       353
                                                                                                                    6DI       354
 546                            RDSC     BSS    0                                                                6DI       355
                                                                                                                    6DI       356
                                *          THE FOLLOWING CODE MUST BE DUPLICATED IN BOTH *RDS* AND              6DI       357
                                *          *WDS* BECAUSE OF TIMING CONSTRAINTS FOR THE 885.                     6DI       358
                                                                                                                    6DI       359
 546          4771                       SOI    D1                                                               6DI       360
 547          0705                       MJN    RDS1         IF POSITION REQUIRED                                6DI       361
 550          3107                       ADD    T7                                                               6DI       362
 551          5300 0602                  LMM    WDSA                                                             6DI       363
 553          0403                       ZJN    RDS2         IF CONSECUTIVE SECTORS                              6DI       364
 554          0200 0642           RDS1     RJM    LDA          LOAD ADDRESS AND ISSUE POSITION                     6DI       365
 556          1404                RDS2     LDN    FCRD         NORMAL READ                                         6DI       366
                          556       RDSA     EQU    *-1                                                          6DI       367
                                *          LDN    FCRU         READ UTILITY SECTOR                                 6DI       368
                                *          LDN    FCRF         READ FACTORY DATA                                   6DI       369
                                *          LDN    FCDS         (READING DETAILED STATUS)                           6DI       370
                                *          LDN    FCTD         (PERFORMING SERVO ADJUSTMENT FOR 885)               6DI       371
                                *          UJN    RDS4         (ISSUING DISABLE RESERVES)                          6DI       372
                                                                                                                    6DI       373
                                *          ENTERED HERE FROM *7SI* TO ISSUE CONTINUE FUNCTION.                  6DI       374
                                *          ENTERED HERE TO READ BACK COUPLER BUFFER ON FULL TRACK                6DI       375
                                *          WRITE BUFFER TO DISK ERROR.                                          6DI       376
                                                                                                                    6DI       377
 557          0200 0725           RDS3     RJM    FNC                                                              6DI       378
 561          7100 0561                    IAM    *,CH                                                             6DI       379
                          562       RDSB     EQU    *-1                                                          6DI       380
 563          0534                RDS3.1   NJN    WDS5         IF TRANSFER NOT COMPLETE                            6DI20       1
                                *          LJM    DEI6.0       (IF COUPLER READ BACK)                              6DI20       2
                          563       RDSD     EQU    *-1                                                          6DI20       3
 564          5000 0530           RDS4     LDM    RDS                                                              6DI20       4
 566          6640 0637                    SFM    LDA8,CH      IF CHANNEL PARITY ERROR (LOWER 800 SERIES)          6DI       382
 570          0335                       UJN    DST1         CHECK STATUS                                        6DI       384
```

```
                                **         WDS - WRITE SECTOR.                                                  6DI       386
                                *                                                                               6DI       387
                                *          ENTRY  (A) = BUFFER ADDRESS FOR SECTOR.                              6DI       388
                                *                                                                               6DI       389
                                *          EXIT   (A) = 0 IF NO ERROR.                                          6DI       390
                                *                 (A) = -0 IF UNRECOVERED ERROR AND WRITE ERROR                 6DI       391
                                *                 PROCESSING SELECTED.                                          6DI       392
                                *                 (A) .EQ. -1 IF UNRECOVERED ERROR ON PREVIOUS SECTOR,          6DI       393
                                *                 NO WRITE ERROR PROCESSING BUFFER SPECIFIED IN *WDSE*          6DI       394
                                *                 AND WRITE ERROR PROCESSING SELECTED.                          6DI       395
```

```
                                *                                                                  6DI       396
                                *       CALLS  DST, FNC, LDA.                                      6DI       397
                                                                                                   6DI       398
                                                                                                   6DI       399
 571        5400 0616            WDS.   STM    WDSC        SET BUFFER ADDRESS                      6DI       400
 573        1063                        SHN    -14                                                 6DI       401
 574        5400 0611                   STM    WDSB        SET WRITE LAST SECTOR                   6DI       402
                                                                                                   6DI       403
                                *       THE FOLLOWING CODE MUST BE DUPLICATED IN BOTH *RDS* AND     6DI       404
                                *       *WDS* BECAUSE OF TIMING CONSTRAINTS FOR THE 885.           6DI       405
                                                                                                   6DI       406
 576        4771                        SOI    D1                                                  6DI       407
 577        0705                        MJN    WDS1        IF POSITION REQUIRED                    6DI       408
 600        3107                        ADD    T7                                                  6DI       409
 601        2300 0601                   LMC    *                                                   6DI       410
                         602    WDSA    EQU    *-1                                                 6DI       411
 603        0403                        ZJN    WDS2        IF CONSECUTIVE SECTORS                  6DI       412
 604        0200 0642            WDS1   RJM    LDA         LOAD ADDRESS AND ISSUE POSITION         6DI       413
 606        4071                 WDS2   LDI    D1          CHECK END OF UNIT/TRACK                 6DI       414
                                *       LJM    /0SD/SUE2   (SPINNING DOWN AN ISD DRIVE)            6DI       415
                                *       LJM    /0SD/SUE4   (SPINNING UP AN ISD DRIVE)              6DI       416
 607        0403                        ZJN    WDS3        IF END OF UNIT/TRACK                    6DI       417
 610        2000 0000                   LDC    0                                                   6DI       418
                         611    WDSB    EQU    *-1                                                 6DI       419
 612        1135                 WDS3   LMN    FCWL        WRITE LAST SECTOR                       6DI       420
                                                                                                   6DI       421
                                *       ENTERED HERE FROM *7SI* TO ISSUE CONTINUE FUNCTION.        6DI       422
                                *       ENTERED HERE FROM *0SD* TO ISSUE SPINUP/SPINDOWN FUNCTION. 6DI       423
                                                                                                   6DI       424
 613        0200 0725            WDS4   RJM    FNC                                                 6DI       425
 615        7300 0615                   OAM    *,CH                                                6DI       426
                         616    WDSC    EQU    *-1                                                 6DI       427
 617        0521                 WDS5   NJN    LDA9        IF INCOMPLETE TRANSFER                  6DI       428
 620        5000 0532            WDSD   LDM    WDS                                                 6DI       429
                                *       LDC    /0SD/SUE4   (SPINNING UP/DOWN AN ISD DRIVE)         6DI       430
                                *       UJN    DST         PROCESS STATUS                          6DI       431
```

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                                **      DST - DEVICE STATUS.                                       6DI       433
                                *       WAITS FOR CHANNEL EMPTY, THEN DISCONNECTS.                 6DI       434
                                *                                                                  6DI       435
                                *       ENTRY  (A) = EXIT ADDRESS.                                 6DI       436
                                *                                                                  6DI       437
                                *       EXIT   (A) = 0 AND EXIT TO EXIT ADDRESS IF NO STATUS ERROR. 6DI       438
                                *                    EXIT TO LDA1 IF STATUS ERROR.                 6DI       439
                                                                                                   6DI       440
                                                                                                   6DI       441
 622        6600 0622            DST    FJM    *,CH                                                6DI       442
 624        7540                        DCN    CH+40                                               6DI       443
 625        3410                 DST1   STD    CM          SAVE EXIT ADDRESS                       6DI       444
                                                                                                   6DI       445
                                *       THE *7155* CONTROLLER CANNOT ACCEPT THE GENERAL STATUS      6DI       446
                                *       FUNCTION FOR 5 MICRO SECONDS AFTER THE DATA TRANSFER       6DI       447
                                *       IS COMPLETE FOR READS AND 10 MICRO SECONDS FOR WRITE.      6DI       448
                                *       IN ORDER TO MAKE USE OF THIS TIMING CONSTRAINT THE EXIT    6DI       449
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                                *       ADDRESS IS AN ENTRY CONDITION TO *DST*, WHICH IS STORED      6DI   450
                                *       IN THE EXIT INSTRUCTION DURING THE CONTROLLER OVERHEAD       6DI   451
                                *       PERIOD AFTER THE DATA TRANSFER.  THIS ALLOWS THE SHORTEST    6DI   452
                                *       DELAY POSSIBLE TO RETURN TO THE CALLER AFTER GENERAL         6DI   453
                                *       STATUS IS RECEIVED.  GENERAL STATUS IS PERFORMED AS AN       NS2776 21
                                *       IN LINE OPERATION TO MINIMIZE OVERHEAD TIME FOR THE          6DI   455
                                *       *7155* CONTROLLER.                                           6DI   456
                                                                                                     6DI   457
 626            1412                    LDN     FCGS        GET GENERAL STATUS                      6DI   458
 627            0200 0725               RJM     FNC         ISSUE FUNCTION                          6DI   459
 631            7040                    IAN     CH+40                                               6DI   460
 632            6640 0637               SFM     LDA8,CH     IF CHANNEL PARITY ERROR (800 SERIES)    6DI   461
 634            0527             DSTA   NJN     LDA3        IF ERRORS                               6DI   462
                                 *      LJM     /0SD/CGS    (SPINNING UP/DOWN AN ISD DRIVE)         6DI   463
 635            0110 0000        DSTB   LJM     0,CM        RETURN                                  NS2494 2
                                 *      LJM     /0SC/SCP8   (SWEEP CYCLING)                         NS2494 3
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```
                                **      LDA - LOAD ADDRESS.                                          6DI   466
                                *                                                                    6DI   467
                                *       ENTRY  (T5) = EQUIPMENT.                                     6DI   468
                                *              (T6) = TRACK.                                         6DI   469
                                *              (T7) = SECTOR.                                        6DI   470
                                *                                                                    6DI   471
                                *       ENTRY  LDA3 = ENTRY POINT TO PROCESS GENERAL STATUS ERRORS.  6DI   472
                                *              LDA2 = ENTRY POINT TO JUMP TO ERROR PROCESSOR.        6DI   473
                                *                                                                    6DI   474
                                *       USES   CM - CM+4.                                            6DI   475
                                *                                                                    6DI   476
                                *       CALLS  DST, DSW, FNC.                                        6DI   477
                                *                                                                    6DI   478
                                *       MACROS MONITOR.                                              6DI   479
                                                                                                     6DI   480
                                                                                                     6DI   481
 637            1501             LDA8   LCN     CHPE        SET CHANNEL PARITY ERROR FLAG           6DI   482
 640            0100 1026        LDA9   LJM     DSW7        CALL ERROR PROCESSOR                    6DI   483
                                                                                                     6DI   484
 642            0000             LDA    CON     0           ENTRY                                   6DI   485
                                                                                                     6DI   486
                                *       REENTER HERE ON ERROR RETRY.                                 6DI   487
                                *       COMPUTE PHYSICAL ADDRESS.                                    6DI   488
                                                                                                     6DI   489
 643            3076             LDA1   LDD     OA          WAIT OUTPUT REGISTER CLEAR              6DI   490
 644            6010                    CRD     CM                                                  6DI   491
 645            3010                    LDD     CM                                                  6DI   492
 646            0574                    NJN     LDA1        IF NOT CLEAR                            6DI   493
 647            3411                    STD     CM+1        INDICATE A STANDARD SEEK                6DI   494
 650            3077                    LDD     MA                                                  6DI   495
 651            6204                    CWD     T4                                                  6DI   496
 652            1464                    MONITOR LDAM        CONVERT LOGICAL TO PHYSICAL ADDRESS     6DI   497
 655            3714                    SOD     CM+4        SET UNIT SWITCH COUNTER                 6DI   498
 656            4471                    STI     D1                                                  6DI   499
 657            3107                    ADD     T7          SET CONSECUTIVE SECTOR COUNT            6DI   500
 660            5400 0602               STM     WDSA                                                6DI   501
 662            0302                    UJN     LDA4        CHECK FOR SEEK WAIT NEEDED              6DI   502
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                                                                                 6DI         503
                                   *       ENTER HERE TO PROCESS GENERAL STATUS ERRORS.  6DI         504
                                   *       *DSW* WILL DETERMINE IF STATUS REQUIRES AN ERROR PROCESSOR  6DI  505
                                   *       CALL OR A SEEK WAIT MONITOR FUNCTION.         6DI         506
                                                                                 6DI         507
       663        3413              LDA3   STD    CM+3        SAVE STATUS        6DI         508
       664        0200 0761         LDA4   RJM    DSW         DRIVER SEEK WAIT PROCESSING  6DI  509
       666        3012                     LDD    CM+2                           6DI         510
       667        0414                     ZJN    LDA5        IF CONTROLLER PREVIOUSLY RESERVED  6DI  511
       670        0200 0725                RJM    FNC                            6DI         512
       672        7040                     IAN    CH+40                          6DI         513
       673        6640 0637                SFM    LDA8,CH     IF CHANNEL PARITY ERROR (800 SERIES)  6DI  514
       675        2200 2000                LPC    2000                           6DI         515
       677        0563                     NJN    LDA3        IF CONTROLLER RESERVED  6DI     516
       700        1410                     LDN    11-1        SET CONNECTED STATUS IN CHRV  6DI  517
       701        5500 0111                RAM    CHRV                           6DI         518
       703        3077              LDA5   LDD    MA          READ SEEK PARAMETERS  6DI        519
                                   *       LJM    RDS2        (GET DETAILED STATUS FOR *0CI*)  6DI  520
                            703     LDAC   EQU    *-1                            6DI         521
       704        1601                     ADN    1                              6DI         522
       705        6010                     CRD    CM                             6DI         523
       706        1400              LDAA   LDN    0           SEEK FUNCTION      6DI         524
                                   *       LDN    FCS1        (SEEK 1 TO 1 INTERLACE)  6DI   525
                                   *       LDN    FCS2        (SEEK 2 TO 1 INTERLACE)  6DI   526
                                   *       LDN    FCGR        (ISSUING DISABLE RESERVES)  6DI  527
       707        0200 0725                RJM    FNC                            6DI         528
       711        1404              LDAB   LDN    4                              6DI         529
                                   *       UJN    LDA7        (ISSUING DISABLE RESERVES)  6DI  530
       712        7300 0011                OAM    CM+1,CH     OUTPUT UNIT, CYLINDER, TRACK AND SECTOR  6DI  531
       714        0525              LDA6   NJN    ERR         IF ERROR           6DI         532
       715        5000 0642         LDA7   LDM    LDA                            6DI         533
       717        0100 0622                LJM    DST         CHECK STATUS       6DI         534



                                   **      FNC - FUNCTION DEVICE.                6DI         536
                                   *                                             6DI         537
                                   *       ENTRY  (A)  = FUNCTION CODE.          6DI         538
                                   *                                             6DI         539
                                   *       EXIT   (A) = 502, IF NORMAL FUNCTION.  6DI        540
                                   *                  = *DSLN*, IF READING DETAILED STATUS.  6DI  541
                                   *                  = 2, IF PERFORMING SERVO ADJUSTMENT FOR 885.  6DI  542
                                   *                  = 1, IF SPINNING UP/DOWN AN ISD DRIVE.  6DI  543
                                   *              FUNCTION ISSUED.               6DI         544
                                   *              CHANNEL ACTIVATED.             6DI         545
                                   *                                             6DI         546
                                   *       CALLS  ERR.                           6DI         547
                                                                                 6DI         548
                                                                                 6DI         549
       721        7400              FNC4   ACN    CH                             6DI         550
       722        2000 0502                LDC    502         FULL BUFFER WORD COUNT  6DI     551
                            723     FNCA   EQU    *-1                            6DI         552
                                   *       LDC    DSLN        (READING DETAILED STATUS)  6DI  553
                                   *       LDC    2           (PERFORMING SERVO ADJUSTMENT FOR 885)  6DI  554
                                   *       LDC    1           (SPINNING UP/DOWN AN ISD DRIVE)  6DI  555
                                                                                 6DI         556
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 724         0100 0724          FNC      SUBR               ENTRY/EXIT                                        6DI        557
 726         6400 0741          FNC1     AJM    ERR,CH      IF CONTROLLER NOT READY                           6DI        558
 730         7600               FNCC     FAN    CH                                                            6DI        559
                                                                                                               6DI        560
                                *        THE FOLLOWING DELAY MUST ALLOW AT LEAST 15 SECONDS.                NS2776      22
                                                                                                               6DI        562
 731         3071                        LDD    HN                                                            NS2776      23
 732         3400                        STD    T0                                                            6DI33        3
 733         3170               FNC2     ADD    ON          ENSURE DELAY IS SATISIFIED                        NS2776      24
 734         6500 0721          FNCB     IJM    FNC4,CH     IF FUNCTION ACCEPTED                              6DI        564
 736         0574                        NJN    FNC2        IF INNER TIMEOUT LOOP NOT YET COMPLETE            6DI33        5
 737         3700                        SOD    T0                                                            6DI33        6
 740         0572                        NJN    FNC2        IF NOT YET TIMED OUT                              6DI33        7
                                                                                                               6DI        566
                                *        UJN    ERR         PROCESS ERROR                                     6DI        567
                                **       ERR - CALL *7BI*.                                                     6DI        569
                                                                                                               6DI        570
                                                                                                               6DI        571
 741         2000 0630          ERR      MSERR  7BI,*                                                         6DI        572
 743         0100 0414                   LJM    LEP1        CALL ERROR PROCESSOR                              6DI        573
                                *        LJM    DCI8        (DURING *7CI* PROCESSING)                         6DI        574
                                *        LJM    DEI6.1      (DURING *7EI* PROCESSING)                         6DI        575
                                *        LJM    FTO13       (DURING *7FI* PROCESSING)                         6DI        576
                                *        LJM    FTO16       (DURING *7FI* PROCESSING)                         6DI        577
                                *        LJM    DCP3        (DURING *7GI* PROCESSING)                         6DI        578
                                *        LJM    DCP5        (DURING *7GI* PROCESSING)                         6DI        579
                                *        LJM    EXD4        (DURING *7KI* PROCESSING)                         6DI        580
                                *        LJM    EXD11       (DURING *7KI* PROCESSING)                         6DI        581
                                *        LJM    /0SC/SCP9   (SWEEP CYCLING)                                   NS2494       4
                      744       ERRA     EQU    *-1         EXIT ADDRESS                                      6DI        582
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                                **        DSW - DRIVER SEEK WAIT PROCESSING.                                    6DI        584
                                *                                                                              6DI        585
                                *         ENTRY  (CM+3) = SEEK WAIT FUNCTION.  THE FOLLOWING IS A LIST         6DI        586
                                *                         OF THE POSSIBLE VALUES AND THEIR ORIGIN.             6DI        587
                                *                          0 = CHANNEL RELEASE REQUEST. *ENDMS REQUEST*        6DI        588
                                *                          2 = SEEK IN PROGRESS.    *CONTROLLER STATUS*        6DI        589
                                *                          4 = STORAGE MOVE REQUESTED OR  *LDAM STATUS*        6DI        590
                                *                              UNIT SWITCH REQUESTED.     *LDAM STATUS*        6DI        591
                                *                         10 = DRIVE RESERVED.      *CONTROLLER STATUS*        6DI        592
                                *                         11 = REQUEST CHANNEL AND UNIT.  *LDAM STATUS*        6DI        593
                                *                       2000 = CONTROLLER RESERVED. *CONTROLLER STATUS*        6DI        594
                                *                       4XXX = ERROR STATUS.        *CONTROLLER STATUS*        6DI        595
                                *                       5XXX = ERROR STATUS.        *CONTROLLER STATUS*        6DI        596
                                *                       77YY = ERROR STATUS.              *LDAM STATUS*        6DI        597
                                *                              YY = COMPLIMENT OF ERROR CODE.                  6DI        598
                                *                 (CHRV) = DRIVER CONTROL WORD.  SEE *COMSMSP*.                6DI        599
                                *                                                                              6DI        600
                                *         EXIT    (A) = 0.                                                     6DI        601
                                *                 (T4) = CHANNEL.                                              6DI        602
                                *                 (T5) = SYSTEM DEVICE SELECTED WHEN APPROPRIATE.              6DI        603
                                *                                                                              6DI        604
                                *         USES    CM - CM+4.                                                   6DI        605
                                *                                                                              6DI        606
                                *         MACROS  MONITOR.                                                     6DI        607
                                                                                                               6DI        608
                                                                                                               6DI        609
     745        7740 0010        DSW4     FNC     FCOC,CH+40  ISSUE RELEASE FUNCTION                          6DI        610
                          746    DSWD     EQU     *-1                                                         6DI        611
                                *         FNC     FCDR,CH+40  A DRIVE RELEASE FUNCTION IS ISSUED AS           6DI        612
                                *                             OPPOSED TO THE OPERATION COMPLETE WHEN           6DI        613
                                *                             A SEEK OPERATION IS OUTSTANDING ON A             6DI        614
                                *                             SHARED DRIVE THROUGH THE SAME CHANNEL.           6DI        615
                                *                             THE ISSUING OF THE DRIVE RELEASE PREVENTS        6DI        616
                                *                             ANOTHER MACHINE FROM ACCESSING, THROUGH          6DI        617
                                *                             THE SAME CONTROLLER, THE DRIVE THAT HAS          6DI        618
                                *                             THE SEEK INITIATED.                              6DI        619
     747        3071                       LDD     HN                                                          NS2776      25
     750        3400                       STD     T0                                                          NS2776      26
     751        6500 0776        DSW5      IJM     DSW2,CH     IF FUNCTION ACCEPTED                            NS2776      27
     753        3170                       ADD     ON          ENSURE DELAY IS SATISIFIED                      NS2776      28
     754        0574                       NJN     DSW5        IF INNER TIMEOUT LOOP NOT YET COMPLETE          NS2776      29
     755        3700                       SOD     T0                                                          NS2776      30
     756        0572                       NJN     DSW5        IF NOT YET TIMED OUT                            NS2776      31
     757        0317                       UJN     DSW2        ISSUE DRIVER SEEK WAIT                          6DI32        3
                                                                                                               6DI32        4
     760        0100 0760        DSW       SUBR                ENTRY/EXIT                                      6DI        628
     762        5000 0111                  LDM     CHRV        CHECK CHANNEL RESERVATION                       6DI        629
     764        3410                       STD     CM                                                          6DI        630
     765        1211                       LPN     11                                                          6DI        631
     766        3313             DSW1      LMD     CM+3                                                        6DI        632
     767        0470                       ZJN     DSWX        IF NO *DSWM* NEEDED                             6DI        633
     770        1377             DSWB      SCN     77                                                          6DI        634
                                *          SCN     75          (SHARED DEVICE - NO RELEASE AFTER SEEK)         6DI        635
     771        1006                       SHN     21-13                                                       6DI        636
     772        0532                       NJN     DSW6        IF NO RELEASE OR ERROR                          6DI        637
     773        3010                       LDD     CM                                                          6DI        638
     774        1210                       LPN     10                                                          6DI        639
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 775          0547                    NJN    DSW4        IF CONNECTED ISSUE RELEASE                  6DI        640
 776          3077              DSW2  LDD    MA          WRITE MESSAGE BUFFER PARAMETERS             6DI        641
 777          6204                    CWD    T4                                                      6DI        642
1000          1413                    MONITOR DSWM       DRIVER SEEK WAIT                          6DI        643
                                *       LDN    0                                                    6DI        644
1003          4500              DSW3  RAI    T0          MODIFY CHANNEL INSTRUCTIONS                 6DI        645
1004          5010 1031               LDM    TCHA,CM                                                 6DI        646
1006          3400                    STD    T0                                                      6DI        647
1007          3610                    AOD    CM                                                      6DI        648
1010          3014                    LDD    CM+4                                                    6DI        649
1011          1700              DSWA  SBN    CH                                                      6DI        650
1012          0570                    NJN    DSW3        IF MORE CHANNEL INSTRUCTIONS TO MODIFY      6DI        651
1013          3077                    LDD    MA          SET T4, T5, AND CM                          6DI        652
1014          6004                    CRD    T4                                                      6DI        653
1015          3011                    LDD    CM+1        SET RELEASE CODE                            6DI        654
1016          5400 0746               STM    DSWD                                                    6DI        655
1020          3010                    LDD    CM          SET CHANNEL STATUS                          6DI        656
1021          5400 0111               STM    CHRV                                                    6DI        657
1023          0342                    UJN    DSW1        CHECK FOR ERROR                             6DI        658
                                                                                                     6DI33        8
1024          0651              DSW6  PJN    DSW2        IF NO ERROR                                 6DI33        9
1025          3013                    LDD    CM+3        SET ERROR CODE                              6DI33       10
1026          4471              DSW7  STI    D1                                                      6DI33       11
1027          0100 0741               LJM    ERR         PROCESS ERROR                               6DI33       12


                                **      TCHA - TABLE OF CHANNEL INSTRUCTION ADDRESSES.              6DI        660
                                                                                                    6DI        661
                                                                                                    6DI        662
                                        CHTL   DSWA        TERMINATE CHANNEL TABLE                  6DI        663
      1031                       TCHA  CHTB                                                         6DI        664
1052                                    RSTC               RESTORE CHANNEL INSTRUCTIONS            6DI        665
                                                                                                    6DI        666


                                **      PRS - PRESET.                                              6DI        669
                                *                                                                  6DI        670
                                *       ENTRY  (CM - CM+4) = *EQDE* WORD OF EST ENTRY.             6DI        671
                                *                                                                  6DI        672
                                *       EXIT   SEEK FUNCTION SELECTED.                             6DI        673
                                *              SELECTION MADE FOR DRIVE RELEASE AFTER SEEK.        6DI        674
                                                                                                    6DI        675
                                                                                                    6DI        676
      1052          5000 0105          PRS   LDM    STSB        SET SEEK FUNCTION                   6DI        677
1054          2177 7400               ADK    LDNI+FCS1-2000                                      6DI        678
1056          5400 0706               STM    LDAA                                                    6DI        679
1060          4071                    LDI    D1                                                  252L678        2
1061          5400 0770               STM    DSWB                                                    6DI        681
1063          1400                    LDN    0           INITIALIZE UNIT SWITCH COUNTER              6DI23        1
1064          4471                    STI    D1                                                      6DI23        2
1065          0100 0473               LJM    SMSX        RETURN                                      6DI        682
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                                  344     .1      SET     *+4-MSFW    CHECK FOR OVERFLOW                      NS2352      1
                                   55     .1      SET     .1/5                                                NS2352      2
                                 1070     .1      SET     MSFW+.1*5                                           NS2352      3
                                    4     .2      SET     PPFW-5-*    BYTES AVAILABLE BEFORE OVERFLOW         NS2352      4
                                    3             ERRNG   PPFW-5-.1   DRIVER OVERFLOWS INTO *PPFW*-5          NS2352      5
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                        IDENT  6DJ,MSFW    ISD DISK DRIVER.                          6DI       686
                    COMMENT 85/07/29. 24/05/19. 6DI - ISD DISK DRIVER.               NS2584      1
                        COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.          281L803     2


                    ***       6DJ - ISD DISK DRIVER.                                 6DI       690
                    *                                                                6DI       691
                    *         K. F. REHM.        85/03/11.                           6DI       692



                    ***             *6DJ* ALLOWS ACCESS TO ISD (834 AND 836) DRIVES ONLY.  NS2584      2
                    *         IT PROVIDES IMPROVED DISK PERFORMANCE OVER *6DI* BY MAKING    6DI       695
                    *         SEVERAL CHANGES TO THE DATA TRANSFER PROTOCOL.  *6DJ* CAUSES  6DI       696
                    *         *CPUMTR* TO PASS THE DIRECTION OF THE DISK TRANSFER (READ OR  6DI       697
                    *         WRITE) IN PREVIOUSLY UNUSED BITS IN THE SEEK PARAMETER WORDS. 6DI       698
                    *         THIS ALLOWS THE ADAPTER TO REDUCE SOME OF THE OVERHEAD IN ITS 6DI       699
                    *         COMMUNICATIONS WITH THE CONTROL MODULE AND ALLOWS THE PP TO   6DI       700
                    *         GIVE UP THE CHANNEL UNTIL DATA IS AVAILABLE IN THE CONTROL    6DI       701
                    *         MODULE-S BUFFER, EFFECTIVELY OVERLAPPING DISK LATENCY TIME.   6DI       702
                    *         *6DJ* ALSO GIVES UP THE CHANNEL AFTER A *WLSF* IF THE LAST    6DI       703
                    *         SECTOR WRITTEN HAS NOT YET ARRIVED ON DISK.  THIS ALLOWS      6DI       704
                    *         OTHER PP-S TO USE THE CHANNEL WHILE THE CONTROL MODULE        6DI       705
                    *         FINISHES WRITING THE SECTOR.  FOR NON-PERFORMANCE CRITICAL    6DI       706
                    *         DATA TRANSFERS SUCH AS READING THE PACK SERIAL NUMBER, THE    6DI       707
                    *         REGULAR *6DI* DRIVER IS USED INSTEAD.                         6DI       708
                    *                                                                       6DI       709
                    *               *6DJ* USES ALL THE SAME MASS STORAGE OVERLAYS AS        6DI       710
                    *         *6DI*.  SINCE THE OVERLAYS OFTEN READ FROM OR MODIFY THE     6DI       711
                    *         RESIDENT DRIVER, MANY OF THE SUBROUTINE TAGS IN *6DJ* MUST    6DI       712
                    *         BE DEFINED AT THE SAME ADDRESS AS THOSE IN *6DI*.  THOSE      6DI       713
                    *         TAGS IN *6DJ* WHICH DO NOT NEED TO BE IN LINE WITH THEIR      6DI       714
                    *         *6DI* COUNTERPARTS HAVE A *.J* APPENDED TO THEM TO PREVENT    6DI       715
                    *         ASSEMBLY ERRORS.                                              6DI       716



                    **        ENTRY CONDITIONS.                                      6DI       718
                    *                                                                6DI       719
                    *         (T4) = CHANNEL IF PREVIOUSLY RESERVED.                 6DI       720
                    *         (T5) = EST ORDINAL.                                    6DI       721
                    *         (T6) = TRACK.                                          6DI       722
                    *         (T7) = SECTOR.                                         6DI       723
```

```
                                *       REDEFINE CHANNEL INSTRUCTIONS TO PRODUCE CHANNEL TABLE.  6DI   725
                                                                                                 6DI   726
 0                                      RICHI           REDEFINE CHANNEL INSTRUCTIONS            6DI   727


 527                                    ORG     MSFW                                             6DI   729


                                *       ENTRY POINT TRANSFERS.                                   6DI   731
                                                                                                 6DI   732
                                                                                                 6DI   733
 527    1052                            CON     PRS     PRESET *6DJ*                             6DI26   1
                                                                                                 6DI   735
                                                                                                 6DI   736
 530    0000                     RDS    CON     0       ENTRY                                    6DI   737
 531    0313                            UJN     RDS.    READ SECTOR                              6DI   738
                                                                                                 6DI   739
                                                                                                 6DI   740
 532    0000                     WDS    CON     0       ENTRY                                    6DI   741
 533    0336                            UJN     WDS.    WRITE SECTOR                             6DI   742


                                **      EMS - END MASS STORAGE PROCESSING.                       6DI   744
                                *                                                                6DI   745
                                *       ENTRY  (T4) = CHANNEL, IF PREVIOUSLY RESERVED.           6DI   746
                                *              (T5) = EQUIPMENT.                                 6DI   747
                                *                                                                6DI   748
                                *       EXIT   (A) = 0.                                          6DI   749
                                *                                                                6DI   750
                                *       NOTE - THE *.EMS* ENTRY POINT IS SUPPORTED ONLY VIA THE  6DI   751
                                *       *ENDMS* MACRO DEFINED IN *COMPMAC*.  IF THIS LOCATION    6DI   752
                                *       CHANGES, THE DEFINITION OF *.EMS* MUST BE CHANGED IN     6DI   753
                                *       *PPCOM* AND ALL PROGRAMS USING THE *ENDMS*               6DI   754
                                *       MACRO MUST BE REASSEMBLED.                               6DI   755
                                                                                                 6DI   756
                                                                                                 6DI   757
 534    0100 0534                .EMS   SUBR                    ENTRY/EXIT                       6DI   758
 536    1400                            LDN     0                                                6DI   759
 537    3413                            STD     CM+3                                             6DI   760
 540    4471                            STI     D1      SET POSITION REQUIRED                    6DI   761
 541    0200 0761                       RJM     DSW     DROP CHANNEL VIA *DSWM*                  6DI   762
 543    0370                            UJN     .EMSX   RETURN                                   6DI   763
```

```
                                    **      RDS - READ SECTOR.                                                  6DI       765
                                    *                                                                           6DI       766
                                    *       ENTRY  (A) = BUFFER ADDRESS FOR SECTOR.                             6DI       767
                                    *                                                                           6DI       768
                                    *       EXIT   (A) .LT. 0 IF UNRECOVERED ERROR AND READ ERROR               6DI       769
                                    *              PROCESSING SELECTED.                                         6DI       770
                                    *                                                                           6DI       771
                                    *       CALLS  DST, FNC, LDA.                                               6DI       772
                                                                                                                6DI       773
                                                                                                                6DI       774
 544          5400 0562             RDS.   STM    RDSB        SET BUFFER ADDRESS                               6DI       775
 546          4771                         SOI    D1                                                           6DI       776
 547          0705                         MJN    RDS1        IF POSITION REQUIRED                             6DI       777
 550          3107                         ADD    T7                                                           6DI       778
 551          5300 0602                    LMM    WDSA                                                         6DI       779
 553          0403                         ZJN    RDS2        IF CONSECUTIVE SECTORS                           6DI       780
 554          0200 0642             RDS1   RJM    LDA         LOAD ADDRESS AND ISSUE POSITION                  6DI       781
 556          1404                  RDS2   LDN    FCRD        NORMAL READ                                      6DI       782
                          0                ERRNZ  RDS2-.RDS2  ENSURE ADDRESS IS CORRECT FOR *LDAM* CHECK       6DI       783
                                                                                                                6DI       784
                                    *       ENTERED HERE FROM *7SI* TO ISSUE CONTINUE FUNCTION.                 6DI       785
                                    *       ENTERED HERE TO READ BACK COUPLER BUFFER ON FULL TRACK               6DI       786
                                    *       WRITE BUFFER TO DISK ERROR.                                         6DI       787
                                                                                                                6DI       788
 557          0200 0725             RDS3   RJM    FNC                                                          6DI       789
 561          7100 0561                    IAM    *,CH                                                         6DI       790
                          562       RDSB   EQU    *-1                                                          6DI       791
 563          0534                         NJN    WDS5        IF TRANSFER NOT COMPLETE                         6DI       792
 564          6640 0637                    SFM    LDA8,CH     IF CHANNEL PARITY ERROR (LOWER 800 SERIES)       6DI       793
 566          5000 0530                    LDM    RDS                                                          6DI       794
 570          0335                         UJN    DST1        CHECK STATUS                                     6DI       795


                                    **      WDS - WRITE SECTOR.                                                 6DI       797
                                    *                                                                           6DI       798
                                    *       ENTRY  (A) = BUFFER ADDRESS FOR SECTOR.                             6DI       799
                                    *                                                                           6DI       800
                                    *       EXIT   (A) = 0 IF NO ERROR.                                         6DI       801
                                    *              (A) = -0 IF UNRECOVERED ERROR AND WRITE ERROR                6DI       802
                                    *              PROCESSING SELECTED.                                         6DI       803
                                    *              (A) .EQ. -1 IF UNRECOVERED ERROR ON PREVIOUS SECTOR,         6DI       804
                                    *              NO WRITE ERROR PROCESSING BUFFER SPECIFIED IN *WDSE*         6DI       805
                                    *              AND WRITE ERROR PROCESSING SELECTED.                         6DI       806
                                    *                                                                           6DI       807
                                    *       CALLS  DST, FNC, LDA.                                               6DI       808
                                                                                                                6DI       809
                                                                                                                6DI       810
 571          5400 0616             WDS.   STM    WDSC        SET BUFFER ADDRESS                               6DI       811
 573          1063                         SHN    -14                                                          6DI       812
 574          5400 0611                    STM    WDSB        SET WRITE LAST SECTOR                            6DI       813
 576          4771                         SOI    D1                                                           6DI       814
 577          0705                         MJN    WDS1        IF POSITION REQUIRED                             6DI       815
 600          3107                         ADD    T7                                                           6DI       816
 601          2300 0601                    LMC    *                                                            6DI       817
                          602       WDSA   EQU    *-1                                                          6DI       818
```

```
 603         0403                    ZJN    WDS2         IF CONSECUTIVE SECTORS                          6DI        819
 604         0200 0642         WDS1  RJM    LDA          LOAD ADDRESS AND ISSUE POSITION                 6DI        820
 606         4071              WDS2  LDI    D1           CHECK END OF UNIT/TRACK                         6DI        821
 607         0403                    ZJN    WDS3         IF END OF UNIT/TRACK                            6DI        822
 610         2000 0000               LDC    0                                                            6DI        823
                          611    WDSB  EQU    *-1                                                          6DI        824
 612         1135              WDS3  LMN    FCWL         WRITE LAST SECTOR                               6DI        825
                                                                                                         6DI        826
                               *     ENTERED HERE FROM *7SI* TO ISSUE CONTINUE FUNCTION.                 6DI        827
                                                                                                         6DI        828
 613         0200 0725         WDS4  RJM    FNC                                                          6DI        829
 615         7300 0615               OAM    *,CH                                                         6DI        830
                          616    WDSC  EQU    *-1                                                          6DI        831
 617         0521              WDS5  NJN    LDA9         IF INCOMPLETE TRANSFER                          6DI        832
 620         5000 0532               LDM    WDS                                                          6DI        833
                               *     UJN    DST          PROCESS STATUS                                  6DI        834
```

```
                               **    DST - DEVICE STATUS.                                                6DI        836
                               *     WAITS FOR CHANNEL EMPTY, THEN DISCONNECTS.                          6DI        837
                               *                                                                         6DI        838
                               *     ENTRY  (A) = EXIT ADDRESS.                                          6DI        839
                               *                                                                         6DI        840
                               *     EXIT   (A) = 0 AND EXIT TO EXIT ADDRESS IF NO STATUS ERROR.         6DI        841
                               *                  EXIT TO LDA1 IF STATUS ERROR.                          6DI        842
                                                                                                         6DI        843
                                                                                                         6DI        844
 622         6600 0622         DST   FJM    *,CH         IF LAST WORD NOT YET TAKEN                      6DI        845
 624         7540                    DCN    CH+40                                                        6DI        846
 625         3410              DST1  STD    CM           SAVE EXIT ADDRESS                               6DI        847
                          0              ERRNZ  DST1-.DST1   ENSURE ADDRESS IS CORRECT FOR *1MS* JUMP   6DI        848
 626         1412                    LDN    FCGS         GET GENERAL STATUS                              6DI        849
 627         0200 0725               RJM    FNC          ISSUE FUNCTION                                  6DI        850
 631         7040                    IAN    CH+40                                                        6DI        851
 632         6640 0637               SFM    LDA8,CH      IF CHANNEL PARITY ERROR (800 SERIES)            6DI        852
 634         0531                    NJN    LDA3.J       IF ERRORS                                       6DI        853
 635         0110 0000               LJM    0,CM         RETURN                                          6DI        854
```

```
                               **    LDA - LOAD ADDRESS.                                                 6DI        856
                               *                                                                         6DI        857
                               *     ENTRY  (T5) = EQUIPMENT.                                            6DI        858
                               *            (T6) = TRACK.                                                6DI        859
                               *            (T7) = SECTOR.                                               6DI        860
                               *                                                                         6DI        861
                               *     ENTRY  LDA3 = ENTRY POINT TO PROCESS GENERAL STATUS ERRORS.         6DI        862
                               *            LDA2 = ENTRY POINT TO JUMP TO ERROR PROCESSOR.               6DI        863
                               *                                                                         6DI        864
                               *     USES   CM - CM+4.                                                   6DI        865
                               *                                                                         6DI        866
                               *     CALLS  DST, DSW, FNC.                                               6DI        867
                               *                                                                         6DI        868
                               *     MACROS MONITOR.                                                     6DI        869
```

```
                                                                                    6DI        870
                                                                                    6DI        871
 637         1501          LDA8     LCN    CHPE           SET CHANNEL PARITY ERROR FLAG        6DI        872
 640         0100 0740     LDA9     LJM    DSW7A          CALL ERROR PROCESSOR                 6DI33       13
                                                                                    6DI        874
 642         0000          LDA      CON    0              ENTRY                                6DI        875
                                                                                    6DI        876
                          *         REENTER HERE ON ERROR RETRY.                               6DI        877
                          *         COMPUTE PHYSICAL ADDRESS.                                  6DI        878
                                                                                    6DI        879
 643         3076          LDA1     LDD    OA             WAIT OUTPUT REGISTER CLEAR           6DI        880
 644         6010                   CRD    CM                                                  6DI        881
 645         3010                   LDD    CM                                                  6DI        882
 646         0574                   NJN    LDA1           IF NOT CLEAR                         6DI        883
 647         3077                   LDD    MA                                                  6DI        884
 650         6204                   CWD    T4                                                  6DI        885
 651         5000 0642              LDM    LDA            PASS READ/WRITE FLAG TO *CPUMTR*     6DI        886
 653         3411                   STD    CM+1                                                6DI        887
 654         1464                   MONITOR LDAM          CONVERT LOGICAL TO PHYSICAL ADDRESS  6DI        888
 657         3714                   SOD    CM+4           SET UNIT SWITCH COUNTER              6DI        889
 660         4471                   STI    D1                                                  6DI        890
 661         3107                   ADD    T7             SET CONSECUTIVE SECTOR COUNT         6DI        891
 662         5400 0602              STM    WDSA                                                6DI        892
 664         0302                   UJN    LDA4.J         CHECK FOR SEEK WAIT NEEDED           6DI        893
                                                                                    6DI        894
                          *         ENTER HERE TO PROCESS GENERAL STATUS ERRORS.               6DI        895
                          *         *DSW* WILL DETERMINE IF STATUS REQUIRES AN ERROR PROCESSOR 6DI        896
                          *         CALL OR A SEEK WAIT MONITOR FUNCTION.                      6DI        897
                                                                                    6DI        898
 665         3413          LDA3.J   STD    CM+3           SAVE STATUS                          6DI        899
 666         0200 0761     LDA4.J   RJM    DSW            DRIVER SEEK WAIT PROCESSING          6DI        900
                                                                                    6DI        901
                          *         IF (CM+2) = 1, THEN *DSW* WAS ENTERED BECAUSE A *0020*     6DI        902
                          *         GENERAL STATUS INDICATED THAT THE SECTOR JUST WRITTEN HAD NOT 6DI     903
                          *         YET ARRIVED ON DISK.  IN ORDER TO ALLOW OTHER PP-S TO USE THE 6DI     904
                          *         CHANNEL DURING THIS DELAY, *6DJ* GIVES UP THE CHANNEL, THEN   6DI     905
                          *         PERIODICALLY RE-REQUESTS IT TO SEE IF THE SECTOR HAS BEEN  6DI        906
                          *         WRITTEN, GIVING THE CHANNEL UP AGAIN IF THE SECTOR IS STILL 6DI       907
                          *         NOT ON DISK.  A GENERAL STATUS OF ZERO INDICATES THAT THE  6DI        908
                          *         SECTOR HAS ARRIVED ON DISK;  BY PATCHING THE DRIVER EXIT   6DI        909
                          *         ADDRESS INTO *LDA*, THE ZERO GENERAL STATUS WILL CAUSE *6DJ* 6DI      910
                          *         TO CORRECTLY RETURN TO ITS CALLER.                         6DI        911
                                                                                    6DI        912
 670         3012                   LDD    CM+2                                                6DI        913
 671         0412                   ZJN    LDA5           IF CONTROLLER PREVIOUSLY RESERVED    6DI        914
 672         1701                   SBN    1                                                   6DI        915
 673         0505                   NJN    LDA4.1         IF NOT BACK FROM A DSWM SUBFUNCTION 20 6DI      916
 674         5000 0532              LDM    WDS                                                 6DI        917
 676         5400 0642              STM    LDA                                                 6DI        918
 700         1410          LDA4.1   LDN    11-1           SET CONNECTED STATUS IN CHRV         6DI        919
 701         5500 0111              RAM    CHRV                                                6DI        920
 703         3077          LDA5     LDD    MA             READ SEEK PARAMETERS                 6DI        921
 704         1601                   ADN    1                                                   6DI        922
 705         6010                   CRD    CM                                                  6DI        923
 706         1401                   LDN    FCS1           (SEEK ONE TO ONE INTERLACE)          6DI        924
 707         0200 0725              RJM    FNC                                                 6DI        925
 711         1404                   LDN    4                                                   6DI        926
```

```
 712          7300 0011                 OAM    CM+1,CH     OUTPUT UNIT, CYLINDER, TRACK AND SECTOR    6DI         927
 714          0525                      NJN    ERR         IF ERROR                                   6DI         928
 715          5000 0642                 LDM    LDA                                                    6DI         929
 717          0100 0622                 LJM    DST         CHECK STATUS                               6DI         930
```

```
                                  **     FNC - FUNCTION DEVICE.                                         6DI         932
                                  *                                                                     6DI         933
                                  *      ENTRY  (A)  = FUNCTION CODE.                                   6DI         934
                                  *                                                                     6DI         935
                                  *      EXIT   (A) = 502.                                              6DI         936
                                  *             FUNCTION ISSUED.                                        6DI         937
                                  *             CHANNEL ACTIVATED.                                      6DI         938
                                  *                                                                     6DI         939
                                  *      CALLS  ERR.                                                    6DI         940
                                                                                                        6DI         941
                                                                                                        6DI         942
 721          7400                FNC4  ACN    CH                                                       6DI         943
 722          2000 0502                 LDC    502         FULL BUFFER WORD COUNT                     6DI         944
                                                                                                        6DI         945
 724          0100 0724           FNC   SUBR               ENTRY/EXIT                                 6DI         946
 726          6400 0741                 AJM    ERR,CH      IF CONTROLLER NOT READY                    6DI         947
 730          7600                      FAN    CH                                                     6DI         948
                                                                                                        6DI         949
                                  *      NOTE - THE FOLLOWING DELAY MUST BE AT LEAST 300 MS.            6DI         950
                                                                                                        6DI         951
 731          3170                FNC2A ADD    ON          ENSURE 300 MS DELAY IS SATISFIED           6DI33        14
 732          6500 0721                 IJM    FNC4,CH     IF FUNCTION ACCEPTED                       6DI         953
 734          0574                      NJN    FNC2A       IF NOT YET TIMED OUT                       6DI33        15
 735          0304                      UJN    ERR         PROCESS ERROR                              6DI33        16
```

```
                                  *      NOTE - THE FOLLOWING CODE IS PLACED HERE TO ALLOW *6DJ*         6DI33        18
                                  *      ADDRESSES TO REMAIN IN SYNCH WITH *6DI*                        6DI33        19
                                                                                                        6DI33        20
 736          0621                DSW6A PJN    DSW5.1      IF NO ERROR                                NS2776       32
 737          3013                      LDD    CM+3        SET ERROR CODE                             6DI33        22
 740          4471                DSW7A STI    D1                                                     6DI33        23
                                  *      UJN    ERR         PROCESS ERROR                              6DI         955
```

```
                                  **     ERR - CALL *7BI*.                                              6DI         957
                                                                                                        6DI         958
                                                                                                        6DI         959
 741          2000 0630           ERR   MSERR  7BI,*                                                  6DI         960
 743          0100 0414                 LJM    LEP1        CALL ERROR PROCESSOR                       6DI         961
                                  *      LJM    DCI8        (DURING *7CI* PROCESSING)                  6DI         962
                                  *      LJM    DEI6.1      (DURING *7EI* PROCESSING)                  6DI         963
                                  *      LJM    FTO13       (DURING *7FI* PROCESSING)                  6DI         964
                                  *      LJM    FTO16       (DURING *7FI* PROCESSING)                  6DI         965
                                  *      LJM    DCP3        (DURING *7GI* PROCESSING)                  6DI         966
```

```
                                *         LJM    DCP5        (DURING *7GI* PROCESSING)                    6DI        967
                          744    ERRA     EQU    *-1         EXIT ADDRESS                                 6DI        968


                                **        DSW - DRIVER SEEK WAIT PROCESSING.                               6DI        970
                                *                                                                          6DI        971
                                *         ENTRY  (CM+3) = SEEK WAIT FUNCTION.  THE FOLLOWING IS A LIST     6DI        972
                                *                         OF THE POSSIBLE VALUES AND THEIR ORIGIN.         6DI        973
                                *                         0 = CHANNEL RELEASE REQUEST. *ENDMS REQUEST*     6DI        974
                                *                         2 = SEEK IN PROGRESS.    *CONTROLLER STATUS*     6DI        975
                                *                         4 = STORAGE MOVE REQUESTED OR  *LDAM STATUS*     6DI        976
                                *                             UNIT SWITCH REQUESTED.     *LDAM STATUS*     6DI        977
                                *                        10 = DRIVE RESERVED.      *CONTROLLER STATUS*     6DI        978
                                *                        11 = REQUEST CHANNEL AND UNIT.  *LDAM STATUS*     6DI        979
                                *                        20 = WRITE IN PROGRESS.   *CONTROLLER STATUS*     6DI        980
                                *                      4XXX = ERROR STATUS.        *CONTROLLER STATUS*     6DI        981
                                *                      5XXX = ERROR STATUS.        *CONTROLLER STATUS*     6DI        982
                                *                      77YY = ERROR STATUS.              *LDAM STATUS*     6DI        983
                                *                             YY = COMPLIMENT OF ERROR CODE.               6DI        984
                                *                (CHRV) = DRIVER CONTROL WORD.  SEE *COMSMSP*.             6DI        985
                                *                                                                          6DI        986
                                *         EXIT   (A) = 0.                                                  6DI        987
                                *                (T4) = CHANNEL.                                           6DI        988
                                *                (T5) = SYSTEM DEVICE SELECTED WHEN APPROPRIATE.           6DI        989
                                *                                                                          6DI        990
                                *         USES   CM - CM+4.                                                6DI        991
                                *                                                                          6DI        992
                                *         MACROS MONITOR.                                                  6DI        993
                                                                                                           6DI        994
                                                                                                           6DI        995
                          745   7740 0010        DSW4   FNC    FCOC,CH+40  ISSUE RELEASE FUNCTION          6DI        996
                                           746   DSWD   EQU    *-1                                        6DI        997
                                *         FNC    FCDR,CH+40  A DRIVE RELEASE FUNCTION IS ISSUED AS        6DI        998
                                *                            OPPOSED TO THE OPERATION COMPLETE WHEN       6DI        999
                                *                            A SEEK OPERATION IS OUTSTANDING ON A         6DI       1000
                                *                            SHARED DRIVE THROUGH THE SAME CHANNEL.       6DI       1001
                                *                            THE ISSUING OF THE DRIVE RELEASE PREVENTS    6DI       1002
                                *                            ANOTHER MACHINE FROM ACCESSING, THROUGH      6DI       1003
                                *                            THE SAME CONTROLLER, THE DRIVE THAT HAS      6DI       1004
                                *                            THE SEEK INITIATED.                          6DI       1005
                          747   1401             LDN    1                                                 NS2776      33
                          750   3400             STD    T0                                                NS2776      34
                          751   6500 0776  DSW5   IJM    DSW2,CH     IF FUNCTION ACCEPTED                  NS2776      35
                          753   1601             ADN    1           ENSURE DELAY IS SATISIFIED            NS2776      36
                          754   0574             NJN    DSW5        IF INNER TIMEOUT LOOP NOT YET COMPLETE NS2776      37
                          755   3700             SOD    T0                                                NS2776      38
                          756   0572             NJN    DSW5        IF NOT YET TIMED OUT                  NS2776      39
                          757   0317  DSW5.1     UJN    DSW2        ISSUE DRIVER SEEK WAIT                NS2776      40
                                                                                                           6DI32        6
                          760   0100 0760  DSW    SUBR               ENTRY/EXIT                          6DI       1014
                          762   5000 0111        LDM    CHRV        CHECK CHANNEL RESERVATION             6DI       1015
                          764   3410             STD    CM                                                6DI       1016
                          765   1211             LPN    11                                                6DI       1017
                          766   3313  DSW1       LMD    CM+3                                              6DI       1018
                          767   0470             ZJN    DSWX        IF NO *DSWM* NEEDED                   6DI       1019
```

```
 770         1355                        SCN    55                                                  6DI       1020
 771         1006                        SHN    21-13                                               6DI       1021
 772         0543                        NJN    DSW6A       IF NO RELEASE OR ERROR                  6DI33       24
 773         3010                        LDD    CM                                                  6DI       1023
 774         1210                        LPN    10                                                  6DI       1024
 775         0547                        NJN    DSW4        IF CONNECTED ISSUE RELEASE              6DI       1025
 776         3076              DSW2      LDD    OA          CHECK IF *DRCM*/*EXCM* COMPLETED        6DI       1026
 777         6170 1056                   CRM    DSWC,ON                                             6DI       1027
1001         5000 1056                   LDM    DSWC                                                6DI       1029
1003         0572                        NJN    DSW2        IF FUNCTION NOT YET PROCESSED           6DI       1030
1004         3077                        LDD    MA          STORE PARAMETERS                        NS2387       2
1005         6204                        CWD    T4                                                  NS2387       3
1006         1413                        MONITOR DSWM       DRIVER SEEK WAIT                        6DI       1031
                                 *        LDN    0                                                   6DI       1032
1011         4500              DSW3.J    RAI    T0          MODIFY CHANNEL INSTRUCTIONS             6DI       1033
1012         5010 1033                   LDM    TCHA.J,CM                                           6DI       1034
1014         3400                        STD    T0                                                  6DI       1035
1015         3610                        AOD    CM                                                  6DI       1036
1016         3014                        LDD    CM+4                                                6DI       1037
1017         1700              DSWA.J    SBN    CH                                                  6DI       1038
1020         0570                        NJN    DSW3.J      IF MORE CHANNEL INSTRUCTIONS TO MODIFY  6DI       1039
1021         3077                        LDD    MA          SET T4, T5, AND CM                      6DI       1040
1022         6004                        CRD    T4                                                  6DI       1041
1023         3011                        LDD    CM+1        SET RELEASE CODE                        6DI       1042
1024         5400 0746                   STM    DSWD                                                6DI       1043
1026         3010                        LDD    CM          SET CHANNEL STATUS                      6DI       1044
1027         5400 0111                   STM    CHRV                                                6DI       1045
1031         0100 0766                   LJM    DSW1        CHECK FOR ERROR                         6DI       1046
```

```
                                 **       TCHA.J - TABLE OF CHANNEL INSTRUCTION ADDRESSES             6DI       1048
                                                                                                      6DI       1049
                                                                                                      6DI       1050
                                          CHTL   DSWA.J      TERMINATE CHANNEL TABLE                 6DI       1051
        1033                      TCHA.J  CHTB                                                        6DI       1052
        1052                              RSTC               RESTORE CHANNEL INSTRUCTIONS            6DI       1053
                                                                                                      6DI       1054
                                0         ERRNG  PRS-*       DRIVER OVERFLOWED INTO SCRATCH AREA      6DI       1055
```

```
                                 **       PRS - PRESET *6DJ*.                                         6DI26        3
                                                                                                      6DI26        4
                                                                                                      6DI26        5
        1052                      PRS     BSS    0           ENTRY                                   6DI26        6
        1052         1400                 LDN    0           FORCE *LDA* CALL ON FIRST OPERATION     6DI26        7
        1053         4471                 STI    D1                                                  6DI26        8
        1054         0100 0473            LJM    SMSX        EXIT VIA *.SMS*                         6DI26        9
                                                                                                      6DI       1056
        1056                      DSWC    BSS    0           *DRCM*/*ECXM* CHECK SCRATCH AREA        6DI       1057
```

```
                    340     .1      SET     *+5+4-MSFW  CHECK FOR OVERFLOW                      NS2352      6
                     54     .1      SET     .1/5                                              NS2352      7
                   1063     .1      SET     MSFW+.1*5                                         NS2352      8
                     10     .2      SET     PPFW-5-*-5  BYTES AVAILABLE BEFORE OVERFLOW       NS2352      9
                     10             ERRNG   PPFW-5-.1   DRIVER OVERFLOWS INTO *PPFW*-5        NS2352     10
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                    7BI     MSOVL  7651,T2,EPFW-1,("HN" INITIAL ERROR PROCESSOR.)        NS2364      1

               151          ERRNG  *-OFFW     *7BI* WILL LOAD ON TOP OF PARAMETERS      MSOVL   .1
                            LIST   *                                                    MSOVL   .1


                    ***     INITIALIZE ERROR PROCESSOR.                                 6DI      1062
                    *       K. F. REHM.       84/02/01.                                 6DI      1063


                    ***           *7BI* IS CALLED BY *6DI*/*6DJ* WHEN AN ERROR HAS BEEN 6DI      1065
                    *       DETECTED.  *7BI* OVERLAYS *6DI*/*6DJ* PRESET WITH RECOVERY  6DI      1066
                    *       CODE INITIALIZES MEMORY LOCATIONS USED BY OTHER OVERLAYS.   6DI      1067


                    **      DBI - INITIALIZE ERROR PROCESSING.                          6DI      1069
                    *                                                                   6DI      1070
                    *       ENTRY  (T1) = LENGTH OF *PRS* OVERLAY CODE.                 6DI      1071
                    *              (T2) = RDCT.                                         6DI      1072
                    *              (T4 - T7) = DRIVER PARAMETERS.                       6DI      1073
                    *              (RDCT) = ERROR PROCESSOR INTERFACE WORD.             6DI      1074
                    *                       BIT 6 = 0 IF FIRST RETRY ATTEMPT.           253L688     1
                    *              (DRSW) = *LDAM*/*DSWM*/CHANNEL PARITY ERROR CODE     6DI      1076
                    *                       COMPLIMENT.                                 6DI      1077
                    *                                                                   6DI      1078
                    *       EXIT   TO *7CI*.                                            6DI      1079
                    *              (T4 - T7) = UNCHANGED.                               6DI      1080
                    *              (DEAI) = ALGORITHM INDEX.                            6DI      1081
                    *       EXIT   (DEDT) = ERROR PROCESSING CONTROL WORD.              252L678     3
                    *                       BITS AFFECTED BY THIS OVERLAY -             252L678     4
                    *                       BITS 3 - 0 = *6DI*/*6DJ* DRIVER TYPE.       252L678     5
                    *              (DEGS) = 0.                                          6DI      1083
                    *              (DENR) = 0 IF FIRST RETRY ATTEMPT, ELSE UNCHANGED.   6DI      1084
                    *              (DERC) = 0 IF FIRST RETRY ATTEMPT, ELSE UNCHANGED.   6DI      1085
                    *              (DERW) = 1 IF WRITE REQUEST, 0 IF READ REQUEST.      6DI      1086
                    *              (DEST) = 0.                                          6DI      1087
                    *              (DEWR) = 0 IF FIRST RETRY ATTEMPT, ELSE UNCHANGED.   6DI      1088
                    *              (DEXA) = *LDA1*, *7EP* EXIT ADDRESS.                 6DI      1089
                    *              (MSFW) = INITIAL CHANNEL.                            6DI      1090
                    *              (RDCT) = ERROR PROCESSOR INTERFACE WORD.             6DI      1091
                    *                       BITS AFFECTED BY THIS OVERLAY -             6DI      1092
                    *                       BIT 4 = 1.                                  253L688     2
                    *              (WDSB) = *WLSF* FUNCTION.                            6DI      1094
                    *              (MB, BYTES 0-3) = T4 - T7, SAVED FOR *7FI*.          6DI      1095
                    *              (MB, BYTE 4) = ADDRESS OF LAST *FNC* CALL FOR *7FI*. 6DI      1096
                    *              (MB+1) = PHYSICAL DISK ADDRESS FROM *LDAM*.          6DI      1097
                    *                                                                   6DI      1098
                    *       USES   T1, CM - CM+4.                                       6DI      1099
                    *                                                                   6DI      1100
                    *       MACROS MONITOR, MSERR.                                      6DI      1101
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                                    *        *7BI* MOVES THE FOLLOWING CODE TO THE *6DI* PRESET AREA.      6DI       1103
                                                                                                          6DI       1104
                                                                                                          6DI       1105
                                             QUAL                                                         6DI       1106
          7651                       DBIA    BSS    0           ERROR PROCESSOR CALLS                     6DI       1107
        L 1052                               LOC    PRS                                                  6DI       1108
                                                                                                          6DI       1109
                                    **       ERR2 - CALL STATUS PROCESSOR.                                6DI       1110
                                                                                                          6DI       1111
        L 1052          2000 2730   ERR2     MSERR  7SI,*                                                6DI       1112
        L 1054          0304                 UJN    WEP1        EXECUTE *7SI*                            6DI       1113
                                                                                                          6DI       1114
                                    **       WEP - WRITE ERROR PROCESSOR.                                 6DI       1115
                                                                                                          6DI       1116
        L 1055          3402        WEP      STD    T2                                                   6DI       1117
        L 1056          2000 2330            MSERR  7WI,*                                                6DI       1118
        L 1060          0100 0414   WEP1     LJM    LEP1        EXECUTE OVERLAY                          6DI       1119
                                                                                                          6DI       1120
                                    *        THE FOLLOWING CHECK VERIFIES THAT LINKAGE BYTES ARE NOT      6DI       1121
                                    *        DESTROYED DURING ERROR RECOVERY OF THE FIRST SECTOR OF A     6DI       1122
                                    *        PP PROGRAM LOAD.  IT ALSO VERIFIES THAT THE USE OF LONG      6DI       1123
                                    *        TERM ERROR PROCESSOR DATA CELLS DOES NOT DESTROY THE ERROR   6DI       1124
                                    *        PROCESSOR CALL CODE.                                         6DI       1125
                                                                                                          6DI       1126
                                4            ERRNG  DEFW+1-*    OVERFLOW                                  6DI       1127
          7661                               LOC    *O                                                   6DI       1128
                               10   DBIAL    EQU    *-DBIA                                               6DI       1129
                                             QUAL   *                                                    6DI       1130
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          7661                       DBI      ENTRY              *7BI* ENTRY                               6DI       1132
                                                                                                          6DI       1133
          7663          5001 7650    DBI1     LDM    DBIA-1,T1   MOVE CODE TO PRESET AREA                  6DI       1134
          7665          5401 1051             STM    PRS-1,T1                                              6DI       1135
          7667          3701                  SOD    T1                                                    6DI       1136
          7670          0572                  NJN    DBI1        IF MORE TO MOVE                           6DI       1137
          7671          5400 7506             STM    DEST        INITIALIZE ERROR PROCESSING CONTROL WORD  6DI       1138
          7673          5400 7503             STM    DEGS        INITIALIZE GENERAL STATUS                 6DI       1139
          7675          5400 7501             STM    DEDT        SET DRIVER TYPE                           6DI       1140
                                   0           ERRNZ  /COMSDFS/D6DI  CODE REQUIRES *D6DI* = 0               6DI       1141
                                   0           ERRNZ  /COMSDFS/D6DJ  CODE REQUIRES *D6DJ* = 0               6DI       1142
          7677          1500                  LCN    0                                                     252L678      6
          7700          5400 7504             STM    DELF        PRESET LAST FUNCTION                      252L678      7
          7702          3005                  SFA    EST,T5                                                6DI       1143
                                              ADK    EQDE                                                  6DI       1144
          7705          6010                  CRD    CM                                                    6DI       1145
          7706          3014                  LDD    CM+4        GET ALGORITHM INDEX FROM MST              6DI       1146
          7707          1003                  SHN    3                                                     6DI       1147
          7710          1613                  ADK    DILL                                                  6DI       1148
          7711          6010                  CRD    CM                                                    6DI       1149
          7712          3014                  LDD    CM+4                                                  6DI       1150
          7713          1277                  LPN    77                                                    6DI       1151
          7714          5400 7500             STM    DEAI                                                  6DI       1152
          7716          5000 0725             LDM    FNC         PRESERVE ADDRESS OF LAST *FNC* CALL       6DI       1153
          7720          3410                  STD    CM                                                    6DI       1154
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7721          3077                        LDD    MA          SAVE (T4 - CM) IN CASE *7FI* IS CALLED     6DI       1155
7722          6204                        CWD    T4                                                     6DI       1156
7723          1400                        LDN    0                                                      6DI       1157
7724          3411                        STD    CM+1                                                   6DI       1158
7725          1464                        MONITOR LDAM       SAVE PHYSICAL DISK ADDRESS                 6DI       1159
7730          2000 0556                   LDC    RDS2        SET READ/WRITE FLAG                        6DI       1160
7732          5200 0642                   SBM    LDA                                                    6DI       1161
7734          1056                        SHN    -21                                                    6DI       1162
                                0         ERRNZ  WRIP-1      CODE DEPENDS ON VALUE OF *WRIP*            6DI       1163
                                0         ERRNZ  REDP        CODE DEPENDS ON VALUE OF *REDP*            6DI       1164
7735          5400 7505                   STM    DERW                                                   6DI       1165
7737          4002                        LDI    T2                                                     6DI       1166
7740          2200 0100                   LPC    100                                                    253L688      3
7742          0526                        NJN    DBI2        IF NOT FIRST RETRY ATTEMPT                 6DI       1168
7743          5400 1067                   STM    DERC        INITIALIZE RETRY COUNT                     6DI       1169
7745          5400 1066                   STM    DEWR        INITIALIZE *DATA WRITTEN/READ* FLAG        6DI       1170
7747          5400 1070                   STM    DENR        INITIALIZE *NON-RECOVERABLE ERROR* FLAG    6DI       1171
7751          3071                        LDD    HN                                                     253L688      4
7752          4402                        STI    T2                                                     6DI       1173
7753          3004                        LDD    T4          SAVE INITIAL CHANNEL                       6DI       1174
7754          5400 0527                   STM    MSFW                                                   6DI       1175
7756          4071                        LDI    D1                                                     NS2364       2
7757          2300 7762                   LMC    7777&LNRE                                              NS2364       3
7761          0407                        ZJN    DBI2        IF SUSPECT SET BY PREVIOUS PP              NS2364       4
7762          5000 0111                   LDM    CHRV                                                   NS2364       5
7764          1304                        SCN    EPNS                                                   NS2364       6
7765          1104                        LMN    EPNS        PERMIT ACCESS TO SUSPECT DEVICE            NS2364       7
7766          5400 0111                   STM    CHRV                                                   NS2364       8
7770          2000 0643           DBI2    LDC    LDA1        SET ERROR PROCESSOR EXIT ADDRESS           6DI       1176
7772          5400 7507                   STM    DEXA                                                   6DI       1177
7774          2000 0730                   MSERR  7CI         EXECUTE *7CI*                              6DI       1178


                                0         ERRNG  10000-*     *7BI* OVERFLOW                             6DI       1180
        10000                             BSS    10000-*     (SPARES)                                   6DI       1181
        10000 7660                        CON    DBI-1       (T0) = ENTRY ADDRESS - 1                   6DI       1182
        10001 0010                        CON    DBIAL       (T1) = LENGTH OF ERROR PROCESSOR CALL CODE 6DI       1183
        10002 0103                        CON    RDCT        (T2) = RDCT                                6DI       1184
                                0         ERRNZ  LN-*        INCORRECT *7BI* OVERLAY LENGTH             6DI       1185
                                          QUAL   *                                                      6DI       1186
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                    7CI     MSOVL  7637,T2,DEXA,(OBTAIN GENERAL AND DETAILED STATUS.)     6DI       1187

              127           ERRNG  *-OFFW     *7CI* WILL LOAD ON TOP OF PARAMETERS      MSOVL   .1
                            LIST   *                                                    MSOVL   .1


                    ***     OBTAIN GENERAL AND DETAILED STATUS.                        6DI       1189
                    *       R. J. MAAS.       80/12/12.                                6DI       1190
                    *       C. R. LUND.       81/07/30.                                6DI       1191



                    *             *7CI* IS CALLED BY *7BI*.  IF THE ERROR IS A         6DI       1193
                    *       CONTROLLER REPORTED ERROR, *7CI* WILL OBTAIN GENERAL AND   6DI       1194
                    *       DETAILED STATUS FROM THE CONTROLLER.  IF THE ERROR IS A    6DI       1195
                    *       *DSWM*, *LDAM* OR CHANNEL PARITY ERROR, STATUS WILL NOT BE 6DI       1196
                    *       TAKEN.  INSTEAD, *7EI* WILL BE CALLED IMMEDIATELY.  *7FI*  6DI       1197
                    *       WILL BE CALLED IF EITHER STATUS FUNCTION TIMES OUT OR AN   6DI       1198
                    *       INCOMPLETE DATA TRANSFER OCCURS ON EITHER STATUS INPUT.    6DI       1199



                    *       REDEFINE CHANNEL INSTRUCTIONS TO PRODUCE LINKED LIST.      6DI       1201
                                                                                       6DI       1202
                      1 FWDL$ EQU    1          SELECT FORWARD LINKED CHANNEL INSTRUCTIONS 6DI     1203
7637                        RICHL                                                      6DI       1204



                    **      DCI - OBTAIN GENERAL AND DETAILED STATUS.                  6DI       1206
                    *                                                                  6DI       1207
                    *       ENTRY  (T1) = DETAILED STATUS SIZE.                        6DI       1208
                    *              (T2) = FIRST CHANNEL INSTRUCTION ADDRESS.           6DI       1209
                    *              (T4 - T7) = DRIVER PARAMETERS.                      6DI       1210
                    *              (D1) = DRSW.                                        6DI       1211
                    *              (DRSW) = *LDAM*/*DSWM*/CHANNEL PARITY ERROR CODE    6DI       1212
                    *                       COMPLIMENT.                                6DI       1213
                    *              (MB, BYTES 0-3) = T4 - T7, SAVED FOR *7FI*.         6DI       1214
                    *              (MB, BYTE 4) = ADDRESS OF LAST *FNC* CALL FOR *7FI*. 6DI      1215
                    *              (MB+1) = PHYSICAL DISK ADDRESS FROM *LDAM*.         6DI       1216
                    *                                                                  6DI       1217
                    *       EXIT   TO *7EI* IF NOT A CONTROLLER REPORTED ERROR OR A    6DI       1218
                    *              CHANNEL PARITY ERROR OCCURS WHEN ATTEMPTING TO INPUT 6DI      1219
                    *              STATUS.                                             6DI       1220
                    *              TO *7FI* IF FUNCTION TIMEOUT OR INCOMPLETE DATA     6DI       1221
                    *              TRANSFER ON STATUS INPUT.                           6DI       1222
                    *              TO *7DI* OTHERWISE.                                 6DI       1223
                    *              (T2) = *7EI* PROCESSING INDEX IF *7EI* IS CALLED.   6DI       1224
                    *              (T4 - T7) = UNCHANGED.                              6DI       1225
                    *              (DEEC) = ERROR CODE (MEANINGFUL ONLY IF CALLING *7EI* 6DI     1229
                    *                       OR *7FI*).                                 6DI       1230
                    *                     = *CSTE* IF FUNCTION TIMEOUT OR INCOMPLETE DATA 6DI     1231
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                                 *                        TRANSFER.                          6DI       1232
                                 *                      = *CHPE* IF CHANNEL PARITY ERROR ON STATUS   6DI       1233
                                 *                        INPUT OR CHANNEL PARITY ERROR ON INPUT IN  6DI       1234
                                 *                        DRIVER.                            6DI       1235
                                 *                      = ERROR CODE REPORTED BY *DSWM* OR *LDAM*.   6DI       1236
                                 *              (DEGS)  = GENERAL STATUS.                    6DI       1237
                                 *              (DELF)  = FUNCTION (COULD BE DATA) RETRIEVED FROM    6DI       1238
                                 *                        CHANNEL.                           6DI       1239
                                 *              (DERC)  = *CHPE* RETRY LIMIT - 1 IF CHANNEL PARITY   6DI       1240
                                 *                        ERROR ON STATUS INPUT IN THIS OVERLAY,     6DI       1241
                                 *                        OTHERWISE UNCHANGED.               6DI       1242
                                 *              (MB, BYTES 0-3) = UNCHANGED.                 6DI       1243
                                 *              (MB, BYTE 4) = UNCHANGED.                    6DI       1244
                                 *              (MB+1) = UNCHANGED.                          6DI       1245
                                 *              (MB+2 - MB+5) = DETAILED STATUS IF CALLING *7DI*.    6DI       1246
                                 *                                                           6DI       1247
                                 *         USES   CM, T1, T2.                                6DI       1248
                                 *                                                           6DI       1249
                                 *         CALLS  FNC.                                       6DI       1250
                                 *                                                           6DI       1251
                                 *         MACROS MSERR.                                     6DI       1252
                                                                                             6DI       1253
                                                                                             6DI       1254
          7637                    DCI      ENTRY            *7CI* ENTRY                      6DI       1255
                                                                                             6DI       1256
          7641      2000 7752              LDC    DCI8      SET FUNCTION TIMEOUT ERROR ADDRESS  6DI       1257
          7643      5400 0744              STM    ERRA                                       6DI       1258
                                                                                             6DI       1259
                                 *         INITIALIZE TO ZEROS THE AREA WHERE DETAILED STATUS WILL BE  6DI       1260
                                 *         READ IN.                                          6DI       1261
                                                                                             6DI       1262
                          111              ERRNG  *-OFFW-DSLN DETAILED STATUS DESTROYS CODE  6DI       1263
          7645      1400          DCI1     LDN    0                                          6DI       1264
          7646      5401 7507              STM    OFFW-1,T1                                  6DI       1265
          7650      3701                   SOD    T1                                         6DI       1266
          7651      0573                   NJN    DCI1      IF MORE BYTES TO CLEAR           6DI       1267
                                                                                             6DI       1268
                                 *         MODIFY CHANNEL INSTRUCTIONS.                      6DI       1269
                                                                                             6DI       1270
                                 *         LDN    0                                          6DI       1271
          7652      3502          DCI2     RAD    T2                                         6DI       1272
          7653      4002                   LDI    T2        SAVE LINK TO NEXT CHANNEL INSTRUCTION  6DI       1273
          7654      1237                   LPN    37                                         6DI       1274
          7655      3410                   STD    CM                                         6DI       1275
          7656      3004                   LDD    T4        MODIFY A CHANNEL INSTRUCTION     6DI       1276
          7657      3210                   SBD    CM                                         6DI       1277
          7660      4502                   RAI    T2                                         6DI       1278
          7661      3010                   LDD    CM                                         6DI       1279
          7662      0567                   NJN    DCI2      IF MORE INSTRUCTIONS TO MODIFY   6DI       1280
                                                                                             6DI       1281
                                 *         IF THE ERROR WAS REPORTED BY THE CONTROLLER, PROCEED TO  6DI       1282
                                 *         TAKE GENERAL AND DETAILED STATUS.  IN ALL OTHER CASES GO  6DI       1283
                                 *         DIRECTLY TO *7EI*.                                6DI       1284
                                                                                             6DI       1285
          7663      4071                   LDI    D1                                         6DI       1286
          7664      2177 0077              SBK    7700                                       6DI       1287
          7666      0714                   MJN    DCI5      IF CONTROLLER REPORTED ERROR     6DI       1288
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7667  1177                    LMN   77                                    6DI  1289
7670  0310                    UJN   DCI4       EXECUTE *7EI*              6DI  1290
                                                                          6DI  1291
                        *     PROCESS A CHANNEL PARITY ERROR (800 SERIES MACHINES)  6DI  1292
                        *     THAT OCCURS ON INPUT OF GENERAL OR DETAILED STATUS     6DI  1293
                        *     IN *7CI*.  *CHRT* RETRIES WILL BE PERFORMED BEFORE    6DI  1294
                        *     THE ERROR IS CONSIDERED UNRECOVERED.                  6DI  1295
                                                                          6DI  1296
7671  3601              DCI3  AOD   T1                                    6DI  1297
7672  1704                    SBN   CHRT                                  6DI  1298
7673  0716                    MJN   DCI6       IF NOT UNRECOVERED YET     6DI  1299
7674  1403                    LDK   CHRT-1     FORCE UNRECOVERED ERROR    6DI  1300
7675  5400 1067               STM   DERC                                  6DI  1301
7677  1401                    LDN   CHPE       SET CHANNEL PARITY ERROR FLAG  6DI  1302
7700  0100 7756         DCI4  LJM   DCI9       CALL *7EI*                 6DI  1303
                                                                          6DI  1304
                        *     RETRIEVE ANY FUNCTION OR DATA LEFT ON THE CHANNEL AND THEN  6DI  1305
                        *     TAKE BOTH GENERAL AND DETAILED STATUS.  IF A FUNCTION TIMES  6DI  1306
                        *     OUT OR IF ALL OF GENERAL OR DETAILED STATUS IS NOT RECEIVED,  6DI  1307
                        *     CALL *7FI* TO DETERMINE THE CAUSE OF THE PROBLEM.     6DI  1308
                                                                          6DI  1309
7702  6502 7712         DCI5  IJM   DCI7,CH     IF NOT FUNCTION TIMEOUT    6DI  1310
7704  6702 7711               EJM   DCI6,CH     IF NO FUNCTION ON CHANNEL  6DI  1311
7706  7043                    IAN   CH+40       INPUT FUNCTION             6DI  1312
7707  5400 7504               STM   DELF                                  6DI  1313
7711  7545              DCI6  DCN   CH+40                                 6DI  1316
7712  1412              DCI7  LDN   FCGS         GET GENERAL STATUS         6DI  1317
7713  0200 0725               RJM   FNC                                   6DI  1318
7715  1401                    LDN   1                                     6DI  1319
7716  7102 7503               IAM   DEGS,CH                               6DI  1320
7720  6661 7671               SFM   DCI3,CH     IF CHANNEL PARITY ERROR (800 SERIES)  6DI  1321
7722  0530                    NJN   DCI8         IF INCOMPLETE DATA TRANSFER  6DI  1322
7723  3401                    STD   T1           RESET CHANNEL PARITY ERROR RETRY COUNT  6DI  1323
7724  5000 7503               LDM   DEGS                                  6DI  1324
7726  2300 5017               LMC   5017                                  6DI  1325
7730  0422                    ZJN   DCI8         IF CONTROL MODULE MEMORY ERROR  6DI  1326
7731  1065                    SHN   0-12                                  6DI  1327
7732  1201                    LPN   1                                     6DI  1328
7733  1101                    LMN   1                                     6DI  1329
                        0     ERRNZ EI0          CODE ASSUMES *EI0* = 0     6DI  1330
7734  0425                    ZJN   DCI11        IF OPPOSITE ACCESS RESERVED  6DI  1331
7735  1423                    LDN   FCDS         GET DETAILED STATUS        6DI  1332
7736  0200 0725               RJM   FNC                                   6DI  1333
7740  1424                    LDN   DSLN                                  6DI  1334
7741  7102 7510               IAM   OFFW,CH                               6DI  1335
                      207     ERRNG *-OFFW-DSLN  DATA READ IN DESTROYS CODE  6DI  1336
7743  6640 7671               SFM   DCI3,CH     IF CHANNEL PARITY ERROR (800 SERIES)  6DI  1337
7745  0505                    NJN   DCI8         IF INCOMPLETE DATA TRANSFER  6DI  1346
7746  1430                    LDN   3R7DQ&3R7DI                           6DI12    1
7747  5400 7771               STM   DCIA                                  6DI12    2
                              MSERR 7DI,=                                 6DI12    3
7751  0311                    UJN   DCI12        EXECUTE *7DI*              6DI  1348
                                                                          6DI  1349
7752  3071              DCI8  LDD   HN                                    6DI  1350
                        0     ERRNZ 3R7FI-3R7EI-100  CODE ASSUMES RELATIVE VALUES  6DI  1351
7753  5500 7771               RAM   DCIA                                  6DI  1352
7755  1402                    LDN   CSTE         SET CONTROLLER STOP ERROR CODE  6DI  1353
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                7756          5400 7502           DCI9     STM    DEEC                                                    6DI       1354
                7760          1403                         LDN    EI3         SET *7EI* PROCESSOR INDEX                   6DI       1355
                7761          3402                DCI11    STD    T2                                                      6DI       1356
                7762          1404                DCI12    LDN    DSLN/5                                                  6DI12        4
                7763          3401                         STD    T1                                                      6DI12        5
                7764          3077                         LDD    MA                                                      6DI12        6
                7765          1602                         ADN    2                                                       6DI12        7
                7766          6301 7510                    CWM    OFFW,T1                                                 6DI12        8
                                           0               ERRNZ  DSLN/5-4    ADJUST IF VALUE OF *DSLN* CHANGES           6DI12        9
                7770          2000 0130                    MSERR  7EI,*                                                   6DI       1357
                                                           MSERR  7FI,=       (FUNCTION TIMEOUT/DATA TRANSFER ERROR)      6DI       1358
                                        7771     DCIA       EQU    *-1                                                     6DI       1359
                7772          0100 0414                    LJM    LEP1        EXECUTE *7DI*/*7EI*/*7FI*                   6DI12       10


                                                           HERE               TERMINATE LINKED CHANNEL INSTRUCTIONS    6DI       1362


                                           4               ERRNG  10000-*     *7CI* OVERFLOW                           6DI       1364
                7774                       4               BSS    10000-*     (SPARES)                                6DI       1365
               10000          7636                         CON    DCI-1       (T0) = ENTRY ADDRESS - 1                6DI       1366
               10001          0024                         CON    DSLN        (T1) = DETAILED STATUS LENGTH           6DI       1367
               10002          7702                         CON    CH01$       (T2) = FIRST CHANNEL INSTRUCTION ADDRESS 6DI       1368
                                           0               ERRNZ  LN-*        INCORRECT *7CI* OVERLAY LENGTH           6DI       1369
                                                           QUAL   *                                                    6DI       1370
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                    7DI     MSOVL  7550,T2,DEXA,(DETAILED STATUS PROCESSOR.)          NS2509      1

                40          ERRNG  *-OFFW     *7DI* WILL LOAD ON TOP OF PARAMETERS    MSOVL   .1
                            LIST   *                                                  MSOVL   .1


                    ***     DETAILED STATUS PROCESSOR.                              6DI      1373
                    *       R. M. DANISCH.     85/02/06.                            6DI      1374


                    *             *7DI* IS CALLED BY *7CI* TO DETERMINE THE ERROR TYPE  6DI      1376
                    *       BY ANALYZING DETAILED STATUS.                           6DI      1377


                    **      DDI - DETAILED STATUS PROCESSOR.                        6DI      1379
                    *                                                               6DI      1380
                    *       ENTRY  (T1) = DEST.                                     6DI      1381
                    *              (T2) = DEGS.                                     6DI      1382
                    *              (T4 - T7) = DRIVER PARAMETERS.                   6DI      1383
                    *              (DEAI) = ALGORITHM INDEX.                        6DI      1384
                    *              (DERW) = 1 IF WRITE REQUEST, 0 IF READ REQUEST.  6DI      1385
                    *              (DEGS) = GENERAL STATUS.                         6DI      1386
                    *              (RDCT) = ERROR PROCESSING INTERFACE WORD.        6DI      1387
                    *              (MB+1) = PHYSICAL DISK ADDRESS FROM *LDAM*.      6DI      1388
                    *              (MB+2 - MB+5) = DETAILED STATUS.                 6DI      1389
                    *                                                               6DI      1390
                    *       EXIT   TO *7EI*.                                        6DI      1391
                    *              (DEST) = ERROR PROCESSING CONTROL WORD.          6DI      1392
                    *                       BITS AFFECTED BY THIS OVERLAY -         6DI      1393
                    *                       BIT 5 = 1 IF ISD DRIVE FAULT.           6DI      1394
                    *                       BIT 0 = 1 IF ERROR ON PREVIOUS SECTOR.  6DI      1395
                    *              (DEWR) = 1 IF DATA WRITTEN TO DISK.              6DI      1396
                    *              (MB+1) = UNCHANGED.                              6DI      1399
                    *              (MB+2 - MB+5) = UNCHANGED.                       6DI      1400
                    *                                                               6DI      1401
                    *       USES   CM, T2.                                          6DI      1402
                    *                                                               6DI      1403
                    *       MACROS MSERR.                                           6DI      1404
                                                                                    6DI      1405
                                                                                    6DI      1406
        7550                        DDI     ENTRY           *7DI* ENTRY             6DI      1407
                                                                                    6DI      1408
        7552        4002                    LDI    T2                               6DI      1409
        7553        1066                    SHN    0-11                             6DI      1410
        7554        1105                    LMN    5                                6DI      1411
        7555        0404                    ZJN    DDI1     IF GENERAL STATUS = 5XXX  6DI      1412
        7556        1400                    LDN    EI0      SET *7EI* PROCESSOR INDEX 6DI      1413
        7557        0100 7757               LJM    DDI22    EXECUTE *7EI*             6DI      1414
                                                                                    6DI      1415
        7561        5000 7500       DDI1    LDM    DEAI     IDENTIFY HARDWARE TYPE    6DI      1416
        7563        1710                    SBN    AIIB                             6DI      1417
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7564         0720                        MJN    DDI3        IF 844/885 DEVICE                                  6DI       1418
7565         1702                        SBK    AIIE-AIIB                                                      6DI       1419
7566         0612                        PJN    DDI2        IF NOT ISD DEVICE                                  6DI       1420
7567         1402                        LDN    12-10                                                          6DI       1423
7570         5500 7674                   RAM    DDIE                                                           6DI       1424
7572         2000 0313                   LDC    UJNI+DDI18.1-DDIH                                              6DI13        1
                          -25            ERRPL  DDI18.1-DDIH-40   RANGE ERROR                               6DI13        2
7574         5400 7703                   STM    DDIH                                                           6DI       1427
7576         1404                        LDN    7-3                                                            6DI       1428
7577         0321                        UJN    DDI6        CONTINUE                                           6DI       1429
                                                                                                               6DI       1430
7600         1700                DDI2    SBN    AIDX-AIIE                                                      6DI       1431
7601         0620                        PJN    DDI7        IF FSC DEVICE                                      6DI       1432
7602         0100 7754                   LJM    DDI20       REPORT STATUS ERROR FOR BUFFERED DEVICE            6DI       1433
                                                                                                               6DI       1434
7604         1477                DDI3    LDN    PSNI        ENABLE DATA WRITTEN CHECK                          6DI       1435
7605         5400 7650                   STM    DDIC                                                           6DI       1436
7607         5000 7500                   LDM    DEAI                                                           6DI       1437
7611         1706                        SBN    AIDQ                                                           NS2776      41
7612         0603                        PJN    DDI4        IF *DR* OR *DQ* DEVICE                             NS2776      42
7613         1603                        ADN    AIDQ-AIDM                                                      NS2776      43
7614         0526                        NJN    DDI9        IF 844 DEVICE                                      6DI       1441
7615         1477                DDI4    LDN    PSNI                                                           NS2776      44
7616         5400 7662                   STM    DDID        ENABLE 885 NOT READY CHECK                         NS2776      45
7620         0320                DDI6    UJN    DDI8        CONTINUE                                           6DI       1444
                                                                                                               6DI       1445
7621         1510                DDI7    LCN    10-0        MODIFY CODE FOR FSC DEVICE                         6DI       1446
7622         5500 7674                   RAM    DDIE                                                           6DI       1447
7624         2000 1101                   LDC    LMNI+1                                                         6DI       1448
7626         5400 7677                   STM    DDIG                                                           6DI       1449
7630         1405                        LDN    21-14                                                          6DI       1450
7631         5500 7704                   RAM    DDIH+1                                                         6DI       1451
7633         2000 0327                   LDC    UJNI+DDI23-DDII                                                6DI       1452
                          -11            ERRPL  DDI23-DDII-40   RANGE ERROR                                 6DI       1453
7635         5400 7735                   STM    DDII                                                           6DI       1454
7637         1503                        LCN    12-7                                                           6DI       1455
7640         5500 7675           DDI8    RAM    DDIF                                                           6DI       1456
7642         1404                DDI9    LDN    DSLN/5      READ DETAILED STATUS FROM MESSAGE BUFFER           6DI       1457
7643         3410                        STD    CM                                                             6DI       1458
7644         3077                        LDD    MA                                                             6DI       1459
7645         1602                        ADN    2                                                              6DI       1460
7646         6110 7510                   CRM    OFFW,CM                                                        6DI       1461
                            0           ERRNZ  DSLN/5-4    ADJUST CODE IF VALUE OF *DSLN* CHANGES             6DI       1462
                          114           ERRNG  *-OFFW-DSLN CODE IS DESTROYED BY DETAILED STATUS               6DI       1463
                                                                                                               6DI       1496
                                *       CHECK FOR DATA WRITTEN TO DISK.                                        6DI       1497
                                                                                                               6DI       1498
7650         0317                DDI13   UJN    DDI15       CONTINUE FOR NON-844/885 DEVICE                    6DI       1499
                                *       PSN                (844/885)                                           6DI       1500
                         7650    DDIC    EQU    *-1                                                            6DI       1501
7651         5000 7530                   LDM    OFFW+20                                                        6DI       1502
7653         1202                        LPN    2                                                              6DI       1503
7654         0406                        ZJN    DDI14       IF NOT DATA FIELD ERROR                            6DI       1504
7655         5000 7505                   LDM    DERW                                                           6DI       1505
7657         0403                        ZJN    DDI14       IF READ REQUEST                                    6DI       1506
7660         5400 1066                   STM    DEWR        SET *DATA WRITTEN/READ* FLAG                       6DI       1507
                                                                                                               6DI       1508
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                                    *       CHECK FOR DRIVE NOT READY.                                      6DI       1509
                                                                                                            6DI       1510
7662        0305                     DDI14  UJN    DDI15      CONTINUE FOR NON-885                         6DI       1511
                                    *       PSN                (885)                                        6DI       1512
                          7662       DDID   EQU    *-1                                                     6DI       1513
7663        5000 7517                       LDM    OFFW+7                                                  6DI       1514
7665        1021                            SHN    21-0                                                    6DI       1515
7666        0715                            MJN    DDI17      IF NOT *NOT READY*                           6DI       1516
7667        4002                     DDI15  LDI    T2                                                      6DI12       12
7670        2300 5020                       LMC    5020                                                    6DI12       13
7672        0511                            NJN    DDI17      IF NOT *NOT READY*                           6DI12       14
7673        5000 7520                       LDM    OFFW+10                                                 6DI12       15
                                    *       LDM    OFFW       (FSC)                                        6DI       1518
                                    *       LDM    OFFW+12    (ISD)                                        6DI       1519
                          7674       DDIE   EQU    *-1                                                     6DI       1520
7675        1070                            SHN    0-7                                                     6DI       1521
                                    *       SHN    0-12       (FSC)                                        6DI       1522
                                    *       SHN    0-3        (ISD)                                        6DI       1523
                          7675       DDIF   EQU    *-1                                                     6DI       1524
7676        1201                            LPN    1                                                       6DI       1525
7677        2400                     DDIG   PSN                                                            6DI       1526
                                    *       LMN    1          (FSC)                                        6DI       1527
7700        0503                            NJN    DDI17      IF NOT *NOT READY*                           6DI       1528
7701        1406                            LDN    EI6        SET *7EI* PROCESSOR INDEX                    6DI       1529
7702        0312                            UJN    DDI18      EXECUTE *7EI*                                6DI       1530
                                                                                                            6DI       1531
                                    *       CHECK FOR ERROR ON PREVIOUS SECTOR.                             6DI       1532
                                                                                                            6DI       1533
7703        5000 7524                DDI17  LDM    OFFW+14                                                 6DI       1534
                                    *       LDM    OFFW+21    (FSC)                                        6DI       1535
                                    *       UJN    DDI18.1    (ISD)                                        6DI13       4
                          7703       DDIH   EQU    *-2                                                     6DI       1537
7705        1064                            SHN    0-13                                                    6DI       1538
7706        0427                            ZJN    DDI19      IF NOT ERROR ON PREVIOUS SECTOR              6DI       1539
7707        5000 7505                       LDM    DERW                                                    6DI31       1
7711        0423                            ZJN    DDI18.2    IF NOT A WRITE                               6DI31       2
7712        4601                            AOI    T1         SET *ERROR ON PREVIOUS SECTOR* FLAG          6DI       1540
7713        1401                            LDN    EI1        SET *7EI* PROCESSOR INDEX                    6DI       1541
7714        0100 7757                DDI18  LJM    DDI22      EXECUTE *7EI*                                6DI13       5
                                                                                                            6DI13       6
                                    *       CHECK FOR ISD MEDIA ERROR.                                      6DI13       7
                                                                                                            6DI13       8
7716        5000 7530                DDI18.1 LDM   OFFW+20    CHECK BOX ISOLATION STATUS                   6DI13       9
7720        1014                            SHN    21-5                                                    6DI13      10
7721        0633                            PJN    DDI20      IF NOT DRIVE/MEDIA FAULT                     6DI13      11
7722        5000 7520                       LDM    OFFW+10                                                 6DI13      12
7724        1073                            SHN    0-4                                                     6DI13      13
7725        2300 0101                       LMC    101                                                     6DI13      14
7727        0427                            ZJN    DDI21      IF MEDIA ERROR IN HEADER                     6DI31       3
7730        1102                            LMN    101&103                                                 6DI13      16
7731        0425                            ZJN    DDI21      IF MEDIA ERROR IN DATA                       6DI31       4
7732        1440                            LDN    40         SET *EXECUTE DIAGNOSTICS* FLAG               6DI31       5
7733        4501                            RAI    T1                                                      6DI13      21
7734        0320                     DDI18.2 UJN    DDI20      SET *7EI* PROCESSOR INDEX (STATUS ERROR)     6DI31       6
                                                                                                            6DI       1543
                                    *       CHECK FOR 844/885 MEDIA ERROR.                                  6DI       1544
                                                                                                            6DI       1545
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7735         5000 7510          DDI19    LDM    OFFW                                        6DI   1546
                                *        UJN    DDI23       (FSC)                           6DI   1547
                          7735  DDII     EQU    *-2                                         6DI   1548
7737         1217               DDI      LPN    17                                          6DI   1549
7740         1110               DDI1     LMN    10                                          6DI   1550
7741         0415               DDI2     ZJN    DDI21       IF MEDIA ERROR                  6DI   1551
7742         5000 7511          DDI3     LDM    OFFW+1                                      6DI   1552
7744         1006               DDI4     SHN    21-13                                       6DI   1553
7745         0711               DDI5     MJN    DDI21       IF MEDIA ERROR                  6DI   1554
7746         1002               DDI6     SHN    13-11                                       6DI   1555
7747         0707               DDI7     MJN    DDI21       IF MEDIA ERROR                  6DI   1556
7750         5000 7530          DDI8     LDM    OFFW+20                                     6DI   1557
7752         1011               DDI9     SHN    21-10                                       6DI   1558
7753         0703               DDI10    MJN    DDI21       IF MEDIA ERROR                  6DI   1559
7754         5700 7756          DDI20    SOM    DDIJ                                        6DI   1560
                          0               ERRNZ  EI5-EI4-1   CODE ASSUMES *EI5* = *EI4* + 1  6DI   1561
7756         1405               DDI21    LDN    EI5         SET *7EI* PROCESSOR INDEX       6DI   1562
                                *        LDN    EI4         (NOT A MEDIA ERROR)             6DI   1563
                          7756  DDIJ     EQU    *-1                                         6DI   1564
7757         3402               DDI22    STD    T2                                          6DI   1565
7760         2000 0130          DDI23    MSERR  7EI         EXECUTE *7EI*                   6DI   1566
                                                                                            6DI   1567
                                *        CHECK FOR FSC MEDIA ERROR.                         6DI   1568
                                                                                            6DI   1569
7764         4002               DDI23    LDI    T2                                          6DI   1570
7765         1015               DDI24    SHN    21-4                                        6DI   1571
7766         0665               DDI25    PJN    DDI20       IF NOT MEDIA ERROR              6DI   1572
7767         5000 7510          DDI26    LDM    OFFW                                        6DI   1573
7771         1012               DDI27    SHN    21-7                                        6DI   1574
7772         0661               DDI28    PJN    DDI20       IF NOT MEDIA ERROR              6DI   1575
7773         5000 7511          DDI29    LDM    OFFW+1                                      6DI   1576
7775         1013               DDI30    SHN    21-6                                        6DI   1577
7776         0655               DDI31    PJN    DDI20       IF NOT MEDIA ERROR              6DI   1578
7777         0356               DDI32    UJN    DDI21       EXECUTE *7EI*                   6DI   1579
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                          0               ERRNG  10000-*     *7DI* HAS OVERFLOWED            6DI   1581
10000                                    BSS    10000-*     SPARES                          6DI   1582
10000        7547               DDI-1    CON    DDI-1       (T0) = ENTRY ADDRESS - 1        6DI   1583
10001        7506               DEST     CON    DEST        (T1) = DEST                     6DI   1584
10002        7503               DEGS     CON    DEGS        (T2) = DEGS                     6DI   1585
                          0               ERRNZ  LN-*        INCORRECT *7DI* OVERLAY LENGTH  6DI   1586
                                          QUAL   *                                           6DI   1587
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                    7EI     MSOVL  7542,T1,DEXA,(SET ERROR CODE.)                    6DI30      1

                32          ERRNG  *-OFFW     *7EI* WILL LOAD ON TOP OF PARAMETERS  MSOVL   .1
                            LIST   *                                               MSOVL   .1


                ***         SET ERROR CODE.                                        6DI      1590
                *           R. J. THIELEN.     75/11/20.                           6DI      1591
                *           W. E. GOEBEL.      77/01/24.                           6DI      1592



                *                 *7EI* IS CALLED BY *7CI*, *7DI* OR *7FI* TO PERFORM  6DI      1594
                *           ADDITIONAL CHECKS ON GENERAL STATUS AND TO ASSIGN AN ERROR  6DI      1595
                *           CODE FOR THE CURRENT ERROR.  FOR COUPLER TO DISK ERRORS,  6DI      1596
                *           *7EI* WILL READ BACK THE PREVIOUS SECTOR FROM THE CONTROLLER  6DI      1597
                *           SO THAT THE DRIVER CAN RE-WRITE IT.                    6DI      1598



                **          DEI - SET ERROR CODE.                                  6DI      1600
                *                                                                  6DI      1601
                *           ENTRY  (T1) = DEST.                                    6DI      1602
                *                  (T2) = INDEX TO PROCESSING ADDRESS IN *7EI*.    6DI30      2
                *                  (T4 - T7) = DRIVER PARAMETERS.                  6DI      1604
                *                  (DEAI) = ALGORITHM INDEX.                       6DI      1605
                *                  (DEEC) = ERROR CODE IF CALLED BY *7CI* OR *7FI*.  6DI      1606
                *                  (DEGS) = GENERAL STATUS.                        6DI      1607
                *                  (DERW) = 1 IF WRITE REQUEST, 0 IF READ REQUEST.  6DI      1608
                *                  (DEST) = ERROR PROCESSING CONTROL WORD.         6DI      1609
                *                  (RDSB) = ADDRESS OF DATA BUFFER FOR READ.       6DI      1610
                *                  (WDSC) = ADDRESS OF DATA BUFFER FOR WRITE.      6DI      1611
                *                  (WDSE) = ADDRESS OF BUFFER FOR WRITE ERROR RETRY (IF  6DI      1612
                *                           SPECIFIED ON *SETMS*).                 6DI      1613
                *                  (MB+1) = PHYSICAL DISK ADDRESS FROM *LDAM*.     6DI      1614
                *                  (MB+2 - MB+5) = DETAILED STATUS, IF ERROR WAS REPORTED  6DI      1615
                *                                  BY CONTROLLER (NOT A *DSWM*/*LDAM*/  6DI      1616
                *                                  CHANNEL PARITY ERROR.          6DI      1617
                *                                                                 6DI      1618
                *           EXIT   TO *7EK*                                       NS2741     1
                *                  (T2) = READ BUFFER ADDRESS.                    6DI      1620
                *                  (T4 - T7) = UNCHANGED.                         6DI      1621
                *                  (DEEC) = ERROR CODE.                           6DI      1622
                *                  (DENR) = 1 IF NON-RECOVERABLE ERROR.           6DI      1623
                *                  (DEST) = ERROR PROCESSING CONTROL WORD.        6DI      1624
                *                           BITS AFFECTED BY THIS OVERLAY -       6DI      1625
                *                           BIT 12 = 1 IF NO RETRIES ARE ALLOWED.  6DI      1626
                *                           BIT  4 = 1 IF RECOVERY IN PROGRESS (BIT 10  6DI      1627
                *                                    OF GENERAL STATUS IS SET).    6DI      1628
                *                           BIT  3 = 1 IF BUFFER READBACK FAILED.  6DI      1629
                *                  (DEWR) = 1 IF DATA MAY HAVE BEEN WRITTEN TO DISK.  6DI      1630
                *                  (DEXA) = ADDRESS AT WHICH TO RETRY OPERATION.  6DI      1631
                *                           *LDA1*, IF *7SI* WILL NOT BE CALLED.  6DI      1632
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                                *                    *ERR2*, IF *7SI* TO BE CALLED.                6DI       1633
                                *              (MB+1) = UNCHANGED.                                 6DI       1634
                                *              (MB+2 - MB+5) = UNCHANGED.                          6DI       1635
                                *                                                                  6DI       1636
                                *         USES   T2, T7, CM.                                       6DI       1637
                                *                                                                  6DI       1638
                                *         MACROS ISTORE, MSERR.                                    6DI30        3
                                                                                                   6DI       1640
                                                                                                   6DI       1641
7542                             DEI      ENTRY             *7EI* ENTRY                           6DI       1642
                                                                                                   6DI       1643
7544    5002 7767                         LDM    TDEI,T2                                         6DI       1644
7546    3410                              STD    CM                                              6DI       1645
7547    1400                              LDN    0                                               6DI       1646
7550    0110 0000                         LJM    0,CM           ENTER PROCESSOR                  6DI       1647
                                                                                                   6DI       1648
                                *         *EI0* - GENERAL STATUS .NE. 5XXX.                        6DI       1649
                                                                                                   6DI       1650
7552    5000 7503                DEI1     LDM    DEGS                                            6DI       1651
7554    1011                              SHN    21-10                                           6DI       1652
7555    0616                              PJN    DEI4           IF NO RECOVERY IN PROGRESS       252L678      9
7556    1003                              SHN    10-5                                            252L678     10
7557    0606                              PJN    DEI3           IF NOT A CORRECTABLE ERROR       6DI       1657
7560    5000 0562                         LDM    RDSB                                            6DI       1658
7562    2177 1000                         SBK    EPFW-502+1                                      6DI       1659
7564    0607                              PJN    DEI4           IF ERROR PROCESSOR OVERLAYS BUFFER 6DI       1660
7565    2000 1052                DEI3     LDC    ERR2           CAUSE *7EP* TO CALL *7SI*        6DI       1661
7567    5400 7507                         STM    DEXA                                            6DI       1662
7571    1420                              LDN    20             SET IMMEDIATE EXIT FLAG FOR *7EP* 6DI       1663
7572    4501                              RAI    T1                                              6DI       1664
7573    0100 7714                DEI4     LJM    DEI9           SET *DSTE* ERROR CODE            252L678     11
                                                                                                   6DI       1667
                                *         *EI1* - WRITE ERROR ON PREVIOUS SECTOR.                  6DI       1668
                                                                                                   6DI       1669
7575    5000 0102                DEI5     LDM    ERXA                                            6DI30        4
7577    0403                              NJP    DEI8           IF ERROR ON A RETRY              6DI30        5
7602    5400 0611                         STM    WDSB           FORCE *WRITE LAST SECTOR*        6DI30        6
                                0         ERRNZ  WLSF           CODE ASSUMES VALUE               6DI       1671
7604    5000 0101                         LDM    WDSE                                            6DI       1672
7606    0503                              NJN    DEI6           IF WRITE BUFFER SPECIFIED        6DI       1673
7607    5000 0616                         LDM    WDSC           DESTROY CURRENT SECTOR BUFFER    6DI       1674
7611    5400 0562                DEI6     STM    RDSB                                            6DI       1675
7613    3402                              STD    T2                                              6DI       1676
7614    2177 1000                         SBK    EPFW-502+1                                      6DI       1677
7616    0623                              PJN    DEI6.1         IF BUFFER IN ERROR PROCESSOR AREA 6DI       1678
7617    2000 7666                         LDC    DEI7           SET RETURN FROM READ OF COUPLER BUFFER 6DI   1679
7621    5400 0530                         STM    RDS                                             6DI       1680
7623    2000 7641                         LDC    DEI6.1         SET ERROR RETURN                 6DI       1681
7625    5400 0744                         STM    ERRA                                            6DI       1682
7627    3071                              LDD    HN                                              6DI20        6
                                0         ERRNZ  LJMI-100       CODE DEPENDS ON VALUE            6DI20        7
7630    5400 0563                         STM    RDSD                                            6DI20        8
7632    2000 7650                         LDC    DEI6.0                                          6DI20        9
7634    5400 0564                         STM    RDSD+1                                          6DI20       10
7636    1443                              LDN    FCRB           READ BACK COUPLER BUFFER         6DI       1683
7637    0100 0557                         LJM    RDS3           USE READ PROCESSOR               6DI       1684
                                                                                                   6DI       1685
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                                *       RETURN HERE ON ERROR IN COUPLER BUFFER READ ATTEMPT.          6DI    1686
                                                                                                      6DI    1687
7641        2000 0317            DEI6.1 LDC    UJNI+DEI17-DEIA                                      6DI    1688
                          -21          ERRPL  DEI17-DEIA-40   RANGE ERROR                          6DI    1689
7643        5400 7723                   STM    DEIA                                                 6DI    1690
7645        1410                        LDN    10          SET *ERROR ON BUFFER READBACK* FLAG      6DI    1691
7646        4501                        RAI    T1                                                   6DI    1692
7647        0337                        UJN    DEI8        CONTINUE                                 6DI    1693
                                                                                                      6DI20    11
                                *       RETURN HERE TO DELAY DURING COUPLER READ BACK.                6DI20   12
                                                                                                      6DI20   13
7650        3400                 DEI6.0 STD    T0          SAVE (A)                                 6DI20   14
7651        2000 5000                   LDC    LDMI        RESTORE DRIVER CODE                      6DI20   15
7653        5400 0564                   STM    RDSD+1                                               6DI20   16
7655        2000 0000                   ISTORE RDSD,(NJN WDS5)                                      6DI20   17
7661        1701                        SBN    1           DELAY AT LEAST 128 MICROSECONDS          6DI20   18
7662        0576                        NJN    *-1         IF DELAY NOT EXPIRED                     6DI20   19
7663        3000                        LDD    T0          RESTORE (A)                              6DI20   20
7664        0100 0563                   LJM    RDS3.1      RE-ENTER DRIVER                          6DI20   21
                                                                                                      6DI    1694
                                *       SET UP RETRY OF PREVIOUS SECTOR.                              6DI    1695
                                                                                                      6DI    1696
7666        5000 0532            DEI7   LDM    WDS         SAVE *WDS* RETURN IN *RDS*               6DI    1697
7670        5400 0530                   STM    RDS                                                  6DI    1698
7672        2000 1055                   LDC    WEP         RETURN TO WEP AFTER RETRY                6DI    1699
7674        5400 0532                   STM    WDS                                                  6DI    1700
7676        5000 0616                   LDM    WDSC        SAVE CURRENT BUFFER ADDRESS              6DI    1701
7700        5400 0562                   STM    RDSB                                                 6DI    1702
7702        3002                        LDD    T2          SET RETRY BUFFER ADDRESS                 6DI    1703
7703        5400 0616                   STM    WDSC                                                 6DI    1704
7705        3707                        SOD    T7                                                   6DI    1705
                                                                                                      6DI    1706
                                *       *EI2* - FUNCTION TIMEOUT / CONTROLLER MEMORY ERROR.           6DI    1707
                                                                                                      6DI    1708
7706        4001                 DEI8   LDI    T1                                                   6DI    1709
7707        2200 0101                   LPC    101                                                  6DI    1710
7711        0405                        ZJN    DEI11       IF FUNCTION TIMEOUT                      6DI    1711
7712        1201                        LPN    1                                                    6DI    1712
7713        0402                        ZJN    DEI10       IF CONTROLLER MEMORY ERROR               6DI    1713
                                                                                                      6DI    1714
                                *       *EI4* - STATUS ERROR.                                         6DI    1715
                                                                                                      6DI    1716
7714        1411                 DEI9   LDK    DSTE&RAME   SET *DSTE* ERROR CODE                    6DI    1717
7715        1107                 DEI10  LMK    RAME&FTOE   SET *RAME* ERROR CODE                    6DI    1718
7716        1114                 DEI11  LMK    FTOE&PARE   SET *FTOE* ERROR CODE                    6DI    1719
                                                                                                      6DI    1720
                                *       *EI5* - MEDIA ERROR.                                          6DI    1721
                                                                                                      6DI    1722
7717        1106                 DEI12  LMK    PARE&NRDE   SET *PARE* ERROR CODE                    6DI    1723
                                                                                                      6DI    1724
                                *       *EI6* - DEVICE NOT READY.                                     6DI    1725
                                                                                                      6DI    1726
7720        1116                 DEI13  LMK    NRDE        SET *NRDE* ERROR CODE                    6DI    1727
7721        5400 7502            DEI14  STM    DEEC                                                 6DI    1728
                                                                                                      6DI    1729
                                *       *EI3* - ERROR CODE ALREADY SET.                               6DI    1730
                                                                                                      6DI    1731
```

```
7723          5000 7502            DEI15    LDM    DEEC                                                    6DI       1732
                                   *        UJN    DEI17       (ERROR ON COUPLER BUFFER READ)              6DI       1733
                          7723     DEIA     EQU    *-2                                                     6DI       1734
7725          1717                         SBK    RESE                                                    6DI       1735
7726          0626                         PJN    DEI18       IF RESERVE ERROR                            6DI       1736
                                                                                                           6DI       1737
                                   *        CHECK FOR A WRITE REQUEST ON AN ISD DEVICE.  THIS IS        6DI       1738
                                   *        CONSIDERED A NON-RECOVERABLE CASE FOR CONTROLLER REPORTED   6DI       1739
                                   *        ERRORS DUE TO THE DATA BUFFERING IN THE 7255 ADAPTER AND    6DI       1740
                                   *        CONTROL MODULE.  THE ERROR IS ALSO FORCED UNRECOVERED TO    6DI       1741
                                   *        PREVENT RETRYING THE OPERATION.                             6DI       1742
                                                                                                           6DI       1743
7727          5000 7500                    LDM    DEAI                                                    6DI       1744
7731          1710                         SBK    AIIB                                                    6DI       1745
7732          0722                         MJN    DEI18       IF NOT ISD                                  6DI       1746
7733          1702                         SBK    AIIE-AIIB                                               6DI       1747
7734          0620                         PJN    DEI18       IF NOT ISD                                  6DI       1748
7735          2000 0600                    LDC    600         SET ISD/WRITE BUFFERING FLAGS               251L664     3
7737          4501                         RAI    T1                                                      6DI       1750
7740          1015                         SHN    21-4                                                    6DI       1751
7741          0713                         MJN    DEI18       IF *CONTINUE* TO BE ISSUED                  6DI       1752
7742          5000 7505            DEI17    LDM    DERW                                                    6DI       1753
7744          0410                         ZJN    DEI18       IF READ REQUEST                             6DI       1754
7745          5400 1066                    STM    DEWR        SET *DATA WRITTEN/READ* FLAG                6DI       1755
7747          5400 1070                    STM    DENR        SET *NON-RECOVERABLE* FLAG                  6DI       1756
7751          2000 2000                    LDC    2000        SET *UNRECOVERED* FLAG                      6DI       1757
7753          4501                         RAI    T1                                                      6DI       1758
7754          2000 0414            DEI18    LDC    LEP1        RESET *FNC* TIMEOUT EXIT ADDRESS            6DI       1759
7756          5400 0744                    STM    ERRA                                                    6DI       1760
7760          5000 0562                    LDM    RDSB                                                    6DI       1761
7762          3402                         STD    T2                                                      6DI       1762
7763          2000 0132                    MSERR  7EK         EXECUTE *7EK*                               NS2741      2
                                                                                                           6DI       1764
                                                                                                           6DI       1765
                                           QUAL                                                            6DI       1766
7767                               TDEI     BSS    0           PROCESSOR ADDRESS TABLE                     6DI       1767
L    0                                     LOC    0                                                       6DI       1768
L    0             7552            EI0      CON    /7EI/DEI1                                               6DI       1769
L    1             7575            EI1      CON    /7EI/DEI5                                               6DI       1770
L    2             7706            EI2      CON    /7EI/DEI8                                               6DI       1771
L    3             7723            EI3      CON    /7EI/DEI15                                              6DI       1772
L    4             7714            EI4      CON    /7EI/DEI9                                               6DI       1773
L    5             7717            EI5      CON    /7EI/DEI12                                              6DI       1774
L    6             7720            EI6      CON    /7EI/DEI13                                              6DI       1775
L    7             0000                     CON    0           FORCE LAST ENTRY OF TABLE .LT. 7777B        6DI       1776
7777                                         LOC    *O                                                      6DI       1777
                                             QUAL   *                                                       6DI       1778
```

```
                          1                  ERRNG  10000-*     *7EI* HAS OVERFLOWED                        6DI       1780
7777                      1                  BSS    10000-*     (SPARES)                                    6DI       1781
10000         7541                         CON    DEI-1       (T0) = ENTRY ADDRESS - 1                    6DI       1782
10001         7506                         CON    DEST        (T1) = DEST                                 6DI       1783
                          0                  ERRNZ  LN-*        INCORRECT *7EI* OVERLAY LENGTH              6DI       1784
                                             QUAL   *                                                       6DI       1785
```

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                    7FI     MSOVL  7517,T2,DEXA,(FUNCTION TIMEOUT PROCESSOR.)          NS2776     46

                7           ERRNG  *-OFFW     *7FI* WILL LOAD ON TOP OF PARAMETERS     MSOVL   .1
                            LIST   *                                                  MSOVL   .1


                    ***     PROCESS FUNCTION TIMEOUT.                                 6DI      1788
                    *       R. M. DANISCH     83/01/03.                               6DI      1789
                    *       P. D. HAAS.       83/04/29.                               6DI      1790



                    ***           THE FUNCTION TIMEOUT PROCESSOR IS CALLED BY *7CI*    6DI      1792
                    *       WHEN ONE OF THE FOLLOWING OCCURS - THE GENERAL STATUS     6DI      1793
                    *       FUNCTION ISSUED BY *7CI* TIMES OUT, THE DETAILED          6DI      1794
                    *       STATUS FUNCTION ISSUED BY *7CI* TIMES OUT, OR THERE       6DI      1795
                    *       IS AN INCOMPLETE DATA TRANSFER ON THE INPUT OF GENERAL    6DI      1796
                    *       OR DETAILED STATUS IN *7CI*.                              6DI      1797
                    *                                                                 6DI      1798
                    *       THIS OVERLAY PERFORMS THE FOLLOWING FUNCTIONS -           6DI      1799
                    *             1. RESTART A 7054 CONTROLLER HUNG ON A COUPLER LOCKUP6DI      1800
                    *                VIA A SHORT AUTOLOAD.                            6DI      1801
                    *             2. DETERMINE IF A RAM PARITY ERROR OR CONTROLLER STOP6DI      1802
                    *                OCCURRED ON A 7155 CONTROLLER.                   6DI      1803



                    *       REDEFINE CHANNEL INSTRUCTIONS TO PRODUCE A LINKED LIST.   6DI      1805
                                                                                      6DI      1806
                1   FWDL$   EQU    1          SELECT FORWARD LINKING                  6DI      1807
7517                        RICHL                                                     6DI      1808



                    **      FTO - FUNCTION TIMEOUT PROCESSOR.                         6DI      1810
                    *                                                                 6DI      1811
                    *       ENTRY  (T1) = DEST.                                       6DI      1812
                    *              (T2) = FIRST CHANNEL INSTRUCTION ADDRESS.          6DI      1813
                    *              (T4) = CHANNEL NUMBER.                             6DI      1814
                    *              (DEAI) = ALGORITHM INDEX.                          6DI      1816
                    *              (DEEC) = *CSTE* ERROR CODE.                        6DI      1817
                    *              (DEGS) = GENERAL STATUS.                           6DI      1818
                    *                       5002 IF 7255 MEMORY ERROR.                6DI      1819
                    *                       5017 IF ISD CONTROL MODULE MEMORY ERROR.  6DI      1820
                    *              (DERW) = 1 IF WRITE REQUEST, 0 IF READ REQUEST.    6DI      1821
                    *              (MB, BYTES 0-3) = T4 - T7.                         6DI      1822
                    *              (MB, BYTE 4) = ADDRESS OF LAST *FNC* CALL.         6DI      1823
                    *              (MB+1) = PHYSICAL DISK ADDRESS FROM *LDAM*.        6DI      1824
                    *              (MB+2 - MB+5) = DETAILED STATUS, IF ONE TAKEN.     6DI      1825
                    *                                                                 6DI      1826
                    *       EXIT   TO *7EI*.                                          6DI      1827
                    *              (T2) = INDEX TO PROCESSING ADDRESS IN *7EI*        6DI      1828
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                                *          (T4 - T7) = RESTORED FROM *MB*.                                  6DI   1829
                                *          (DENR) = 1 IF ALL OF THE FOLLOWING CONDITIONS HOLD -             6DI   1830
                                *                     A. THE CONTROLLER IS CONNECTED.                       6DI   1831
                                *                     B. NOT AN ISD DEVICE.                                 6DI   1832
                                *                     C. THE OPERATION IS A WRITE.                          6DI   1833
                                *                     D. TIMEOUT OCCURRED BEFORE THE PREVIOUS               6DI   1834
                                *                        SECTOR WAS WRITTEN TO DISK.                        6DI   1835
                                *          (DERC) = *FTRT* IF ALL OF THE FOLLOWING ARE TRUE -               6DI   1836
                                *                     A. THE CONTROLLER IS CONNECTED.                       6DI   1837
                                *                     B. THE DRIVE IS NOT AN ISD.                           6DI   1838
                                *                     C. THE CONTROLLER TYPE IS NOT A 7155 MODEL            6DI   1839
                                *                        B OR C.                                            6DI   1840
                                *                     D. TIMEOUT OCCURRED BEFORE THE PREVIOUS               6DI   1841
                                *                        SECTOR WAS WRITTEN TO DISK.                        6DI   1842
                                *                     E. THE ERROR IS NOT A RAM PARITY ERROR.               6DI   1843
                                *          (DEST) = ERROR PROCESSING CONTROL WORD.                          6DI   1844
                                *                   BITS AFFECTED BY THIS OVERLAY -                        6DI   1845
                                *                   BIT   6 = 1 IF RAM PARITY ERROR.                       6DI   1846
                                *                   BITS 2-1 = CONTROLLER TYPE.                            6DI   1847
                                *                              0    7155 MODEL A.                          6DI   1848
                                *                              1    7155 MODEL B OR C.                     6DI   1849
                                *                              2    7255 ADAPTER.                          6DI   1850
                                *                              3    CONTROL MODULE.                        6DI   1851
                                *          (DEWR) = 1 IF WRITE OPERATION ON NON-ISD DEVICE AND              6DI   1852
                                *                   THE CONTROLLER IS CONNECTED.                           6DI   1853
                                *                                                                          6DI   1854
                                *          USES   T0 - T2, T4 - T7, CM - CM+4.                             6DI   1855
                                *                                                                          6DI   1856
                                *          CALLS  FNC, RCM.                                                6DI   1857
                                *                                                                          6DI   1858
                                *          MACROS MSERR, RICHL.                                            6DI   1859
                                                                                                           6DI   1860
                                                                                                           6DI   1861
 7517                            DFI       ENTRY              *7FI* ENTRY                                  6DI   1862
                                                                                                           6DI   1863
 7521  1400                      FTO       LDN    0                                                       6DI   1864
 7522  3502                      FTO1      RAD    T2          MODIFY CHANNEL INSTRUCTIONS                  6DI   1865
 7523  4002                                LDI    T2                                                      6DI   1866
 7524  1237                                LPN    37                                                      6DI   1867
 7525  3410                                STD    CM                                                      6DI   1868
 7526  3004                                LDD    T4                                                      6DI   1869
 7527  3210                                SBD    CM                                                      6DI   1870
 7530  4502                                RAI    T2                                                      6DI   1871
 7531  3010                                LDD    CM                                                      6DI   1872
 7532  0567                                NJN    FTO1        IF MORE INSTRUCTIONS                        6DI   1873
                           0                 ERRNZ  WLSF        CODE DEPENDS ON VALUE                       6DI   1874
 7533  5400 0611                           STM    WDSB                                                    6DI   1875
 7535  1403                                LDN    EI3         PRESET *7EI* PROCESSOR INDEX                6DI   1876
 7536  3402                                STD    T2                                                      6DI   1877
 7537  7567                                DCN    CH+40                                                   6DI   1878
 7540  5000 7500                           LDM    DEAI                                                    6DI24    2
 7542  1710                                SBK    AIIB                                                    6DI   1885
 7543  0723                                MJN    FTO4        IF NOT ISD DEVICE                           6DI   1886
 7544  1702                                SBK    AIIE-AIIB                                               6DI   1887
 7545  0621                                PJN    FTO4        IF NOT ISD DEVICE                           6DI   1888
 7546  3071                                LDD    HN          SET *MEMORY ERROR* FLAG                     6DI   1889
 7547  4501                                RAI    T1                                                      6DI   1890
```

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7550          5000 7503                LDM    DEGS        SET CONTROLLER TYPE                          6DI       1891
7552          2300 5017                LMC    5017                                                     6DI       1892
7554          0402                     ZJN    FTO3        IF ISD CONTROL MODULE MEMORY ERROR           6DI       1893
7555          1402                     LDN    1S1                                                      6DI       1894
7556          1106               FTO3  LMN    3S1                                                      6DI       1895
7557          4501                     RAI    T1                                                       6DI       1896
7560          0100 7765                LJM    FTO15       CALL *7EI*                                   6DI       1897
                                                                                                        6DI       1898
                                 *        ISSUE A SHORT AUTOLOAD TO RESTART THE CONTROLLER IN CASE IT   6DI       1899
                                 *        IS HUNG, AND WAIT UNTIL THE FUNCTION HAS COMPLETED.          6DI       1900
                                 *        DETERMINE WHETHER OR NOT THE ERROR COULD HAVE OCCURRED ON A  6DI       1901
                                 *        PREVIOUS SECTOR.                                             6DI       1902
                                                                                                        6DI       1903
7562          1601               FTO3.1 ADN    AIDR-AIDQ                                                NS2776      47
7563          0423                     ZJN    FTO6        IF 885 *DQ* DRIVE                            NS2776      48
7564          1603                     ADN    AIDQ-AIDM                                                NS2776      49
7565          0314                     UJN    FTO4.1      CHECK FOR 885 *DM* DRIVE                     NS2776      50
                                                                                                        NS2776      51
7566          7736 0414          FTO4  FNC    FCAL,CH     ISSUE SHORT AUTOLOAD FUNCTION                6DI       1904
7570          5000 7505                LDM    DERW                                                     6DI       1905
7572          0413                     ZJN    FTO5        IF READ SEQUENCE                             6DI       1906
7573          5400 1066                STM    DEWR        SET *DATA WRITTEN* FLAG                      6DI       1907
7575          5000 7500                LDM    DEAI                                                     6DI       1908
7577          1707                     SBK    AIDR                                                     NS2776      52
7600          0761                     MJN    FTO3.1      IF POSSIBLE 885 *DQ* OR *DM* DRIVE           NS2776      53
7601          0405               FTO4.1 ZJN    FTO6        IF CDSS II *DR* OR 885 *DM* DRIVE            NS2776      54
7602          5000 0706                LDM    LDAA                                                     6DI       1913
7604          1277                     LPN    77          EXTRACT INTERLACE                            6DI       1914
7605          1101               FTO5  LMN    FCS1                                                     6DI       1915
                               1          ERRZR  FCS1        CODE DEPENDS ON VALUE                        6DI       1916
7606          3407               FTO6  STD    T7                                                       6DI       1917
7607          3072                     LDD    TH          SET 5 SECOND TIMEOUT                         6DI25        2
7610          3405                     STD    T5                                                       6DI       1919
7611          1405               FTO7  DELAY  10D*8D      DELAY FOR 10 MS                              6DI25        3
7622          3705                     SOD    T5                                                       6DI25        4
7623          0732                     MJN    RCM1        IF AUTOLOAD TIMEOUT                          6DI       1921
7624          6402 7611                AJM    FTO7,CH     IF AUTOLOAD NOT PROCESSED                    6DI       1924
                                                                                                        6DI25A       1
                                 *        ACTIVATE THE CHANNEL FOR 25 - 750 MICROSECONDS.              6DI25A       2
                                                                                                        6DI25A       3
                                 *        LDC    **          0 .LE. (A) .LT. 1000B                        6DI25A       4
7626          7403                     ACN    CH                                                       6DI       1925
7627          3277                     SBD    MA          1022B .LE. (MA) .LE. 7632B                   6DI25A       5
7630          0776                     MJN    *-1         IF DELAY INCOMPLETE                          6DI25A       6
7631          7562                     DCN    CH+40                                                    6DI       1928
                                                                                                        6DI       1929
                                 *        DETERMINE IF RAM PARITY ERROR OCCURRED.  THE METHOD FOR      6DI       1930
                                 *        DOING THIS IS TO ISSUE A MANIPULATE PROCESSOR FUNCTION       6DI       1931
                                 *        AND SEE IF IT TIMES OUT.  IF IT DOESN-T, THE CONTROLLER      6DI       1932
                                 *        TYPE IS ESTABLISHED AS A 7155, OTHER MODELS WILL NOT ACCEPT  6DI       1933
                                 *        THE FUNCTION.  THE INPUT DISPLAY DATA FUNCTION IS USED       6DI       1934
                                 *        TO REFERENCE EACH RAM ADDRESS IN THE CONTROLLER AND WILL     6DI       1935
                                 *        NOT HALT IF A PARITY ERROR IS DETECTED, RATHER A BIT WILL    6DI       1936
                                 *        BE SET IN THE CONTROLLER-S PROCESSOR STATUS THAT INDICATES   6DI       1937
                                 *        THE ERROR.  THIS BIT WILL BE INTERROGATED BY THE PP.         6DI       1938
                                                                                                        6DI       1939
7632          1466                     LDN    ZERL                                                     6DI       1940
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7633  6010                    CRD   CM                                                  6DI  1941
7634  2000 7746               LDC   FTO13     SET ERROR EXIT FOR FUNCTION TIMEOUT     6DI  1942
7636  5400 0744               STM   ERRA                                                6DI  1943
7640  2000 0400               LDC   8192DS-5  SET LOOP COUNT FOR 16384 BYTE DUMP       6DI  1944
7642  3405                    STD   T5                                                  6DI  1945
                                                                                        6DI  1946
                    7510  BUF   EQU   OFFW      SCRATCH BUFFER                        6DI  1947
                     -34        ERRPL BUF+77-*   BUFFER OVERLAYS CODE                  6DI  1948
```

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                          **    RCM - READ CONTROLLER MEMORY.                         6DI  1950
                          *                                                           6DI  1951
                          *     ENTRY  (CM+1 - CM+2) = ADDRESS IN CONTROLLER MEMORY.  6DI  1952
                          *                                                           6DI  1953
                          *     EXIT   (CM) = 2.                                      6DI  1954
                          *            *FCID* FUNCTION ISSUED TO CONTROLLER.          6DI  1955
                          *            (ERRA) = *FTO16*.                              6DI  1956
                          *                                                           6DI  1957
                          *     CALLS  FNC.                                           6DI  1958
                                                                                      6DI  1959
                                                                                      6DI  1960
7643  0100 7667           RCMX  LJM   FTO8      ENTRY/EXIT                           6DI  1961
                    7644  RCM   EQU   *-1                                           6DI  1962
7645  1402                      LDN   2         SET READ MODE                       6DI  1963
7646  3410                      STD   CM                                            6DI  1964
7647  1462                      LDN   FCMP      ISSUE *MANIPULATE PROCESSOR* FUNCTION 6DI 1965
7650  0200 0725                 RJM   FNC                                           6DI  1966
7652  1405                      LDN   5         OUTPUT PARAMETERS                   6DI  1967
7653  7303 0010                 OAM   CM,CH                                        6DI  1968
7655  0517                RCM1  NJN   FTO9      IF INCOMPLETE TRANSFER              6DI  1969
7656  7554                      DCN   CH+40                                         6DI  1970
7657  2000 7766                 LDC   FTO16     SET ERROR EXIT FOR FUNCTION TIMEOUT 6DI  1971
7661  5400 0744                 STM   ERRA                                          6DI  1972
7663  1463                      LDN   FCID      ISSUE *INPUT DISPLAY DATA* FUNCTION 6DI  1973
7664  0200 0725                 RJM   FNC                                           6DI  1974
7666  0354                      UJN   RCMX      RETURN                              6DI  1975
                                                                                    6DI  1976
                          *     READ OUT CONTROLLER MEMORY.                         6DI  1977
                                                                                    6DI  1978
7667  0200 7644           FTO8  RJM   RCM                                           6DI  1979
7671  3071                      LDD   HN        INPUT 64 BYTES                      6DI  1980
7672  7117 7510                 IAM   BUF,CH                                       6DI  1981
7674  0517                FTO9  NJN   FTO11     IF INCOMPLETE TRANSFER              6DI  1982
7675  1440                      LDN   40                                            6DI  1983
7676  3512                      RAD   CM+2      ADVANCE CONTROLLER ADDRESS          6DI  1984
7677  1011                      SHN   21-10                                         6DI  1985
7700  0603                      PJN   FTO10     IF NOT 8 BIT OVERFLOW               6DI  1986
7701  3412                      STD   CM+2                                          6DI  1987
7702  3611                      AOD   CM+1      ADJUST CONTROLLER ADDRESS           6DI  1988
7703  3705                FTO10 SOD   T5                                            6DI  1989
7704  0562                      NJN   FTO8      IF MORE TO READ                     6DI  1990
                                                                                    6DI  1991
                          *     OBTAIN PROCESSOR STATUS.                            6DI  1992
                                                                                    6DI  1993
7705  1452                      LDN   FCST      ISSUE *INPUT PROCESSOR STATUS* FUNCTION 6DI 1994
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7706  0200 0725          RJM   FNC                                          6DI   1995
7710  1440               LDN   40        INPUT STATUS                       6DI   1996
7711  7132 7510          IAM   BUF,CH                                       6DI   1997
7713  0532         FTO11 NJN   FTO12     IF INCOMPLETE TRANSFER             6DI   1998
7714  5000 7533          LDM   BUF+23                                       6DI   1999
7716  1220               LPN   20                                           6DI   2000
7717  1074               SHN   1-4       SET 7155 CONTROLLER TYPE, MODEL A OR/B/C  6DI  2001
7720  4501               RAI   T1                                           6DI   2002
7721  5000 7510          LDM   BUF       SET *RAM PARITY ERROR* FLAG        6DI   2003
7723  1220               LPN   20                                           6DI   2004
7724  1002               SHN   6-4                                          6DI   2005
7725  4501               RAI   T1                                           6DI   2006
7726  3077               LDD   MA                                           6DI   2007
7727  6010               CRD   CM                                           6DI   2008
7730  3014               LDD   CM+4      CHECK LAST CALL TO *FNC*           6DI   2009
7731  2300 0615          LMC   WDS4+2                                       6DI   2010
7733  0532               NJN   FTO15     IF NOT WRITE FUNCTION TIMEOUT      6DI   2011
7734  3411               STD   CM+1                                         6DI   2012
7735  2000 0321          LDC   321                                          6DI   2013
7737  3412               STD   CM+2      READ CONTROLLER MEMORY             6DI   2014
7740  0200 7644          RJM   RCM                                          6DI   2015
7742  1402               LDN   2         INPUT *WRITE BUFFER TO DISK* FLAG  6DI   2016
7743  7123 0006          IAM   T6,CH                                        6DI   2017
7745  0521         FTO12 NJN   FTO16     IF INCOMPLETE TRANSFER             6DI   2018
7746  3007         FTO13 LDD   T7                                           6DI   2019
7747  0516               NJN   FTO15     IF NOT ERROR AFFECTING PREVIOUS SECTOR  6DI  2020
7750  1401               LDN   1         FORCE ERROR NON-RECOVERABLE        6DI   2021
7751  5400 1070          STM   DENR                                         6DI   2022
7753  4001               LDI   T1                                           6DI   2023
7754  1020               SHN   21-1                                         6DI   2024
7755  0603               PJN   FTO14     IF NOT B/C MODEL 7155 CONTROLLER   6DI   2025
7756  3702               SOD   T2                                           6DI   2026
                   0      ERRNZ EI1+1-EI2 CODE DEPENDS ON VALUES           6DI   2027
7757  0306               UJN   FTO15     ADJUST *7EI* PROCESSOR INDEX       6DI   2028
                                                                           6DI   2029
7760  1220         FTO14 LPN   20                                           251L664  4
7761  0504               NJN   FTO15     IF RAM PARITY ERROR                251L664  5
7762  1403               LDK   FTRT-1    FORCE UNRECOVERED                  251L664  6
7763  5400 1067          STM   DERC                                         251L664  7
7765  3702         FTO15 SOD   T2                                           6DI   2035
                   0      ERRNZ EI2+1-EI3 CODE DEPENDS ON VALUES           6DI   2036
7766  7540         FTO16 DCN   CH+40                                        6DI   2037
7767  3077               LDD   MA        RESTORE DRIVER PARAMETERS          6DI24    3
7770  6004               CRD   T4                                           6DI   2039
7771  2000 0130          MSERR 7EI       CALL *7EI*                         6DI   2040
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                                HERE    TERMINATE LINKED CHANNEL INSTRUCTIONS      6DI       2042

                          3     ERRNG   10000-*     OVERFLOW                       6DI       2044
 7775                     3     BSS     10000-*     SPARES                         6DI       2045
10000         7516              CON     DFI-1       (T0) = ENTRY ADDRESS - 1       6DI       2046
10001         7506              CON     DEST        (T1) = DEST                    6DI       2047
10002         7537              CON     CH01$       (T2) = FIRST CHANNEL INSTRUCTION ADDRESS  6DI  2048
                          0     ERRNZ   LN-*        INCORRECT *7FI* OVERLAY LENGTH 6DI       2049
                                QUAL    *                                          6DI       2050
```

```
                    7GI     MSOVL  7613,T2,DSFA+4,(CHANNEL/CONTROLLER ERROR PROCESSOR.)   NS2632      1

          52                ERRNG  *-OFFW     *7GI* WILL LOAD ON TOP OF PARAMETERS      MSOVL   .1
                            LIST   *                                                    MSOVL   .1


                    ***     PROCESS CHANNEL/CONTROLLER ERROR.                          6DI      2053
                    *       R. M. DANISCH     83/01/03.                                6DI      2054


                    *       THE CHANNEL/CONTROLLER ERROR PROCESSOR IS CALLED BY *7HI*.  NS2507      2
                    *       IF *7HI* WAS UNSUCCESSFUL IN ATTEMPTING THE CONTROLWARE     NS2507      3
                    *       RELOAD, *7GI* WILL ATTEMPT TO RELEASE DRIVES RESERVED TO THE NS2507     4
                    *       FAILING CONTROLLER SO THEY MAY BE ACCESSED THROUGH AN       NS2507      5
                    *       ALTERNATE CHANNEL.  IF THE CONTROLLER IS UNABLE TO RELEASE  NS2507      6
                    *       DRIVES, IT MAY BE NECESSARY TO REMOVE DRIVE RESERVATIONS    NS2507      7
                    *       MANUALLY IN ORDER TO GAIN ACCESS THROUGH AN ALTERNATE       NS2507      8
                    *       CHANNEL.                                                    NS2507      9


                    *       GENERATE LINKED LIST OF CHANNEL INSTRUCTIONS.               6DI      2064
                                                                                        6DI      2065
          1     FWDL$     EQU    1          SELECT FORWARD LINKING                    6DI      2066
7613                      RICHL                                                       6DI      2067


                    *       LIST OF PROCESSOR INDICES.                                  6DI      2069
                                                                                        6DI      2070
                                                                                        6DI      2071
                            QUAL                                                        6DI      2072
          0     DC1       EQU    0          *DCP1* INDEX                              6DI      2073
          1     DC6       EQU    1          *DCP6* INDEX                              6DI      2074
          2     DC9       EQU    2          *DCP9* INDEX                              6DI      2075
          3     DC11      EQU    3          *DCP11* INDEX                             6DI      2076
                            QUAL   *                                                    6DI      2077


                    **      DCP - PROCESS CHANNEL/CONTROLLER ERROR.                     6DI      2079
                    *                                                                   6DI      2080
                    *       ENTRY  (A) = 0.                                             6DI      2081
                    *              (T1) = RDCT.                                         6DI      2082
                    *              (T2) = CH01$.                                        6DI      2083
                    *              (T4) = CHANNEL NUMBER.                               6DI      2084
                    *              (T5) = EST ORDINAL.                                  6DI      2085
                    *                                                                   6DI      2086
                    *       USES   CM, T2.                                              NS2507     10
                    *                                                                   6DI      2088
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                                *       CALLS  FNC.                                                      6DI       2089
                                *                                                                        6DI       2090
                                *       MACROS ENDMS.                                                    NS2507      11

                                                                                                         6DI       2092
                                                                                                         6DI       2093
          7613          3502            DCP1  RAD    T2                                                6DI       2094
          7614          4002                  LDI    T2          MODIFY CHANNEL INSTRUCTIONS           6DI       2095
          7615          1237                  LPN    37                                                6DI       2096
          7616          3410                  STD    CM                                                6DI       2097
          7617          3004                  LDD    T4                                                6DI       2098
          7620          3210                  SBD    CM                                                6DI       2099
          7621          4502                  RAI    T2                                                6DI       2100
          7622          3010                  LDD    CM                                                6DI       2101
          7623          0567                  NJN    DCP1        IF MORE INSTRUCTIONS                  6DI       2102
          7624          5000 0111             LDM    CHRV        PREVENT OPERATION COMPLETE            6DI27        1
          7626          1310                  SCN    10                                                6DI27        2
          7627          5400 0111             STM    CHRV                                              6DI27        3
          7631          5000 7506             LDM    DEST                                              6DI17        2
          7633          1240                  LPN    40                                                6DI17        3
          7634          0403                  ZJN    DCP2        IF NOT AN ISD DEVICE                  6DI17        4
          7635          0100 7702             LJM    DCP6        AVOID DROP SEEKS AND CONTROLLER HANG  6DI17        5
                                                                                                         6DI17        6
          7637          5600 7714       DCP2  AOM    DCPA        SET TIME-OUT FLAG                     6DI17        7
          7641          5000 0106             LDM    UERR                                              6DI       2106
                              0                 ERRNZ  EPDE-400-EPSM  CODE ASSUMES VALUES              6DI       2107
          7643          1011                  SHN    21-10                                             6DI       2108
          7644          0717                  MJN    DCP4        IF *ENDMS* IS DISABLED                6DI       2109
          7645          2000 7662             LDC    DCP3        SET ERROR EXIT ADDRESS                6DI       2110
          7647          5400 0744             STM    ERRA                                              6DI       2111
                                                                                                         6DI       2112
                                *       RELEASE ALL UNITS RESERVED TO CONTROLLER.                        6DI       2113
                                                                                                         6DI       2114
          7651          1415                  LDN    FCDK        RELEASE ALL BUT LAST DRIVE ACCESSED   6DI       2115
          7652          0200 0725             RJM    FNC                                               6DI       2116
          7654          7546                  DCN    CH+40                                             6DI       2117
          7655          1420                  LDN    FCDR        RELEASE LAST DRIVE ACCESSED           6DI       2118
          7656          0200 0725             RJM    FNC                                               6DI       2119
          7660          5700 7714             SOM    DCPA        CLEAR TIME-OUT FLAG                   6DI       2120
          7662          7551            DCP3  DCN    CH+40                                             6DI       2121
                                                                                                         6DI       2122
                                *       SINCE IT IS KNOWN THE CONTROLLER CONTAINS A RAM PARITY           6DI       2123
                                *       ERROR, IT IS DESIRABLE TO LEAVE THE CONTROLLER IN SUCH A         6DI       2124
                                *       STATE THAT THE NEXT PP TO ACCESS IT DISCOVERS THE ERROR          6DI       2125
                                *       ALSO.  THE METHOD USED TO ACCOMPLISH THIS IS TO ISSUE A          6DI       2126
                                *       PROCESSOR MANIPULATION FUNCTION TO CAUSE THE CONTROLLER TO       6DI       2127
                                *       HANG ON A ZERO INSTRUCTION.                                      6DI       2128
                                                                                                         6DI       2129
          7663          2000 7675       DCP4  LDC    DCP5        SET ERROR EXIT ADDRESS                6DI       2130
          7665          5400 0744             STM    ERRA                                              6DI       2131
          7667          1462                  LDN    FCMP        HANG CONTROLLER                       6DI       2132
          7670          0200 0725             RJM    FNC                                               6DI       2133
          7672          1405                  LDN    5                                                 6DI       2134
          7673          7306 7752             OAM    DCPB,CH                                           6DI       2135
          7675          2000 0414       DCP5  LDC    LEP1        RESET ERROR EXIT ADDRESS              6DI       2136
          7677          5400 0744             STM    ERRA                                              6DI       2137
          7701          7540                  DCN    CH+40                                             6DI       2138
          7702          5000 0106       DCP6  LDM    UERR                                              NS2507      12
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                                0               ERRNZ  EPDE-400-EPSM  CODE ASSUMES VALUES                                6DI       2154
          7704          1011                    SHN    21-10                                                             6DI       2155
          7705          0710                    MJN    DCP8          IF *ENDMS* DISABLED                                 6DI       2156
          7706          0200 0535               ENDMS                                                                    6DI       2157
          7710          5000 0111               LDM    CHRV                                                              6DI21        2
          7712          1015                    SHN    21-4                                                              6DI21        3
          7713          0725                    MJN    DCP11         IF CALLER SELECTED CHANNEL                          6DI21        4
          7714          1400             DCPA   LDN    0                                                                 6DI       2160
                                         *      LDN    1             (*FCDK*/*FCDR* TIMED OUT)                           6DI       2161
          7715          0523              DCP8  NJN    DCP11         IF DRIVES NOT RELEASED                              6DI       2162
          7716          3410              DCP9  STD    CM                                                                NS2507      13
          7717          4001                    LDI    T1                                                                6DI       2164
          7720          2200 0500               LPC    500                                                               253L688      5
          7722          4401                    STI    T1                                                                6DI       2166
          7723          5700 7523               SOM    HEDR+6                                                            6DI       2168
          7725          5000 7506               LDM    DEST                                                              6DI22        1
          7727          2277 4777               LPC    -3000                                                             6DI22        2
          7731          5400 7506               STM    DEST                                                              6DI22        3
          7733          3074                    LDD    CP            CLEAR CONTROL POINT MESSAGE                         6DI       2171
          7734          1636                    ADN    MS2W                                                              6DI       2172
          7735          6210                    CWD    CM                                                                6DI       2173
          7736          0100 0643               LJM    LDA1          RETRY I/O                                           6DI       2174
                                                                                                                         6DI       2175
          7740          5000 7506         DCP11 LDM    DEST          SET UNRECOVERED FLAG                                NS2632       2
          7742          2277 5777               LPC    -2000                                                             NS2632       3
          7744          2300 2000               LMC    2000                                                              NS2632       4
          7746          5400 7506               STM    DEST                                                              NS2632       5
          7750          0100 0413               LJM    LEP           EXECUTE *7EQ*                                       NS2632       6
                                                                                                                         6DI       2184
          7752          0004 0000         DCPB  CON    4,0,27,0,0                                                        6DI       2185
          7754          0027 0000
          7756          0000

                                         **     PCE - PROCESS CHANNEL/CONTROLLER ERROR.                                  6DI       2187
                                         *                                                                               6DI       2188
                                         *      ENTRY  (T3) = PROCESSOR INDEX.                                           6DI       2189
                                         *                  = 0 FOR *DCP1*.                                              6DI       2190
                                         *                  = 1 FOR *DCP6*.                                              6DI       2191
                                         *                  = 2 FOR *DCP9*.                                              6DI       2192
                                         *                  = 3 FOR *DCP11*.                                             6DI       2193
                                         *                (MB+2) = ORIGINAL CELLS (T3 - T7).                             6DI       2194
                                         *                (MB+3 - MB+5) = LAST THREE WORDS OF DETAILED STATUS.           6DI       2195
                                         *                                                                               6DI       2196
                                         *      EXIT   (A) = 0.                                                          6DI       2197
                                         *                (T3 - T7) = RESTORED FROM (MB+2).                              6DI       2198
                                         *                (MB+3 - MB+5) = UNCHANGED.                                     6DI       2199
                                         *                                                                               6DI       2200
                                         *      USES   CM.                                                               6DI       2201
                                         *                                                                               6DI       2202
                                         *      NOTE   IF THE TAGS IN *7GI* ARE RENAMED OR RENUMBERED,                   6DI       2203
                                         *             THE TABLE INDEX MNEMONICS DEFINED ABOVE SHOULD ALSO               6DI       2204
                                         *             BE UPDATED TO REFLECT THOSE CHANGES (FOR CLARITY).                6DI       2205
                                                                                                                         6DI       2206
                                                                                                                         6DI       2207
```

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                7757                            DGI     ENTRY           *7GI* ENTRY                                     6DI     2208
                                                                                                                        6DI     2209
                7761                            PCE     BSS     0                                                       6DI     2210
                7761            5003 7772               LDM     TPCE,T3 SET PROCESSOR ADDRESS                           6DI     2211
                7763            3410                    STD     CM                                                      6DI     2212
                7764            3077                    LDD     MA      RESTORE DIRECT CELLS                            6DI     2213
                7765            1602                    ADN     2                                                       6DI     2214
                7766            6003                    CRD     T3                                                      6DI     2215
                7767            1400                    LDN     0                                                       6DI     2216
                7770            0110 0000               LJM     0,CM    EXIT TO PROCESSOR                               6DI     2217
                                                                                                                        6DI     2218
                                                                                                                        6DI     2219
                7772                            TPCE    BSS     0       PROCESSOR ADDRESSES                             6DI     2220
          L     0                                       LOC     0                                                       6DI     2221
          L     0               7613            DC1     CON     DCP1                                                    6DI     2222
          L     1               7702            DC6     CON     DCP6                                                    6DI     2223
          L     2               7716            DC9     CON     DCP9                                                    6DI     2224
          L     3               7740            DC11    CON     DCP11                                                   6DI     2225
                7776                                    LOC     *O                                                      6DI     2226


                                                        HERE            TERMINATE LINKED CHANNEL INSTRUCTIONS           6DI     2228


                                        2               ERRNG   10000-*  OVERFLOW                                        6DI     2230
                7776                    2               BSS     10000-*  SPARES                                         6DI     2231
               10000            7756                    CON     DGI-1   (T0) = ENTRY ADDRESS - 1                       6DI     2232
               10001            0103                    CON     RDCT    (T1) = RDCT                                     6DI     2233
               10002            7654                    CON     CH01$   (T2) = CH01$                                    6DI     2234
                                        0               ERRNZ   LN-*    INCORRECT *7GI* OVERLAY LENGTH                   6DI     2235
                                                        QUAL    *                                                       6DI     2236
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                    7HI     MSOVL  7574,T2,DSFA+4,(CONTROLWARE RELOAD PROCESSOR.)          252L678    32

              33            ERRNG  *-OFFW     *7HI* WILL LOAD ON TOP OF PARAMETERS       MSOVL   .1
                            LIST   *                                                     MSOVL   .1
                    ***     PROCESS CONTROLWARE RELOAD.                                  6DI       2239
                    *       P. D. HAAS.       83/04/29.                                  6DI       2240
                    *             *7HI* IS CALLED BY *7JI* TO RELOAD CHANNEL OR CONTROL  6DI       2242
                    *       MODULE CONTROLWARE.  *7HI* SETS THE RELOAD FLAG FOR THE      6DI       2243
                    *       CHANNEL OR CONTROL MODULE AND THEN CALLS *1DS* TO START A    6DI       2244
                    *       *LOADBC* JOB WHICH RELOADS THE CONTROLWARE.  *7HI* WILL WAIT 6DI       2245
                    *       UP TO *CRTO* SECONDS FOR THE RELOAD TO COMPLETE BEFORE GIVING 6DI       2246
                    *       UP.                                                          6DI       2247
                    **      COMMON DECKS.                                                6DI       2249
                                                                                         6DI       2250
                                                                                         6DI       2251
          7574              CTEXT  COMS1DS - 1DS FUNCTION CODE DEFINITIONS.              COMS1DS      1
                    **      RCW - RELOAD CONTROLWARE PROCESSOR.                          6DI       2254
                    *                                                                    6DI       2255
                    *       ENTRY  (T1) = DEST.                                          6DI       2256
                    *              (T2) = RELOAD TIMEOUT VALUE.                          6DI       2257
                    *              (T3) = ADDRESS + *CM* OF BYTE CONTAINING              6DI       2258
                    *                     RELOAD FLAGS.                                  6DI       2259
                    *              (T4) = CONTROL MODULE ACCESS INDICATOR.  FOR C/M      6DI       2260
                    *                     RELOADS, 1 INDICATES PRIMARY CHANNEL SHOULD    6DI       2261
                    *                     BE USED FOR RELOAD.  0 INDICATES SECONDARY     6DI       2262
                    *                     CHANNEL SHOULD BE USED.  THIS CELL IS          6DI       2263
                    *                     UNUSED FOR NON-C/M RELOADS.                    6DI       2264
                    *              (T5) = SYSTEM CP *MS2W* ADDRESS.                      6DI       2265
                    *              (T6 - T7) = ADDRESS OF RELOAD INTERLOCK WORD.         6DI       2266
                    *              (DEST) = ERROR PROCESSING CONTROL WORD.               6DI       2267
                    *              (MB+2) = ORIGINAL CELLS (T3 - T7)                     6DI       2268
                    *              (MB+3 - MB+5) = LAST THREE WORDS OF DETAILED STATUS.  6DI       2269
                    *                                                                    6DI       2270
                    *       EXIT   TO *7GI*.                                             6DI       2271
                    *              (T3) = *7GI* PROCESSOR INDEX.                         6DI       2272
                    *              (MB+2) = UNCHANGED.                                   6DI       2277
                    *              (MB+3 - MB+5) = UNCHANGED.                            6DI       2278
                    *                                                                    6DI       2279
                    *       USES   CM - CM+4, T0 - T7.                                   6DI       2280
                    *                                                                    6DI       2281
                    *       CALLS  FTN, SCT.                                             6DI       2282
```

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                                *                                                                  6DI   2283
                                *       MACROS DELAY, MONITOR, MSERR, PAUSE.                       6DI   2284
                                *                                                                  6DI   2285
                                                                                                   6DI   2286
7574                             DHI    ENTRY           *7HI* ENTRY                                6DI   2287
                                                                                                   6DI   2288
7576    4001                     RCW    LDI    T1                                                  6DI   2289
7577    1076                            SHN    0-1                                                 6DI   2290
7600    1203                            LPN    3                                                   6DI   2291
7601    1103                            LMN    3                                                   6DI   2292
7602    0511                            NJN    RCW0        IF NOT CONTROL MODULE RELOAD            6DI   2293
7603    3004                            LDD    T4          STORE C/M ACCESS INDICATOR              6DI   2294
7604    5500 7775                       RAM    SCTC+4      SET PRIMARY OR SECONDARY CHANNEL        6DI   2295
7606    5700 7661                       SOM    RCWD        AVOID DOWNING CHANNEL IF RELOAD FAILS   6DI   2297
                        0               ERRNZ  RCW8-RCW7-1  CODE ASSUMES *RCW8* = RCW7* + 1        6DI   2298
7610    5600 7734                       AOM    RCWC+4      INDICATE CONTROL MODULE RELOAD TO *1DS* 6DI   2299
7612    0313                            UJN    RCW0.1      BEGIN RELOAD                            6DI   2300
                                                                                                   6DI   2301
7613    5003 7747                RCW0   LDM    SCTA-CM,T3  DEFINE LOCATION OF LOAD FLAGS           6DI   2302
7615    5400 7772                       STM    SCTC+1                                              6DI   2303
7617    5400 7765                       STM    SCTB+1                                              6DI   2304
7621    5700 7771                       SOM    SCTC        SET CORRECT FIELD WIDTH FOR NON-C/M LOAD 6DI   2305
7623    5400 7775                       STM    SCTC+4      SET CORRECT FIELD VALUE                 6DI   2306
                                                                                                   6DI   2307
                                *       SET THE CONTROLWARE RELOAD FLAG FOR THE APPROPRIATE CHANNEL 6DI   2308
                                *       OR CONTROL MODULE.                                         6DI   2309
                                                                                                   6DI   2310
7625    1402                     RCW0.1 LDN    2           SET *UTEM* PARAMETER COUNT FOR *SCT*    6DI   2311
7626    3404                            STD    T4                                                  6DI   2312
7627    0200 7736                       RJM    SCT                                                 6DI   2313
7631    0522                            NJN    RCW3        IF RELOAD ALREADY REQUESTED OR IN PROGRESS 6DI 2314
                                                                                                   6DI   2315
                                *       INITIATE A CONTROLWARE RELOAD *1DS* CALL.  *1DS* WILL START A 6DI 2316
                                *       *LOADBC* JOB TO RELOAD THE CONTROLWARE.                    6DI   2317
                                                                                                   6DI   2318
7632    0200 0165                RCW1   RJM    FTN                                                 6DI   2319
                                *       PAUSE  NE          PAUSE FOR MOVE                          6DI   2320
7634    3077                            LDD    MA                                                  6DI   2321
7635    6370 7730                       CWM    RCWC,ON     STORE *1DS* CALL                        6DI   2322
7637    2000 0100                       MONITOR  RPPM                                              6DI   2323
7643    3011                            LDD    CM+1                                                6DI   2324
7644    0465                            ZJN    RCW1        IF PP NOT ASSIGNED                      6DI   2325
                                                                                                   6DI   2326
                                *       WAIT *CRTO* SECONDS FOR THE RELOAD TO COMPLETE.            6DI   2327
                                                                                                   6DI   2328
7645    1400                            LDN    0                                                   6DI   2329
7646    1201                     RCW2   LPN    1                                                   6DI   2330
7647    0404                     RCWA   ZJN    RCW3        IF RELOAD NOT INITIATED                 6DI   2331
7650    5400 7647                       STM    RCWA                                                6DI   2332
7652    0403                            ZJN    RCW4        IF RELOAD ABORTED                       6DI   2333
7653    3702                     RCW3   SOD    T2                                                  6DI   2334
7654    0506                            NJN    RCW5        IF NOT RELOAD TIMEOUT                   6DI   2335
7655    0200 7736                RCW4   RJM    SCT         CLEAR LOAD REQUESTED FLAG               6DI   2336
7657    0503                            NJN    RCW5        IF RELOAD REQUEST NOT CLEARED           6DI   2337
7660    0100 7717                       LJM    RCW8        CONTINUE                                6DI   2338
                         7661    RCWD   EQU    *-1                                                 6DI   2339
                                                                                                   6DI   2340
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7662  1431          RCW5   DELAY  100D*8D   100 MILLISECOND DELAY LOOP          6DI  2341
7673  0200 0165            RJM    FTN                                          6DI  2342
                     *      PAUSE  NE                                           6DI  2343
7675  3006                 LDD    T6        CHECK RELOAD FLAGS                 6DI  2344
7676  1014                 SHN    14                                           6DI  2345
7677  3307                 LMD    T7                                           6DI  2346
7700  6010                 CRD    CM                                           6DI  2347
7701  4003                 LDI    T3                                           6DI  2348
7702  1065                 SHN    0-12                                         6DI  2349
7703  0542                 NJN    RCW2      IF RELOAD NOT COMPLETE             6DI  2350
7704  4001                 LDI    T1                                           6DI  2361
7705  1076                 SHN    0-1                                          6DI  2362
7706  1207                 LPN    7                                            6DI  2363
7707  1101                 LMN    1                                            6DI  2364
7710  0405                 ZJN    RCW6      IF 7155 B OR C AND READBACK WORKED 6DI  2365
7711  5000 1070            LDM    DENR                                         6DI  2366
7713  1101                 LMN    1                                            6DI  2367
7714  0402                 ZJN    RCW7      IF UNRECOVERABLE WITH CONTROLWARE RELOAD 6DI  2368
7715  1401          RCW6   LDN    DC9&DC11                                     6DI  2369
7716  1103          RCW7   LMN    DC11                                         6DI  2370
                  0         ERRNZ  DC1       CODE DEPENDS ON VALUE              6DI  2371
7717  3403          RCW8   STD    T3                                           6DI  2372
7720  1400                 LDN    0                                            6DI  2373
7721  3410                 STD    CM                                           6DI  2374
7722  3005                 LDD    T5        CLEAR SYSTEM CP MESSAGE            6DI  2375
7723  6210                 CWD    CM                                           6DI  2376
7724  2000 0330            MSERR  7GI       EXECUTE *7GI*                      6DI  2377
                                                                               6DI  2378
                                                                               6DI  2379
7730  3404          RCWC   VFD    18/0L1DS,6/0,6/0,6/ILJF,24/0                 6DI  2380
7731  2300
7732  0023
7733  0000
7734  0000
```

```
                     **     SCT - SET (CLEAR) CONTROLWARE LOAD REQUEST FLAG.    6DI  2382
                     *                                                          6DI  2383
                     *      ENTRY  (T4) = 2.                                    6DI  2384
                     *             (T6 - T7) = ADDRESS OF WORD CONTAINING CONTROLWARE 6DI  2385
                     *                         LOAD FLAGS.                      6DI  2386
                     *                                                          6DI  2387
                     *      EXIT   (A) = RESPONSE FROM *UTEM* REQUEST.          6DI  2388
                     *                                                          6DI  2389
                     *      USES   CM - CM+4.                                   6DI  2390
                     *                                                          6DI  2391
                     *      MACROS MONITOR.                                     6DI  2392
                                                                               6DI  2393
                                                                               6DI  2394
7735  0100 7735      SCT    SUBR             ENTRY/EXIT                         6DI  2395
7737  3077                 LDD    MA         SETUP OUTPUT REGISTER              6DI  2396
7740  6203                 CWD    T7-4                                          6DI  2397
7741  6010                 CRD    CM                                            6DI  2398
7742  6311 7764            CWM    SCTB,CM+1  STORE *UTEM* PARAMETERS            6DI  2399
7744  2000 0115            MONITOR  UTEM                                       6DI  2400
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                                    *       LDN     0           RESET PARAMETERS FOR ERROR PROCESSING      6DI     2401
          7750      5400 7775               STM     SCTC+4                                                 6DI     2402
          7752      1402                    LDN     2                                                      6DI     2403
          7753      5400 7770               STM     SCTB+4                                                 6DI     2404
          7755      3011                    LDD     CM+1                                                   6DI     2405
          7756      0356                    UJN     SCTX        RETURN                                     6DI     2406
                                                                                                           6DI     2407
                                                                                                           6DI     2408
          7757                      SCTA    BSS     0           TABLE OF RELOAD FLAG BIT POSITIONS         6DI     2409
          7757      7200                    CON     58DS6                                                  6DI     2410
          7760      5600                    CON     46DS6                                                  6DI     2411
          7761      4200                    CON     34DS6                                                  6DI     2412
          7762      2600                    CON     22DS6                                                  6DI     2413
          7763      1200                    CON     10DS6                                                  6DI     2414
                                                                                                           6DI     2415
          7764      4002              SCTB  VFD     1/1,5/0,6/2,6/34D,42/0                                 6DI     2416
          7765      4200
          7766      0000
          7767      0000
          7770      0000
                                    *       VFD     1/1,5/0,6/2,6/34D,42/2                                 6DI     2417
          7771      0003              SCTC  VFD     1/0,5/0,6/3,6/33D,42/4                                 6DI     2418
          7772      4100
          7773      0000
          7774      0000
          7775      0004
                                    *       VFD     1/0,5/0,6/3,6/33D,42/0                                 6DI     2419
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```
                                2           ERRNG   10000-*     OVERFLOW                                   6DI     2421
           7776                 2           BSS     10000-*     SPARES                                     6DI     2422
         10000      7573                    CON     DHI-1       (T0) = ENTRY ADDRESS - 1                   6DI     2423
         10001      7506                    CON     DEST        (T1) = DEST                                6DI     2424
         10002      0121                    CON     CRTO*10D+1  (T2) = RELOAD TIMEOUT VALUE                6DI     2425
                                0           ERRNZ   LN-*        INCORRECT *7HI* OVERLAY LENGTH             6DI     2426
                                            QUAL    *                                                      6DI     2427
```

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                    7II     MSOVL  7613,T2,DSFA+4,(INITIATE CONTROLWARE RELOAD.)          252L678    33

                52          ERRNG  *-OFFW     *7II* WILL LOAD ON TOP OF PARAMETERS      MSOVL   .1
                            LIST   *                                                    MSOVL   .1


                    ***     INITIATE CONTROLWARE RELOAD.                                6DI       2430
                    *       P. D. HAAS.       83/04/29.                                 6DI       2431
                    *       R. M. DANISCH.    83/10/17.                                 6DI       2432



                    ***           *7II* IS CALLED BY *7EP* TO DETERMINE WHETHER OR NOT  6DI       2434
                    *       A CONTROLWARE RELOAD IS POSSIBLE.  IF SO, *7JI* IS CALLED TO  6DI       2435
                    *       BEGIN THE RELOAD PROCESS.  IF NOT, *7GI* IS CALLED TO TRY AND 6DI       2436
                    *       DOWN THE CHANNEL ON WHICH THE ERROR OCCURRED.               6DI       2437



                    **      ICR - INITIATE CONTROLWARE RELOAD.                          6DI       2439
                    *                                                                   6DI       2440
                    *       ENTRY  (T1) = DEST.                                         6DI       2441
                    *              (T2) = DEEC.                                         6DI       2442
                    *              (T4) = CHANNEL NUMBER.                               6DI       2443
                    *              (DEEC) = ERROR CODE.                                 6DI       2444
                    *              (DEST) = ERROR PROCESSING CONTROL WORD.              6DI       2445
                    *              (MB+3 - MB+5) = LAST THREE WORDS OF DETAILED STATUS. 6DI       2446
                    *                                                                   6DI       2447
                    *       EXIT   TO *7GI* IF NO CONTROLWARE RELOAD.                   6DI       2448
                    *              (T3) = *7GI* PROCESSOR INDEX.                        6DI       2449
                    *              (MB+2) = ORIGINAL CELLS (T3 - T7).                   6DI       2450
                    *              (MB+3 - MB+5) = UNCHANGED.                           6DI       2451
                    *                                                                   6DI       2452
                    *              TO *7JI* IF CONTROLWARE RELOAD.                      6DI       2453
                    *              (T3) = ADDRESS OF BYTE CONTAINING RELOAD FLAGS.      6DI       2454
                    *              (T4) = CONTROL MODULE ACCESS INDICATOR.  FOR C/M     6DI       2455
                    *                     RELOADS, 1 INDICATES PRIMARY CHANNEL SHOULD BE 6DI       2456
                    *                     USED FOR RELOAD.  0 INDICATES SECONDARY CHANNEL 6DI       2457
                    *                     SHOULD BE USED.  THIS CELL IS UNUSED FOR      6DI       2458
                    *                     NON-C/M RELOADS.                              6DI       2459
                    *              (T5) = CONTROL MODULE EST ORDINAL IF C/M RELOAD.     6DI       2460
                    *              (T6-T7) = ADDRESS OF RELOAD INTERLOCK WORD.          6DI       2461
                    *              (MB+2) = ORIGINAL CELLS (T3 - T7).                   6DI       2462
                    *              (MB+3 - MB+5) = UNCHANGED.                           6DI       2463
                    *                                                                   6DI       2464
                    *       USES   CM - CM+4, T0 - T7.                                  6DI       2465
                    *                                                                   6DI       2466
                    *       CALLS  FCM, FCT.                                            6DI       2467
                    *                                                                   6DI       2468
                    *       MACROS MSERR.                                               6DI       2469
                                                                                        6DI       2470
                                                                                        6DI       2471
          7613              DII     ENTRY             *7II* ENTRY                     6DI       2472



                                                                                                  1
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                                                                                                    6DI       2473
                                *       IF THE ERROR IS EITHER A CHANNEL PARITY ERROR OR A CONTROLLER 6DI       2474
                                *       STOP, PROCEED TO *7GI* TO TRY AND DOWN THE CHANNEL.         6DI       2475
                                                                                                    6DI       2476
 7615           3077             ICR    LDD     MA          SAVE DRIVER PARAMETERS                  6DI       2477
 7616           1602                    ADN     2                                                   6DI       2478
 7617           6203                    CWD     T3                                                  6DI       2479
 7620           4002                    LDI     T2                                                  6DI       2480
 7621           1703                    SBN     RAME                                                6DI       2481
 7622           0610                    PJN     ICR2        IF FUNCTION TIMEOUT / RAM PARITY        6DI       2482
 7623           1402                    LDN     DC6&DC11                                            6DI       2483
 7624           1103             ICR0   LMN     DC11                                                6DI       2484
                          0             ERRNZ   DC1         CODE DEPENDS ON VALUE                   6DI       2485
 7625           3403             ICR1   STD     T3                                                  6DI       2486
 7626           2000 0330               MSERR   7GI         EXECUTE *7GI*                           6DI       2487
                                                                                                    6DI       2488
                                                                                                    6DI       2489
                                *       FOR RAM PARITY ERRORS AND FUNCTION TIMEOUTS, CHECK IF THE   6DI       2490
                                *       CONTROLWARE RELOAD LIMIT HAS ALREADY BEEN REACHED.  IF NOT, 6DI       2491
                                *       CALL *7JI* TO BEGIN THE RELOAD.                             6DI       2492
                                                                                                    6DI       2493
 7632           4001             ICR2   LDI     T1                                                  6DI       2494
 7633           1076                    SHN     0-1                                                 6DI       2495
 7634           1203                    LPN     3                                                   6DI       2496
 7635           1103                    LMN     3                                                   6DI       2497
 7636           0407                    ZJN     ICR3        IF CONTROL MODULE RELOAD                6DI       2498
                          0             ERRNZ   ICR1-ICR0-1  CODE REQUIRES *ICR1* = *ICR0* + 1      6DI       2499
 7637           5600 7663               AOM     ICRB                                                6DI       2500
 7641           2000 7750               LDC     FCT         STORE ADDRESS OF NON-C/M PROCESSOR      6DI       2501
 7643           5400 7646               STM     ICRA                                                6DI       2502
 7645           0200 7670        ICR3   RJM     FCM         FIND CONTROL MODULE EST ENTRY           6DI       2503
                                 *      RJM     FCT         (NOT CONTROL MODULE RELOAD)             6DI       2504
                          7646   ICRA   EQU     *-1                                                 6DI       2505
 7647           3011                    LDD     CM+1                                                6DI       2506
 7650           3507                    RAD     T7          SET CONTROLWARE TABLE WORD ADDRESS      6DI       2507
 7651           1063                    SHN     -14                                                 6DI       2508
 7652           3110                    ADD     CM                                                  6DI       2509
 7653           3406                    STD     T6                                                  6DI       2510
 7654           1014                    SHN     14          READ RELOAD FLAGS WORD                  6DI       2511
 7655           3307                    LMD     T7                                                  6DI       2512
 7656           6010                    CRD     CM                                                  6DI       2513
 7657           4003                    LDI     T3                                                  6DI       2514
 7660           1071                    SHN     -6                                                  6DI       2515
 7661           1207                    LPN     7                                                   6DI       2516
 7662           1107                    LMN     CRTH                                                6DI       2517
 7663           0440                    ZJN     ICR0        IF RELOAD THRESHOLD REACHED             6DI       2518
                                 *      ZJN     ICR1        (NOT CONTROL MODULE ERROR)              6DI       2519
                          7663   ICRB   EQU     *-1                                                 6DI       2520
 7664           2000 1630               MSERR   7JI         EXECUTE *7JI*                           6DI       2521
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                                **      FCM - FIND CONTROL MODULE EST ENTRY.                                    6DI       2523
                                *                                                                               6DI       2524
                                *       ENTRY  (T4) = CHANNEL NUMBER.                                           6DI       2525
                                *              (HEDR+3) = ISD UNIT NUMBER.                                      6DI       2526
                                *                                                                               6DI       2527
                                *       EXIT   (T3) = *CM* + 2.                                                 6DI       2528
                                *              (T4) = 1 IF PRIMARY CHANNEL SHOULD BE USED FOR RELOAD.           6DI       2529
                                *                     0 IF SECONDARY CHANNEL SHOULD BE USED.                    6DI       2530
                                *              (T5) = CONTROL MODULE EST ORDINAL.                               6DI       2531
                                *              (T7) = RELOAD INTERLOCK WORD OFFSET FROM FWA OF EST.             6DI29        1
                                *              (CM - CM+1) = FWA OF EST.                                        6DI       2533
                                *                                                                               6DI       2534
                                *       USES   T2 - CM+4.                                                       6DI       2535
                                *                                                                               6DI       2536
                                *       MACROS MONITOR, SFA.                                                    6DI       2537
                                                                                                                6DI       2538
                                                                                                                6DI       2539
7670            0000             FCM    CON    0           ENTRY                                                6DI       2540
7671            3004                    LDD    T4          STORE CHANNEL FOR COMPARISON                         6DI       2541
7672            5500 7731               RAM    FCMA                                                             6DI       2542
7674            5400 7735               STM    FCMB                                                             6DI       2543
7676            1472                    LDK    ESTP                                                             6DI       2544
7677            6010                    CRD    CM                                                               6DI       2545
7700            3712             FCM1   SOD    CM+2        DECREMENT EST ORDINAL                                6DI       2546
7701            1001                    CFI    EST         SAVE EST ENTRY OFFSET                                6DI28        1
7702            3407                    STD    T7                                                               6DI       2549
7703            0505                    NJN    FCM3        IF NOT END OF SCAN                                   6DI       2550
7704            1422             FCM2   MONITOR  HNGM                                                          6DI       2551
7707            0374                    UJN    FCM2        HANG PP                                              6DI       2552
                                                                                                                6DI       2553
7710            3012             FCM3   SFA    EST,CM+2    READ NEXT ENTRY                                      6DI       2554
                                        ADK    EQDE                                                             6DI       2555
7713            6002                    CRD    T2                                                               6DI       2556
7714            3005                    LDD    T2+3                                                             6DI       2557
7715            2300 0315               LMC    2RCM                                                             6DI       2559
7717            0560                    NJN    FCM1        IF NOT CONTROL MODULE EST ENTRY                      6DI       2560
7720            3006                    LDD    T2+4                                                             6DI       2561
7721            1071                    SHN    0-6                                                              6DI       2562
7722            5300 7520               LMM    HEDR+3                                                           6DI       2563
7724            1307                    SCN    7                                                                6DI       2564
7725            0552                    NJN    FCM1        IF WRONG EQUIPMENT                                   6DI       2565
7726            3004                    LDD    T2+2        SET CHANNEL INDICATOR FOR *7HI*                      252L678    34
7727            0404                    ZJN    FCM4        IF NO SECONDARY CHANNEL                              6DI       2569
7730            1237                    LPN    37                                                               252L678    35
7731            1100                    LMN    **                                                               6DI       2570
                         7731   FCMA    EQU    *-1                                                              6DI       2571
7732            0406                    ZJN    FCM5        IF SECONDARY CHANNEL IN USE                          6DI       2572
7733            3003             FCM4   LDD    T2+1                                                             6DI       2573
7734            1237                    LPN    37                                                               6DI       2574
7735            1100                    LMN    **                                                               6DI       2575
                         7735   FCMB    EQU    *-1                                                              6DI       2576
7736            0545                    NJN    FCM2        IF CHANNEL NOT IN EST ENTRY                          6DI       2577
7737            1401                    LDN    1                                                                6DI       2578
7740            3404             FCM5   STD    T4                                                               6DI       2579
7741            3012                    LDD    CM+2        SAVE EST ORDINAL FOR *7HI*                           6DI       2580
7742            3405                    STD    T5                                                               6DI       2581
7743            1412                    LDN    CM+2        SET BYTE NUMBER                                      6DI       2582
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7744          3403                      STD    T3                                                  6DI       2583
7745          3607                      AOD    T7          ADVANCE TO *EQAE* WORD OF EST ENTRY     6DI29        2
                                  0     ERRNZ  EQAE-1      CODE ASSUMES *EQAE* = 1                 6DI29        3
7746          0100 7647           FCM6  LJM    ICRA+1      RETURN                                  6DI       2584




                                  **    FCT - FIND CONTROLWARE TABLE ENTRY.                         6DI       2586
                                  *                                                                 6DI       2587
                                  *     ENTRY  (T4) = CHANNEL NUMBER.                               6DI       2588
                                  *                                                                 6DI       2589
                                  *     EXIT   (T3) = CHANNEL NUMBER MODULO 5 + *CM*.               6DI       2590
                                  *            (T7) = WORD OFFSET RELATIVE TO FWA OF CONTROLWARE    6DI       2591
                                  *                   TABLE.                                       6DI       2592
                                  *            (CM - CM+1) = FWA OF CONTROLWARE TABLE.              6DI       2593
                                  *                                                                 6DI       2594
                                  *     USES   T3, T4, T6 - CM+2.                                   6DI       2595
                                                                                                    6DI       2596
                                                                                                    6DI       2597
7750          0000                FCT   CON    0           ENTRY                                   6DI       2598
7751          3004                      LDD    T4          STORE CHANNEL NUMBER                    6DI       2599
7752          5500 7754                 RAM    FCTA                                                6DI       2600
7754          7700 0414                 FNC    FCAL,CH     ISSUE SHORT AUTOLOAD                    6DI       2601
                          7754    FCTA  EQU    *-2                                                 6DI       2602
7756          2000 0141                 LDC    CHTP        READ CHANNEL TABLE POINTER              6DI       2603
7760          6006                      CRD    CM-2                                                6DI       2604
7761          1421                      LDN    2*CTALL-1   INITIALIZE WORD OFFSET                   6DI       2605
7762          3407                      STD    T7                                                  6DI       2606
7763          3607                FCT1  AOD    T7          INCREMENT WORD OFFSET                   6DI       2607
7764          1505                      LCN    5                                                   6DI       2608
7765          3504                      RAD    T4                                                  6DI       2609
7766          0674                      PJN    FCT1        IF CORRECT WORD NOT REACHED             6DI       2610
7767          1615                      ADN    CM+5        SAVE BYTE NUMBER + *CM*                 6DI       2611
7770          3403                      STD    T3                                                  6DI       2612
7771          0354                      UJN    FCM6        RETURN                                  6DI       2613




                                  6     ERRNG  10000-*     OVERFLOW                                6DI       2615
7772                              6     BSS    10000-*     SPARES                                  6DI       2616
10000         7612                      CON    DII-1       (T0) = ENTRY ADDRESS - 1                6DI       2617
10001         7506                      CON    DEST        (T1) = DEST                             6DI       2618
10002         7502                      CON    DEEC        (T2) = DEEC                             6DI       2619
                                  0     ERRNZ  LN-*        INCORRECT *7II* OVERLAY LENGTH          6DI       2620
                                        QUAL   *                                                   6DI       2621
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                    7JI     MSOVL  7702,T2,DSFA+4,(ISSUE RELOAD MESSAGE.)                252L678    36

               141          ERRNG  *-OFFW     *7JI* WILL LOAD ON TOP OF PARAMETERS       MSOVL   .1
                            LIST   *                                                    MSOVL   .1


                    ***     ISSUE RELOAD MESSAGE.                                      6DI       2624
                    *       R. M. DANISCH.     83/10/11.                               6DI       2625


                    ***           *7JI* IS CALLED BY *7II* TO ISSUE A MESSAGE TO THE   6DI       2627
                    *       SYSTEM CONTROL POINT TO SHOW THE OPERATOR WHAT CHANNEL OR   6DI       2628
                    *       CONTROL MODULE IS HAVING ITS CONTROLWARE RELOADED.  *7JI*   6DI       2629
                    *       THEN CALLS *7HI* TO BEGIN THE ACTUAL RELOAD.                6DI       2630


                    **      IRM - ISSUE RELOAD MESSAGE.                                6DI       2632
                    *                                                                  6DI       2633
                    *       ENTRY  (T1) = DEST.                                        6DI       2634
                    *              (T2) = HEDR+7.                                      6DI       2635
                    *              (T3) = ADDRESS + *CM* OF BYTE CONTAINING RELOAD FLAGS. 6DI    2636
                    *              (T4) = CONTROL MODULE ACCESS INDICATOR.  FOR CONTROL 6DI       2637
                    *                     MODULE RELOADS, 1 INDICATES THE PRIMARY CHANNEL 6DI    2638
                    *                     SHOULD BE USED FOR RELOAD.  0 INDICATES      6DI       2639
                    *                     SECONDARY CHANNEL SHOULD BE USED.  THIS CELL IS 6DI    2640
                    *                     UNUSED FOR NON-CONTROL MODULE RELOADS.       6DI       2641
                    *                   (T5) = CONTROL MODULE EST ORDINAL IF C/M RELOAD.  6DI    2642
                    *                   (T6 - T7) = ADDRESS OF RELOAD INTERLOCK WORD.     6DI    2643
                    *                   (DEST) = ERROR PROCESSING CONTROL WORD.           6DI    2644
                    *                   (MB+2) = ORIGINAL (T3 - T7).                      6DI    2645
                    *                   (MB+3 - MB+5) = LAST THREE WORDS OF DETAILED STATUS. 6DI 2646
                    *                                                                     6DI    2647
                    *       EXIT   TO *7HI*.                                              6DI    2648
                    *              (T3) = UNCHANGED.                                      6DI    2649
                    *              (T4) = UNCHANGED.                                      6DI    2650
                    *              (T5) = SYSTEM CP *MS2W* ADDRESS.                       6DI    2651
                    *              (T6 - T7) = UNCHANGED.                                 6DI    2652
                    *              (MB+2) = UNCHANGED.                                    6DI    2653
                    *              (MB+3 - MB+5) = UNCHANGED.                             6DI    2654
                    *                                                                     6DI    2655
                    *       USES   T5, CM - CM+4.                                         6DI    2656
                    *                                                                     6DI    2657
                    *       MACROS MSERR.                                                 6DI    2658
                                                                                          6DI    2659
                                                                                          6DI    2660
          7702                      DJI     ENTRY            *7JI* ENTRY                6DI    2661
                                                                                          6DI    2662
          7704      4001            IRM     LDI    T1                                    6DI    2663
          7705      1076                    SHN    0-1                                   6DI    2664
          7706      1203                    LPN    3                                     6DI    2665
          7707      1103                    LMN    3                                     6DI    2666
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7710          0506                        NJN     IRM1        IF NOT CONTROL MODULE RELOAD                6DI       2667
7711          2000 0521                   LDC     2REQ        CONVERT MESSAGE FOR C/M RELOAD              6DI       2668
7713          5400 7763                   STM     IRMA+5                                                  6DI       2669
7715          0310                        UJN     IRM2        CONVERT EST ORDINAL                         6DI       2670
                                                                                                          6DI       2671
7716          4002                IRM1    LDI     T2          GET CHANNEL NUMBER                          6DI       2672
7717          1071                        SHN     -6                                                      6DI       2673
7720          3405                        STD     T5                                                      6DI       2674
7721          2000 5533                   LDC     2R 0                                                    6DI       2675
7723          5400 7764                   STM     IRMA+6                                                  6DI       2676
7725          3005                IRM2    LDD     T5          CONVERT CHANNEL OR EST ORDINAL TO DISPLAY   6DI       2677
7726          1207                        LPN     7                                                       6DI       2678
7727          1006                        SHN     6                                                       6DI       2679
7730          5500 7765                   RAM     IRMA+7                                                  6DI       2680
7732          3005                        LDD     T5                                                      6DI       2681
7733          1074                        SHN     -3                                                      6DI       2682
7734          1207                        LPN     7                                                       6DI       2683
7735          3305                        LMD     T5                                                      6DI       2684
7736          1277                        LPN     77                                                      6DI       2685
7737          3305                        LMD     T5                                                      6DI       2686
7740          5500 7764                   RAM     IRMA+6                                                  6DI       2687
7742          1470                        LDN     NCPL        WRITE MESSAGE TO SYSTEM CONTROL POINT       6DI       2688
7743          6010                        CRD     CM                                                      6DI       2689
7744          3611                        AOD     CM+1                                                    6DI       2690
7745          1007                        SHN     7                                                       6DI       2691
7746          1636                        ADN     MS2W                                                    6DI       2692
7747          3405                        STD     T5                                                      6DI       2693
7750          6373 7756                   CWM     IRMA,TR                                                 6DI       2694
7752          2000 1430                   MSERR   7HI         EXECUTE *7HI*                               6DI       2695
                                                                                                          6DI       2696
                                                                                                          6DI       2697
 7756         2205                IRMA    DATA    C*RELOADING CH000 CONTROLWARE.*                         6DI       2698

                          3              ERRNG   10000-*     OVERFLOW                                    6DI       2700
 7775                     3              BSS     10000-*     SPARES                                      6DI       2701
10000         7701                       CON     DJI-1       (T0) = ENTRY ADDRESS - 1                    6DI       2702
10001         7506                       CON     DEST        (T1) = DEST                                 6DI       2703
10002         7524                       CON     HEDR+7      (T2) = POINTER TO CHANNEL NUMBER            6DI       2704
                          0              ERRNZ   LN-*        INCORRECT *7JI* OVERLAY LENGTH              6DI       2705
                                         QUAL    *                                                       6DI       2706
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                    7KI     MSOVL  7567,T2,DSFA+4,(EXECUTE LEVEL 1 DIAGNOSTICS.)          252L678    37

                26          ERRNG  *-OFFW      *7KI* WILL LOAD ON TOP OF PARAMETERS      MSOVL   .1
                            LIST   *                                                     MSOVL   .1
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                    ***     EXECUTE LEVEL 1 DIAGNOSTICS.                                 6DI       2709
                    *       R. M. DANISCH.     83/10/17.                                 6DI       2710
```

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                    ***           *7KI* IS CALLED BY *7EO* FOR UNRECOVERED ERRORS ON     6DI       2712
                    *       ISD DEVICES.  IT ISSUES A SPINUP COMMAND TO EXECUTE          6DI       2713
                    *       LEVEL 1 DIAGNOSTICS IN THE CONTROL MODULE.  FOLLOWING        6DI       2714
                    *       COMPLETION OF THE DIAGNOSTICS EXECUTION, *7EP* IS ENTERED    252L678     38
                    *       TO ISSUE A BML MESSAGE NOTING DIAGNOSTIC RESULTS FOR *HPA*.  252L678     39
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                    *       GENERATE LINKED LIST OF CHANNEL INSTRUCTIONS.                6DI       2719
                                                                                         6DI       2720
                        1   FWDL$  EQU    1           SELECT FORWARD LINKING            6DI       2721
7567                            RICHL                                                    6DI       2722
```

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                    **      EXD - EXECUTE LEVEL 1 DIAGNOSTICS.                           6DI       2724
                    *                                                                    6DI       2725
                    *       ENTRY  (T1) = DEDT.                                          252L678     40
                    *              (T2) = FIRST CHANNEL INSTRUCTION ADDRESS.             6DI       2727
                    *              (T4 - T7) = DRIVER PARAMETERS.                        6DI       2728
                    *              (DEDT) = ERROR PROCESSING CONTROL WORD.               252L678     41
                    *              (MSGH - MSGH+4) = *EMB* MESSAGE HEADER.               252L678     42
                    *              (HEDR - HEDR+11) = BML MESSAGE HEADER.                252L678     43
                    *              (DDMD - DDMD+4) = DEVICE DEPENDENT MESSAGE DATA.      252L678     44
                    *              (DSFA - DSFA+4) = FIRST WORD OF DETAILED STATUS.      252L678     45
                    *              (MB+2 - MB+5) = DETAILED STATUS TAKEN BY *7CI*.       252L678     46
                    *                                                                    252L678     47
                    *       EXIT   (T4 - T7) = UNCHANGED.                                252L678     48
                    *              (MSGH - MSGH+4) = UNCHANGED.                          252L678     49
                    *              (HEDR - HEDR+11) = BML MESSAGE HEADER.                252L678     50
                    *              (DDMD - DDMD+4) = DEVICE DEPENDENT MESSAGE DATA.      252L678     51
                    *              (DSFA - DSFA+23) = DETAILED STATUS TAKEN BY *7KI*.    252L678     52
                    *              (MB+2 - MB+5) = DETAILED STATUS TAKEN BY *7KI*.       252L678     53
                    *                                                                    6DI       2746
                    *       USES   T0 - T2, CM - CM+4.                                   6DI       2747
                    *                                                                    6DI       2748
                    *       CALLS  FNC.                                                  6DI       2749
                    *                                                                    6DI       2750
                    *       MACROS DELAY, MSERR, PAUSE.                                  6DI       2751
                                                                                         6DI       2752
                                                                                         6DI       2753
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7567                          DKI     ENTRY           *7KI* ENTRY                          6DI     2754
                                                                                           6DI     2755
7571    4001                          LDI     T1      CHECK INITIAL CALL                   252L678   54
7572    1220                          LPN     20                                           252L678   55
7573    0520                          NJN     EXD1    IF FIRST FAILURE MESSAGE ISSUED      252L678   56
7574    5000 0102                     LDM     ERXA                                         252L678   57
7576    4471                          STI     D1      SAVE ERROR RETURN ADDRESS            252L678   58
7577    2000 1730                     MSERR   7KI,*                                        252L678   59
7601    5400 1053                     STM     ERR2+1  MODIFY ERROR PROCESSOR CALL          252L678   60
7603    2000 1052                     LDC     ERR2                                         252L678   61
7605    5400 0102                     STM     ERXA                                         252L678   62
7607    1420                          LDN     20      SET RETURN TO ERROR PROCESSOR        252L678   63
7610    4501                          RAI     T1                                           252L678   64
7611    0100 0413                     LJM     LEP     ISSUE FIRST FAILURE MESSAGE          252L678   65
                                                                                           252L678   66
7613    4071                  EXD1    LDI     D1      RESTORE ERROR RETURN ADDRESS         252L678   67
7614    5400 0102                     STM     ERXA                                         252L678   68
7616    1520                          LCN     20      CLEAR RETURN TO ERROR PROCESSOR      252L678   69
7617    4501                          RAI     T1                                           252L678   70
7620    2000 2730                     MSERR   7SI,*   RESTORE ERROR PROCESSOR CALL          252L678   71
7622    5400 1053                     STM     ERR2+1                                       252L678   72
7624    1400                          LDN     0                                            6DI     2760
7625    3502                  EXD2    RAD     T2      MODIFY CHANNEL INSTRUCTIONS          6DI     2761
7626    4002                          LDI     T2                                           6DI     2762
7627    1237                          LPN     37                                           6DI     2763
7630    3400                          STD     T0                                           6DI     2764
7631    3004                          LDD     T4                                           6DI     2765
7632    3200                          SBD     T0                                           6DI     2766
7633    4502                          RAI     T2                                           6DI     2767
7634    3000                          LDD     T0                                           6DI     2768
7635    0567                          NJN     EXD2    IF MORE INSTRUCTIONS TO MODIFY       6DI     2769
                                                                                           6DI     2770
                              *       ISSUE SPINUP FUNCTION TO EXECUTE LEVEL ONE DIAGNOSTICS.  6DI     2771
                                                                                           6DI     2772
7636    1400                  EXD3    LDN     0                                            6DI     2773
7637    3410                          STD     CM      INITIALIZE *FCSU* TIMEOUT FLAG       6DI     2774
7640    3402                          STD     T2      INITIALIZE CHANNEL PARITY RETRY COUNT  6DI     2775
7641    2000 7661                     LDC     EXD5                                         252L678   73
7643    5400 0744                     STM     ERRA    SET ERROR EXIT ADDRESS               252L678   74
7645    1455                          LDN     FCSU    ISSUE SPINUP FUNCTION                6DI     2778
7646    0200 0725                     RJM     FNC                                          6DI     2779
7650    1401                          LDN     1       OUTPUT PARAMETER                     6DI     2780
7651    7305 7520                     OAM     HEDR+3,CH                                    6DI     2781
7653    0506                          NJN     EXD5    IF INCOMPLETE TRANSFER               252L678   75
7654    1701                  EXD4    SBN     1                                            252L678   76
7655    0404                          ZJN     EXD5    IF TIMEOUT                           252L678   77
7656    6603 7654                     FJM     EXD4,CH IF CHANNEL FULL                      252L678   78
7660    3610                          AOD     CM      INDICATE NO ERROR ON *FCSU*          252L678   79
7661    7554                  EXD5    DCN     CH+40                                        252L678   80
                                                                                           6DI     2788
                              *       TAKE GENERAL STATUS.  IF STATUS SHOWS SPINUP STILL IN  6DI     2789
                              *       PROGRESS, LOOP ISSUING SPINUP AND GENERAL STATUS FUNCTIONS  6DI     2790
                              *       UNTIL DIAGNOSTICS COMPLETE.  IF GENERAL STATUS CANNOT BE  6DI     2791
                              *       TAKEN, EXIT TO *7EP*.                                6DI     2792
                                                                                           6DI     2793
7662    2000 7764                     LDC     EXD11   SET ERROR EXIT ADDRESS               6DI     2794
7664    5400 0744                     STM     ERRA                                         252L678   81
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7666  3602          EXD6   AOD   T2        INCREMENT CHANNEL PARITY RETRY COUNT   252L678  82
7667  1105                 LMN   CHRT+1                                          6DI      2797
7670  0410                 ZJN   EXD7      IF CHANNEL PARITY RETRY LIMIT REACHED 6DI      2798
7671  1412                 LDN   FCGS      ISSUE GENERAL STATUS FUNCTION         252L678  83
7672  0200 0725            RJM   FNC                                             6DI      2800
7674  1401                 LDN   1         INPUT GENERAL STATUS                  6DI      2801
7675  7111 7503            IAM   DEGS,CH                                         252L678  84
7677  0405                 ZJN   EXD9      IF DATA TRANSFER COMPLETE             252L678  85
7700  0100 7764    EXD7    LJM   EXD11     CALL *7EP*                            6DI      2805
                                                                                 6DI12    17
7702  0100 7636    EXD8    LJM   EXD3      REISSUE SPINUP FUNCTION               252L678  86
                                                                                 252L678  87
7704  3402          EXD9   STD   T2        CLEAR CHANNEL PARITY RETRY COUNT      252L678  88
7705  3010                 LDD   CM                                              252L678  89
7706  6676 7666            SFM   EXD6,CH   IF CHANNEL PARITY ERROR              252L678  90
7710  0425                 ZJN   EXD10     IF *FCSU* TIMED OUT                   252L678  91
7711  5000 7503            LDM   DEGS                                            252L678  92
7713  5400 7533            STM   DDMD+4    SET GENERAL STATUS IN MESSAGE         252L678  93
7715  1102                 LMN   2                                               252L678  94
7716  0517                 NJN   EXD10     IF NOT BUSY STATUS                    252L678  95
7717  5000 0255            DELAY 1*8D      DELAY FOR 1 MILLISECOND               6DI      2813
7724  1400                 PAUSE                                                 6DI      2814
7732  3011                 LDD   CM+1                                            6DI      2816
7733  1146                 LMN   ORET                                            6DI      2817
7734  0545                 NJN   EXD8      IF NOT OPERATOR OVERRIDE              252L678  96
                                                                                 252L678  97
                     *     TAKE DETAILED STATUS.                                 252L678  98
                                                                                 252L678  99
7735  3602          EXD10  AOD   T2        INCREMENT CHANNEL PARITY RETRY COUNT   6DI      2826
7736  1105                 LMN   CHRT+1                                          6DI      2827
7737  0425                 ZJN   EXD11     IF CHANNEL PARITY RETRY LIMIT REACHED 6DI      2828
7740  1423                 LDN   FCDS      ISSUE DETAILED STATUS                 6DI      2829
7741  0200 0725            RJM   FNC                                             6DI      2830
7743  1424                 LDN   DSLN      INPUT DETAILED STATUS                 6DI      2831
7744  7103 7534            IAM   DSFA,CH                                         252L678  100
7746  0516                 NJN   EXD11     IF DATA TRANSFER ERROR                6DI      2834
7747  6655 7735            SFM   EXD10,CH  IF CHANNEL PARITY ERROR              6DI      2835
7751  1404                 LDN   DSLN/5                                          6DI      2836
7752  3402                 STD   T2                                              6DI      2837
7753  3077                 LDD   MA                                              6DI      2838
7754  1602                 ADN   2         SAVE NEW DETAILED STATUS              252L678  101
7755  6302 7534            CWM   DSFA,T2                                        252L678  102
7757  2000 0200            LDC   /COMSDFS/RS0200+/COMSDFS/D6DJ*400  SET SYMPTOM CODE 252L678  103
7761  5400 7516            STM   HEDR+1                                          252L678  104
7763  0310                 UJN   EXD12     CALL *7EP*                            252L678  105
                                                                                 6DI      2843
7764  7540          EXD11  DCN   CH+40                                           6DI      2844
7765  5000 7506            LDM   DEST      INHIBIT BML MESSAGE                   252L678  106
7767  2200 3777            LPC   3777                                            252L678  107
7771  5400 7506            STM   DEST                                            252L678  108
7773  2000 0101    EXD12   MSERR 7EP       EXECUTE *7EP*                         6DI      2845
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                                        HERE                TERMINATE LINKED CHANNEL INSTRUCTIONS      6DI       2847

                                   1    ERRNG  10000-*       OVERFLOW                                   6DI       2849
 7777                              1    BSS    10000-*       SPARES                                     6DI       2850
10000         7566                     CON    DKI-1         (T0) = ENTRY ADDRESS - 1                   6DI       2851
10001         7501                     CON    DEDT          (T1) = DEDT                                252L678    109
10002         7651                     CON    CH01$         (T2) = FIRST CHANNEL INSTRUCTION ADDRESS   6DI       2853
                                   0    ERRNZ  LN-*          INCORRECT *7KI* OVERLAY LENGTH             6DI       2854
                                        QUAL   *                                                        6DI       2855
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                    7SI     MSOVL  7733,T2,DSFA+4,(STATUS PROCESSOR.)                    252L678   110

                172         ERRNG  *-OFFW     *7SI* WILL LOAD ON TOP OF PARAMETERS      MSOVL   .1
                            LIST   *                                                    MSOVL   .1


                    ***     MASS STORAGE STATUS PROCESSOR.                              6DI      2958
                    *       R. J. THIELEN.     75/11/20.                               6DI      2959
                    *       W. E. GOEBEL.      77/01/24.                               6DI      2960



                    ***           *7SI* IS CALLED BY *7EP* TO PERFORM ADDITIONAL       6DI      2962
                    *       DETAILED STATUS PROCESSING.  IF A CORRECTION VECTOR IS      6DI      2963
                    *       PROVIDED IN DETAILED STATUS, *7SI* CORRECTS THE ERROR IN THE 6DI      2964
                    *       READ BUFFER AND THEN EXITS TO *7EQ* TO COMPLETE ERROR       6DI      2965
                    *       RECOVERY.  FOR OTHER ERRORS, *7SI* REENTERS THE DRIVER AND  6DI      2966
                    *       ISSUES A *CONTINUE* FUNCTION CAUSING THE CONTROLLER TO RETRY 6DI      2967
                    *       THE PREVIOUS OPERATION.                                     6DI      2968



                    **      DSI - MAIN ROUTINE.                                         6DI      2970
                    *                                                                   6DI      2971
                    *       ENTRY  (T1) = DEGS.                                         6DI      2972
                    *              (T2) = DERW.                                         6DI      2973
                    *              (T4 - T7) = DRIVER PARAMETERS.                       6DI      2974
                    *              (DERW) = 1 IF WRITE REQUEST, 0 IF READ REQUEST.      6DI      2975
                    *              (DEGS) = GENERAL STATUS.                             6DI      2976
                    *              (HEDR - HEDR+11) = BML MESSAGE HEADER.               6DI      2977
                    *              (HEDR+12 - HEDR+16) = FIRST WORD OF DETAILED STATUS. 6DI      2978
                    *              (MB+3 - MB+5) = LAST THREE WORDS OF DETAILED STATUS. 6DI      2979
                    *                                                                   6DI      2980
                    *       EXIT   TO *6DI* IF CONTINUE FUNCTION TO BE ISSUED.          6DI      2981
                    *              TO *7EQ* IF ERROR CAN BE CORRECTED ON THE FLY.       6DI      2982
                    *              (T4 - T7) = UNCHANGED.                               6DI      2983
                    *              (MB+3 - MB+5) = UNCHANGED.                           6DI      2984
                    *                                                                   6DI      2985
                    *       USES   CM, CM+1.                                            6DI      2986
                                                                                        6DI      2987
                                                                                        6DI      2988
          7733                      DSI     ENTRY           *7SI* ENTRY               6DI      2989
                                                                                        6DI      2990
          7735      4002                    LDI    T2                                 6DI      2991
          7736      0402                    ZJN    DSI1        IF READ                6DI      2992
          7737      1434                    LDN    WDS4-RDS3   SET EXIT ADDRESS FOR CONTINUE 6DI 2993
          7740      3411            DSI1    STD    CM+1                               6DI      2994
          7741      4001                    LDI    T1                                 6DI      2995
          7742      1240                    LPN    40                                 6DI      2996
          7743      0504                    NJN    DSI2        IF CORRECTABLE ON THE FLY 6DI 2997
          7744      1414                    LDN    FCCO                               6DI      2998
          7745      0111 0557               LJM    RDS3,CM+1   ISSUE CONTINUE FUNCTION 6DI 2999
                                                                                        6DI      3000
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                                *       PERFORM ERROR CORRECTION.                                                6DI       3001
                                                                                                                 6DI       3002
          7747          3077                    DSI2      LDD     MA                                           6DI       3003
          7750          1603                              ADN     3                                            6DI       3004
          7751          6173 7541                         CRM     DSFA+5,TR   READ IN REMAINDER OF DETAILED STATUS 6DI       3005
                                     173                  ERRNG   *-DSFA-DSLN DATA READ IN DESTROYS CODE       6DI       3006
          7753          5000 7550                         LDM     DSFA+14     SET BUFFER ADDRESS               6DI       3007
          7755          2200 0777                         LPC     777                                          6DI       3008
          7757          5100 0562                         ADM     RDSB                                         6DI       3009
          7761          3410                              STD     CM                                           6DI       3010
          7762          5000 7551                         LDM     DSFA+15     PERFORM CORRECTION ON FIRST WORD 6DI       3011
          7764          4310                              LMI     CM                                           6DI       3012
          7765          4410                              STI     CM                                           6DI       3013
          7766          3610                              AOD     CM                                           6DI       3014
          7767          5000 7552                         LDM     DSFA+16     PERFORM CORRECTION ON SECOND WORD 6DI      3015
          7771          4310                              LMI     CM                                           6DI       3016
          7772          4410                              STI     CM                                           6DI       3017
          7773          0100 0413                         LJM     LEP         CALL *7EQ* TO REPORT RECOVERY    6DI       3018
                                                                                                                 6DI       3019
                                     3                    ERRNG   10000-*     *7SI* HAS OVERFLOWED             6DI       3020
          7775                       3                    BSS     10000-*     SPARES (ADJUST ORIGIN BY 5 AS REQUIRED) 6DI    3021
         10000          7732                              CON     DSI-1       ENTRY ADDRESS - 1                6DI       3022
         10001          7503                              CON     DEGS        (T1) = DEGS                      6DI       3023
         10002          7505                              CON     DERW        (T2) = DERW                      6DI       3024
                                     0                    ERRNZ   LN-*         INCORRECT *7SI* OVERLAY LENGTH   6DI       3025
                                                          QUAL    *                                            6DI       3026
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                    7WI     MSOVL  7732,T1,DEEC,(WRITE ERROR PROCESSOR.)                6DI       3027

               227          ERRNG  *-OFFW      *7WI* WILL LOAD ON TOP OF PARAMETERS      MSOVL   .1
                            LIST   *                                                    MSOVL   .1
1
2
3
4
5
6                   ***     WRITE ERROR PROCESSOR.                                     6DI       3029
7                   *       W. E. GOEBEL.      77/01/24.                               6DI       3030
8
9
10
11
12                  ***           THE WRITE ERROR PROCESSOR IS CALLED ONLY WHEN        6DI       3032
13                  *       WRITING IN FULL TRACK MODE UTILIZING THE 715X CONTROLLER    6DI       3033
14                  *       OR THE FSC CHANNEL ADAPTOR.  *7WI* IS CALLED TO            6DI       3034
15                  *       RETRY THE CURRENT SECTOR AFTER THE ERROR PROCESSOR          6DI       3035
16                  *       HAS INITIATED A RETRY OF THE PREVIOUS SECTOR. THE PREVIOUS  6DI       3036
17                  *       SECTOR HAD BEEN DETECTED TO BE IN ERROR BY A FUNCTION       6DI       3037
18                  *       TIME OUT.                                                   6DI       3038
19                  *                                                                   6DI       3039
20                  *             IF THE PREVIOUS SECTOR WAS SUCCESSFULLY WRITTEN       6DI       3040
21                  *       AND THE CURRENT SECTOR DATA STILL EXISTS (BUFFER SPECIFIED  6DI       3041
22                  *       IN WDSE) NORMAL PROCESSING WILL RESUME AT THE CURRENT SECTOR. 6DI      3042
23                  *                                                                   6DI       3043
24                  *             IF NO BUFFER WAS SPECIFIED VIA WDSE THE CURRENT SECTOR 6DI      3044
25                  *       DATA DOES NOT EXIST IN THE PPU FOR RETRY. IN THIS CASE      6DI       3045
26                  *       CONTROL WILL BE RETURNED TO THE CALLING PROGRAM WITH BIT 11 6DI       3046
27                  *       OF THE ACCUMULATOR (AND *RDCT*) SET.                        6DI       3047
28                  *                                                                   6DI       3048
29                  *       ENTRY  (T1) = RDS.                                          6DI       3049
30                  *              (T2) = 0 IF PREVIOUS SECTOR ERROR WAS RECOVERED.     6DI       3050
31                  *              (RDS) = *WDS* EXIT ADDRESS.                          6DI       3051
32                  *              (RDSB) = BUFFER ADDRESS.                             6DI       3052
33                  *              (WDSE) = WRITE ERROR BUFFER ADDRESS (IF ANY).        6DI       3053
34                  *              (DEEC) = ERROR CODE.                                 6DI       3054
35                  *                                                                   6DI       3055
36                  *       EXIT   (A) = 1/1, 5/0, 12/(RDCT)                            6DI       3056
37                  *              (RDCT) = 1/0, 1/1, 1/F, 3/0, 6/E.                    253L688     6
38                  *                       F = 1 IF CURRENT SECTOR DATA WAS DESTROYED BY 6DI      3058
39                  *                           PREVIOUS SECTOR RECOVERY.  CALLER SHOULD 6DI      3059
40                  *                           REISSUE CURRENT SECTOR WRITE REQUEST.    6DI      3060
41                  *                       E = ERROR CODE.                              6DI      3061
42                  *              (T7) = CURRENT SECTOR.                               6DI       3062
43                  *                                                                   6DI       3063
44                  *       USES   T1, T7.                                              6DI       3064
45                  *                                                                   6DI       3065
46                  *       MACROS ENDMS.                                               6DI       3066
47
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7732                        DWI     ENTRY           *7WI* ENTRY                                 6DI   3068
                                                                                                6DI   3069
7734        3607            PWI     AOD     T7      ADVANCE TO CURRENT SECTOR                   6DI   3070
7735        5000 0562               LDM     RDSB    RESTORE BUFFER ADDRESS                      6DI   3071
7737        5400 0616               STM     WDSC                                                6DI   3072
7741        4001                    LDI     T1      RESTORE EXIT ADDRESS                        6DI   3073
7742        3401                    STD     T1                                                  6DI   3074
7743        5400 0532               STM     WDS                                                 6DI   3075
7745        3002                    LDD     T2                                                  6DI   3076
7746        0515                    NJN     PWI1    IF UNRECOVERED ERROR                        6DI   3077
7747        3072                    LDD     TH      SET *REISSUE CURRENT SECTOR* FLAG           6DI   3078
7750        5500 7766               RAM     PWIA                                                6DI   3079
7752        5000 0101               LDM     WDSE                                                6DI   3080
7754        0517                    NJN     PWI2    IF ERROR RECOVERY BUFFER SPECIFIED          6DI   3081
7755        5000 0106               LDM     UERR                                                6DI   3082
                          0         ERRNZ   EPDE-400-EPSM  CODE ASSUMES VALUES                  6DI   3083
7757        1011                    SHN     21-10                                               6DI   3084
7760        0703                    MJN     PWI1    IF *ENDMS* DISABLED                         6DI   3085
7761        0200 0535               ENDMS                                                       6DI   3086
7763        5000 7502       PWI1    LDM     DEEC    SET ERROR PROCESSOR INTERFACE WORD          6DI   3087
7765        2340 2000               LMC     1S17D+1S10D                                         6DI   3088
                       7766 PWIA    EQU     *-1                                                 6DI   3089
7767        5400 0103               STM     RDCT                                                6DI   3090
7771        0101 0000               LJM     0,T1    RETURN                                      6DI   3091
                                                                                                6DI   3092
7773        0100 0643       PWI2    LJM     LDA1    RETRY CURRENT SECTOR                        6DI   3093
                                                                                                6DI   3094
                                                                                                6DI   3095
                          3         ERRNG   10000-*  *7WI* HAS OVERFLOWED                       6DI   3096
7775                      3         BSS     10000-*  SPARES (ADJUST ORIGIN BY 5 AS REQUIRED)   6DI   3097
10000       7731                    CON     DWI-1   (T0) = ENTRY ADDRESS - 1                    6DI   3098
10001       0530                    CON     RDS     (T1) = *RDS*                                6DI   3099
                          0         ERRNZ   LN-*     INCORRECT *7WI* OVERLAY LENGTH              6DI   3100
                                    QUAL    *                                                   6DI   3101
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                                    QUAL   0TI                                                  6DI       3103
                                    IDENT  0TI,FFIX   "HN" TRACK FLAW PROCESSOR.               6DI       3104
                                COMMENT 85/07/29. 24/05/19. 6DI - "HN" TRACK FLAW PROCESSOR.  6DI       3105
                                    COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.        281L803     3
                                    TRACK FLAW PROCESSOR.                                      6DI       3108
                                    R. J. THIELEN.     75/11/20.                               6DI       3109
                                    W. E. GOEBEL.      77/01/24.                               6DI       3110
                                    J. R. HILDEBRAND.  82/01/12.                               6DI       3111
                                          THE TRACK FLAW PROCESSOR READS FLAW MAPS FROM DISK   6DI       3113
                                    PACKS AND FLAWS LOGICAL TRACKS CORRESPONDING TO THE PHYSICAL  6DI     3114
                                    FLAW ADDRESSES RECORDED THERE.                             6DI       3115
                                                                                               6DI       3116
                                                                                               6DI       3117
                                    ENTRY CONDITIONS.                                          6DI       3118
                                                                                               6DI       3119
                                    ((LA)-1) = EQUIPMENT.                                      6DI       3120
                                                                                               6DI       3121
                                    THE TRACK FLAW PROCESSOR IS CALLED IN THE SAME MANNER AS   6DI       3122
                                    LOCATION FREE OVERLAYS.                                    6DI       3123
                                                                                               6DI       3124
                                                                                               6DI       3125
                                    EXIT CONDITIONS.                                           6DI       3126
                                                                                               6DI       3127
                                    (A) = NON-ZERO IF FLAWING INCOMPLETE.                      6DI       3128
                                    (T5) = EQUIPMENT EST ORDINAL.                              6DI       3129
                                    TRACKS FLAWED IN TRT IF POSSIBLE TO DO SO.                 6DI       3130
                                                                                               6DI       3131
                                    CALLS  RDS.                                                6DI       3132
                                                                                               6DI       3133
                                    USES   DIRECT CELLS 00 - 17, BFMS - BFMS+501.              6DI       3134
                                                                                               6DI       3135
                                                                                               6DI       3136
                                    NOTES -                                                    6DI       3137
                                                                                               6DI       3138
                                    MODIFIES READ FUNCTION CODE IN MAIN DRIVER AND CLEARS      6DI       3139
                                    *MSD* SO THAT DRIVER WILL BE RELOADED BY A *SMS*.          6DI       3140
                                                                                               6DI       3141
                                    PHYSICAL FLAW INFORMATION IS RECORDED IN THE UTILITY       6DI       3142
                                    SECTOR IN 24 BIT FORMAT AS FOLLOWS                         6DI       3143
                                                                                               6DI       3144
                                    1/S, 1/T, 10/CY, 6/HD, 6/SC                                6DI       3145
                                                                                               6DI       3146
                                    WHERE   S = SECTOR FLAW IF SET = 1                         6DI       3147
                                             T = TRACK FLAW IF SET = 1                         6DI       3148
                                           CY = CYLINDER                                       6DI       3149
                                           HD = HEAD                                           6DI       3150
                                           SC = SECTOR                                         6DI       3151
                                                                                               6DI       3152
                                    THE MAIN OVERLAY, 0TI, CONTAINS COMMON SUBROUTINES AND     6DI       3153
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                                *       PROCESSORS FOR THE FOLLOWING DEVICES -                          6DI   3154
                                *                                                                       6DI   3155
                                *             DI                                                        6DI   3156
                                *             DJ                                                        6DI   3157
                                *                                                                       6DI   3158
                                *       AN AUXILLIARY OVERLAY, 0TJ, CONTAINS PROCESSORS FOR -           6DI   3159
                                *                                                                       6DI   3160
                                *             DK                                                        6DI   3161
                                *             DL                                                        6DI   3162
                                *             DM                                                        6DI   3163
                                *             DQ                                                        6DI   3164
                                *             DR                                                        NS2776  55
                                *             DX                                                        6DI   3165
                                *             DY                                                        6DI   3166
                                *             DZ                                                        6DI   3167
                                *             DA                                                        6DI   3168
                                *             DB                                                        6DI   3169
                                *             DC                                                        6DI   3170
                                *                                                                       6DI   3171
                                *       THE FOLLOWING TYPES OF DEVICES DO NOT HAVE FLAW MAPS RECORDED   6DI   3172
                                *       ON DISK, SO *0TI* IS IMMEDIATELY EXITED -                       6DI   3173
                                *                                                                       6DI   3174
                                *             DD                                                        6DI   3175
                                *             DG                                                        6DI   3176


                                **      DIRECT LOCATION ASSIGNMENTS.                                    6DI   3178
                                                                                                        6DI   3179
                                                                                                        6DI   3180
                          16    T8      EQU   16          TEMPORARY                                     6DI   3181
                          17    T9      EQU   17          TEMPORARY                                     6DI   3182


                                *       REDEFINE INSTRUCTIONS FOR LOCATION FREE EXECUTION.              6DI   3184
                                                                                                        6DI   3185
                                        RIREL             REDEFINE INSTRUCTIONS                         6DI   3186


                           5                ORG   5                                                     6DI   3188
                           5    0100 0005   FFI   SUBR              ENTRY/EXIT                          6DI   3189
                           7    0215 0147         RJM   PRS         PRESET FLAW PROCESSING              6DI   3190
                          11    0473              ZJN   FFIX        IF NO FLAW MAP ON DISK TO READ      6DI   3191
                          12    0772              MJN   FFIX        IF NO ALGORITHM INDEX               6DI   3192
                                                                                                        6DI   3193
                                *       MAIN FLAW PROCESSING LOOP.                                      6DI   3194
                                                                                                        6DI   3195
                          13    2000 0000   FFI1  LDC   0                                             6DI   3196
                                *           LDC   NTDA/2      (DA DEVICE)                               6DI   3197
                          14        FFID    EQU   *-1                                                 6DI   3198
                          15    0215 0042         RJM   POM         PROCESS ONE FLAW MAP                6DI   3199
                          17    0307        FFIA  UJN   FFI2        CONTINUE                            6DI   3200
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                                *       LDD     T9          (PROCESS SECOND *DA* FLAW MAP)                  6DI   3201
          20    2177 6717               ADC     -NTDA/2                                                     6DI   3202
          22    3417                    STD     T9                                                          6DI   3203
          23    1400                    LDN     0                                                           6DI   3204
          24    0215 0042               RJM     POM         PROCESS FLAW MAP FOR SECOND *DA* VOLUME         6DI   3205
          26    2000 0000         FFI2  LDC     **          SINGLE UNIT SECTOR LIMIT                        6DI   3206
                              27  FFIB  EQU     *-1                                                         6DI   3207
          30    3507                    RAD     T7          ADVANCE LOGICAL SECTOR ADDRESS                  6DI   3208
          31    5200 0107               SBM.    SLM                                                         6DI   3209
          33    0757                    MJN     FFI1        IF MORE UNITS FOR THIS DEVICE                   6DI   3210
          34    0302              FFIC  UJN     *+2         CONTINUE                                        6DI   3211
                                *       RJM     FCE         (*DA* DEVICE)                                   6DI   3212
          35    0323                    VFD     12/FCE                                                      6DI   3213
          36    3016                    LDD     T8          ERROR STATUS                                    6DI   3214
          37    0345                    UJN     FFIX        EXIT                                            6DI   3215
                                                                                                                  
                                                                                                                  
                                                                                                                  
                                **      POM - PROCESS ONE FLAW MAP.                                         6DI   3217
                                *                                                                           6DI   3218
                                *       ENTRY   (A) = *NTDA*/2, IF FIRST CALL FOR A *DA* DEVICE.            6DI   3219
                                *                     0 IF NOT.                                             6DI   3220
                                *             T9 = LOGICAL TRACK NUMBER OF UTILITY FLAW SECTOR.              6DI   3221
                                *                                                                           6DI   3222
                                *       EXIT    T8 INCREMENTED IF ERROR.                                    6DI   3223
                                *                                                                           6DI   3224
                                *       CALLS   RDS, FLAW PROCESSORS.                                       6DI   3225
                                                                                                            6DI   3226
                                                                                                            6DI   3227
          40    3616              POM2  AOD     T8          COUNT ERROR                                     6DI   3228
                                                                                                            6DI   3229
          41    0100 0041         POM   SUBR                                                              6DI   3230
          43    5415 0067               STM     POMA+1      SET *DA* TRACK BIAS                             6DI   3231
          45    3017                    LDD     T9          SET DEADSTART CYLINDER TRACK ADDRESS            6DI   3232
          46    3406                    STD     T6                                                          6DI   3233
          47    2000 6776               LDC     BFMS        RESET UTILITY MAP INDEX                         6DI   3234
          51    3403                    STD     T3                                                          6DI   3235
          52    0200 0530               RJM.    RDS         READ UTILITY SECTOR                             6DI   3236
          54    1056                    SHN     -17D                                                        6DI   3237
          55    3406                    STD     T6          SAVE STATUS                                     6DI   3238
          56    0200 0535               ENDMS                                                               6DI   3239
          60    3006                    LDD     T6                                                          6DI   3240
          61    0556                    NJN     POM2        IF ERROR IN READ                                6DI   3241
                                                                                                            6DI   3242
                                *       CONVERT FLAWS FROM PHYSICAL TO LOGICAL.                             6DI   3243
                                                                                                            6DI   3244
          62    4003              POM1  LDI     T3          READ TRACK ADDRESS                              6DI   3245
          63    0455                    ZJN     POMX        IF NO MORE FLAWS                                6DI   3246
          64    2200 1777               LPC     1777                                                        6DI   3247
          66    2100 0000         POMA  ADC     0                                                           6DI   3248
                                *       ADC     NTDA/2      (FIRST CALL FOR *DA* DEVICE)                    6DI   3249
          70    1001                    SHN     1                                                           6DI   3250
          71    3406                    STD     T6                                                          6DI   3251
          72    0215 0000         POMB  RJM     **          PROCESS FLAW                                    6DI   3252
          74    1402                    LDN     2           ADVANCE UTILITY SECTOR INDEX                    6DI   3253
          75    3503                    RAD     T3                                                          6DI   3254
                                                                                                                  
                                                                                                                  
                                                                                                                  
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 76         0363                        UJN    POM1        CONTINUE PROCESSING                    6DI       3255


                                        **      FLT - FLAW LOGICAL TRACK.                          6DI       3257
                                        *                                                          6DI       3258
                                        *       ENTRY  (T6) = LOGICAL TRACK.                       6DI       3259
                                        *                                                          6DI       3260
                                        *       EXIT   LOGICAL TRACK FLAWED IF WITHIN TRT.         6DI       3261
                                        *                                                          6DI       3262
                                        *       USES   CM+1 - CM+3.                                6DI       3263
                                                                                                   6DI       3264
                                                                                                   6DI       3265
 77         0100 0077            FLT    SUBR                ENTRY/EXIT                         6DI       3266
101         3006                        LDD    T6           CHECK IF TRACK WITHIN TRT              6DI       3267
102         3412                        STD    CM+2                                                6DI       3268
103         2177 7777                   ADC    -**                                                 6DI       3269
                        104     FLTA    EQU    *-1          NUMBER OF TRACKS                       6DI       3270
105         0671                        PJN    FLTX         IF BEYOND TRT                          6DI       3271
106         1400                        LDN    STFS         SELECT TRACK FLAW FUNCTION             6DI       3272
107         3413                        STD    CM+3                                                6DI       3273
110         3005                        LDD    T5           SET EQUIPMENT                          6DI       3274
111         3411                        STD    CM+1                                                6DI       3275
112         1443                        MONITOR STBM        SET TRACK FLAW                         6DI       3276
115         0361                        UJN    FLTX         EXIT                                   6DI       3277


                                        **      PRS - PRESET FLAW PROCESSOR.                       6DI       3279
                                        *                                                          6DI       3280
                                        *       LOAD DRIVER AND PRESET FOR UTILITY SECTOR READ.    6DI       3281
                                        *       LOAD AUXILLIARY OVERLAY IF NEEDED.                 6DI       3282
                                        *       MODIFY CODE FOR PROPER DEVICE.                     6DI       3283
                                        *                                                          6DI       3284
                                        *       EXIT   (T9) = LOGICAL TRACK OF UTILITY SECTOR.     6DI       3285
                                        *              (T7) = LOGICAL SECTOR OF UTILITY SECTOR.    6DI       3286
                                        *              (T8) = 0.                                   6DI       3287
                                        *              (A)  .LT. 0 IF NO ALGORITHM INDEX IN MST.   6DI       3288
                                        *              (A)  .EQ. 0 IF NO FLAW MAP ON DISK TO READ. 6DI       3289
                                        *              (T5) = EQUIPMENT.                           6DI       3290
                                                                                                   6DI       3291
                                                                                                   6DI       3292
116         0200 0462            PRS3   RJM.   EXR                                                 6DI       3293
                                        EXECUTE  0TJ,=      LOAD AUXILLIARY PROCESSOR OVERLAY      6DI       3294
120         2077 7627                   LDC    -PFLA                                               6DI       3295
122         3515                        RAD    LA           RESTORE 0TI LOAD ADDRESS               6DI       3296
123         5015 7776            PRS4   LDM    -1                                                  6DI       3297
125         3405                        STD    T5           SET EST ORDINAL                        6DI       3298
126         2002 0051                   SETMS  PIO,(DF,NR,NS)                                      6DI       3299
132         2000 0000                   LDC    **                                                  6DI       3300
                        133     PRSB    EQU    *-1                                                 6DI       3301
134         3407                        STD    T7           SET SECTOR NUMBER                      6DI       3302
135         2000 0000                   LDC    **                                                  6DI       3303
                        136     PRSC    EQU    *-1                                                 6DI       3304
137         3417                        STD    T9           SET TRACK NUMBER                       6DI       3305
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 140         1400                        LDN    0                                                    6DI       3306
 141         3416                        STD    T8          PRESET RETURN STATUS                     6DI       3307
 142         2000 1431                   LDC    LDNI+FCRU   SET UTILITY SECTOR FUNCTION CODE        6DI       3308
 144         5400 0556                   STM.   RDSA                                                 6DI       3309
                                                                                                      6DI       3310
 146         0100 0146           PRS     SUBR                                                        6DI       3311
                                                                                                      6DI       3312
 150                             PFLA    BSS    0           AUXILLIARY PROCESSOR OVERLAY ORIGIN      6DI       3313
                                                                                                      6DI       3314
 150         5015 7776                   LDM    -1          SET EST ORDINAL                          6DI       3315
 152         3405                        STD    T5                                                   6DI       3316
 153         0200 0245                   SFA    EST                                                  6DI       3317
                                         ADK    EQDE                                                 6DI       3318
 155         6010                        CRD    CM          READ EST ENTRY                           6DI       3319
 156         3014                        LDD    CM+4                                                 6DI       3320
 157         1003                        SHN    3                                                    6DI       3321
 160         1613                        ADN    DILL        READ ALGORITHM INDEX                     6DI       3322
 161         6010                        CRD    CM                                                   6DI       3323
 162         1713                        SBN    DILL-TDGL                                            6DI       3324
 163         6007                        CRD    CM-1                                                 6DI       3325
 164         1500                        LCN    0           SET NUMBER OF TRACKS                     6DI       3326
 165         3311                        LMD    CM-1+2                                               6DI       3327
 166         1002                        SHN    2                                                    6DI       3328
 167         5415 0104                   STM    FLTA        STORE IN *FLT* SUBROUTINE                6DI       3329
                                                                                                      6DI       3330
                                 *       SET ALGORITHM INDEX DEPENDENT PARAMETERS.                    6DI       3331
                                                                                                      6DI       3332
 171         3014                        LDD    CM+4                                                 6DI       3333
 172         1277                        LPN    77                                                   6DI       3334
 173         1701                        SBN    1                                                    6DI       3335
 174         0751                        MJN    PRSX        IF NO ALGORITHM INDEX                    6DI       3336
 175         3400                        STD    T0                                                   6DI       3337
 176         1002                        SHN    2           SET *TALP* OFFSET                        6DI       3338
 177         3100                        ADD    T0                                                   6DI       3339
 200         3115                        ADD    LA                                                   6DI       3340
 201         3403                        STD    T3                                                   6DI       3341
 202         5003 0261                   LDM.   TALP,T3     SET LOGICAL TRACK                        6DI       3342
 204         0441                        ZJN    PRSX        IF NO FLAW MAP ON DISK TO READ           6DI       3343
 205         5415 0136                   STM    PRSC                                                 6DI       3344
 207         5003 0262                   LDM.   TALP+1,T3   SAVE LOGICAL SECTOR                      6DI       3345
 211         5415 0133                   STM    PRSB                                                 6DI       3346
 213         5003 0263                   LDM.   TALP+2,T3   SET FLAW PROCESSOR                       6DI       3347
 215         5415 0073                   STM    POMB+1                                               6DI       3348
 217         5003 0264                   LDM.   TALP+3,T3   SET SINGLE UNIT SECTOR LIMIT             6DI       3349
 221         5415 0027                   STM    FFIB                                                 6DI       3350
 223         3000                        LDD    T0                                                   6DI       3351
 224         1714                        SBN    AIDA-1                                               6DI       3352
 225         0515                        NJN    PRS1        IF NOT A *DA* DEVICE                     6DI       3353
 226         2000 1060                   LDC    NTDA/2      SET UP FOR *DA* PROCESS                  6DI       3354
 230         5415 0014                   STM    FFID                                                 6DI       3355
 232         2000 3017                   LDC    LDDI+T9                                              6DI       3356
 234         5415 0017                   STM    FFIA                                                 6DI       3357
 236         2000 0215                   LDC    RJMI+LA                                              6DI       3358
 240         5415 0034                   STM    FFIC                                                 6DI       3359
 242         5003 0265           PRS1    LDM.   TALP+4,T3                                            6DI       3360
 244         0503                        NJN    PRS2        IF AUXILLIARY OVERLAY NEEDED             6DI       3361
 245         0115 0123                   LJM    PRS4        LOAD DRIVER                              6DI       3362
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                                                                                         6DI       3363
   247         2000 0150      PRS2     LDC    PFLA                                       6DI       3364
   251         3515                    RAD    LA          SET LOAD ADDRESS FOR AUXILLIARY OVERLAY   6DI       3365
   252         5003 0265               LDM.   TALP+4,T3                                  6DI       3366
   254         1006                    SHN    6                                          6DI       3367
   255         1633                    ADN    1R0                                        6DI       3368
   256         1014                    SHN    18D-6                                      6DI       3369
   257         0115 7745               LJM    PRS3-PFLA   LOAD AUXILLIARY PROCESSOR OVERLAY         6DI       3370



                             **        TALP - TABLE OF ALGORITHM INDEX DEPENDENT PARAMETERS.     6DI       3372
                             *                                                           6DI       3373
                             *         ENTRY = 5 BYTES.                                  6DI       3374
                             *         WORD 1 = LOGICAL TRACK OF FLAW INFORMATION.       6DI       3375
                             *         WORD 2 = LOGICAL SECTOR OF FLAW INFORMATION.      6DI       3376
                             *         WORD 3 = FLAW PROCESSOR ADDRESS.                  6DI       3377
                             *         WORD 4 = SINGLE UNIT SECTOR LIMIT.                6DI       3378
                             *         WORD 5 = PROCESSOR OVERLAY NAME.                  6DI       3379
                                                                                         6DI       3380
                                                                                         6DI       3381
   261                        TALP     INDEX                                             6DI       3382
L    0         7150 0001               INDEX  5*AIDI-5,(7150,1,FPI,SLDI,0)               6DI       3383
L    5         7154 0001               INDEX  5*AIDJ-5,(7154,1,FPJ,SLDJ,0)               6DI       3384
L   17         7150 0002               INDEX  5*AIDK-5,(7150,2,FPK,SLDK,2RTJ)            6DI       3385
L   24         7154 0002               INDEX  5*AIDL-5,(7154,2,FPL,SLDL,2RTJ)            6DI       3386
L   12         7223 0020               INDEX  5*AIDM-5,(7223,20,FPM,SLDM,2RTJ)           6DI       3387
L   31         7222 0041               INDEX  5*AIDQ-5,(7222,41,FPQ,SLDQ,2RTJ)           6DI       3388
L   36         0000 0000               INDEX  5*AIDR-5,(0,0,0,0,0)                       NS2776      56
L   43         0000 0000               INDEX  5*AIDD-5,(0,0,0,0,0)                       6DI       3389
L   50         0000 0000               INDEX  5*AIDG-5,(0,0,0,0,0)                       6DI       3390
L   55         7150 0001               INDEX  5*AIDX-5,(7150,1,FPX,SLDX,2RTJ)            6DI       3391
L   62         7134 0001               INDEX  5*AIDY-5,(7134,1,FPY,SLDY,2RTJ)            6DI       3392
L   67         6136 0001               INDEX  5*AIDZ-5,(6136,1,FPZ,SLDZ,2RTJ)            6DI       3393
L   74         6137 0001               INDEX  5*AIDA-5,(6137,1,FPA,SLDA,2RTJ)            6DI       3394
L  101         7222 0204               INDEX  5*AIDB-5,(7222,204,FPB,SLDB,2RTJ)          6DI       3395
L  106         7352 0001               INDEX  5*AIDC-5,(7352,1,FPC,SLDC,2RTJ)            6DI       3396
   374                                 INDEX  5*AIDS-5                                   284L847      1



                             **        FLAW PROCESSORS.                                  6DI       3399
                             *                                                           6DI       3400
                             *         ENTRY  (T3) = ADDRESS OF PHYSICAL ADDRESS.        6DI       3401
                             *                (A) = (T6) = CYLINDER * 2.                 6DI       3402
                             *                                                           6DI       3403
                             *         EXIT   LOGICAL TRACK CORRESPONDING TO THE PHYSICAL ADDRESS   6DI       3404
                             *                FLAWED IN THE TRT.                         6DI       3405
                             *                                                           6DI       3406
                             *         MAY USE  T1, T2, T6, T7, CM - CM+4.               6DI       3407
                             *                                                           6DI       3408
                             *         CALLS  FLT.                                       6DI       3409
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                                **        FPI - FLAW PROCESSOR FOR *DI* EQUIPMENTS.                6DI       3411
                                                                                                 6DI       3412
                                                                                                 6DI       3413
          374       0100 0374       FPI     SUBR                ENTRY/EXIT                     6DI       3414
          376       3506                    RAD     T6                                         6DI       3415
          377       5003 0001               LDM.    1,T3        TRACK AND SECTOR               6DI       3416
          401       3402                    STD     T2                                         6DI       3417
          402       1071                    SHN     -6                                         6DI       3418
          403       1711                    SBN     11                                         6DI       3419
          404       0702                    MJN     FPI1        IF LOWER HALF OF CYLINDER      6DI       3420
          405       3606                    AOD     T6                                         6DI       3421
          406       3002            FPI1    LDD     T2          SET EVEN ODD PHYSICAL SECTOR   6DI       3422
          407       1201                    LPN     1                                          6DI       3423
          410       1001                    SHN     1                                          6DI       3424
          411       3506                    RAD     T6                                         6DI       3425
          412       0215 0100               RJM     FLT         FLAW TRACK                     6DI       3426
          414       4003                    LDI     T3          CHECK FOR TRACK MODE FLAW      6DI       3427
          415       1007                    SHN     21-12                                      6DI       3428
          416       0655                    PJN     FPIX        IF NOT TRACK MODE FLAW         6DI       3429
          417       3006                    LDD     T6                                         6DI       3430
          420       1102                    LMN     2           SELECT OTHER LOGICAL TRACK     6DI       3431
          421       3406                    STD     T6                                         6DI       3432
          422       0215 0100               RJM     FLT         FLAW LOGICAL TRACK             6DI       3433
          424       0347                    UJN     FPIX        EXIT                           6DI       3434


                                **        FPJ - FLAW PROCESSOR FOR *DJ* EQUIPMENTS.                6DI       3436
                                                                                                 6DI       3437
                                                                                                 6DI       3438
          425       0100 0425       FPJ     SUBR                ENTRY/EXIT                     6DI       3439
          427       5003 0001               LDM.    1,T3        SET EVEN/ODD TRACK             6DI       3440
          431       1201                    LPN     1                                          6DI       3441
          432       3506                    RAD     T6                                         6DI       3442
          433       0215 0100               RJM     FLT         FLAW LOGICAL TRACK             6DI       3443
          435       4003                    LDI     T3          CHECK FOR TRACK MODE FLAW      6DI       3444
          436       1007                    SHN     21-12                                      6DI       3445
          437       0665                    PJN     FPJX        IF NOT TRACK MODE FLAW         6DI       3446
          440       3006                    LDD     T6          SELECT OTHER LOGICAL TRACK     6DI       3447
          441       1101                    LMN     1                                          6DI       3448
          442       3406                    STD     T6                                         6DI       3449
          443       0215 0100               RJM     FLT         FLAW LOGICAL TRACK             6DI       3450
          445       0357                    UJN     FPJX        EXIT                           6DI       3451


                    25              ERRNG   473-*               OVERLAY OVERFLOWS PRU          6DI       3453
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                                        IDENT  0TJ,FFIX   "HN" TRACK FLAW PROCESSOR.                6DI       3455
                                      COMMENT 85/07/29. 24/05/19. 6DI - "HN" TRACK FLAW PROCESSOR.   6DI       3456
                                        COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.          281L803     4


                                  ***   TRACK FLAW PROCESSOR AUXILLIARY OVERLAY.                     6DI       3459
                                  *     J. D. MEYER        80/12/12.                                 6DI       3460
                                  *     J. R. HILDEBRAND   82/01/12.                                 6DI       3461



                                  ***   ADDITIONAL FLAW PROCESSORS FOR *0TI*.                        6DI       3463
                                  *                                                                  6DI       3464
                                  *     CONTAINS FLAW PROCESSORS FOR THE FOLLOWING EQUIPMENTS -       6DI       3465
                                  *                                                                  6DI       3466
                                  *           DK                                                     6DI       3467
                                  *           DL                                                     6DI       3468
                                  *           DM                                                     6DI       3469
                                  *           DQ                                                     6DI       3470
                                  *           DX                                                     6DI       3471
                                  *           DY                                                     6DI       3472
                                  *           DZ                                                     6DI       3473
                                  *           DA                                                     6DI       3474
                                  *           DB                                                     6DI       3475
                                  *           DC                                                     6DI       3476
                                  *                                                                  6DI       3477
                                  *     ENTRY  (T3) = ADDRESS OF PHYSICAL ADDRESS.                   6DI       3478
                                  *           (A) = (T6) = CYLINDER * 2.                             6DI       3479
                                  *                                                                  6DI       3480
                                  *     EXIT   LOGICAL TRACK CORRESPONDING TO THE PHYSICAL ADDRESS   6DI       3481
                                  *           FLAWED IN THE TRT.                                     6DI       3482
                                  *                                                                  6DI       3483
                                  *     MAY USE  T1, T2, T6, T7, CM - CM+4.                          6DI       3484
                                  *                                                                  6DI       3485
                                  *     CALLS  CHS, FLT, PTF.                                        6DI       3486



                       5                        ORG    5                                             6DI       3488
                 L   155                        LOC    PFLA+5                                        6DI       3489
                 L   155    0100 0155    ZTJ    SUBR                                                 6DI       3490
                 L   157    0375                UJN    ZTJX        RETURN AFTER LOADING ROUTINES     6DI       3491



                                  **    FPK - FLAW PROCESSOR FOR *DK* EQUIPMENT.                     6DI       3493
                                                                                                     6DI       3494
                                                                                                     6DI       3495
                 L   160    1602        FPK5    ADN    2                                             6DI       3496
                 L   161    0603                PJN    FPKX        IF IN GAP SECTOR                  6DI       3497
                 L   162    0215 0100   FPK6    RJM    FLT         FLAW LOGICAL TRACK                6DI       3498
                                                                                                     6DI       3499



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      L  164         0100 0164          FPK      SUBR              ENTRY/EXIT                                    6DI       3500
      L  166         3506                        RAD     T6                                                      6DI       3501
      L  167         4003                        LDI     T3                                                      6DI       3502
      L  170         1007                        SHN     21-12                                                   6DI       3503
      L  171         0711                        MJN     FPK2      IF TRACK MODE FLAW                            6DI       3504
      L  172         0215 0402                   RJM     CHS       CONVERT HEAD GROUP AND SECTOR                 6DI       3505
      L  174         2077 7615          FPK1     LDC     -SLDK-2                                                 6DI       3506
      L  176         3502                        RAD     T2                                                      6DI       3507
      L  177         0760                        MJN     FPK5      IF IN PREVIOUS TRACK                          6DI       3508
      L  200         3606                        AOD     T6        ADVANCE TRACK                                 6DI       3509
      L  201         0372                        UJN     FPK1                                                    6DI       3510
                                                                                                                 6DI       3511
      L  202         0215 0423          FPK2     RJM     PTF       PROCESS TRACK FLAW                            6DI       3512
      L  204         0357                        UJN     FPKX      RETURN                                        6DI       3513


                                        **       FPL - FLAW PROCESSOR FOR *DL* EQUIPMENTS.                     6DI       3515
                                                                                                                 6DI       3516
                                                                                                                 6DI       3517
      L  205         1602               FPL4     ADN     2                                                       6DI       3518
      L  206         0603                        PJN     FPLX      IF IN GAP SECTOR                              6DI       3519
      L  207         0215 0100          FPL5     RJM     FLT       FLAW LOGICAL TRACK                            6DI       3520
                                                                                                                 6DI       3521
      L  211         0100 0211          FPL      SUBR              ENTRY/EXIT                                    6DI       3522
      L  213         4003                        LDI     T3                                                      6DI       3523
      L  214         1007                        SHN     21-12                                                   6DI       3524
      L  215         0711                        MJN     FPL2      IF TRACK MODE FLAW                            6DI       3525
      L  216         0215 0402                   RJM     CHS       CONVERT HEAD GROUP AND SECTOR                 6DI       3526
      L  220         2077 7432          FPL1     LDC     -SLDL-2                                                 6DI       3527
      L  222         3502                        RAD     T2                                                      6DI       3528
      L  223         0761                        MJN     FPL4      IF IN PREVIOUS TRACK                          6DI       3529
      L  224         3606                        AOD     T6        ADVANCE TRACK                                 6DI       3530
      L  225         0372                        UJN     FPL1                                                    6DI       3531
                                                                                                                 6DI       3532
      L  226         0215 0265          FPL2     RJM     FPY       PROCESS TRACK FLAW                            6DI       3533
      L  230         0360                        UJN     FPLX      RETURN                                        6DI       3534


                                        **       FPM - FLAW PROCESSOR FOR *DM* EQUIPMENTS.                     6DI       3536
                                                                                                                 6DI       3537
                                                                                                                 6DI       3538
      L  231         0100 0231          FPM      SUBR              ENTRY/EXIT                                    6DI       3539
      L  233         0215 0100                   RJM     FLT       FLAW TRACK                                    6DI       3540
      L  235         3606                        AOD     T6                                                      6DI       3541
      L  236         0215 0100                   RJM     FLT       FLAW TRACK                                    6DI       3542
      L  240         0370                        UJN     FPMX      RETURN                                        6DI       3543
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                                **      FPQ - FLAW PROCESSOR FOR *DQ* EQUIPMENTS.                    6DI   3545
                                                                                                     6DI   3546
                                                                                                     6DI   3547
        L   241         0100 0241       FPQ     SUBR                    ENTRY/EXIT                   6DI   3548
        L   243         5003 0001               LDM.    1,T3                                         6DI   3549
        L   245         1071                    SHN     -6                                           6DI   3550
        L   246         1724                    SBN     24                                           6DI   3551
        L   247         0702                    MJN     FPQ1            IF IN FIRST HALF OF CYLINDER 6DI   3552
        L   250         3606                    AOD     T6                                           6DI   3553
        L   251         0215 0100       FPQ1    RJM     FLT             FLAW TRACK                   6DI   3554
        L   253         0365                    UJN     FPQX            RETURN                       6DI   3555
                                                                                                     6DI   3557
                                **      FLAW PROCESSOR FOR *DX* EQUIPMENTS.                          6DI   3558
                                                                                                     6DI   3559
        L   254         0100 0254       FPX     SUBR                    ENTRY/EXIT                   6DI   3560
        L   256         3506                    RAD     T6                                           6DI   3561
        L   257         0215 0423               RJM     PTF             PROCESS TRACK FLAW           6DI   3562
        L   261         0372                    UJN     FPXX            RETURN                       6DI   3563
                                **      FLAW PROCESSOR FOR *DY* EQUIPMENTS.                          6DI   3565
                                                                                                     6DI   3566
                                                                                                     6DI   3567
        L   262         0215 0100       FPY2    RJM     FLT             FLAW LOGICAL TRACK           6DI   3568
                                                                                                     6DI   3569
        L   264         0100 0264       FPY     SUBR                    ENTRY/EXIT                   6DI   3570
        L   266         5003 0001               LDM.    1,T3                                         6DI   3571
        L   270         1071                    SHN     -6                                           6DI   3572
        L   271         1711                    SBN     11                                           6DI   3573
        L   272         0767                    MJN     FPY2            IF IN FIRST TRACK            6DI   3574
        L   273         0503                    NJN     FPY1            IF IN SECOND TRACK           6DI   3575
        L   274         0215 0100               RJM     FLT             FLAW BOTH TRACKS             6DI   3576
        L   276         3606            FPY1    AOD     T6                                           6DI   3577
        L   277         0362                    UJN     FPY2            FLAW SECOND TRACK            6DI   3578
                                **      FLAW PROCESSOR FOR *DZ* EQUIPMENTS.                          6DI   3580
                                                                                                     6DI   3581
                                                                                                     6DI   3582
        L   300         0100 0300       FPZ     SUBR                    ENTRY/EXIT                   6DI   3583
        L   302         5003 0001               LDM.    1,T3                                         6DI   3584
        L   304         1071                    SHN     -6                                           6DI   3585
        L   305         1717                    SBN     17                                           6DI   3586
        L   306         0702                    MJN     FPZ1            IF FIRST TRACK IN CYLINDER   6DI   3587
        L   307         3606                    AOD     T6              ADVANCE TRACK                6DI   3588
        L   310         0215 0100       FPZ1    RJM     FLT             FLAW LOGICAL TRACK           6DI   3589
        L   312         0365                    UJN     FPZX            RETURN                       6DI   3590
```

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                                **        FPA - FLAW PROCESSOR FOR *DA* EQUIPMENTS.                    6DI       3592
                                                                                                     6DI       3593
                                                                                                     6DI       3594
        L  313          0100 0313        FPA      SUBR                                               6DI       3595
        L  315          1076             SHN      -1                                                 6DI       3596
        L  316          3406             STD      T6          SET LOGICAL TRACK = PHYSICAL CYLINDER  6DI       3597
        L  317          0215 0100        RJM      FLT         PROCESS FLAW                           6DI       3598
        L  321          0371             UJN      FPAX        EXIT                                   6DI       3599


                                **        FCE - FLAW DS AND CE TRACKS FOR *DA* DEVICE.                 6DI       3601
                                                                                                     6DI       3602
                                                                                                     6DI       3603
        L  322          0100 0322        FCE      SUBR                                               6DI       3604
        L  324          3017             LDD      T9                                                 6DI       3605
        L  325          2100 1060        ADC      NTDA/2                                             6DI       3606
        L  327          2200 3777        LPC      3777                                               6DI       3607
        L  331          3406             STD      T6          SET DEAD START TRACK ADDRESS           6DI       3608
        L  332          0215 0100        RJM      FLT         FLAW TRACK                             6DI       3609
        L  334          3706             SOD      T6                                                 6DI       3610
        L  335          0215 0100        RJM      FLT                                                6DI       3611
        L  337          3006             LDD      T6                                                 6DI       3612
        L  340          1076             SHN      -1                                                 6DI       3613
        L  341          3406             STD      T6                                                 6DI       3614
        L  342          0215 0100        RJM      FLT                                                6DI       3615
        L  344          3706             SOD      T6                                                 6DI       3616
        L  345          0215 0100        RJM      FLT                                                6DI       3617
        L  347          0352             UJN      FCEX        RETURN                                 6DI       3618


                                **        FPB - FLAW PROCESSOR FOR *DB* EQUIPMENTS.                    6DI       3620
                                                                                                     6DI       3621
                                                                                                     6DI       3622
        L  350          0100 0350        FPB      SUBR                                               6DI       3623
        L  352          5003 0001        LDM.     1,T3                                               6DI       3624
        L  354          1071             SHN      -6                                                 6DI       3625
        L  355          1705             SBN      5                                                  6DI       3626
        L  356          0702             MJN      FPB1        IF FIRST HALF OF CYLINDER              6DI       3627
        L  357          3606             AOD      T6                                                 6DI       3628
        L  360          0215 0100        RJM      FLT         ENTER FLAW                             6DI       3629
        L  362          0365             UJN      FPBX        RETURN                                 6DI       3630
```

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                                **      FLAW PROCESSOR FOR *DC* EQUIPMENTS.                                 6DI   3632
                                                                                                            6DI   3633
                                                                                                            6DI   3634
        L   363         0100 0363       FPC     SUBR            ENTRY/EXIT                                  6DI   3635
        L   365         5003 0001               LDM.    1,T3                                                6DI   3636
        L   367         1071                    SHN     -6                                                  6DI   3637
        L   370         1707                    SBN     7                                                   6DI   3638
        L   371         0705                    MJN     FPC2            IF IN FIRST TRACK                   6DI   3639
        L   372         0503                    NJN     FPC1            IF IN SECOND TRACK                  6DI   3640
        L   373         0215 0100               RJM     FLT             FLAW BOTH TRACKS                    6DI   3641
        L   375         3606            FPC1    AOD     T6                                                  6DI   3642
        L   376         0215 0100       FPC2    RJM     FLT             FLAW LOGICAL TRACK                  6DI   3643
        L   400         0362                    UJN     FPCX            FLAW SECOND TRACK                   6DI   3644


                                **      FLAW SUBROUTINES.                                                   6DI   3646


                                **      CHS - CONVERT HEAD AND SECTOR TO RELATIVE SECTOR IN CYLINDER.       6DI   3648
                                *                                                                           6DI   3649
                                *       ENTRY   ((T3)+1) = 6/  HEAD,6/  SECTOR.                             6DI   3650
                                *                                                                           6DI   3651
                                *       EXIT    (T2) = RELATIVE SECTOR IN CYLINDER.                         6DI   3652
                                *                    = HEAD * 30B + SECTOR.                                 6DI   3653
                                *                                                                           6DI   3654
                                *       USES    T1, T2.                                                     6DI   3655
                                                                                                            6DI   3656
                                                                                                            6DI   3657
        L   401         0100 0401       CHS     SUBR            ENTRY/EXIT                                  6DI   3658
        L   403         5003 0001               LDM.    1,T3            SET HEAD GROUP                      6DI   3659
        L   405         1071                    SHN     -6                                                  6DI   3660
        L   406         3401                    STD     T1                                                  6DI   3661
        L   407         5003 0001               LDM.    1,T3            SET SECTOR                          6DI   3662
        L   411         1277                    LPN     77                                                  6DI   3663
        L   412         3402                    STD     T2                                                  6DI   3664
        L   413         3701            CHS1    SOD     T1                                                  6DI   3665
        L   414         0764                    MJN     CHSX            IF END OF MULTIPLY                  6DI   3666
        L   415         1430                    LDN     30                                                  6DI   3667
        L   416         3502                    RAD     T2                                                  6DI   3668
        L   417         0373                    UJN     CHS1            LOOP                                6DI   3669
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                                **        PTF - PROCESS TRACK FLAW.                                                6DI       3671
                                *                                                                                  6DI       3672
                                *         ENTRY  (T3) = ADDRESS OF PHYSICAL ADDRESS.                               6DI       3673
                                *                (T6) = PHYSICAL CYLINDER * 4.                                     6DI       3674
                                *                                                                                  6DI       3675
                                *         EXIT   LOGICAL TRACK FLAWED.                                             6DI       3676
                                *                                                                                  6DI       3677
                                *         USES   T1.                                                               6DI       3678
                                *                                                                                  6DI       3679
                                *         CALLS  FLT.                                                              6DI       3680
                                                                                                                   6DI       3681
                                                                                                                   6DI       3682
        L  420          0215 0100       PTF3      RJM    FLT          FLAW LOGICAL TRACK                          6DI       3683
                                                                                                                   6DI       3684
        L  422          0100 0422       PTF       SUBR                ENTRY/EXIT                                  6DI       3685
        L  424          5003 0001                 LDM.   1,T3                                                      6DI       3686
        L  426          1071                      SHN    -6                                                        6DI       3687
        L  427          1601                      ADN    1                                                         6DI       3688
        L  430          3401                      STD    T1           HEAD GROUP + 1                               6DI       3689
        L  431          0302                      UJN    PTF2         CONTINUE PROCESSING                          6DI       3690
                                                                                                                   6DI       3691
        L  432          3606            PTF1      AOD    T6           ADVANCE TRACK                                6DI       3692
        L  433          1505            PTF2      LCN    5                                                         6DI       3693
        L  434          3501                      RAD    T1                                                        6DI       3694
        L  435          0762                      MJN    PTF3         IF IN PREVIOUS TRACK                         6DI       3695
        L  436          0573                      NJN    PTF1         IF NOT HEAD GROUP CROSSING TRACK BOUNDARY    6DI       3696
        L  437          0215 0100                 RJM    FLT          FLAW LOGICAL TRACK                           6DI       3697
        L  441          3606                      AOD    T6                                                        6DI       3698
        L  442          0355                      UJN    PTF3         FLAW SECOND TRACK                            6DI       3699


                  30            ERRNG  473-*      OVERLAY OVERFLOWS PRU                                            6DI       3701
                                                                                                                   6DI       3702
                                RSTR              RESTORE INSTRUCTIONS                                             6DI       3703
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                                QUAL   0PI                                                    6DI       3705
                                IDENT  0PI,PRSX   "HN" PACK SERIAL PROCESSOR.               6DI       3706
                              COMMENT 85/07/29. 24/05/19. 6DI - "HN" PACK SERIAL PROCESSOR.  6DI       3707
                                COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.          281L803     5
                                ***      PACK SERIAL PROCESSOR.                              6DI       3710
                                *        R. J. THIELEN.     75/11/20.                        6DI       3711
                                *        W. E. GOEBEL.      78/03/06.                        6DI       3712
                                ***            THE PACK SERIAL PROCESSOR PERFORMS ANY ONE OF THREE    6DI       3714
                                *        DIFFERENT FUNCTIONS, DEPENDING UPON THE OPTION CHOSEN BY THE  6DI       3715
                                *        CALLER.                                                       6DI       3716
                                *        1)     IT READS THE PACK SERIAL NUMBER FROM A SPECIFIED DISK  6DI       3717
                                *               PACK AND PLACES IT INTO BOTH ERRLOG AND BML MESSAGES   6DI       3718
                                *               WHICH ARE RETURNED TO THE CALLING PROGRAM.             6DI       3719
                                *        2)     IT LOADS AND MODIFIES THE MASS STORAGE DRIVER TO ALLOW 6DI       3720
                                *               THE CALLER TO READ AND WRITE PROTECTED SECTORS.        6DI       3721
                                *        3)     IT READS THE DEADSTART SECTOR FROM A SPECIFIED DISK    6DI       3722
                                *               DRIVE AND VERIFIES THAT IT IS VALID BY CHECKING THOSE  6DI       3723
                                *               FIELDS IN THE SECTOR WHOSE CONTENTS ARE KNOWN AND      6DI       3724
                                *               CONSTANT.  AN *ENDMS* IS NOT ISSUED IF THE SECTOR IS   6DI       3725
                                *               VALID, ALLOWING THE CALLER TO UPDATE AND REWRITE THE   6DI       3726
                                *               SECTOR BEFORE ANOTHER MAINFRAME CAN GAIN ACCESS TO THE 6DI       3727
                                *               DRIVE.                                                 6DI       3728
                                *        REDEFINE INSTRUCTIONS FOR LOCATION FREE EXECUTION.            6DI       3730
                                                                                                       6DI       3731
                                RIREL              REDEFINE INSTRUCTIONS                               6DI       3732
                                *        COMMON DECKS.                                                 6DI       3734
                                                                                                       6DI       3735
                                                                                                       6DI       3736
                                                                                                    #  COMSDFS     1
                              0 CTEXT  COMSDFS - COMMON DAYFILE SYMBOL DEFINITIONS.                    COMSDFS     2
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                                ***       PRS - PRESET PACK SERIAL PROCESSOR.                                  6DI       3739
                                *                                                                              6DI       3740
                                *         ENTRY  ((LA)-1) = 3/ FC,9/ EQ.                                       6DI       3741
                                *                EQ = EST ORDINAL.                                             6DI       3742
                                *                FC = 0 IF TO READ PACK SERIAL NUMBER.                         6DI       3743
                                *                FC = 1 IF TO MODIFY DRIVER TO READ AND WRITE PROTECTED        6DI       3744
                                *                       SECTORS.                                               6DI       3745
                                *                FC = 4 IF TO READ AND VERIFY THE DEADSTART SECTOR.            6DI       3746
                                *                                                                              6DI       3747
                                *         EXIT   (T5) = EST ORDINAL.                                           6DI       3748
                                *                                                                              6DI       3749
                                *                FOR FC = 0,                                                   6DI       3750
                                *                (A) = MAIN PROCESSOR ENTRY ADDRESS.                           6DI       3751
                                *                (T6) = LOGICAL TRACK OF PACK SERIAL NUMBER.                   6DI       3752
                                *                (T7) = LOGICAL SECTOR OF PACK SERIAL NUMBER.                  NS2776      57
                                *                PACK SERIAL NUMBER PROCESSOR INITIALIZED.                     6DI       3753
                                *                                                                              6DI       3754
                                *                FOR FC = 1,                                                   6DI       3755
                                *                DRIVER MODIFIED TO READ AND WRITE PROTECTED SECTORS.          6DI       3756
                                *                                                                              6DI       3757
                                *                FOR FC = 4,                                                   6DI       3758
                                *                (A) = 0 IF DEADSTART SECTOR LOADED AND VERIFIED.              6DI       3759
                                *                    = 1 IF MASS STORAGE ERROR OCCURRED WHILE READING          6DI       3760
                                *                        DEADSTART SECTOR.                                     6DI       3761
                                *                    = 2 IF DEADSTART SECTOR FIELDS WERE NOT CORRECT.          6DI       3762
                                *                (T6) = LOGICAL TRACK OF DEADSTART SECTOR.                     6DI       3763
                                *                (T7) = LOGICAL SECTOR OF DEADSTART SECTOR.                    6DI       3764
                                *                (BFMS - BFMS+501) = DEADSTART SECTOR, IF (A) = 0.             6DI       3765
                                *                                                                              6DI       3766
                                *         USES   T3, T5 - T7, CM - CM+4.                                       6DI       3767
                                *                                                                              6DI       3768
                                *         CALLS  C2D, RDS.                                                     6DI       3769
                                *                                                                              6DI       3770
                                *         MACROS ENDMS, SETMS.                                                 6DI       3771
                                                                                                               6DI       3772
                                                                                                               6DI       3773
                              5                          ORG    5                                              6DI       3774
                              5  0100 0005        PRS     SUBR                ENTRY/EXIT                       6DI       3775
                              7  3015              LDD    LA                  ABSOLUTIZE MESSAGE ADDRESSES     6DI       3776
                             10  5515 0327          RAM    TDMA                                                 6DI       3777
                             12  3015              LDD    LA                                                   6DI       3778
                             13  5515 0330          RAM    TDMA+1                                               6DI       3779
                             15  5015 7776          LDM    -1                  SET EST ORDINAL                  6DI       3780
                             17  2200 0777          LPC    777                                                  6DI       3781
                             21  3405              STD    T5                                                   6DI       3782
                             22  5415 0322          STM    MSGB+5                                               271L716     1
                             24  1074              SHN    -3                  CONVERT UPPER TWO DIGITS OF EST ORDINAL 6DI    3784
                             25  0215 0460          RJM    C2D                                                  6DI       3785
                             27  5415 0302          STM    MSGA+1                                               6DI       3786
                             31  3005              LDD    T5                  CONVERT LOWER DIGIT OF EST ORDINAL   6DI       3787
                             32  1207              LPN    7                                                    6DI       3788
                             33  1006              SHN    6                                                    6DI       3789
                             34  5515 0303          RAM    MSGA+2                                               6DI       3790
                                                                                                               6DI       3791
                                *         *SETMS* IS CHANGED TO SUPPRESS ERROR REPORTING OF NORMAL AND         6DI       3792
                                *         NOT READY ERRORS WHILE READING BOTH THE DEADSTART SECTOR AND         6DI       3793
                                *         THE PACK SERIAL NUMBER, PREVENTING UNNECESSARY ERROR MESSAGES        6DI       3794
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                                *       FROM BEING ISSUED TO THE OPERATOR.  EXAMPLES OF UNNEEDED      6DI       3795
                                *       ERROR MESSAGES ARE 1) READING THE DEADSTART SECTOR ON ISD AND 6DI       3796
                                *       844 PACKS WHICH HAVE NEVER HAD *CIP* INSTALLED, AND 2) TRYING 6DI       3797
                                *       TO READ THE PACK SERIAL NUMBER ON AN ISD PACK THAT DOES NOT   6DI       3798
                                *       HAVE ONE.                                                     6DI       3799
                                                                                                      6DI       3800
          36        1401                SETMS  PIO                                                    6DI       3801
                                        SETMS  =,PIO,(AR,DF,-RR,SM)                                   6DI19        1
          41        2000 2061           LDK    EPAR&EPDF&EPRR&EPSM                                    6DI19        2
          43        5400 0106           STM.   UERR                                                   6DI       3804
          45        5000 0111           LDM.   CHRV        SET ACCESS TO A DOWN DEVICE                6DI19        3
          47        1302                SCN    EPAD                                                   6DI19        4
          50        1102                LMN    EPAD                                                   6DI19        5
          51        5400 0111           STM.   CHRV                                                  6DI19        6
          53        2000 1430           LDC    LDNI+FCRF   SET READ FACTORY DATA FUNCTION            6DI       3805
          55        5400 0556           STM.   RDSA                                                   6DI       3806
          57        3013                LDD    CM+3        SET EQUIPMENT NAME IN MESSAGE              6DI       3807
          60        2200 3777           LPC    3777                                                   6DI       3808
          62        5415 0301           STM    MSGA                                                   6DI       3809
          64        5415 0317           STM    MSGB+2                                                 6DI       3810
          66        3014                LDD    CM+4                                                   6DI       3811
          67        1003                SHN    3                                                      6DI       3812
          70        1613                ADN    DILL        READ ALGORITHM INDEX                       6DI       3813
          71        6010                CRD    CM                                                     6DI       3814
          72        1705                SBN    DILL-MDGL   READ SECTOR LIMIT                          6DI       3815
          73        6007                CRD    CM-1                                                   6DI       3816
          74        3010                LDD    CM-1+1      SET SINGLE UNIT SECTOR LIMIT               6DI       3817
          75        2200 3777           LPC    3777                                                   6DI       3818
          77        5415 0226           STM    PSPB                                                   6DI       3819
                                                                                                      6DI       3820
                                *       SET ALGORITHM INDEX DEPENDENT PROCESSING.                     NS2776       58
                                                                                                      6DI       3822
         101        3014                LDD    CM+4                                                   6DI       3823
         102        1277                LPN    77                                                     6DI       3824
         103        2100 0332           ADC    TALP                                                   6DI       3825
         105        3115                ADD    LA                                                     6DI       3826
         106        3403                STD    T3                                                     6DI       3827
         107        4003                LDI    T3          SET TRACK                                  6DI       3828
         110        3406                STD    T6                                                     6DI       3829
                                                                                                      NS2776       59
                                *       NOTE - THE FOLLOWING CODE SETS THE CORRECT *FACTORY* SECTOR    NS2776       60
                                *       NUMBER FOR ALL DEVICES (ZERO FOR ALL EXCEPT CDSS II).  IF A    NS2776       61
                                *       NEW DEVICE IS TO BE ADDED WITH A *DEADSTART* SECTOR NUMBER     NS2776       62
                                *       EXCEEDING 377, THIS CODE MAY REQUIRE ALTERATION.               NS2776       63
                                                                                                      NS2776       64
         111        5003 0040           LDM.   TDSS-TALP,T3  SET FACTORY SECTOR NUMBER                NS2776       65
         113        2200 7400           LPC    7400        CLEAR BITS 7-0                             NS2776       66
                                *       SAVE FACTORY SECTOR NUMBER FOR PSP                            0PIMSFX       1
         115        5415 0331           STM    FSN                                                    0PIMSFX       2
         117        3407                STD    T7                                                     NS2776       67
         120        5015 7776           LDM    -1          CHECK OPTION TYPE                          6DI       3830
         122        1066                SHN    0-11                                                   6DI       3831
         123        0506                NJN    PRS2        IF NOT READING PACK SERIAL NUMBER          6DI       3832
         124        2000 0216           LDC    PSP         RETURN MAIN PROCESSOR ENTRY ADDRESS        6DI       3833
         126        3115                ADD    LA                                                     6DI       3834
         127        0115 0005    PRS1   LJM    PRSX        EXIT                                       6DI       3835
                                                                                                      6DI       3836
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 131        2000 1434          PRS2    LDC    LDNI+FCRP                                                  6DI    3837
 133        5400 0556                  STM.   RDSA                                                      6DI    3838
 135        2000 1437                  LDC    LDNI+FCWP                                                  6DI    3839
 137        5400 0612                  STM.   WDS3                                                      6DI    3840
 141        5015 7776                  LDM    -1                                                         6DI    3841
 143        1065                       SHN    0-12                                                       6DI    3842
 144        0462                       ZJN    PRS1        IF SETTING FOR PROTECTED READS AND WRITES      6DI    3843
 145        5003 0020                  LDM.   TDST-TALP,T3  SET DEADSTART TRACK                          6DI    3844
 147        3406                       STD    T6                                                         6DI    3845
 150        5003 0040                  LDM.   TDSS-TALP,T3  SET DEADSTART SECTOR NUMBER                  6DI    3846
 152        3407                       STD    T7                                                         6DI    3847
 153        2000 6776                  LDC    BFMS        READ THE DEADSTART SECTOR                      6DI    3848
 155        0200 0530                  RJM.   RDS                                                        6DI    3849
 157        1056                       SHN    0-21                                                       6DI    3850
 160        0520                       NJN    PRS4        IF DEADSTART SECTOR CANNOT BE READ             6DI    3851
 161        1413                       LDN    PRSBL+1                                                    6DI    3852
 162        3410                       STD    CM                                                         6DI    3853
 163        3015                       LDD    LA                                                         6DI    3854
 164        5515 0173                  RAM    PRSA                                                       6DI    3855
 166        3710               PRS3    SOD    CM          CHECK NEXT BYTE                                6DI    3856
 167        0411                       ZJN    PRS4        IF ALL KNOWN BYTES IN SECTOR ARE CORRECT       6DI    3857
 170        5010 6775                  LDM.   BFMS-1,CM                                                  6DI    3858
 172        5310 0201                  LMM.   PRSB-1,CM   VERIFY BYTE AGAINST EXPECTED VALUE             6DI    3859
                         173     PRSA  EQU    *-1                                                        6DI    3860
 174        0471                       ZJN    PRS3        IF BYTE CONTENTS ARE CORRECT                   6DI    3861
 175        0200 0535                  ENDMS                                                             6DI    3862
 177        1402                       LDN    2                                                          6DI    3863
 200        0115 0005          PRS4    LJM    PRSX        EXIT                                           6DI    3864
                                                                                                         6DI    3865
                                                                                                         6DI    3866
 202        0500 0016          PRSB    CON    0500,0016                  CONTROL BYTES                   6DI    3867
 204        0000 0000                  CON    0000,0000,0000,1120,1400   FIRST WORD OF SECTOR            6DI    3868
 206        0000 1120
 210        1400
 211        0000 0000                  CON    0000,0000,0000             BEGINNING OF SECOND WORD        6DI    3869
 213        0000
                    12      PRSBL  EQU    *-PRSB                                                         6DI    3870


                           ***     PSP - PACK SERIAL PROCESSOR.                                          6DI    3872
                           *                                                                             6DI    3873
                           *       ENTRY  (A) = LOGICAL UNIT.                                            6DI    3874
                           *              (T5) = EQUIPMENT.                                              6DI    3875
                           *              (T6) = TRACK.                                                  6DI    3876
                           *                                                                             6DI    3877
                           *       EXIT   (A) = 6/BL, 12/TA.                                             6DI    3878
                           *                    BL = BML MESSAGE LENGTH.                                 6DI    3879
                           *                    TA = DAYFILE MESSAGE TABLE ADDRESS.                      6DI    3880
                           *              (A) = 0 IF DISK ERROR DETECTED.                                6DI    3881
                           *              (BFMS - BFMS+1) = PACK SERIAL NUMBER IF NO DISK ERROR.         6DI    3882
                           *                                                                             6DI    3883
                           *       USES   T0, T3 - T7, CM - CM+4.                                        6DI    3884
                           *                                                                             6DI    3885
                           *       CALLS  CBD, CHB, CSD, CTD, RDS.                                       6DI    3886
                           *                                                                             6DI    3887
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                                *       MACROS ENDMS.                                                   6DI       3888
                                                                                                        6DI       3889
                                                                                                        6DI       3890
     214        1400                PSP4    LDN   0           RETURN ERROR STATUS                      6DI       3891
                                                                                                        6DI       3892
     215        0100 0215           PSP     SUBR              ENTRY/EXIT                             6DI       3893
     217        3401                        STD   T1          SAVE LOGICAL UNIT                        6DI       3894
                                    *       FSN IS SET DURING PRS EXECUTION, SEE COMMENTS THERE         0PIMSFX      3
     220        5015 0331                   LDM   FSN  SET FACTORY SECTOR NUMBER                      0PIMSFX      4
     222        3407                        STD   T7                                                 0PIMSFX      5
     223        3701                PSP1    SOD   T1          FORM LOGICAL UNIT * SECTOR LIMIT         6DI       3897
     224        0705                        MJN   PSP2        IF MULTIPLICATION COMPLETE               6DI       3898
     225        2000 0000                   LDC   0           ADD SINGLE UNIT SECTOR LIMIT             6DI       3899
                           226      PSPB    EQU   *-1                                                  6DI       3900
     227        3507                        RAD   T7                                                   6DI       3901
     230        0372                        UJN   PSP1                                                 6DI       3902
                                                                                                        6DI       3903
     231        2000 6776           PSP2    LDC   BFMS        READ FACTORY SECTOR                      6DI       3904
     233        0200 0530                   RJM.  RDS                                                  6DI       3905
     235        0756                        MJN   PSP4        IF ERROR                                 6DI       3906
     236        3077                        LDD   MA          GET PHYSICAL UNIT NUMBER                 6DI       3908
     237        6204                        CWD   T4                                                   6DI       3909
     240        1464                        MONITOR  LDAM     CONVERT ADDRESS                          6DI       3910
     243        0200 0535                   ENDMS                                                      NS2546       1
     245        3077                        LDD   MA                                                   6DI       3911
     246        1601                        ADN   1                                                    6DI       3912
     247        6010                        CRD   CM                                                   6DI       3913
     250        3011                        LDD   CM+1         PUT PHYSICAL UNIT NUMBER IN MESSAGE      6DI       3914
     251        5415 0320                   STM   MSGB+3                                               271L716      2
     253        0215 0460                   RJM   C2D                                                  6DI       3916
     255        5415 0305                   STM   MSGA+4                                               6DI       3917
     257        2000 6776                   LDC   BFMS        SET ADDRESS OF PACK SERIAL NUMBER         6DI       3918
     261        3410                        STD   CM                                                   6DI       3919
     262        2000 0310                   LDC   MSGA+7      SET ERRLOG MESSAGE DESTINATION ADDRESS   6DI       3920
     264        3115                        ADD   LA                                                   6DI       3921
     265        3411                        STD   CM+1                                                 6DI       3922
     266        2000 0324                   LDC   MSGB+7      SET BML MESSAGE DESTINATION ADDRESS      271L716      3
     270        3115                        ADD   LA                                                   6DI       3924
     271        3412                        STD   CM+2                                                 6DI       3925
     272        0215 0434                   RJM   CSD         CONVERT 6 BCD DIGITS TO DISPLAY          6DI       3926
     274        2012 0327                   LDC   TDMA+MSG1L*10000                                    6DI       3927
     276        3115                        ADD   LA                                                   6DI       3928
     277        0115 0215                   LJM   PSPX        EXIT                                     6DI       3929
                                                                                                        6DI       3930
                                                                                                        6DI       3931
     301        0521                MSGA    DATA  C*EQ000, U00,PS=000000.*                            6DI       3932
                                                                                                        6DI       3933
     315        0401                MSGB    CON   DM0401       MESSAGE ID                               6DI       3934
     316        0100                        CON   HI0100       MESSAGE SYMPTOM                          6DI       3935
     317        0000                        CON   0            DEVICE TYPE (DISPLAY CODE)               6DI       3936
     320        0000                        CON   0            UNIT NUMBER (BINARY)                     271L716      4
     321        0000                        CON   0            RESERVED FOR CDC                         271L716      5
     322        0000                        CON   0            EST ORDINAL (BINARY)                     271L716      6
     323        0000                        CON   0            RESERVED FOR CDC                         271L716      7
     324        3030                        DATA  6AXXXXXX     PACK SERIAL NUMBER (DISPLAY CODE)        271L716      8
                           12       MSG1L   EQU   *-MSGB       REGULAR BML MESSAGE LENGTH               6DI       3941
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                                **        TDMA - TABLE OF DAYFILE MESSAGE ADDRESSES.                    6DI       3943
                                                                                                      6DI       3944
                                                                                                      6DI       3945
          327                            TDMA      BSS     0                                        6DI       3946
          327          0301              .         CON     MSGA        ERRLOG MESSAGE ADDRESS       6DI       3947
          330          0315              .         CON     MSGB        BML MESSAGE ADDRESS          6DI       3948
                                *         RESERVE SPACE FOR STORING FACTORY SECTOR NUMBER           0PIMSFX      6
          331                1     FSN     BSS     1                                                0PIMSFX      7


                                **        TALP - TABLE OF ALGORITHM INDEX PROCESSING PARAMETERS.        6DI       3950
                                *                                                                     6DI       3951
                                *         ENTRY = 1 WORDS.                                            6DI       3952
                                *         WORD 1 = LOGICAL TRACK OF MANUFACTURING SECTOR.             6DI       3953
                                                                                                      6DI       3954
                                                                                                      6DI       3955
          332                            TALP      INDEX                                             6DI       3956
        L   1          7150              .         INDEX   AIDI,(7150)                               6DI       3957
        L   2          7154              .         INDEX   AIDJ,(7154)                               6DI       3958
        L   4          7150              .         INDEX   AIDK,(7150)                               6DI       3959
        L   5          7154              .         INDEX   AIDL,(7154)                               6DI       3960
        L   3          7222              .         INDEX   AIDM,(7222)                               6DI       3961
        L   6          7222              .         INDEX   AIDQ,(7222)                               6DI       3962
        L   7          5060              .         INDEX   AIDR,(5060)                               NS2776      69
        L  12          7150              .         INDEX   AIDX,(7150)                               6DI       3963
        L  13          7134              .         INDEX   AIDY,(7134)                               6DI       3964
        L  14          6136              .         INDEX   AIDZ,(6136)                               6DI       3965
        L  15          6137              .         INDEX   AIDA,(6137)                               6DI       3966
        L  16          7222              .         INDEX   AIDB,(7222)                               6DI       3967
        L  17          7352              .         INDEX   AIDC,(7352)                               6DI       3968
        L  10          0000              .         INDEX   AIDD,(0)                                  6DI       3969
        L  11          0000              .         INDEX   AIDG,(0)                                  6DI       3970
          352                            .         INDEX   AIDS                                      284L847      2


                                **        TDST - TABLE OF DEADSTART TRACK NUMBERS.                      6DI       3973
                                                                                                      6DI       3974
                                                                                                      6DI       3975
          352                            TDST      INDEX                                             6DI       3976
        L   1          7152              .         INDEX   AIDI,7152                                 6DI       3977
        L   2          7155              .         INDEX   AIDJ,7155                                 6DI       3978
        L   4          7150              .         INDEX   AIDK,7150                                 6DI       3979
        L   5          7154              .         INDEX   AIDL,7154                                 6DI       3980
        L   3          7222              .         INDEX   AIDM,7222                                 6DI       3981
        L   6          7222              .         INDEX   AIDQ,7222                                 6DI       3982
        L   7          5060              .         INDEX   AIDR,5060                                 NS2776      70
        L  12          7150              .         INDEX   AIDX,7150                                 6DI       3983
        L  13          7134              .         INDEX   AIDY,7134                                 6DI       3984
        L  14          6136              .         INDEX   AIDZ,6136                                 6DI       3985
        L  15          6137              .         INDEX   AIDA,6137                                 6DI       3986
        L  16          7222              .         INDEX   AIDB,7222                                 6DI       3987
        L  17          7352              .         INDEX   AIDC,(7352)                               6DI       3988
        L  10          7140              .         INDEX   AIDD,7140                                 6DI       3989
```

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L   11        6570                    INDEX  AIDG,6570                                  6DI       3990
   372                                  INDEX  AIDS                                      284L847      3


                                **      TDSS - TABLE OF DEADSTART SECTOR NUMBERS.        6DI       3993
                                *                                                       NS2776       71
                                *      NOTE - IF A NEW DEVICE WITH A DEADSTART SECTOR NUMBER GREATER NS2776       72
                                *      THAN 377 IS ADDED TO THIS TABLE, CODE IN THE AREA JUST BEFORE NS2776       73
                                *      TAG *PRS1* MAY REQUIRE ALTERATION.               NS2776       74
                                                                                        6DI       3994
                                                                                        6DI       3995
   372                           TDSS   INDEX                                           6DI       3996
L    1        0001                     INDEX  AIDI,1                                   6DI       3997
L    2        0001                     INDEX  AIDJ,1                                   6DI       3998
L    4        0003                     INDEX  AIDK,3                                   6DI       3999
L    5        0003                     INDEX  AIDL,3                                   6DI       4000
L    3        0037                     INDEX  AIDM,37B                                 6DI       4001
L    6        0076                     INDEX  AIDQ,76B                                 6DI       4002
L    7        2476                     INDEX  AIDR,2476B                               NS2776       75
L   12        0002                     INDEX  AIDX,2                                   6DI       4003
L   13        0002                     INDEX  AIDY,2                                   6DI       4004
L   14        0002                     INDEX  AIDZ,2                                   6DI       4005
L   15        0002                     INDEX  AIDA,2                                   6DI       4006
L   16        0370                     INDEX  AIDB,370B                                6DI       4007
L   17        0002                     INDEX  AIDC,2                                   6DI       4008
L   10        0000                     INDEX  AIDD,0                                   6DI       4009
L   11        0000                     INDEX  AIDG,0                                   6DI       4010
   412                                  INDEX  AIDS                                      284L847      4


                                **      CBD - CONVERT BINARY CODED DECIMAL TO DISPLAY CODE. 6DI       4013
                                *                                                       6DI       4014
                                *      ENTRY  (A) = 10/,8/ 2 BCD DIGITS.                6DI       4015
                                *             (CM+1) = ADDRESS IN ERRLOG MESSAGE WHERE RESULT IS 6DI       4016
                                *                      TO BE STORED.                    6DI       4017
                                *             (CM+2) = ADDRESS IN BML MESSAGE WHERE RESULT IS TO 6DI       4018
                                *                      BE STORED.                       6DI       4019
                                *                                                       6DI       4020
                                *      EXIT   CONVERTED DIGITS ADDED TO ERRLOG AND BML MESSAGES. 6DI       4021
                                *             (CM+1) AND (CM+2) INCREMENTED.           6DI       4022
                                *                                                      6DI       4023
                                *      USES   T0.                                       6DI       4024
                                                                                        6DI       4025
                                                                                        6DI       4026
   412        0100 0412          CBD  SUBR                ENTRY/EXIT                  6DI       4027
   414        2200 0377               LPC    377         UNPACK DIGITS               6DI       4028
   416        1016                    SHN    16          SAVE HIGH ORDER DIGIT       6DI       4029
   417        3400                    STD    T0                                      6DI       4030
   420        1317                    SCN    17                                      6DI       4031
   421        1075                    SHN    -2          POSITION LOW ORDER DIGIT    6DI       4032
   422        3300                    LMD    T0          MERGE HIGH ORDER DIGIT      6DI       4033
   423        1006                    SHN    6                                       6DI       4034
   424        2100 3333               ADC    2R00        CONVERT TO DISPLAY CODE     6DI       4035
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 426         4411                    STI    CM+1                                                  6DI       4036
 427         4412                    STI    CM+2                                                  6DI       4037
 430         3611                    AOD    CM+1                                                  6DI       4038
 431         3612                    AOD    CM+2                                                  6DI       4039
 432         0357                    UJN    CBDX        EXIT                                      6DI       4040
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                                **      CSD - CONVERT SIX BCD DIGITS TO DISPLAY CODE.             6DI       4042
                                *                                                                 6DI       4043
                                *       ENTRY  (CM) = ADDRESS OF BCD DIGITS.                      6DI       4044
                                *              (CM+1) = STARTING ADDRESS IN ERRLOG MESSAGE WHERE  6DI       4045
                                *                       RESULT IS TO BE STORED.                   6DI       4046
                                *              (CM+2) = STARTING ADDRESS IN BML MESSAGE WHERE RESULT 6DI     4047
                                *                       IS TO BE STORED.                          6DI       4048
                                *                                                                 6DI       4049
                                *       EXIT   DIGITS ADDED TO ERRLOG AND BML MESSAGES.           6DI       4050
                                *              (CM - CM+2) EACH INCREMENTED TO POINT TO THE FIRST  6DI       4051
                                *              BYTE AFTER THE ADDED DIGITS.                       6DI       4052
                                *                                                                 6DI       4053
                                *       USES   CM.                                                6DI       4054
                                *                                                                 6DI       4055
                                *       CALLS  CBD.                                               6DI       4056
                                                                                                  6DI       4057
                                                                                                  6DI       4058
 433         0100 0433           CSD    SUBR                ENTRY/EXIT                         6DI       4059
 435         4010                       LDI    CM          CONVERT BCD DIGITS ONE AND TWO         6DI       4060
 436         1073                       SHN    -4                                                 6DI       4061
 437         0215 0413                  RJM    CBD                                                6DI       4062
 441         4010                       LDI    CM          CONVERT BCD DIGITS THREE AND FOUR      6DI       4063
 442         1217                       LPN    17                                                 6DI       4064
 443         1014                       SHN    14                                                 6DI       4065
 444         5310 0001                  LMM.   1,CM                                               6DI       4066
 446         1067                       SHN    -10                                                6DI       4067
 447         0215 0413                  RJM    CBD                                                6DI       4068
 451         3610                       AOD    CM                                                 6DI       4069
 452         4010                       LDI    CM          CONVERT BCD DIGITS FIVE AND SIX        6DI       4070
 453         0215 0413                  RJM    CBD                                                6DI       4071
 455         3610                       AOD    CM                                                 6DI       4072
 456         0354                       UJN    CSDX        EXIT                                   6DI       4073
```

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                                **      COMMON DECKS.                                             6DI       4075
                                                                                                  6DI       4076
                                                                                                  6DI       4077
 457                                    CTEXT  COMPC2D - CONVERT 2 OCTAL DIGITS TO DISPLAY CODE.  COMPC2D     1
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                              2        ERRNG  473-*       OVERLAY OVERFLOWS PRU                     6DI       4080
                                       RSTR               RESTORE INSTRUCTIONS                   6DI       4081
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                                    QUAL   0RI                                                    6DI       4083
                                    IDENT  0RI,PRSX   "HN" UNIT RESERVE PROCESSOR.              6DI       4084
                                COMMENT 85/07/29. 24/05/19. 6DI - "HN" UNIT RESERVE PROCESSOR.  6DI       4085
                                    COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.         281L803     6
                                ***         UNIT RESERVE PROCESSOR.                             6DI       4088
                                *           R. J. THIELEN.     75/11/20.                        6DI       4089
                                *           W. E. GOEBEL.      78/03/06.                        6DI       4090
                                *           K. F. REHM.        84/07/12.                        6DI       4091
                                ***               THE UNIT RESERVE PROCESSOR IS USED IN CASES WHERE 844  6DI       4093
                                *           DRIVES ARE CONNECTED TO MORE THAN ONE CONTROLLER, AND THE     6DI       4094
                                *           CONTROLLER WHICH IS CURRENTLY HOLDING DRIVES RESERVED IS       6DI       4095
                                *           INOPERATIVE.  THE PROCESSOR ISSUES A *GRENADE* FUNCTION TO    6DI       4096
                                *           THE FUNCTIONING CONTROLLER, WHICH RELEASES ALL 844 DRIVES      6DI       4097
                                *           RESERVED BY THE INOPERATIVE CONTROLLER.                       6DI       4098
                                *           REDEFINE INSTRUCTIONS FOR LOCATION FREE EXECUTION.            6DI       4100
                                                                                                          6DI       4101
                                    RIREL               REDEFINE INSTRUCTIONS                         6DI       4102
                                ***         PRS - PRESET UNIT RESERVE PROCESSOR.                      6DI       4104
                                *                                                                     6DI       4105
                                *           EXIT   (A) = MAIN PROCESSOR ENTRY ADDRESS.                6DI       4106
                                                                                                      6DI       4107
                                                                                                      6DI       4108
                                    5                       ORG    5                                  6DI       4109
                                    5       0100 0005  PRS  SUBR               ENTRY/EXIT            6DI       4110
                                    7       2000 0014       LDC    RUR                               6DI       4111
                                   11       3115            ADD    LA                                6DI       4112
                                   12       0372            UJN    PRSX        EXIT                  6DI       4113
                                **          RUR - RELEASE UNIT RESERVES.                              6DI       4115
                                *                                                                     6DI       4116
                                *           ENTRY  (T5) = EST ORDINAL OF EQUIPMENT.                   6DI       4117
                                *                  (T6) = LEGAL TRACK NUMBER.                         6DI       4118
                                *                  (T7) = LEGAL SECTOR NUMBER.                        6DI       4119
                                *                                                                     6DI       4120
                                *           CALLS  RDS.                                               6DI       4121
                                *                                                                     6DI       4122
                                *           MACROS SETMS.                                             6DI       4123
                                                                                                      6DI       4124
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                                                                                         6DI        4125
       13         0100 0013         RUR       SUBR              ENTRY/EXIT               6DI        4126
       15         2002 0041                   SETMS  PIO,(DF,NS)                         6DI        4127
       21         2000 1411                   LDC    LDNI+FCGR                           6DI        4128
       23         5400 0706                   STM.   LDAA                                6DI        4129
       25         5015 0042                   LDM    RURA                                6DI        4130
       27         5400 0711                   STM.   LDAB                                6DI        4131
       31         5015 0043                   LDM    RURB                                6DI        4132
       33         5400 0556                   STM.   RDSA                                6DI        4133
       35         0200 0530                   RJM.   RDS          ISSUE GRENADE FUNCTION  6DI        4134
       37         0200 0535                   ENDMS                                      6DI        4135
       41         0351                        UJN    RURX         RETURN                 6DI        4136
                                                                                         6DI        4137
       42                           RURA      BSS    0                                   6DI        4138
     L  711                                   LOC    LDAB                                6DI        4139
     L  711       0304                        UJN    LDA7         AVOID OUTPUT OF DISK ADDRESS  6DI  4140
       43                                     LOC    *O                                  6DI        4141
                                                                                         6DI        4142
       43                           RURB      BSS    0                                   6DI        4143
     L  556                                   LOC    RDSA                                6DI        4144
     L  556       0306                        UJN    RDS4         AVOID ISSUING FURTHER FUNCTIONS  6DI  4145
       44                                     LOC    *O                                  6DI        4146
                                                                                         6DI        4147
                                                                                         6DI        4148
       44                                     BSS    0                                   6DI        4149
                               427            ERRNG  473-*        OVERLAY OVERFLOWS PRU  6DI        4150
                                              RSTR                RESTORE INSTRUCTIONS   6DI        4151
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                                    QUAL   0SI                                                    6DI       4153
                                    IDENT  0SI,PRSX   "HN" SERVO TIMING PROCESSOR.              6DI       4154
                                COMMENT 82/02/26. 82/10/23. 6DI - "HN" SERVO TIMING PROCESSOR.  6DI       4155
                                    COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.          281L803     7
                                    COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.          6DI       4157
                                ***         SERVO TIMING PROCESSOR.                              6DI       4158
                                *           R. J. THIELEN.     75/11/20.                         6DI       4159
                                *           W. E. GOEBEL.      78/03/06.                         6DI       4160
                                *           T. J. CALLAGHAN.   83/03/09.                         6DI       4161
                                *                                                               6DI       4162
                                ***               THE SERVO TIMING PROCESSOR PERFORMS SERVO      6DI       4163
                                *           ADJUSTMENTS FOR 885 DRIVES.                         6DI       4164
                                *                                                               6DI       4165
                                *           REDEFINE INSTRUCTIONS FOR LOCATION FREE EXECUTION.  6DI       4166
                                *                                                               6DI       4167
                                    RIREL               REDEFINE INSTRUCTIONS                   6DI       4168
                                *                                                               6DI       4169
                                ***         PRS - PRESET PACK SERIAL PROCESSOR.                 6DI       4170
                                *                                                               6DI       4171
                                *           ENTRY  ((LA)-1) = 3/,9/  EQ.                        6DI       4172
                                *                  EQ = EST ORDINAL.                            6DI       4173
                                *                                                               6DI       4174
                                *           EXIT   (A) = MAIN PROCESSOR ENTRY ADDRESS.          6DI       4175
                                *                  (T5) = EST ORDINAL.                          6DI       4176
                                *                  (T6) = TRACK.                                6DI       4177
                                *                  (T7) = SECTOR.                               6DI       4178
                                *                  PACK SERIAL PROCESSOR INITIALIZED.           6DI       4179
                                *                  MASS STORAGE DRIVER INITIALIZED AND MODIFIED TO READ  6DI  4180
                                *                  THE APPROPRIATE SECTOR.                      6DI       4181
                                *                                                               6DI       4182
                                *           USES   T5.                                          6DI       4183
                                *                                                               6DI       4184
                                *           MACROS SETMS.                                       6DI       4185
                                                                                                6DI       4186
                                                                                                6DI       4187
                                    5               ORG    5                                    6DI       4188
                                    5  0100 0005    PRS    SUBR               ENTRY/EXIT        6DI       4189
                                    7  5015 7776           LDM    -1          SET EST ORDINAL   6DI       4190
                                   11  2200 0777           LPC    777                           6DI       4191
                                   13  3405                STD    T5                            6DI       4192
                                   14  2002 0041           SETMS  PIO,(DF,NS)                   6DI       4193
                                   20  3015                LDD    LA          ABSOLUTIZE ADDRESS 6DI       4194
                                   21  5515 0037           RAM    FTCA                          6DI       4195
                                   23  1746                SBN    TFTC-FTC    RETURN PROCESSOR ADDRESS  6DI  4196
                                   24  0360                UJN    PRSX        RETURN            6DI       4197
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                                **        FTC - FUNCTION SERVO DIFFERENCE TIMING COUNTER.                6DI   4199
                                *                                                                        6DI   4200
                                *         ENTRY  (T7) = LOGICAL UNIT * SINGLE UNIT SECTOR LIMIT.         6DI   4201
                                *                                                                        6DI   4202
                                *         EXIT   (A) = 0 IF TIMING TOO LARGE.                            6DI   4203
                                *                (A) .LT. 0 IF DISK ERROR.                               6DI   4204
                                *                (A) = SERVO TIMING AVERAGED OVER 20 SAMPLES.            6DI   4205
                                *                                                                        6DI   4206
                                *         USES   T1, T3.                                                 6DI   4207
                                *                                                                        6DI   4208
                                *         CALLS  RDS.                                                    6DI   4209
                                *                                                                        6DI   4210
                                *         MACROS ENDMS, SETMS.                                           6DI   4211
                                                                                                         6DI   4212
                                                                                                         6DI   4213
          25    0200 0535       FTC3      ENDMS                                                        6DI   4214
                                                                                                         6DI   4215
          27    0100 0027       FTC       SUBR               ENTRY/EXIT                                6DI   4216
          31    1402                      LDN    2           SET DRIVER                                6DI   4217
          32    5400 0723                 STM.   FNCA                                                  6DI   4218
          34    1410                      LDN    TFTCL-1     MOVE CODE TO *RDS*                        6DI   4219
          35    3401                      STD    T1                                                    6DI   4220
          36    5001 0076       FTC1      LDM.   TFTC,T1                                               6DI   4221
                          37    FTCA      EQU    *-1                                                   6DI   4222
          40    5401 0546                 STM.   RDSC,T1                                               6DI   4223
          42    3701                      SOD    T1                                                    6DI   4224
          43    0672                      PJN    FTC1        IF MORE TO MOVE                           6DI   4225
          44    1420                      LDN    20          SET TIMING LOOP COUNTER                   6DI   4226
          45    3403                      STD    T3                                                    6DI   4227
          46    2000 6776       FTC2      LDC    BFMS        INPUT TIMING SAMPLE                       6DI   4228
          50    0200 0530                 RJM.   RDS                                                   6DI   4229
          52    0754                      MJN    FTCX        IF ERROR                                  6DI   4230
          53    5000 6776                 LDM.   BFMS                                                  6DI   4231
          55    0547                      NJN    FTC3        IF TIMING DATA TOO LARGE                  6DI   4232
          56    5000 6777                 LDM.   BFMS+1      PROCESS TIMING SAMPLE                     6DI   4233
          60    5515 0072                 RAM    FTCB+1                                                6DI   4234
          62    1063                      SHN    -14                                                   6DI   4235
          63    5515 0071                 RAM    FTCB                                                  6DI   4236
          65    3703                      SOD    T3                                                    6DI   4237
          66    0557                      NJN    FTC2        IF MORE SAMPLES TO PROCESS                6DI   4238
          67    0200 0535                 ENDMS                                                        6DI   4239
          71    2000 0000       FTCB      LDC    0           TOTAL OF TIMING SAMPLES                   6DI   4240
          73    1073                      SHN    -4                                                    6DI   4241
          74    0115 0027                 LJM    FTCX        RETURN                                    6DI   4242
                                                                                                         6DI   4243
          76                    TFTC      BSS    0           CODE TO OVERLAY *RDS*                     6DI   4244
    L     546                             LOC    RDSC                                                  6DI   4245
    L     546   0200 0642                 RJM.   LDA         SEEK TO CYLINDER 0                        6DI   4246
    L     550   0215 0110                 RJM    FTD         FUNCTION TIMING DIFFERENCE COUNTER        6DI   4247
    L     552   0304                      UJN    RDSA        INPUT TIMING DATA                         6DI   4248
    L     553                     3       BSS    RDSA-*      SPARES                                    6DI   4249
    L     556   1456              RDSA    LDN    FCTD        INPUT TIMING DATA                         6DI   4250
          107                             LOC    *O                                                    6DI   4251
                                  11      TFTCL  EQU    *-TFTC                                        6DI   4252
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                                **        FTD - FUNCTION TIMING DIFFERENCE COUNTER.                    6DI       4254
                                                                                                     6DI       4255
                                                                                                     6DI       4256
      107         0100 0107       FTD     SUBR                ENTRY/EXIT                           6DI       4257
      111         5000 0730               LDM.   FNCC        SET FUNCTION                         6DI       4258
      113         1640                    ADN    40                                                6DI       4259
      114         5415 0123               STM    FTDA                                              6DI       4260
      116         5000 0734               LDM.   FNCB        SET TEST                             6DI       4261
      120         5415 0127               STM    FTDB                                              6DI       4262
      122         1464                    LDN    FCFT        FUNCTION TIMING DIFFERENCE COUNTER    6DI       4263
      123         7640            FTDA    FAN    0+40                                              6DI       4264
      124         3072                    LDD    TH                                                6DI       4265
      125         3401                    STD    T1                                                6DI       4266
      126         3402                    STD    T2                                                6DI       4267
      127         0000 0556       FTDB    CON    0,RDSA                                            6DI       4268
                                  *       IJM    RDSA,CH     IF FUNCTION ACCEPTED                  6DI       4269
      131         3701                    SOD    T1                                                6DI       4270
      132         0674                    PJN    FTDB        IF NOT TIME OUT                       6DI       4271
      133         3702                    SOD    T2                                                6DI       4272
      134         0672                    PJN    FTDB        IF NOT TIME OUT                       6DI       4273
      135         0351                    UJN    FTDX        RETURN                                6DI       4274

                                335       ERRNG  473-*       OVERLAY OVERFLOWS PRU                 6DI       4276
                                          RSTR   RESTORE INSTRUCTIONS                              6DI       4277
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                                    QUAL   0CI                                                    6DI       4279
                                    IDENT  0CI,PRSX   "HN" FIRMWARE IDENT PROCESSOR.            6DI       4280
                                COMMENT 85/07/29. 24/05/19. 6DI - "HN" FIRMWARE IDENT PROCESSOR.  6DI       4281
                                    COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.          281L803      8
                                ***         FIRMWARE IDENT PROCESSOR.                           6DI       4284
                                *           R. J. THIELEN.     75/11/20.                        6DI       4285
                                *           W. E. GOEBEL.      78/03/06.                        6DI       4286
                                ***               THE FIRMWARE IDENT PROCESSOR OBTAINS DETAILED STATUS   6DI       4288
                                *           FOR A SPECIFIED EQUIPMENT, CHANNEL AND LOGICAL UNIT, EXTRACTS 6DI       4289
                                *           THE FIRMWARE REVISION NUMBER AND PLACES THAT INFORMATION IN A 6DI       4290
                                *           DAYFILE MESSAGE THAT IT RETURNS TO THE CALLING PROGRAM.       6DI       4291
                                *           REDEFINE INSTRUCTIONS FOR LOCATION FREE EXECUTION.            6DI       4293
                                                                                                  6DI       4294
                                    RIREL               REDEFINE INSTRUCTIONS                     6DI       4295
                                **          COMMON DECKS.                                         6DI       4297
                                                                                                  6DI       4298
                                                                                                  6DI       4299
                                                                                                # COMSDFS      1
                  0                 CTEXT  COMSDFS - COMMON DAYFILE SYMBOL DEFINITIONS.           COMSDFS      2
                                ***         PRS - PRESET FIRMWARE IDENTIFICATION PROCESSOR.      6DI       4302
                                *                                                               6DI       4303
                                *           ENTRY  ((LA)-1) = 3/ FN,9/ EQ.                      6DI       4304
                                *                  FN = FUNCTION NUMBER.                        6DI       4305
                                *                       0 = CHANNEL CONTROLWARE IDENTIFICATION. 6DI       4306
                                *                       1 = CONTROL MODULE CONTROLWARE IDENTIFICATION. 6DI  4307
                                *                                                               6DI       4308
                                *           EXIT   (A) = MAIN PROCESSOR ENTRY ADDRESS.          6DI       4309
                                *                  (T5) = EST ORDINAL.                          6DI       4310
                                *                  FIRMWARE IDENTIFICATION PROCESSOR INITIALIZED. 6DI     4311
                                *                                                               6DI       4312
                                *           USES   T5, T7, CM - CM+4.                           6DI       4313
                                *                                                               6DI       4314
                                *           MACROS SETMS.                                       6DI       4315
                                                                                                  6DI       4316
                                                                                                  6DI       4317
                  5                       ORG    5                                              6DI       4318
                  5         0100 0005      PRS     SUBR               ENTRY/EXIT                6DI       4319
```

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 7         3015                    LDD    LA          ABSOLUTIZE MESSAGE ADDRESSES              6DI       4320
10         5515 0161               RAM    TDMA                                                  6DI       4321
12         5515 0162               RAM    TDMA+1                                                6DI       4322
14         5015 7776               LDM    -1          SET EST ORDINAL                           6DI       4323
16         2200 0777               LPC    777                                                   6DI       4324
20         3405                    STD    T5                                                    6DI       4325
21         2002 0052               SETMS  PIOCH,(DF,NR,NS)                                      6DI       4326
25         3014                    LDD    CM+4        GET ALGORITHM INDEX FROM MST              6DI       4327
26         1003                    SHN    3                                                     6DI       4328
27         1613                    ADN    DILL                                                  6DI       4329
30         6010                    CRD    CM                                                    6DI       4330
31         3014                    LDD    CM+4                                                  6DI       4334
32         1277                    LPN    77                                                    6DI       4335
33         5515 0207               RAM    FIPC                                                  6DI       4336
35         5415 0071               STM    PRSA                                                  6DI14        1
37         2177 7437               ADC    -AIIB-TDAI                                            6DI       4338
41         0713                    MJN    PRS2        IF NOT ISD                                6DI       4339
42         1702                    SBK    AIIE-AIIB                                             6DI       4340
43         0712                    MJN    PRS3        IF ISD                                    6DI       4341
44         1705                    SBK    AIDC-AIIE                                             6DI       4342
                         5         ERRNG  AIDC-AIIE   ALGORITHM INDEXES OUT OF ORDER           6DI       4343
45         0707                    MJN    PRS2        IF NOT FSC, 7165 NOR ISD                  6DI14        2
46         3400                    STD    T0                                                    6DI       4345
47         1415                    LDN    ARNW-FRNW   SET ADAPTOR REVISION NUMBER WORD         6DI       4346
50         5515 0262               RAM    FIPF                                                  6DI       4347
52         3000                    LDD    T0                                                    6DI       4348
53         0425                    ZJN    PRS5        IF 7165/895 EQUIPMENT                     6DI       4349
54         0331             PRS2   UJN    PRS6        MODIFY DRIVER                             6DI14        3
                                                                                                 6DI       4351
                              *     MODIFY OVERLAY FOR EITHER THE 7255 ADAPTOR OR FOR A CONTROL  6DI       4352
                              *     MODULE.                                                      6DI       4353
                                                                                                 6DI       4354
55         5015 7776        PRS3   LDM    -1                                                    6DI       4355
57         1066                    SHN    0-11                                                  6DI       4356
60         0420                    ZJN    PRS5        IF 7255 ADAPTOR                           6DI       4357
61         5015 0071               LDM    PRSA                                                  6DI14        4
63         2177 7437               ADK    -AIDD-TDAI                                            6DI       4360
65         0402                    ZJN    PRS4        IF *DD* DEVICE TYPE                       6DI       4361
66         1402                    LDN    /CNTL/T424-/CNTL/T422   (CONTROL MODULE II)           6DI       4362
67         1614             PRS4   ADN    /CNTL/T422  (CONTROL MODULE I)                        6DI       4363
70         5415 0000               STM    **                                                    6DI       4364
                         71  PRSA   EQU    *-1         (MODIFY CONTROLWARE INDEX TABLE CONTENTS) 6DI       4365
72         1477                    LDN    PSNI                                                  6DI       4366
73         5415 0240               STM    FIPE                                                  6DI       4367
75         1403                    LDN    HI0104-HI0101                                         6DI       4368
76         5515 0150               RAM    MSGB+1                                                6DI       4369
100        1403             PRS5   LDN    1RD-1RA                                               6DI       4370
101        5515 0141               RAM    MSGA+5                                                6DI       4371
103        5415 0157               STM    MSGB+10                                               6DI       4372
105        2000 1423        PRS6   LDC    LDNI+FCDS   SET DRIVER TO READ *DETAILED STATUS*      6DI14        5
107        5400 0556               STM.   RDSA                                                  6DI       4375
111        5015 7776               LDM    -1                                                    6DI14        6
113        1066                    SHN    0-11                                                  6DI14        7
114        0510                    NJN    PRS7        IF CONTROL MODULE FIRMWARE IDENTIFICATION 6DI14        8
115        3071                    LDD    HN          ENABLE A BRANCH TO READ *DETAILED STATUS*  6DI       4376
                         0         ERRNZ  LJMI-100    ADJUST IF VALUE CHANGES                   6DI       4377
116        5400 0703               STM.   LDAC                                                  6DI       4378
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 120          2000 0556                    LDC    RDS2                                                  6DI        4379
 122          5400 0704                    STM.   LDAC+1                                               6DI        4380
 124          1424                  PRS7   LDN    DSLN                                                  6DI14         9
 125          5400 0723                    STM.   FNCA                                                  6DI        4382
 127          2000 0164                    LDC    FIP                                                   6DI        4383
 131          3115                         ADD    LA                                                    6DI        4384
 132          0115 0005                    LJM    PRSX        EXIT                                      6DI        4385
                                                                                                        6DI        4386
 134          0310                  MSGA   DATA   C*CH00 MA722-A00,CM0.*                               271L716       9
                                                                                                        6DI        4388
 147          0401                  MSGB   CON    DM0401      MESSAGE ID                                6DI        4389
 150          0101                         CON    HI0101      MESSAGE SYMPTOM                           6DI        4390
 151          0000                         CON    0           CHANNEL (OCTAL)                           6DI        4391
 152          0000                         CON    0           (CONTROL MODULE EQUIPMENT NUMBER)         6DI        4392
 153          0000                         CON    0           RESERVED FOR CDC                          6DI        4393
 154          5515                         DATA   10A MA722-AYY  FIRMWARE REVISION LEVEL (DISPLAY CODE)  6DI        4394
                        12      MSGBL      EQU    *-MSGB      BML MESSAGE LENGTH                        6DI        4395
```

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                              **     TDMA - TABLE OF DAYFILE MESSAGE ADDRESSES.                          6DI        4397
                                                                                                        6DI        4398
                                                                                                        6DI        4399
 161                          TDMA   BSS    0                                                          6DI        4400
 161          0134                         CON    MSGA        ERRLOG MESSAGE ADDRESS                    6DI        4401
 162          0013                         CON    MSGB-MSGA   BML MESSAGE ADDRESS                       6DI        4402
```

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                              ***    FIP - FIRMWARE IDENTIFICATION PROCESSOR.                            6DI        4404
                              *                                                                         6DI        4405
                              *      ENTRY  (T4) = CHANNEL.                                             6DI        4406
                              *             (T5) = EST ORDINAL.                                         6DI        4407
                              *                                                                         6DI        4408
                              *      EXIT   (A) = 6/BL, 12/TA.                                          6DI        4409
                              *                   BL = BML MESSAGE LENGTH.                             6DI        4410
                              *                   TA = ADDRESS OF MESSAGE PARAMETER BLOCK.             6DI        4411
                              *                .LT. 0 IF MASS STORAGE ERROR.                           6DI        4412
                              *             (T5) = UNCHANGED.                                          6DI        4413
                              *             (BFMS) = DETAILED STATUS.                                  6DI        4414
                              *                                                                        6DI        4415
                              *      USES   T3, T6, T7.                                                6DI        4416
                              *                                                                        6DI        4417
                              *      CALLS  CDD, COD, RDS.                                             6DI        4418
                              *                                                                        6DI        4419
                              *      MACROS ENDMS.                                                     6DI        4420
                                                                                                        6DI        4421
                                                                                                        6DI        4422
 163          0100 0163     FIP     SUBR                ENTRY/EXIT                                    6DI        4423
 165          1400                  LDN    0                                                          6DI        4424
 166          3406                  STD    T6          CLEAR LOGICAL ADDRESS                          6DI        4425
 167          3407                  STD    T7                                                         6DI        4426
 170          2000 6776             LDC    BFMS        READ DETAILED STATUS                           6DI        4427
 172          0200 0530             RJM.   RDS                                                        6DI        4428
 174          0766                  MJN    FIPX        IF ERROR                                       6DI        4429
```

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 175         0200 0535                      ENDMS                                                6DI       4430
                                                                                                 6DI       4431
                                *           ADD CHANNEL NUMBER TO THE ERRLOG AND BML MESSAGES.   6DI       4432
                                                                                                 6DI       4433
 177         3004                           LDD    T4          PUT CHANNEL IN MESSAGE            6DI       4434
 200         5415 0151                      STM    MSGB+2                                        6DI       4435
 202         0215 0370                      RJM    COD                                           6DI       4436
 204         5415 0135                      STM    MSGA+1                                        6DI       4437
                                                                                                 6DI       4438
                                *           ADD FIRMWARE TYPE TO ERRLOG AND BML MESSAGES.        6DI       4439
                                                                                                 6DI       4440
 206         5015 0330                      LDM    TDAI                                          6DI       4441
                          207     FIPC      EQU    *-1                                           6DI       4442
 210         0505                           NJN    FIP4        IF CONTROLWARE TYPE ALREADY KNOWN 6DI       4443
 211         5000 7001                      LDM.   BFMS+FRNW                                     6DI       4444
 213         1065                           SHN    -12                                           6DI       4445
 214         1001                           SHN    1                                             6DI       4446
 215         3115                    FIP4   ADD    LA                                            6DI       4447
 216         2100 0306                      ADC    FIPH                                          6DI       4448
 220         3403                           STD    T3                                            6DI       4449
 221         4003                           LDI    T3                                            6DI       4450
 222         5415 0137                      STM    MSGA+3                                        6DI       4451
 224         5415 0155                      STM    MSGB+6                                        6DI       4452
 226         5003 0001                      LDM.   1,T3                                          6DI       4453
 230         5415 0140                      STM    MSGA+4                                        6DI       4454
 232         5415 0156                      STM    MSGB+7                                        6DI       4455
                                                                                                 6DI       4456
                                *           ADD REVISION NUMBER TO ERRLOG AND BML MESSAGES.  IF  6DI       4457
                                *           PROCESSING A CONTROL MODULE, ADD THE CONTROL MODULE  6DI       4458
                                *           EQUIPMENT NUMBER TO THE MESSAGES.                    6DI       4459
                                                                                                 6DI       4460
 234         2000 0143                      LDC    MSGA+7                                        6DI       4461
 236         3115                           ADD    LA                                            6DI       4462
 237         3403                           STD    T3                                            6DI       4463
 240         0321                           UJN    FIP6        CHANNEL FIRMWARE IDENTIFICATION   6DI       4464
                                *           PSN                (CONTROL MODULE FIRMWARE IDENTIFICATION) 6DI  4465
                          240     FIPE      EQU    *-1                                           6DI       4466
 241         5000 7001                      LDM.   BFMS+FRNW   GET CONTROL MODULE EQUIPMENT NUMBER 6DI       4467
 243         1074                           SHN    -3                                            6DI       4468
 244         1207                           LPN    7                                             6DI       4469
 245         5415 0152                      STM    MSGB+3                                        6DI       4470
 247         2100 1533                      ADC    2RM0                                          6DI       4471
 251         5415 0144                      STM    MSGA+10                                       6DI       4472
 253         1402                           LDN    11-7                                          6DI       4473
 254         3503                           RAD    T3                                            6DI       4474
 255         5000 7017                      LDM.   BFMS+CMNW                                     6DI       4475
 257         1237                           LPN    37                                            6DI       4476
 260         0305                           UJN    FIP7        ADD REVISION NUMBER               6DI       4477
                                                                                                 6DI       4478
 261         5000 7001               FIP6   LDM.   BFMS+FRNW                                     6DI       4479
                                *           LDM.   BFMS+ARNW   (FSC AND 7165 EQUIPMENTS)         6DI       4480
                          262     FIPF      EQU    *-1                                           6DI       4481
 263         1071                           SHN    -6                                            6DI       4482
 264         1217                           LPN    17                                            6DI       4483
 265         0215 0355               FIP7   RJM    CDD                                           6DI       4484
 267         5415 0142                      STM    MSGA+6                                        6DI       4485
 271         5415 0160                      STM    MSGB+11                                       6DI       4486
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                                                                                                6DI        4487
                                     *         TERMINATE THE ERROR LOG MESSAGE.                 6DI        4488
                                                                                                6DI        4489
          273        2000 5755                 LDC     2R.                                      6DI        4490
          275        4403                      STI     T3                                       6DI        4491
          276        1400                      LDN     0                                        6DI        4492
          277        5403 0001                 STM.    1,T3                                     6DI        4493
          301        2012 0161                 LDC     TDMA+MSGBL*10000  SET TABLE ADDRESS, BML MSG LENGTH   6DI        4494
          303        3115                      ADD     LA                                       6DI        4495
          304        0115 0163                 LJM     FIPX         RETURN                      6DI        4496
                                                                                                6DI        4497
                                                                                                6DI        4498
          306                         FIPH     BSS     0                                        6DI        4499
        L   0                                  LOC     0                                        6DI        4500
                                               QUAL    CNTL                                     6DI        4501
        L   0        0142             T710     DATA    4RA710       HALF TRACK CONTROLWARE      6DI        4502
        L   2        0137             T454     DATA    4RA454       FSC ADAPTOR CONTROLWARE     6DI        4503
        L   4        0137             T401     DATA    4RA401       FULL TRACK CONTROLWARE      6DI        4504
        L   6        0142             T721     DATA    4RA721       FMD CONTROLWARE             6DI        4505
        L  10        0142             T722     DATA    4RA722       DEMA/PFMD CONTROLWARE       6DI        4506
        L  12        0137             T462     DATA    4RA462       7255 ADAPTOR CONTROLWARE    6DI        4507
        L  14        1037             T422     DATA    4RH422       CONTROL MODULE I CONTROLWARE    6DI        4508
        L  16        1037             T424     DATA    4RH424       CONTROL MODULE II CONTROLWARE   6DI        4509
        L  20        0137             T464     DATA    4RA464       7165 CONTROLWARE            6DI        4510
                                               QUAL    *                                        6DI        4511
          330                                  LOC     *O                                       6DI        4512
                                                                                                6DI        4513
                                                                                                6DI        4514
          330                         TDAI     INDEX                                            6DI        4515
        L   1        0000                      INDEX   AIDI,0                                   6DI        4516
        L   2        0000                      INDEX   AIDJ,0                                   6DI        4517
        L   3        0000                      INDEX   AIDM,0                                   6DI        4518
        L   4        0000                      INDEX   AIDK,0                                   6DI        4519
        L   5        0000                      INDEX   AIDL,0                                   6DI        4520
        L   6        0000                      INDEX   AIDQ,0                                   6DI        4521
        L   7        0000                      INDEX   AIDR,0                                   NS2776       76
        L  10        0012                      INDEX   AIDD,/CNTL/T462                          6DI        4522
        L  11        0012                      INDEX   AIDG,/CNTL/T462                          6DI        4523
        L  16        0010                      INDEX   AIDB,/CNTL/T722                          6DI        4524
        L  17        0020                      INDEX   AIDC,/CNTL/T464                          6DI        4525
        L  12        0004                      INDEX   AIDX,/CNTL/T401                          6DI        4526
        L  13        0004                      INDEX   AIDY,/CNTL/T401                          6DI        4527
        L  14        0004                      INDEX   AIDZ,/CNTL/T401                          6DI        4528
        L  15        0004                      INDEX   AIDA,/CNTL/T401                          6DI        4529
          350                                  INDEX   AIDS                                     284L847       5
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                                **      CDD - CONVERT TWO DIGITS TO DECIMAL DISPLAY CODE.          6DI   4532
                                *                                                                 6DI   4533
                                *       ENTRY  (A) = NUMBER TO CONVERT.                           6DI   4534
                                *                                                                 6DI   4535
                                *       EXIT   (A) = DISPLAY CODE VALUE.                          6DI   4536
                                *                                                                 6DI   4537
                                *       USES   T0 - T1.                                           6DI   4538
                                                                                                  6DI   4539
                                                                                                  6DI   4540
          350   1645           CDD2     ADN    10D+1R0                                           6DI   4541
          351   1014                    SHN    14          POSITION UNITS                        6DI   4542
          352   3100                    ADD    T0                                                6DI   4543
          353   1006                    SHN    6                                                 6DI   4544
                                                                                                  6DI   4545
          354   0100 0354        CDD    SUBR               ENTRY/EXIT                         6DI   4546
          356   3401                    STD    T1          SAVE NUMBER                           6DI   4547
          357   1433                    LDN    1R0         PRESET TENS                           6DI   4548
          360   3400                    STD    T0                                                6DI   4549
          361   3001           CDD1     LDD    T1          COUNT 10                              6DI   4550
          362   1712                    SBN    10D                                               6DI   4551
          363   0764                    MJN    CDD2        IF CONVERSION COMPLETE                6DI   4552
          364   3401                    STD    T1                                                6DI   4553
          365   3600                    AOD    T0                                                6DI   4554
          366   0372                    UJN    CDD1        LOOP TO END OF CONVERSION             6DI   4555


                                **      COD - CONVERT TWO DIGITS TO OCTAL DISPLAY CODE.            6DI   4557
                                *                                                                 6DI   4558
                                *       ENTRY  (A) = NUMBER TO CONVERT.                           6DI   4559
                                *                                                                 6DI   4560
                                *       EXIT   (A) = DISPLAY CODE VALUE.                          6DI   4561
                                *                                                                 6DI   4562
                                *       USES   T0.                                                6DI   4563
                                                                                                  6DI   4564
                                                                                                  6DI   4565
          367   0100 0367        COD    SUBR               ENTRY/EXIT                         6DI   4566
          371   3400                    STD    T0                                                6DI   4567
          372   1003                    SHN    3                                                 6DI   4568
          373   3300                    LMD    T0                                                6DI   4569
          374   1370                    SCN    70                                                6DI   4570
          375   2100 3333               ADC    2R00                                              6DI   4571
          377   0367                    UJN    CODX        RETURN                                6DI   4572
                                                                                                  6DI   4573
                                                                                                  6DI   4574
          400                           BSS    0                                                 6DI   4575
                              73        ERRNG  473-*       OVERLAY OVERFLOWS PRU                 6DI   4576
                                        RSTR               RESTORE INSTRUCTIONS                  6DI   4577
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                        QUAL   0SC                                                  NS2494      6
                        IDENT  0SC,SCPX                                             NS2494      7
                    COMMENT 85/07/29. 24/05/19. 6DI - SWEEP CYCLING PROCESSOR.      NS2584      3
                        COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.         281L803     9


                    ***     0SC - SWEEP CYCLING PROCESSOR.                          NS2494     11
                    *       R. M. DANISCH.     87/01/01.                            NS2494     12


                    ***     *0SC* IS CALLED BY *1MV* TO EXECUTE THE NEXT SWEEP CYCLING  NS2494  14
                    *       SEEK SEQUENCE FOR A SPECIFIED MASS STORAGE DEVICE.  THE SEEK  NS2494  15
                    *       SEQUENCE WILL BE EXECUTED FOR EACH PHYSICAL UNIT OF A       NS2494  16
                    *       MULTI-UNIT DEVICE.  WORD *SCLL* OF THE MST ENTRY CONTAINS THE NS2494  17
                    *       CYLINDER NUMBER USED FOR THE LAST SEEK IN THE PREVIOUS      NS2494  18
                    *       SEQUENCE.                                                   NS2494  19


                    ***     ENTRY CONDITIONS.                                       NS2494     21
                    *                                                               NS2494     22
                    *                                                               NS2494     23
                    *       (IR+2) = EST ORDINAL.                                   NS2494     24


                    *       DIRECT CELL ASSIGNMENTS.                                NS2494     26
                                                                                    NS2494     27
                                                                                    NS2494     28
                20      CN      EQU     20 - 24     CM WORD BUFFER                  NS2494     29
                25      AB      EQU     25 - 31     CM WORD BUFFER                  NS2494     30
                32      SU      EQU     32          SINGLE UNIT SECTOR LIMIT        NS2494     31
                33      SC      EQU     33          SEEK COUNT                      NS2494     32
                34      SI      EQU     34          SEEK INCREMENT                  NS2494     33
                35      TI      EQU     35          *TDVP* TABLE INDEX              NS2494     34
                36      MS      EQU     36          MST ENTRY ADDRESS / 10B         NS2494     35


                    *       REDEFINE INSTRUCTIONS FOR LOCATION FREE EXECUTION.      NS2494     37
                                                                                    NS2494     38
                        RIREL                                                       NS2494     39
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     5                                 ORG    5                                               NS2494      41
                                                                                              NS2494      42
                              **       SCP - SWEEP CYCLING PROCESSOR.                         NS2494      43
                                                                                              NS2494      44
                                                                                              NS2494      45
     5         0100 0005       SCP     SUBR                ENTRY/EXIT                         NS2494      46
                                                                                              NS2494      47
                              *        PRESET *0SC*.                                          NS2494      48
                                                                                              NS2494      49
     7         3052                    LDD    IR+2                                            NS2494      50
    10         3405                    STD    T5                                              NS2494      51
    11         1441                    SETMS  PIO,(NS)                                        NS2494      52
    14         3014                    LDD    CM+4         SAVE MST ENTRY ADDRESS             NS2494      53
    15         3436                    STD    MS                                              NS2494      54
    16         1003                    SHN    3                                               NS2494      55
    17         1606                    ADN    MDGL         READ SINGLE UNIT SECTOR LIMIT      NS2494      56
    20         6025                    CRD    AB                                              NS2494      57
    21         1612                    ADK    SCLL-MDGL    READ SWEEP CYCLING CONTROL WORD    NS2494      58
    22         6020                    CRD    CN                                              NS2494      59
    23         3026                    LDD    AB+1         SET SINGLE UNIT SECTOR LIMIT       NS2494      60
    24         2200 3777               LPC    3777                                            NS2494      61
    26         3432                    STD    SU                                              NS2494      62
    27         3015                    LDD    LA           INITIALIZE *TDVP* TABLE INDEX      NS2494      63
    30         1705                    SBN    5                                               NS2494      64
    31         3435                    STD    TI                                              NS2494      65
    32         1405            SCP1    LDN    5            ADVANCE TO NEXT TABLE ENTRY        NS2494      66
    33         3535                    RAD    TI                                              NS2494      67
    34         3215                    SBD    LA                                              NS2494      68
    35         2300 0240               LMC    TDVPL                                           NS2494      69
    37         0445                    ZJP    SCPX         IF SWEEP CYCLING NOT SUPPORTED ON DEVICE  NS2494      70
    40         5035 0207               LDM.   TDVP,TI                                         NS2494      71
    42         3313                    LMD    CM+3                                            NS2494      72
    43         0566                    NJN    SCP1         IF NOT DEVICE TYPE MATCH           NS2494      73
    44         3407                    STD    T7                                              NS2494      74
    45         2000 0152               LDC    SCP9         DISABLE ERROR PROCESSING           NS2494      75
    47         3115                    ADD    LA                                              NS2494      76
    50         5400 0744               STM.   ERRA                                            NS2494      77
    52         3071                    LDD    HN           AVOID DATA TRANSFER                NS2494      78
    53         5400 0635               STM.   DSTB                                            NS2494      79
                          0            ERRNZ  LJMI-100     CODE DEPENDS ON VALUE              NS2494      80
                                                                                              NS2494      81
                              *        POSITION TO STARTING CYLINDER.                         NS2494      82
                                                                                              NS2494      83
    55         1400            SCP2    LDN    0            CAUSE IMMEDIATE EXIT IF ERROR ON 1ST SEEK  NS2494      84
    56         3433                    STD    SC                                              NS2494      85
    57         1475                    LDN    SCP4         AVOID DATA TRANSFER                NS2494      86
    60         3115                    ADD    LA                                              NS2494      87
    61         5400 0636               STM.   DSTB+1                                          NS2494      88
    63         3020                    LDD    CN                                              NS2494      89
    64         1601                    ADN    1                                               NS2494      90
    65         5335 0210               LMM.   TDVP+1,TI                                       NS2494      91
    67         0403                    ZJN    SCP3         IF PRIOR SEQUENCE ENDED ON LAST CYLINDER  NS2494      92
    70         3020                    LDD    CN           SET INITIAL POSITION               NS2494      93
    71         1001                    SHN    1            CONVERT CYLINDER TO LOGICAL TRACK  NS2494      94
    72         3406            SCP3    STD    T6                                              NS2494      95
                              *        LDC    BFMS         ISSUE READ REQUEST FOR SEEK EXECUTION  NS2494      96
    73         0200 0530               RJM.   RDS          CALL DRIVER TO ISSUE SEEK          NS2494      97
```

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 75        1421                SCP4     DELAY  8D*17D      DELAY FOR ONE DISK REVOLUTION              NS2494     98
                                                                                                      NS2494     99
                               *         ISSUE SEEK SEQUENCE.                                         NS2494    100
                                                                                                      NS2494    101
      106         2000 0141              LDC    SCP8        AVOID DATA TRANSFER                        NS2494    102
      110         3115                   ADD    LA                                                     NS2494    103
      111         5400 0636              STM.   DSTB+1                                               NS2494    104
      113         5035 0211              LDM.   TDVP+2,TI   SET SMALL SEEK COUNT                      NS2494    105
      115         3433                   STD    SC                                                     NS2494    106
      116         5035 0212              LDM.   TDVP+3,TI   SET SMALL SEEK INCREMENT                  NS2494    107
      120         3434          SCP5     STD    SI                                                     NS2494    108
      121         3034          SCP6     LDD    SI          ADVANCE POSITION BY SEEK INCREMENT         NS2494    109
      122         1001                   SHN    1                                                      NS2494    110
      123         3506                   RAD    T6                                                     NS2494    111
      124         1076                   SHN    -1                                                     NS2494    112
      125         5235 0210              SBM.   TDVP+1,TI                                             NS2494    113
      127         0710                   MJN    SCP7        IF NOT BEYOND END OF DEVICE                NS2494    114
      130         1400                   LDN    0           PERFORM ONLY ONE SEEK AT END OF DEVICE     NS2494    115
      131         3433                   STD    SC                                                     NS2494    116
      132         5035 0210              LDM.   TDVP+1,TI   SEEK TO LAST CYLINDER                     NS2494    117
      134         1701                   SBN    1                                                      NS2494    118
      135         1001                   SHN    1                                                      NS2494    119
      136         3406                   STD    T6                                                     NS2494    120
                               *         LDC    BFMS        ISSUE READ REQUEST WITH NO DATA TRANSFER   NS2494    121
      137         0200 0530     SCP7     RJM.   RDS         CALL DRIVER TO ISSUE SEEK                  NS2494    122
      141         1421          SCP8     DELAY  8D*17D      DELAY FOR ONE DISK REVOLUTION              NS2494    123
      152         3733          SCP9     SOD    SC          DECREMENT SEEK COUNT                       NS2494    124
      153         0705                   MJN    SCP10       IF POSITIONING COMPLETE                    NS2494    125
      154         0544                   NJN    SCP6        IF SMALL SEEK SEQUENCE INCOMPLETE          NS2494    126
      155         5035 0213              LDM.   TDVP+4,TI   SET MAJOR POSITION INCREMENT              NS2494    127
      157         0340                   UJN    SCP5        CALCULATE NEXT SEEK ADDRESS                NS2494    128
                                                                                                      NS2494    129
                               *         RELEASE THE CURRENT DRIVE AND CHECK FOR ANOTHER (MULTI-UNIT). NS2494    130
                                                                                                      NS2494    131
      160         0200 0535     SCP10    ENDMS                                                      NS2494    132
      162         3032                   LDD    SU          ADVANCE TO NEXT UNIT                       NS2494    133
      163         3507                   RAD    T7                                                     NS2494    134
      164         5200 0107              SBM.   SLM                                                   NS2494    135
      166         0603                   MJP    SCP2        IF MORE UNITS TO PROCESS                   NS2494    136
                                                                                                      NS2494    137
                               *         UPDATE THE SWEEP CYCLING CONTROL WORD IN THE MST ENTRY.     NS2494    138
                                                                                                      NS2494    139
      171         3006                   LDD    T6          STORE FINAL POSITION IN *SCLL*             NS2494    140
      172         1076                   SHN    -1                                                     NS2494    141
      173         3420                   STD    CN                                                     NS2494    142
      174         2000 0106              LDK    RTCL        STORE NEW TIME STAMP IN *SCLL*             NS2494    143
      176         6010                   CRD    CM                                                     NS2494    144
      177         3011                   LDD    CM+1                                                   NS2494    145
      200         3421                   STD    CN+1                                                   NS2494    146
      201         3036                   LDD    MS          UPDATE *SCLL*                              NS2494    147
      202         1003                   SHN    3                                                      NS2494    148
      203         1620                   ADN    SCLL                                                   NS2494    149
      204         6220                   CWD    CN                                                     NS2494    150
      205         0115 0005              LJM    SCPX        RETURN                                     NS2494    151
```

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                                **        TDVP - TABLE OF DEVICE PARAMETERS.                                NS2494     153
                                                                                                          NS2494     154
                                                                                                          NS2494     155
                207                             TDVP     BSS     0                                        NS2494     156
                                                                                                          NS2494     157
                207             0402                     CON     2RDB        DEVICE TYPE *DB*             NS2494     158
                210             1511                     CON     CYUNDB      NUMBER OF CYLINDERS ON DEVICE NS2494     159
                211             0003                     CON     3           NUMBER OF SMALL INCREMENT SEEKS NS2494     160
                212             0014                     CON     12D         SIZE OF SMALL INCREMENT SEEK  NS2494     161
                213             0135                     CON     93D         SIZE OF LARGE INCREMENT SEEK  NS2494     162
                                                                                                          NS2494     163
                214             0404                     CON     2RDD        DEVICE TYPE *DD*             NS2494     164
                215             1457                     CON     CYUNDD      NUMBER OF CYLINDERS ON DEVICE NS2494     165
                216             0004                     CON     4           NUMBER OF SMALL INCREMENT SEEKS NS2494     166
                217             0015                     CON     13D         SIZE OF SMALL INCREMENT SEEK  NS2494     167
                220             0062                     CON     50D         SIZE OF LARGE INCREMENT SEEK  NS2494     168
                                                                                                          NS2494     169
                221             0407                     CON     2RDG        DEVICE TYPE *DG*             NS2494     170
                222             1273                     CON     CYUNDG      NUMBER OF CYLINDERS ON DEVICE NS2494     171
                223             0006                     CON     6           NUMBER OF SMALL INCREMENT SEEKS NS2494     172
                224             0020                     CON     16D         SIZE OF SMALL INCREMENT SEEK  NS2494     173
                225             0120                     CON     80D         SIZE OF LARGE INCREMENT SEEK  NS2494     174
                                                                                                          NS2494     175
                226             0415                     CON     2RDM        DEVICE TYPE *DM*             NS2494     176
                227             1511                     CON     CYUNDM      NUMBER OF CYLINDERS ON DEVICE NS2494     177
                230             0003                     CON     3           NUMBER OF SMALL INCREMENT SEEKS NS2494     178
                231             0014                     CON     12D         SIZE OF SMALL INCREMENT SEEK  NS2494     179
                232             0135                     CON     93D         SIZE OF LARGE INCREMENT SEEK  NS2494     180
                                                                                                          NS2494     181
                233             0421                     CON     2RDQ        DEVICE TYPE *DQ*             NS2494     182
                234             1511                     CON     CYUNDQ      NUMBER OF CYLINDERS ON DEVICE NS2494     183
                235             0003                     CON     3           NUMBER OF SMALL INCREMENT SEEKS NS2494     184
                236             0014                     CON     12D         SIZE OF SMALL INCREMENT SEEK  NS2494     185
                237             0135                     CON     93D         SIZE OF LARGE INCREMENT SEEK  NS2494     186
                                                                                                          NS2494     187
                240                             TDVPL    BSS     0           LWA+1 OF TABLE                NS2494     188


                                                         OVERFLOW  5,ZSCL    *0SC* OVERFLOWS PRU           NS2494     190

                                                                                                          OVERFLOW.1
                                  0                      ERRNG   .2-.1+5-.3/500B*500B   BYTES LEFT AFTER LAST SECTOR OVERFLOW.1
                                240                      ERRNG   .3/500B*500B-*+.1-5    BYTES LEFT IN LAST SECTOR OVERFLOW.1
                                240                      ERRNG   .4/500B*500B-*+.1-5    BYTES CAN BE ADDED TO OVERLAY OVERFLOW.1
                                  1                      ERRNG   .3/500B                SECTORS NEEDED FOR OVERLAY OVERFLOW.1
                                                                                                          OVERFLOW.1
                                                         LIST    *                                         OVERFLOW.1
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                                    QUAL   0SD                                                    6DI       4579
                                    IDENT  0SD,PRSX    "HN" SPIN UP/DOWN MS DRIVES.            251L670      1
                                COMMENT 85/07/29. 24/05/19. 6DI - SPIN UP/DOWN MS DRIVES.      NS2584       4
                                    COMMENT  COPYRIGHT CONTROL DATA SYSTEMS INC.  1992.        281L803     10
                                ***         0SD - SPIN UP/DOWN MASS STORAGE DRIVES.            251L670      3
                                *           K. F. REHM.        83/06/16.                       6DI       4585
                                ***         *0SD* IS USED TO SPINUP OR SPINDOWN THOSE MASS STORAGE  251L670  4
                                *           DEVICES THAT SUPPORT SAID CAPABILITY.  FOR ISMD TYPE    251L670  5
                                *           DEVICES, THE DRIVER IS MODIFIED TO ISSUE A SPINUP OR    251L670  6
                                *           SPINDOWN FUNCTION.  FOR BUFFERED DEVICES, A FLAG IS     271L716 10
                                *           SET IN THE BUFFERED I/O PHYSICAL UNIT TABLE TO BE       271L716 11
                                *           PROCESSED BY DEVICE SPECIFIC DRIVERS.                   271L716 12
                                **          COMMON DECKS.                                      251L670     10
                                                                                               251L670     11
                                                                                               251L670     12
                      0                     CTEXT  COMSHIO - HIGH-SPEED BUFFERED I/O EQUIVALENCES.  COMSHIO  1
                                *           REDEFINE INSTRUCTIONS FOR LOCATION FREE EXECUTION.  6DI       4594
                                                                                               6DI       4595
                                            RIREL              REDEFINE INSTRUCTIONS           6DI       4596
                                **          PRS - PRESET SPINUP/DOWN PROCESSOR.                6DI       4598
                                *                                                              6DI       4599
                                *           EXIT   (A) = PROCESSOR ENTRY ADDRESS.              6DI       4600
                                                                                               6DI       4601
                                                                                               6DI       4602
                      5                     ORG    5                                         6DI       4603
                      5         0100 0005    PRS     SUBR               ENTRY/EXIT          6DI       4604
                      7         3015                 LDD    LA                              251L670     14
                     10         5515 0207            RAM    PRDC                            251L670     15
                     12         1421                 LDN    SUE         RETURN SPINUP/SPINDOWN PROCESSOR ADDRESS  6DI  4605
                     13         3115                 ADD    LA                              6DI       4606
                     14         0370                 UJN    PRSX        EXIT                6DI       4607
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                                **        SUE - SPIN UP/DOWN AN ISD DRIVE.                                  6DI     4609
                                *                                                                         6DI     4610
                                *         ENTRY  ((LA)-1) = EST ORDINAL OF EQUIPMENT TO SPIN UP/DOWN.     6DI     4611
                                *                ((LA)-2) = 7/0,1/SF,4/0, WHERE                           251L670   16
                                *                           SF = 0, IF TO SPIN UP EQUIPMENT.              6DI     4613
                                *                              = 1, IF TO SPIN DOWN EQUIPMENT.            6DI     4614
                                *                                                                         6DI     4618
                                *         EXIT   ((LA)-1) = UNCHANGED.                                    6DI     4619
                                *                ((LA)-2) = UNCHANGED.                                    6DI     4620
                                *                                                                         6DI     4621
                                *         USES   CM - CM+4.                                               6DI     4622
                                *                                                                         6DI     4623
                                *         CALLS  ANU, PRD, WDS.                                           6DI     4624
                                *                                                                         6DI     4625
                                *         MACROS MONITOR.                                                 6DI     4626
                                                                                                          6DI     4627
                                                                                                          6DI     4628
     15         0215 0072       SUE4     RJM    ANU          ADVANCE TO THE NEXT PHYSICAL UNIT           6DI     4629
     17         0506                     NJN    SUE1         IF MORE UNITS TO SPIN UP                    6DI     4630
                                                                                                          6DI     4631
     20         0100 0020       SUE      SUBR                ENTRY/EXIT                              6DI     4632
     22         0215 0222               RJM    PRD          PRESET DRIVER                               6DI     4633
     24         0473                    ZJN    SUEX         IF NOT AN ISD DRIVE                         6DI     4634
     25         1400            SUE1    LDN    0                                                        6DI     4635
     26         5415 0123               STM    CGSA                                                     6DI     4636
     30         1411                    LDN    CM+1                                                     6DI     4637
     31         0200 0532               RJM.   WDS                                                      6DI     4638
     33         1217                    LPN    17                                                       6DI     4639
     34         1116                    LMN    NRDE                                                     6DI     4640
     35         0557                    NJN    SUE4         IF HARDWARE FAILURE                         6DI     4641
     36         3410                    STD    CM           CLEAR FLASHING *MS2W* MESSAGE               6DI     4642
     37         3074                    LDD    CP                                                       6DI     4643
     40         1636                    ADK    MS2W                                                     6DI     4644
     41         6210                    CWD    CM                                                       6DI     4645
     42         5015 7775               LDM    -2                                                       6DI     4646
     44         0550                    NJN    SUE4         IF SPINDOWN REQUEST                         6DI     4648
     45         3077            SUE2    LDD    MA                                                       6DI     4649
     46         6204                    CWD    T4                                                       6DI     4650
     47         1464                    MONITOR  LDAM                                                   6DI     4651
     52         3077                    LDD    MA                                                       6DI     4652
     53         1601                    ADN    1                                                        6DI     4653
     54         6010                    CRD    CM                                                       6DI     4654
     55         1402                    LDN    2            IGNORE *DRIVE BUSY* GENERAL STATUS          6DI     4655
     56         5415 0123               STM    CGSA                                                     6DI     4656
     60         5015 7775               LDM    -2                                                       6DI     4657
     62         0402                    ZJN    SUE3         IF SPINUP REQUEST                           6DI     4659
     63         1403                    LDN    FCSD&FCSU    SET SPINDOWN                                6DI     4660
     64         1155            SUE3    LMK    FCSU         SET SPINUP                                  6DI     4661
     65         0100 0613               LJM.   WDS4         ISSUE SPINUP/DOWN FUNCTION                  6DI     4662
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                                **        ANU - ADVANCE TO NEXT PHYSICAL UNIT.                                  6DI   4664
                                *                                                                               6DI   4665
                                *         *ANU* WILL DELAY AT LEAST 10 MSEC TO AVOID POWER FLUCTUATIONS         6DI   4666
                                *         WHEN MORE THAN ONE UNIT IS TO BE SPUN UP/DOWN.                        6DI   4667
                                *                                                                               6DI   4668
                                *         ENTRY  (T6) = NUMBER OF UNITS REMAINING TO BE SPUN UP/DOWN.           6DI   4669
                                *                                                                               6DI   4670
                                *         EXIT   (A) .NE. 0, IF NEXT UNIT EXISTS.                               6DI   4671
                                *                                                                               6DI   4672
                                *         USES   CM.                                                            6DI   4673
                                *                                                                               6DI   4674
                                *         MACROS DELAY, ENDMS.                                                  6DI   4675
                                                                                                                6DI   4676
                                                                                                                6DI   4677
     67         0200 0535       ANU2      ENDMS                                                                 6DI   4678
                                *         LDN    0           (A) = 0 IS *ENDMS* EXIT CONDITION                  6DI   4679
                                                                                                                6DI   4680
     71         0100 0071       ANU       SUBR               ENTRY/EXIT                                         6DI   4681
     73         2000 0000                 LDC    0           (SINGLE UNIT SECTOR LIMIT)                         6DI   4685
                          74     ANUA      EQU    *-1         SET BY *PRD*                                       6DI   4686
     75         3507                      RAD    T7                                                             6DI   4687
     76         3706                      SOD    T6                                                             6DI   4688
     77         0767                      MJN    ANU2        IF NO MORE UNITS IN EQUIPMENT                      6DI   4689
    100         1405                      DELAY  10D*8D       DELAY 10 MILLISECONDS                             6DI   4690
    111         1400                      PAUSE  ST                                                             6DI   4691
    114         1401                      LDN    1                                                              6DI   4692
    115         0353                      UJN    ANUX        EXIT                                               6DI   4693
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                                **        CGS - CHECK GENERAL STATUS.                                           6DI   4695
                                *                                                                               6DI   4696
                                *         *CGS* TRAPS ALL GENERAL STATUS FUNCTIONS ISSUED BY *6DI* TO           6DI   4697
                                *         THE CONTROLLER AND RETURNS TO CALLER IF EITHER A *0000*               6DI   4698
                                *         (OPERATION SUCCESSFUL) OR *0002* (DRIVE BUSY) STATUS IS               6DI   4699
                                *         ISSUED.  THIS ALLOWS *0SD* TO CONTINUE SPINNING UP/DOWN               6DI   4700
                                *         OTHER DRIVES WITHOUT HAVING TO WAIT IN *DSWM* PROCESSING              6DI   4701
                                *         UNTIL THE CURRENT DRIVE FINISHES SPINNING UP/DOWN.                    6DI   4702
                                *                                                                               6DI   4703
                                *         ENTRY  (A) = GENERAL STATUS.                                          6DI   4704
                                *                                                                               6DI   4705
                                *         EXIT   TO *SUE4* IF SPINUP AND NON-ERROR GENERAL STATUS.              6DI   4706
                                *                TO *SUE2* IF SPINDOWN AND NON-ERROR GENERAL STATUS.            6DI   4707
                                *                TO *LDA1* IF ERROR GENERAL STATUS.                             6DI   4708
                                                                                                                6DI   4709
                                                                                                                6DI   4710
    116                          CGS       BSS    0           ENTRY                                              6DI   4711
    116         0503                      NJN    CGS2        IF NOT *0000* GENERAL STATUS                       6DI   4712
    117         0110 0000       CGS1      LJM.   0,CM        RETURN TO CALLER                                   6DI   4713
                                                                                                                6DI   4714
    121         3413            CGS2      STD    CM+3        SAVE STATUS                                        6DI   4715
    122         2300 0000                 LMC    0                                                              6DI   4716
                                *         LMC    2           (IGNORE *DRIVE BUSY* GENERAL STATUS)               6DI   4717
                          123    CGSA      EQU    *-1                                                            6DI   4718
    124         0472                      ZJN    CGS1        IF *DRIVE BUSY*                                    6DI   4719
    125         1006                      SHN    21-13                                                          6DI   4720
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 126         0604                    PJN    CGS3        IF NO ERROR                                    6DI       4721
 127         1400                    LDN    0                                                          6DI       4722
 130         5415 0123               STM    CGSA                                                       6DI       4723
 132         3013              CGS3  LDD    CM+3        RESTORE STATUS                                 6DI       4724
 133         0100 0663               LJM.   LDA3        PROCESS STATUS                                 6DI       4725



                               **    PRD - PRESET DRIVER.                                               6DI       4727
                               *                                                                        6DI       4728
                               *     EXIT   (A) = 0 IF DEVICE NOT CANDIDATE FOR SPINUP/SPINDOWN.        NS2750       1
                               *            (T5) = EST ORDINAL.                                         251L670     17
                               *            (T6) = NUMBER OF UNITS - 1 IN EQUIPMENT.                    6DI       4730
                               *                                                                        6DI       4731
                               *     USES   T6, T7, CM - CM+4.                                          251L670     18
                               *                                                                        6DI       4733
                               *     MACROS SETMS, SFA.                                                 6DI       4734
                                                                                                        6DI       4735
                                                                                                        6DI       4736
 135         5015 7775         PRD6  LDM    -2          SET FLAG VALUE                                 251L670     19
 137         1074                    SHN    -3                                                         251L670     20
 140         0502                    NJN    PRD7        IF SPINDOWN REQUEST                            251L670     21
 141         1404                    LDN    4                                                          251L670     22
                       0             ERRNZ  SPDF+1-SPUF CODE DEPENDS ON VALUE                          251L670     23
 142         1101            PRD7    LMN    1                                                          251L670     24
                       0             ERRNZ  DUNF+1-SPDF CODE DEPENDS ON VALUE                          251L670     25
 143         5415 0352               STM    PRDA+4                                                     251L670     26
 145         2000 0147               LDC    BIOL        GET POINTER TO BUFFERED I/O TABLES             251L670     27
 147         6010                    CRD    CM                                                         251L670     28
 150         3011                    LDD    CM+1        FETCH *PUT* TABLE POINTER WORD                 251L670     29
 151         1014                    SHN    14                                                         251L670     30
 152         3312                    LMD    CM+2                                                       251L670     31
 153         1603                    ADN    PUTP                                                       251L670     32
 154         6010                    CRD    CM                                                         251L670     33
 155         3014                    LDD    CM+4        SET FWA OF *UNCT* WORD IN *PUT*                251L670     34
                                     ADK    UNCT                                                       251L670     35
 156         5415 0173               STM    PRDB                                                       251L670     36
 160         1063                    SHN    -14                                                        251L670     37
 161         3113                    ADD    CM+3                                                       251L670     38
 162         1277                    LPN    77          CLEAR FLAGS                                    NS2682       1
 163         2300 2100               LMC    ADCI                                                       251L670     39
 165         5415 0172               STM    PRDB-1                                                     251L670     40
 167         3010                    LDD    CM          NUMBER OF ENTRIES IN TABLE                     251L670     41
 170         3407                    STD    T7                                                         251L670     42
 171         1003              PRD8  SHN    PUTLS       READ UNIT DESCRIPTOR WORD                      251L670     43
 172         2100 0000               ADC    0                                                          251L670     44
                         173   PRDB  EQU    *-1                                                        251L670     45
 174         6010                    CRD    CM                                                         251L670     46
 175         3414                    STD    CM+4        SAVE ADDRESS FOR MONITOR CALL                  251L670     47
 176         1063                    SHN    -14                                                        251L670     48
 177         3413                    STD    CM+3                                                       251L670     49
 200         3011                    LDD    CM+1        CHECK EST ORDINAL                              251L670     50
 201         3305                    LMD    T5                                                         251L670     51
 202         0514                    NJN    PRD9        IF NOT REQUESTED DEVICE                        251L670     52
 203         1401                    LDN    1                                                          251L670     53
 204         3411                    STD    CM+1                                                       251L670     54
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 205         3077                        LDD    MA          STORE *UTEM* REQUEST IN MESSAGE BUFFER     251L670     55
 206         6311 0346                   CWM.   PRDA,CM+1                                            251L670     56
                          207     PRDC   EQU    *-1                                                   251L670     57
 210         2000 0115                   MONITOR  UTEM      SET FLAG FOR BUFFERED DEVICE DRIVER       251L670     58
 214         3706                        SOD    T6                                                    251L670     59
 215         0703                        MJN    PRD10       IF NO MORE UNITS                          251L670     60
 216         3707                PRD9    SOD    T7                                                    251L670     61
 217         0551                        NJN    PRD8        IF NOT END OF *PUT*                       251L670     62
 220         1400                PRD10   LDN    0           DEVICE NOT CANDIDATE FOR SPINUP/SPINDOWN  272L774      1
                                                                                                       6DI       4738
 221         0100 0221           PRD     SUBR               ENTRY/EXIT                             6DI       4739
 223         5015 7776                   LDM    -1          SET EQUIPMENT                          6DI       4740
 225         3405                        STD    T5                                                    6DI       4741
 226         0200 0245                   SFA    EST         GET EST ENTRY                          6DI       4742
                                         ADK    EQDE                                               6DI       4743
 230         6010                        CRD    CM                                                    6DI       4744
 231         3010                        LDD    CM                                                    6DI       4745
 232         1006                        SHN    21-13                                                 6DI       4746
 233         0664                        PJN    PRD10       IF NOT A MASS STORAGE DEVICE              251L670     64
 234         2000 0352                   LDC    TPRD-1      CHECK DEVICE TYPE                         272L774      2
 236         3115                        ADD    LA                                                    272L774      3
 237         3401                        STD    T1                                                    272L774      4
 240         3601                PRD1    AOD    T1                                                    272L774      5
 241         4001                        LDI    T1                                                    272L774      6
 242         0455                        ZJN    PRD10       IF NOT CANDIDATE FOR SPINUP/SPINDOWN      272L774      7
 243         3313                        LMD    CM+3                                                  272L774      8
 244         0573                        NJN    PRD1        IF DEVICE TYPE DOES NOT MATCH             272L774      9
 245         3014                PRD2    LDD    CM+4                                                  251L670     75
 246         1003                        SHN    3                                                     251L670     76
 247         1616                        ADN    DDLL        FETCH DEVICE UNIT COUNT                   251L670     77
 250         6006                        CRD    T6                                                    251L670     78
 251         1703                        SBN    DDLL-DILL   GET DEVICE DEPENDENT PARAMETERS           251L670     79
 252         6007                        CRD    T7                                                    251L670     80
 253         3006                        LDD    T6          CHECK FOR NULL EQUIPMENT                  251L670     81
 254         2200 2007                   LPC    2007                                                  251L670     82
 256         3406                        STD    T6          SAVE UNIT COUNT                           251L670     83
 257         1007                        SHN    21-12                                                 251L670     84
 260         0603                        MJP    PRD10       IF NULL EQUIPMENT                         272L774     10
 263         3012                        LDD    T7+3                                                  251L670     86
 264         1007                        SHN    21-12                                                 251L670     87
 265         0603                        MJP    PRD6        IF BUFFERED DEVICE                        251L670     88
 270         3014                        LDD    CM+4                                                  251L670     89
 271         1003                        SHN    3                                                     251L670     90
 272         1606                        ADN    MDGL        GET SINGLE UNIT SECTOR LIMIT              251L670     91
 273         6010                        CRD    CM                                                    251L670     92
 274         3011                        LDD    CM+1        SECTOR LIMIT                           6DI       4769
 275         2200 3777                   LPC    3777                                               6DI       4770
 277         5415 0074                   STM    ANUA                                               6DI       4771
 301         2002 4271                   SETMS  PIO,(AD,DE,DF,NR,NS)                               6DI       4772
 305         1400                        LDN    0                                                  6DI       4773
 306         3407                        STD    T7                                                 6DI       4774
 307         3071                        LDD    HN                                                    251L670     93
                          0              ERRNZ  LJMI-100B   CODE USES *HN* TO CREATE *LJM*          6DI       4787
 310         5400 0634                   STM.   DSTA                                               6DI       4788
 312         5400 0606                   STM.   WDS2        MODIFY ROUTINES *WDS* AND *DST*         251L670     94
 314         2000 0116                   LDC    CGS                                                6DI       4790
 316         3115                        ADD    LA                                                 6DI       4791
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 317         5400 0635                  STM.   DSTA+1                                                  6DI       4792
 321         5015 7775                  LDM    -2                                                      6DI       4793
 323         0402                       ZJN    PRD5         IF SPINUP REQUEST                          251L670     95
 324         1450                       LDK    SUE2&SUE4                                               251L670     96
 325         1115              PRD5     LMK    SUE4                                                    251L670     97
 326         3115                       ADD    LA                                                      6DI       4798
 327         5400 0607                  STM.   WDS2+1                                                 6DI       4799
 331         2000 2000                  LDC    LDCI                                                    6DI       4800
 333         5400 0620                  STM.   WDSD                                                    6DI       4801
 335         1415                       LDK    SUE4                                                    6DI       4802
 336         3115                       ADD    LA                                                      6DI       4803
 337         5400 0621                  STM.   WDSD+1                                                 6DI       4804
 341         1401                       LDN    1                                                       6DI       4805
 342         5400 0723                  STM.   FNCA                                                    6DI       4806
 344         0115 0221                  LJM    PRDX         EXIT                                       6DI       4807
                                                                                                       251L670     98
                                                                                                       251L670     99
 346         0703              PRDA     VFD    1/0,5/PILL-UNCT,6/3,6/DUNF,42/0  *UTEM* REQUEST     251L670    100
 347         1400
 350         0000
 351         0000
 352         0000
                                                                                                       272L774     11
 353                           TPRD     BSS    0            CANDIDATE DEVICES FOR SPINUP/SPINDOWN      272L774     12
 353         0404                       CON    2RDD         834                                        272L774     13
 354         0407                       CON    2RDG         836                                        272L774     14
 355         0406                       CON    2RDF         887 (4KB SECTOR)                           272L774     15
 356         0410                       CON    2RDH         887 (16KB SECTOR)                          272L774     16
 357         0000                       CON    0                                                       272L774     24
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                                113                ERRNG  473-*       OVERLAY OVERFLOWS PRU                  6DI       4809
                                                   RSTR              RESTORE INSTRUCTIONS                   6DI       4810
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 360                                               END                                                    6DI       4813

                        141100B CM  STORAGE USED            25810 STATEMENTS     4238 SYMBOLS      000456 INVENTED SYMBOLS
                           PARALLEL CPU ASSEMBLY           13.653 SECONDS        8616 REFERENCES
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SYMBOLIC REFERENCE TABLE.

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ADCI          2100                 130/42
ADDE            11                  26/32 L
ADRE             2                  23/30 D   26/32
AIAB            25                  15/43 D
AIAE            43                  16/49 D
AIBB            16                  15/23 D
AIBD            43                  16/50 D
AIDA            15                  15/17 D   96/36    109/30    109/54    110/25    121/44
                                    95/47     96/36    109/30    109/54    110/25    121/44
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AIDB	16	15/25 D	96/37	109/31	109/55	110/26	121/39		
		96/37	109/31	109/55	110/26	121/39			
AIDC	17	15/27 D	96/38	109/32	109/56	110/27	118/21	121/40	
		96/38	109/32	109/56	110/27	118/20	121/40		
AIDD	10	15/02 D	96/31	109/33	109/57	110/28	121/37		
		96/31	109/33	109/57	110/28	118/37	121/37		
AIDE	0	14/26 D							
AIDF	22	15/36 D							
AIDG	11	15/04 D	96/32	109/34	110/01	110/29	121/38		
		96/32	109/34	110/01	110/29	121/38			
AIDH	23	15/38 D							
AIDI	1	14/39 D	109/20	109/44	110/15	121/30			
		96/24	109/20	109/44	110/15	121/30			
AIDJ	2	14/41 D	96/25	109/21	109/45	110/16	121/31		
		96/25	109/21	109/45	110/16	121/31			
AIDK	4	14/48 D	96/26	109/22	109/46	110/17	121/33		
		96/26	109/22	109/46	110/17	121/33			
AIDL	5	14/50 D	96/27	109/23	109/47	110/18	121/34		
		96/27	109/23	109/47	110/18	121/34			
AIDM	3	14/43 D	65/16	96/28	109/24	109/48	110/19	121/32	
		56/21	96/28	109/24	109/48	110/19	121/32		
AIDN	24	15/40 D							
AIDP	0	14/27 D							
AIDQ	6	14/52 D	56/21	65/16	96/29	109/25	109/49	110/20	121/35
		56/19	65/14	96/29	109/25	109/49	110/20	121/35	
AIDR	7	14/54 D	65/24	96/30	109/26	109/50	110/21	121/36	
		65/14	96/30	109/26	109/50	110/21	121/36		
AIDS	20	15/30 D	96/39	109/35	110/02	110/30	121/45		
AIDV	20	15/32 D							
AIDW	21	15/34 D							
AIDX	12	15/11 D	96/33	109/27	109/51	110/22	121/41		
		56/12	96/33	109/27	109/51	110/22	121/41		
AIDY	13	15/13 D	96/34	109/28	109/52	110/23	121/42		
		96/34	109/28	109/52	110/23	121/42			
AIDZ	14	15/15 D	96/35	109/29	109/53	110/24	121/43		
		96/35	109/29	109/53	110/24	121/43			
AIEA	25	15/47 D							
AIEB	26	15/49 D							
AIEC	27	15/54 D	15/56						
AIED	27	15/56 D							
AIEE	30	16/01 D	16/03						
AIEF	30	16/03 D							
AIEG	33	16/15 D	16/17						
AIEH	33	16/17 D							
AIEI	34	16/22 D	16/24						
AIEJ	34	16/24 D							
AIEK	35	16/26 D							
AIEL	36	16/28 D							
AIEM	31	16/08 D							
AIEN	32	16/10 D							
AIEO	37	16/33 D	16/35						
AIEP	37	16/35 D							
AIES	40	16/40 D	16/42						
AIEU	40	16/42 D							
AIEV	41	16/44 D							
AIEW	42	16/46 D							
AIHT	3	14/46 D							

SYMBOLIC REFERENCE TABLE.

AIIB	10	14/57 D	56/02	62/16	64/54	118/18				
		55/57	62/14	64/52	118/16					
AIIE	12	15/07 D	56/02	56/12	62/16	64/54	118/18	118/20	118/21	
AIMX	43	16/55 D								
ARNW	20	29/41 D	118/24							
BCTDA	0	15/17 D								
BCTDB	4	15/25 D								
BCTDC	4	15/27 D								
BCTDD	0	15/02 D								
BCTDE	0	14/26 D								
BCTDF	6	15/36 D								
BCTDG	0	15/04 D								
BCTDH	6	15/38 D								
BCTDI	0	14/39 D								
BCTDJ	0	14/41 D								
BCTDK	0	14/48 D								
BCTDL	0	14/50 D								
BCTDM	0	14/43 D								
BCTDN	4	15/40 D								
BCTDP	0	14/27 D								
BCTDQ	0	14/52 D								
BCTDR	0	14/54 D								
BCTDV	4	15/32 D								
BCTDW	4	15/34 D								
BCTDX	0	15/11 D								
BCTDY	0	15/13 D								
BCTDZ	0	15/15 D								
BCTEA	4	15/47 D								
BCTEB	4	15/49 D								
BCTEC	4	15/54 D								
BCTED	4	15/56 D								
BCTEE	4	16/01 D								
BCTEF	4	16/03 D								
BCTEG	4	16/15 D								
BCTEH	4	16/17 D								
BCTEI	4	16/22 D								
BCTEJ	4	16/24 D								
BCTEK	4	16/26 D								
BCTEL	4	16/28 D								
BCTEM	4	16/08 D								
BCTEN	4	16/10 D								
BCTEO	4	16/33 D								
BCTEP	4	16/35 D								
BCTES	4	16/40 D								
BCTEU	4	16/42 D								
BCTEV	4	16/44 D								
BCTEW	4	16/46 D								
BEP	410	18/15 D	52/24	60/10	72/01	77/57	84/01	90/01		
		49/33	55/47	64/34	74/05	81/52	87/46			
BFDA	0	15/17 D	15/17							
BFDB	6	15/25 D	15/25							
BFDC	6	15/27 D	15/27							
BFDD	0	15/02 D	15/02							
BFDE	4	14/26 D	14/26							
BFDF	6	15/36 D	15/36							
BFDG	0	15/04 D	15/04							
BFDH	6	15/38 D	15/38							

SYMBOLIC REFERENCE TABLE.

BFDI	0		14/39 D	14/39						
BFDJ	0		14/41 D	14/41						
BFDK	0		14/48 D	14/48						
BFDL	0		14/50 D	14/50						
BFDM	0		14/43 D	14/43						
BFDN	6		15/40 D	15/40						
BFDP	4		14/27 D	14/27						
BFDQ	0		14/52 D	14/52						
BFDR	0		14/54 D	14/54						
BFDV	6		15/32 D	15/32						
BFDW	6		15/34 D	15/34						
BFDX	0		15/11 D	15/11						
BFDY	0		15/13 D	15/13						
BFDZ	0		15/15 D	15/15						
BFEA	6		15/47 D	15/47						
BFEB	6		15/49 D	15/49						
BFEC	6		15/54 D	15/54						
BFED	7		15/56 D	15/56						
BFEE	6		16/01 D	16/01						
BFEF	7		16/03 D	16/03						
BFEG	6		16/15 D	16/15						
BFEH	7		16/17 D	16/17						
BFEI	6		16/22 D	16/22						
BFEJ	7		16/24 D	16/24						
BFEK	7		16/26 D	16/26						
BFEL	6		16/28 D	16/28						
BFEM	7		16/08 D	16/08						
BFEN	6		16/10 D	16/10						
BFEO	6		16/33 D	16/33						
BFEP	7		16/35 D	16/35						
BFES	6		16/40 D	16/40						
BFEU	7		16/42 D	16/42						
BFEV	7		16/44 D	16/44						
BFEW	6		16/46 D	16/46						
BFMS	6776	NOSTEXT	93/37	107/22	108/32	115/33	119/55	120/38	120/50	
			107/12	108/18	115/30	115/35	120/15	120/46		
BIOL	147	NOSTEXT	130/29							
CEC.AD	2		26/32 D							
CEC.CF	4		26/27 D							
CEC.CP	4		26/23 D							
CEC.CR	5		26/40 D							
CEC.CS	4		26/24 D							
CEC.DF	3		26/29 D							
CEC.FT	4		26/26 D							
CEC.ID	4		26/28 D							
CEC.IW	4		26/35 D							
CEC.LN	6		26/36 D							
CEC.ME	1		26/31 D							
CEC.NR	6		26/37 D							
CEC.RA	4		26/25 D							
CEC.RD	0		26/42 D							
CEC.RS	5		26/39 D							
CEC.SA	0		26/43 D							
CEC.SK	3		26/34 D							
CEC.ST	3		26/33 D							
CFSDA	0		15/17 D							
CFSDB	2		15/25 D							

CFSDC	5		15/27 D						
CFSDD	0		15/02 D						
CFSDE	0		14/26 D						
CFSDF	3		15/36 D						
CFSDG	0		15/04 D						
CFSDH	5		15/38 D						
CFSDI	0		14/39 D						
CFSDJ	0		14/41 D						
CFSDK	0		14/48 D						
CFSDL	0		14/50 D						
CFSDM	0		14/43 D						
CFSDN	2		15/40 D						
CFSDP	0		14/27 D						
CFSDQ	0		14/52 D						
CFSDR	0		14/54 D						
CFSDV	3		15/32 D						
CFSDW	3		15/34 D						
CFSDX	0		15/11 D						
CFSDY	0		15/13 D						
CFSDZ	0		15/15 D						
CFSEA	5		15/47 D						
CFSEB	5		15/49 D						
CFSEC	5		15/54 D						
CFSED	5		15/56 D						
CFSEE	5		16/01 D						
CFSEF	5		16/03 D						
CFSEG	5		16/15 D						
CFSEH	5		16/17 D						
CFSEI	5		16/22 D						
CFSEJ	5		16/24 D						
CFSEK	5		16/26 D						
CFSEL	5		16/28 D						
CFSEM	5		16/08 D						
CFSEN	5		16/10 D						
CFSEO	3		16/33 D						
CFSEP	3		16/35 D						
CFSES	4		16/40 D						
CFSEU	4		16/42 D						
CFSEV	4		16/44 D						
CFSEW	4		16/46 D						
CH	0		29/43 D	34/12	41/26	44/24	53/26	65/45	70/53	85/37
			31/36	34/29	41/29	44/25	53/30	66/31	70/56	85/47
			31/42	34/51	42/12	44/30	53/31	66/33	80/24	
			32/31	35/02	42/30	45/33	53/45	66/44	84/43	
			32/50	35/03	42/31	45/45	53/47	67/03	84/47	
			32/51	35/10	42/36	46/20	64/50	67/23	84/49	
			33/11	36/27	42/37	53/22	65/19	67/42	85/07	
			33/12	36/39	44/01	53/23	65/37	70/35	85/15	
			34/11	37/11	44/20	53/24	65/42	70/39	85/35	
CHFE	5		26/27 L							
CHPE	1		26/23 L	33/37	43/03	53/14				
CHRT	4		17/32 D	26/23	53/10	53/12	85/02	85/30		
CHRV	111		18/13 D	36/47	43/51 S	46/27 S	50/28 S	70/17 S	106/11	
			34/16 S	37/18 S	45/53	50/25	70/15	71/05	106/14 S	
CHTP	141	NOSTEXT	80/26							

SYMBOLIC REFERENCE TABLE.

CM	10	NOSTEXT	30/45 S	42/39	49/57 S	70/09 S	79/57	95/15	111/03 S	130/30 S	
			32/52 S	43/12 S	50/04 S	70/11	80/27 S	95/18 S	111/04 S	130/31	
			33/15	43/13	52/44 S	70/13	80/34	95/20 S	111/28	130/33	
			33/46 S	43/18 S	52/46	71/11 S	82/23 S	95/22	111/31	130/35 S	
			33/47	43/20 S	52/48	71/21	82/24 S	95/28	111/34	130/36	
			33/49 S	43/30 S	56/39 S	72/05 S	84/36 S	106/17	111/37 S	130/40	
			33/53 S	43/44	56/42	72/10	84/48 S	106/21	111/38	130/44	
			34/06 S	43/54 S	60/13 S	74/19	85/14	106/24 S	111/40 S	130/49 S	
			34/08	44/01	60/15	74/41	85/22 S	106/26 S	118/08	130/50 S	
			34/21 S	44/41	64/40 S	75/07 S	85/23	106/27	118/11 S	130/52 S	
			34/29	45/54 S	64/42	75/24 S	87/51 S	106/33	118/12	130/53	
			36/48 S	45/56	64/44	75/26	87/56	107/17 S	124/13	130/57 S	
			36/50	46/04	66/01 S	75/55 S	88/10 S	107/20 S	124/32	131/02	
			36/56	46/16	66/27 S	75/56	88/12	107/22	125/47 S	131/16 S	
			37/07	46/18 S	66/31	76/05	88/13 I	107/23	125/48	131/17	
			37/09 S	46/19	66/47 S	78/34	88/14 S	108/27 S	128/26	131/26	
			37/10	46/24	66/50 S	78/37	88/16	108/28	128/31 S	131/28	
			37/15	46/26	66/51 S	78/41 S	88/17 I	108/33 S	128/34	131/42	
			37/17	49/48 S	67/14 S	79/23 S	94/17 S	108/36 S	128/42 S	131/45 S	
			37/22	49/49	67/15	79/24 S	94/22 S	108/39 S	129/50	131/46	
			40/45 S	49/52 S	67/18 S	79/31	94/24 S	111/01 I	129/52 S		
			42/32 S	49/53	67/20 S	79/55	95/14 S	111/02 I	130/04		
CMNW	21		29/42 D	120/46							
CNAC	37		17/41 D								
COME	4		23/32 D	26/23	26/24	26/25	26/26	26/27	26/28	26/35	
CP	74	NOSTEXT	71/19	85/22	128/32						
CRSE	20		26/40 L								
CRTH	7		17/27 D	78/45							
CRTO	10		17/28 D	76/36							
CSRT	2		17/33 D	26/24							
CSTE	2		26/24 L	53/57							
CTALL	11	NOSTEXT	80/28								
CTDA	10		15/17 D								
CTDB	10		15/25 D								
CTDC	10		15/27 D								
CTDD	40		15/02 D								
CTDE	4		14/26 D								
CTDF	10		15/36 D								
CTDG	10		15/04 D								
CTDH	10		15/38 D								
CTDI	40		14/39 D								
CTDJ	40		14/41 D								
CTDK	40		14/48 D								
CTDL	40		14/50 D								
CTDM	10		14/43 D								
CTDN	10		15/40 D								
CTDP	4		14/27 D								
CTDQ	10		14/52 D								
CTDR	10		14/54 D								
CTDV	10		15/32 D								
CTDW	10		15/34 D								
CTDX	40		15/11 D								
CTDY	40		15/13 D								
CTDZ	10		15/15 D								
CTEA	10		15/47 D								
CTEB	10		15/49 D								
CTEC	10		15/54 D								

SYMBOLIC REFERENCE TABLE.

CTED	10	15/56 D
CTEE	10	16/01 D
CTEF	10	16/03 D
CTEG	10	16/15 D
CTEH	10	16/17 D
CTEI	10	16/22 D
CTEJ	10	16/24 D
CTEK	10	16/26 D
CTEL	10	16/28 D
CTEM	10	16/08 D
CTEN	10	16/10 D
CTEO	10	16/33 D
CTEP	10	16/35 D
CTES	10	16/40 D
CTEU	10	16/42 D
CTEV	10	16/44 D
CTEW	10	16/46 D
CWR.AD	0	26/32 D
CWR.CF	1	26/27 D
CWR.CP	0	26/23 D
CWR.CR	0	26/40 D
CWR.CS	0	26/24 D
CWR.DF	0	26/29 D
CWR.FT	1	26/26 D
CWR.ID	1	26/28 D
CWR.IW	0	26/35 D
CWR.LN	0	26/36 D
CWR.ME	0	26/31 D
CWR.NR	0	26/37 D
CWR.RA	1	26/25 D
CWR.RD	0	26/42 D
CWR.RS	0	26/39 D
CWR.SA	0	26/43 D
CWR.SK	0	26/34 D
CWR.ST	0	26/33 D
CYPNDA	2140	15/17 D
CYPNDB	1511	15/25 D
CYPNDC	1563	15/27 D
CYPNDD	1457	15/02 D
CYPNDE	0	14/26 D
CYPNDF	1562	15/36 D
CYPNDG	1273	15/04 D
CYPNDH	1562	15/38 D
CYPNDI	630	14/39 D
CYPNDJ	1464	14/41 D
CYPNDK	630	14/48 D
CYPNDL	1464	14/50 D
CYPNDM	1511	14/43 D
CYPNDN	2601	15/40 D
CYPNDP	0	14/27 D
CYPNDQ	1511	14/52 D
CYPNDR	6000	14/54 D
CYPNDV	627	15/32 D
CYPNDW	1462	15/34 D
CYPNDX	630	15/11 D
CYPNDY	1454	15/13 D
CYPNDZ	1056	15/15 D

SYMBOLIC REFERENCE TABLE.

CYPNEA	1514	15/47	D		
CYPNEB	1514	15/49	D		
CYPNEC	3135	15/54	D		
CYPNED	3135	15/56	D		
CYPNEE	3135	16/01	D		
CYPNEF	3135	16/03	D		
CYPNEG	5074	16/15	D		
CYPNEH	5074	16/17	D		
CYPNEI	2436	16/22	D		
CYPNEJ	2436	16/24	D		
CYPNEK	1551	16/26	D		
CYPNEL	1217	16/28	D		
CYPNEM	1456	16/08	D		
CYPNEN	1456	16/10	D		
CYPNEO	4362	16/33	D		
CYPNEP	4362	16/35	D		
CYPNES	2171	16/40	D		
CYPNEU	2171	16/42	D		
CYPNEV	1373	16/44	D		
CYPNEW	1074	16/46	D		
CYUNDA	2140	15/17	D	15/17	
CYUNDB	1511	15/25	D	15/25	126/07
CYUNDC	1563	15/27	D	15/27	
CYUNDD	1457	15/02	D	15/02	126/13
CYUNDE	0	14/26	D	14/26	
CYUNDF	1562	15/36	D	15/36	
CYUNDG	1273	15/04	D	15/04	126/19
CYUNDH	1562	15/38	D	15/38	
CYUNDI	630	14/39	D	14/39	
CYUNDJ	1464	14/41	D	14/41	
CYUNDK	630	14/48	D	14/48	
CYUNDL	1464	14/50	D	14/50	
CYUNDM	1511	14/43	D	14/43	126/25
CYUNDN	2601	15/40	D	15/40	
CYUNDP	0	14/27	D	14/27	
CYUNDQ	1511	14/52	D	14/52	126/31
CYUNDR	6000	14/54	D	14/54	
CYUNDV	627	15/32	D	15/32	
CYUNDW	1462	15/34	D	15/34	
CYUNDX	630	15/11	D	15/11	
CYUNDY	1454	15/13	D	15/13	
CYUNDZ	1056	15/15	D	15/15	
CYUNEA	1514	15/47	D	15/47	
CYUNEB	1514	15/49	D	15/49	
CYUNEC	3135	15/54	D	15/54	
CYUNED	3135	15/56	D	15/56	
CYUNEE	3135	16/01	D	16/01	
CYUNEF	3135	16/03	D	16/03	
CYUNEG	5074	16/15	D	16/15	
CYUNEH	5074	16/17	D	16/17	
CYUNEI	5074	16/22	D	16/22	
CYUNEJ	5074	16/24	D	16/24	
CYUNEK	5074	16/26	D	16/26	
CYUNEL	5074	16/28	D	16/28	
CYUNEM	3135	16/08	D	16/08	
CYUNEN	3135	16/10	D	16/10	
CYUNEO	4362	16/33	D	16/33	

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CYUNEP      4362               16/35 D   16/35
CYUNES      4362               16/40 D   16/40
CYUNEU      4362               16/42 D   16/42
CYUNEV      4362               16/44 D   16/44
CYUNEW      4362               16/46 D   16/46
DBIA        7651               49/05 L   49/27     49/35
DBIAL         10               49/27 D   50/39
DBSV           5               17/42 D
DC1            0               69/39 D   75/21     78/13
DC11           3               69/42 D   75/19     75/20     78/11     78/12
DC6            1               69/40 D   78/11
DC9            2               69/41 D   75/19
DDFE           7               26/29 L
DDLL          16   NOSTEXT    131/30    131/32
DDMD        7527               21/12 L   85/18 S
DEAI        7500               21/02 L   49/55 S   55/56     56/18     62/13     64/51     65/23
DEDT        7501               21/03 L   49/41 S   86/09
DEEC        7502               21/04 L   54/01 S   61/54 S   62/01     80/45     88/30     90/20
DEFW        1065               20/22 L   49/25
DEGS        7503               21/05 L   53/30 S   58/43     65/01     85/17
                               49/40 S   53/34     60/19     85/07 S   88/26
DELF        7504               21/06 L   49/45 S   53/25 S
DENR        1070               20/19 L   50/17 S   62/25 S   67/28 S   75/16
DEPL        7560               21/14 L
DERC        1067               20/20 L   50/15 S   53/13 S   67/39 S
DERW        7505               21/07 L   50/11 S   56/54     57/35     62/22     65/20     88/27
DEST        7506               21/08 L   58/42     68/09     71/16     71/24     76/35     82/40     85/50 S
                               49/39 S   62/55     70/18     71/18 S   71/27 S   80/44     85/48
DEWR        1066               20/21 L   50/16 S   56/56 S   62/24 S   65/22 S
DEXA        7507               21/09 L   50/30 S   50/43     54/30     58/46     60/28 S   63/01
DIDA           1               15/17 D
DIDB           4               15/25 D
DIDC           4               15/27 D
DIDD           2               15/02 D
DIDE           4               14/26 D
DIDF           4               15/36 D
DIDG           2               15/04 D
DIDH           4               15/38 D
DIDI           1               14/39 D
DIDJ           1               14/41 D
DIDK           1               14/48 D
DIDL           1               14/50 D
DIDM           1               14/43 D
DIDN           4               15/40 D
DIDP           3               14/27 D
DIDQ           1               14/52 D
DIDR           1               14/54 D
DIDV           4               15/32 D
DIDW           4               15/34 D
DIDX           1               15/11 D
DIDY           1               15/13 D
DIDZ           1               15/15 D
DIEA           4               15/47 D
DIEB           4               15/49 D
DIEC           4               15/54 D
DIED           4               15/56 D
DIEE           4               16/01 D
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SYMBOLIC REFERENCE TABLE.

DIEF	4		16/03 D							
DIEG	4		16/15 D							
DIEH	4		16/17 D							
DIEI	4		16/22 D							
DIEJ	4		16/24 D							
DIEK	4		16/26 D							
DIEL	4		16/28 D							
DIEM	4		16/08 D							
DIEN	4		16/10 D							
DIEO	4		16/33 D							
DIEP	4		16/35 D							
DIES	4		16/40 D							
DIEU	4		16/42 D							
DIEV	4		16/44 D							
DIEW	4		16/46 D							
DILL	13	NOSTEXT	49/51	95/17	95/19	106/23	106/25	118/10	131/32	
DRSW	100		18/03 D							
DRVE	17		26/39 L							
DSFA	7534		21/13 L	72/36	80/48	85/35 S	86/13	88/06	88/11	
			68/13	76/39	82/44	85/42	88/05 S	88/07	88/15	
DSLN	24		29/39 D	53/44	54/04	54/26	56/43	85/34	88/06	
			52/32	53/46	54/09	56/38	56/44	85/38	119/03	
DST	622		32/50 L	34/32	42/30 L	44/04				
DSTA	634		33/13 L	131/54 S	132/01 S					
DSTB	635		33/15 L	124/39 S	124/48 S	125/07 S				
DSTE	12		26/33 L	61/43						
DST1	625		31/43	32/52 L	41/31	42/32 L	42/33			
DSW	761		30/47	34/07	36/46 D	40/47	43/31	45/52 D		
DSWA	1011		37/11 L	37/32						
DSWA.J	1017		46/20 L	46/36						
DSWB	770		36/52 L	37/52 S						
DSWC	1056		46/08 S	46/09	46/53 L					
DSWD	746		36/28 D	37/16 S	45/34 D	46/25 S				
DSWM	13	NOSTEXT	37/04	46/13						
DSWX	760		36/46 L	36/51	45/52 L	45/57				
DSW1	766		36/50 L	37/19	45/56 L	46/28				
DSW2	776		36/39	36/44	37/02 L	37/21	45/45	45/50	46/07 L	46/10
DSW3	1003		37/06 L	37/12						
DSW3.J	1011		46/15 L	46/21						
DSW4	745		36/27 L	37/01	45/33 L	46/06				
DSW5	751		36/39 L	36/41	36/43	45/45 L	45/47	45/49		
DSW5.1	757		44/40	45/50 L						
DSW6	1024		36/55	37/21 L						
DSW6A	736		44/40 L	46/03						
DSW7	1026		33/38	37/23 L						
DSW7A	740		43/04	44/42 L						
D1	71		18/04 D	32/12 I	37/23 I	40/46 I	42/03	46/50 I	84/07 I	
			30/46 I	32/19	37/51	41/12 I	43/21 I	50/22	84/16	
			31/17 I	33/54 I	37/54 I	41/53 I	44/42 I	52/55		
ECBL	102		17/43 D							
EI0	0		53/40	55/53	62/38 L					
EI1	1		57/38	62/39 L	67/33					
EI2	2		62/40 L	67/33	67/41					
EI3	3		54/02	62/41 L	64/48	67/41				
EI4	4		58/16	62/42 L						
EI5	5		58/16	58/17	62/43 L					
EI6	6		57/24	62/44 L						

SYMBOLIC REFERENCE TABLE.

EMN.AD	104		26/32 D								
EMN.CF	306		26/27 D								
EMN.CP	320		26/23 D								
EMN.CR	322		26/40 D								
EMN.CS	323		26/24 D								
EMN.DF	406		26/29 D								
EMN.FT	624		26/26 D								
EMN.ID	1104		26/28 D								
EMN.IW	1127		26/35 D								
EMN.LN	1416		26/36 D								
EMN.ME	1505		26/31 D								
EMN.NR	1622		26/37 D								
EMN.RA	2201		26/25 D								
EMN.RD	2204		26/42 D								
EMN.RS	2223		26/39 D								
EMN.SA	2301		26/43 D								
EMN.SK	2313		26/34 D								
EMN.ST	2324		26/33 D								
EPAD	2		19/50	22/52 D	106/12	106/13	131/49				
EPAR	51		23/05 D	106/09							
EPDE	420		23/02 D	70/25	71/01	90/16	131/49				
EPDF	2000		23/04 D	94/51	106/09	113/03	114/53	118/07	131/49		
EPER	40		22/56 D	26/23	26/25	26/27	26/29	26/32	26/34	26/43	
			23/05	26/24	26/26	26/28	26/31	26/33	26/35		
EPFW	7500	NOSTEXT	21/01	50/43	58/46	60/44	68/13	76/39	82/44	88/30	
			47/06	54/30	60/25	63/01	72/36	80/48	86/13		
EPND	1000		23/03 D								
EPNF	200		23/01 D								
EPNR	1		22/51 D	23/05	26/36	26/37	26/42	94/51	118/07	131/49	
EPNS	4		19/51	50/26	94/51	114/53	124/12				
			22/53 D	50/27	113/03	118/07	131/49				
EPO.AD	40		26/32 D								
EPO.CF	40		26/27 D								
EPO.CP	40		26/23 D								
EPO.CR	10		26/40 D								
EPO.CS	40		26/24 D								
EPO.DF	40		26/29 D								
EPO.FT	40		26/26 D								
EPO.ID	40		26/28 D								
EPO.IW	40		26/35 D								
EPO.LN	1		26/36 D								
EPO.ME	40		26/31 D								
EPO.NR	1		26/37 D								
EPO.RA	40		26/25 D								
EPO.RD	1		26/42 D								
EPO.RS	10		26/39 D								
EPO.SA	40		26/43 D								
EPO.SK	40		26/34 D								
EPO.ST	40		26/33 D								
EPRR	10		22/54 D	23/05	26/39	26/40	106/09				
EPRW	100		22/57 D								
EPSM	20		22/55 D	23/02	70/25	71/01	90/16	106/09			
EQAE	1	NOSTEXT	80/03								
EQDE	0	NOSTEXT	49/47	79/32	95/13	131/15					
ERR	741		34/30	35/02	35/23 L	37/24	44/02	44/24	44/32	44/51 L	
ERRA	744		35/34 D	52/27 S	62/29 S	66/35 S	70/49 S	84/39 S	124/37 S		
			45/02 D	60/49 S	66/03 S	70/29 S	70/55 S	84/57 S			

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ERR2          1052                 49/10 L   60/27     84/09 S   84/10     84/21 S
ERXA           102                 18/06 D   60/35     84/06     84/11 S   84/17 S
ESTE             2   NOSTEXT       79/25
ESTP            72   NOSTEXT       79/22
EXR            462   NOSTEXT       94/45
FCAL           414                 29/31 D   65/19     80/24
FCCN             0                 29/04 D
FCCO            14                 29/12 D   87/55
FCDK            15                 29/13 D   70/33
FCDP            61                 29/26 D
FCDR            20                 29/14 D   70/36
FCDS            23                 29/15 D   53/42     85/32    118/50
FCFT            64                 29/29 D  116/10
FCGR            11                 29/10 D  113/04
FCGS            12                 29/11 D   33/09     42/34     53/27     85/04
FCID            63                 29/28 D   66/36
FCLC            71                 29/30 D
FCMP            62                 29/27 D   66/28     70/50
FCOC            10                 29/09 D   36/27     45/33
FCRB            43                 29/21 D   60/55
FCRD             4                 29/07 D   31/23     41/18
FCRF            30                 29/16 D  106/15
FCRP            34                 29/18 D  107/01
FCRU            31                 29/17 D   95/03
FCSD            56                 29/24 D  128/47
FCST            52                 29/22 D   66/57
FCSU            55                 29/23 D   84/40    128/47    128/48
FCS1             1                 29/05 D   37/49     43/55     65/29     65/30
FCS2             2                 29/06 D
FCTD            56                 29/25 D  115/52
FCWL            35                 29/19 D   32/25     42/07
FCWP            37                 29/20 D  107/03
FCWR             5                 29/08 D
FNC            725                 31/35     34/10     41/25     43/56     53/28     66/37     70/37     85/05
                                   32/30     34/26     42/11     44/23 D   53/43     67/01     70/51     85/33
                                   33/10     35/01 D   42/35     49/56     66/29     70/34     84/41
FNCA           723                 34/53 D  115/20 S  119/04 S  132/14 S
FNCB           734                 35/10 L  116/08
FNCC           730                 35/03 L  116/05
FNCX           724                 35/01 L   44/23 L
FNC1           726                 35/02 L
FNC2           733                 35/09 L   35/11     35/13
FNC2A          731                 44/29 L   44/31
FNC4           721                 34/51 L   35/10     44/20 L   44/30
FRNW             3                 29/40 D  118/24    120/15    120/38    120/50
FTN            165   NOSTEXT       33/52     43/19     50/05     74/40     75/57     85/22    108/23    129/25
                                   37/04     46/13     74/36     75/02     79/28     94/25    128/39    131/04
FTOE             4                 26/26 L   61/44     61/45
FTRT             4                 17/35 D   26/26     26/34     26/35     67/38
GSDA             0                 15/17 D   15/17
GSDB             0                 15/25 D   15/25
GSDC             0                 15/27 D   15/27
GSDD             0                 15/02 D   15/02
GSDE             0                 14/26 D   14/26
GSDF             0                 15/36 D   15/36
GSDG             0                 15/04 D   15/04
GSDH             0                 15/38 D   15/38
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SYMBOLIC REFERENCE TABLE.

GSDI	1		14/39 D	14/39					
GSDJ	1		14/41 D	14/41					
GSDK	2		14/48 D	14/48					
GSDL	1		14/50 D	14/50					
GSDM	0		14/43 D	14/43					
GSDN	0		15/40 D	15/40					
GSDP	0		14/27 D	14/27					
GSDQ	0		14/52 D	14/52					
GSDR	0		14/54 D	14/54					
GSDV	0		15/32 D	15/32					
GSDW	0		15/34 D	15/34					
GSDX	2		15/11 D	15/11					
GSDY	2		15/13 D	15/13					
GSDZ	0		15/15 D	15/15					
GSEA	0		15/47 D	15/47					
GSEB	0		15/49 D	15/49					
GSEC	0		15/54 D	15/54					
GSED	0		15/56 D	15/56					
GSEE	0		16/01 D	16/01					
GSEF	0		16/03 D	16/03					
GSEG	0		16/15 D	16/15					
GSEH	0		16/17 D	16/17					
GSEI	0		16/22 D	16/22					
GSEJ	0		16/24 D	16/24					
GSEK	0		16/26 D	16/26					
GSEL	0		16/28 D	16/28					
GSEM	0		16/08 D	16/08					
GSEN	0		16/10 D	16/10					
GSEO	0		16/33 D	16/33					
GSEP	0		16/35 D	16/35					
GSES	0		16/40 D	16/40					
GSEU	0		16/42 D	16/42					
GSEV	0		16/44 D	16/44					
GSEW	0		16/46 D	16/46					
HEDR	7515		21/11 L	71/15 S	79/39	82/41	84/43	85/44 S	
HN	71	NOSTEXT	18/04	36/37	53/54	64/56	118/55	131/52	
			35/07	50/18	60/50	66/43	124/38		
HNGM	22	NOSTEXT	79/28						
IDC.AD	0		26/32 D						
IDC.CF	1		26/27 D						
IDC.CP	1		26/23 D						
IDC.CR	0		26/40 D						
IDC.CS	1		26/24 D						
IDC.DF	0		26/29 D						
IDC.FT	1		26/26 D						
IDC.ID	1		26/28 D						
IDC.IW	0		26/35 D						
IDC.LN	0		26/36 D						
IDC.ME	0		26/31 D						
IDC.NR	0		26/37 D						
IDC.RA	1		26/25 D						
IDC.RD	0		26/42 D						
IDC.RS	0		26/39 D						
IDC.SA	0		26/43 D						
IDC.SK	0		26/34 D						
IDC.ST	0		26/33 D						
IDTE	6		26/28 L						

SYMBOLIC REFERENCE TABLE.

IEC.AD	1		26/32 D
IEC.CF	1		26/27 D
IEC.CP	1		26/23 D
IEC.CR	2		26/40 D
IEC.CS	1		26/24 D
IEC.DF	0		26/29 D
IEC.FT	1		26/26 D
IEC.ID	1		26/28 D
IEC.IW	1		26/35 D
IEC.LN	0		26/36 D
IEC.ME	1		26/31 D
IEC.NR	2		26/37 D
IEC.RA	1		26/25 D
IEC.RD	0		26/42 D
IEC.RS	2		26/39 D
IEC.SA	1		26/43 D
IEC.SK	1		26/34 D
IEC.ST	1		26/33 D
IEM.AD	2		26/32 D
IEM.CF	2		26/27 D
IEM.CP	2		26/23 D
IEM.CR	2		26/40 D
IEM.CS	2		26/24 D
IEM.DF	0		26/29 D
IEM.FT	2		26/26 D
IEM.ID	2		26/28 D
IEM.IW	2		26/35 D
IEM.LN	0		26/36 D
IEM.ME	1		26/31 D
IEM.NR	1		26/37 D
IEM.RA	2		26/25 D
IEM.RD	0		26/42 D
IEM.RS	2		26/39 D
IEM.SA	0		26/43 D
IEM.SK	2		26/34 D
IEM.ST	1		26/33 D
IR	50	NOSTEXT	124/10
IRTE	21		26/41 L
IWTE	14		26/35 L
IWTO	17		17/29 D
IXCR	4		17/21 D
IXIW	3		17/20 D
IXMX	4		17/22 D
IXST	1		17/18 D
IXUR	2		17/19 D

LA	15	NOSTEXT	92/47	96/08	101/23	106/36	111/39	118/33	120/41	128/35
			92/56	97/16	101/27	106/49	112/42	118/36	120/43	128/44
			93/05	97/23	101/29	106/51	113/06	118/41	120/55	128/45
			93/34	97/36	101/44	106/55	113/08	118/44	120/56	130/03
			93/55	97/43	102/10	106/56	114/50	118/46	120/57	130/21
			94/48 S	98/56	102/12	107/05	114/54	118/48	121/09	130/28
			94/49	99/06	103/13	107/18	114/55	118/49	121/10	130/38
			95/10	99/13	103/27	107/19	115/36	118/52	124/23	130/43
			95/24	99/24	105/39	107/28	115/38	119/06	124/28	131/12
			95/35	99/30	105/40	108/09	115/44	119/07	124/36	131/21
			95/39	99/37	105/41	108/29	115/49	120/06	124/47	131/38
			95/41	99/47	105/42	108/30	116/07	120/07	125/06	131/41
			95/43	99/49	105/43	108/31	116/09	120/08	125/39	131/48
			95/45	100/10	105/46	108/35	118/01	120/12	125/54	131/57
			95/50	100/21	105/48	108/38	118/02	120/18	127/47	132/02
			95/52	100/30	105/49	108/40	118/03	120/22	127/48	132/06
			95/53	100/38	105/53	108/42	118/04	120/23	127/50	132/11
			95/54	100/54	106/19	108/43	118/14	120/25	128/18	132/15
			95/57	101/07	106/20	111/30	118/15	120/26	128/22	
			96/03 S	101/21	106/29	111/36	118/25	120/33	128/25	
LA6DE	4		10/49 L	15/32	15/40	15/56	16/10	16/24	16/35	16/46
			14/26	15/34	15/47	16/01	16/15	16/26	16/40	
			15/25	15/36	15/49	16/03	16/17	16/28	16/42	
			15/27	15/38	15/54	16/08	16/22	16/33	16/44	
LA6DI	1		10/46 L	14/41	14/48	14/52	15/11	15/15		
			14/39	14/43	14/50	14/54	15/13	15/17		
LA6DJ	2		10/47 L	15/02	15/04					
LA6DP	3		10/48 L	14/27						
LA6DX	5		10/50 L							
LA6MX	6		10/51 L							
LCDA	35		15/17 D							
LCDB	15		15/25 D							
LCDC	15		15/27 D							
LCDD	43		15/02 D							
LCDE	0		14/26 D							
LCDF	15		15/36 D							
LCDG	57		15/04 D							
LCDH	15		15/38 D							
LCDI	47		14/39 D							
LCDJ	47		14/41 D							
LCDK	77		14/48 D							
LCDL	77		14/50 D							
LCDM	47		14/43 D							
LCDN	15		15/40 D							
LCDP	0		14/27 D							
LCDQ	67		14/52 D							
LCDR	67		14/54 D							
LCDV	15		15/32 D							
LCDW	15		15/34 D							
LCDX	35		15/11 D							
LCDY	35		15/13 D							
LCDZ	35		15/15 D							
LCEA	15		15/47 D							
LCEB	15		15/49 D							
LCEC	15		15/54 D							
LCED	15		15/56 D							
LCEE	15		16/01 D							

SYMBOLIC REFERENCE TABLE.

LCEF	15		16/03 D							
LCEG	15		16/15 D							
LCEH	15		16/17 D							
LCEI	15		16/22 D							
LCEJ	15		16/24 D							
LCEK	15		16/26 D							
LCEL	15		16/28 D							
LCEM	15		16/08 D							
LCEN	15		16/10 D							
LCEO	15		16/33 D							
LCEP	15		16/35 D							
LCES	15		16/40 D							
LCEU	15		16/42 D							
LCEV	15		16/44 D							
LCEW	15		16/46 D							
LDA	642		31/22	33/40 L	41/17	43/06 L	43/49 S	50/07		
			32/18	34/31	42/02	43/17	44/03	115/48		
LDAA	706		34/22 L	37/50 S	65/27	113/05 S				
LDAB	711		34/27 L	113/07 S	113/15					
LDAC	703		34/19 D	118/57 S	119/02 S					
LDAM	64	NOSTEXT	33/52	43/19	50/05	108/23	128/39			
LDAMDA	1		15/17 D							
LDAMDB	1		15/25 D							
LDAMDC	1		15/27 D							
LDAMDD	1		15/02 D							
LDAMDE	0		14/26 D							
LDAMDF	0		15/36 D							
LDAMDG	1		15/04 D							
LDAMDH	0		15/38 D							
LDAMDI	1		14/39 D							
LDAMDJ	1		14/41 D							
LDAMDK	1		14/48 D							
LDAMDL	1		14/50 D							
LDAMDM	1		14/43 D							
LDAMDN	0		15/40 D							
LDAMDP	0		14/27 D							
LDAMDQ	1		14/52 D							
LDAMDR	1		14/54 D							
LDAMDV	0		15/32 D							
LDAMDW	0		15/34 D							
LDAMDX	1		15/11 D							
LDAMDY	1		15/13 D							
LDAMDZ	1		15/15 D							
LDAMEA	0		15/47 D							
LDAMEB	0		15/49 D							
LDAMEC	0		15/54 D							
LDAMED	0		15/56 D							
LDAMEE	0		16/01 D							
LDAMEF	0		16/03 D							
LDAMEG	0		16/15 D							
LDAMEH	0		16/17 D							
LDAMEI	0		16/22 D							
LDAMEJ	0		16/24 D							
LDAMEK	0		16/26 D							
LDAMEL	0		16/28 D							
LDAMEM	0		16/08 D							
LDAMEN	0		16/10 D							

SYMBOLIC REFERENCE TABLE.

LDAMEO	0	16/33 D								
LDAMEP	0	16/35 D								
LDAMES	0	16/40 D								
LDAMEU	0	16/42 D								
LDAMEV	0	16/44 D								
LDAMEW	0	16/46 D								
LDA1	643	33/45 L	33/48	43/11 L	43/14	50/29	71/22	90/26		
LDA3	663	33/13	34/06 L	34/14	130/05					
LDA3.J	665	42/38	43/30 L							
LDA4	664	33/57	34/07 L							
LDA4.J	666	43/24	43/31 L							
LDA4.1	700	43/47	43/50 L							
LDA5	703	34/09	34/17 L	43/45	43/52 L					
LDA6	714	34/30 L								
LDA7	715	34/31 L	113/16							
LDA8	637	31/42	33/12	33/37 L	34/12	41/29	42/37	43/03 L		
LDA9	640	32/33	33/38 L	42/14	43/04 L					
LDCI	2000	132/08								
LDDI	3000	95/51								
LDMI	5000	61/13								
LDNI	1400	37/49	95/03	106/15	107/01	107/03	113/04	118/50		
LEP	413	18/16 D	71/28	84/14	88/18					
LEP1	414	18/17 D	44/52	50/31	58/21	62/32	70/54	78/15	82/29	
		35/24	49/17	54/13	62/28	67/45	75/27	78/49	85/51	
LJMI	100	60/51	118/56	124/40	131/53					
LMNI	1100	56/29								
LNRE	15	26/36 L	50/23							
LSPSDA	1	15/17 D	15/17							
LSPSDB	4	15/25 D	15/25							
LSPSDC	40	15/27 D	15/27							
LSPSDD	1	15/02 D	15/02							
LSPSDE	1	14/26 D	14/26							
LSPSDF	10	15/36 D	15/36							
LSPSDG	1	15/04 D	15/04							
LSPSDH	40	15/38 D	15/38							
LSPSDI	1	14/39 D	14/39							
LSPSDJ	1	14/41 D	14/41							
LSPSDK	1	14/48 D	14/48							
LSPSDL	1	14/50 D	14/50							
LSPSDM	1	14/43 D	14/43							
LSPSDN	4	15/40 D	15/40							
LSPSDP	1	14/27 D	14/27							
LSPSDQ	1	14/52 D	14/52							
LSPSDR	1	14/54 D	14/54							
LSPSDV	10	15/32 D	15/32							
LSPSDW	10	15/34 D	15/34							
LSPSDX	1	15/11 D	15/11							
LSPSDY	1	15/13 D	15/13							
LSPSDZ	1	15/15 D	15/15							
LSPSEA	40	15/47 D	15/47							
LSPSEB	40	15/49 D	15/49							
LSPSEC	40	15/54 D	15/54							
LSPSED	40	15/56 D	15/56							
LSPSEE	40	16/01 D	16/01							
LSPSEF	40	16/03 D	16/03							
LSPSEG	40	16/15 D	16/15							
LSPSEH	40	16/17 D	16/17							

SYMBOLIC REFERENCE TABLE.

LSPSEI	40	16/22	D	16/22
LSPSEJ	40	16/24	D	16/24
LSPSEK	40	16/26	D	16/26
LSPSEL	40	16/28	D	16/28
LSPSEM	40	16/08	D	16/08
LSPSEN	40	16/10	D	16/10
LSPSEO	10	16/33	D	16/33
LSPSEP	10	16/35	D	16/35
LSPSES	20	16/40	D	16/40
LSPSEU	20	16/42	D	16/42
LSPSEV	20	16/44	D	16/44
LSPSEW	20	16/46	D	16/46
LSPTDA	34	15/17	D	15/17
LSPTDB	200	15/25	D	15/25
LSPTDC	140	15/27	D	15/27
LSPTDD	40	15/02	D	15/02
LSPTDE	0	14/26	D	14/26
LSPTDF	460	15/36	D	15/36
LSPTDG	57	15/04	D	15/04
LSPTDH	540	15/38	D	15/38
LSPTDI	30	14/39	D	14/39
LSPTDJ	30	14/41	D	14/41
LSPTDK	30	14/48	D	14/48
LSPTDL	30	14/50	D	14/50
LSPTDM	40	14/43	D	14/43
LSPTDN	124	15/40	D	15/40
LSPTDP	0	14/27	D	14/27
LSPTDQ	40	14/52	D	14/52
LSPTDR	40	14/54	D	14/54
LSPTDV	240	15/32	D	15/32
LSPTDW	240	15/34	D	15/34
LSPTDX	25	15/11	D	15/11
LSPTDY	25	15/13	D	15/13
LSPTDZ	34	15/15	D	15/15
LSPTEA	140	15/47	D	15/47
LSPTEB	300	15/49	D	15/49
LSPTEC	300	15/54	D	15/54
LSPTED	300	15/56	D	15/56
LSPTEE	540	16/01	D	16/01
LSPTEF	540	16/03	D	16/03
LSPTEG	240	16/15	D	16/15
LSPTEH	240	16/17	D	16/17
LSPTEI	440	16/22	D	16/22
LSPTEJ	440	16/24	D	16/24
LSPTEK	700	16/26	D	16/26
LSPTEL	1100	16/28	D	16/28
LSPTEM	1040	16/08	D	16/08
LSPTEN	1300	16/10	D	16/10
LSPTEO	150	16/33	D	16/33
LSPTEP	150	16/35	D	16/35
LSPTES	320	16/40	D	16/40
LSPTEU	320	16/42	D	16/42
LSPTEV	460	16/44	D	16/44
LSPTEW	620	16/46	D	16/46
LTCYDA	1	15/17	D	
LTCYDB	2	15/25	D	
LTCYDC	2	15/27	D	

SYMBOLIC REFERENCE TABLE.

LTCYDD	2		15/02 D						
LTCYDE	0		14/26 D						
LTCYDF	2		15/36 D						
LTCYDG	2		15/04 D						
LTCYDH	2		15/38 D						
LTCYDI	4		14/39 D						
LTCYDJ	2		14/41 D						
LTCYDK	4		14/48 D						
LTCYDL	2		14/50 D						
LTCYDM	2		14/43 D						
LTCYDN	1		15/40 D						
LTCYDP	0		14/27 D						
LTCYDQ	2		14/52 D						
LTCYDR	0		14/54 D						
LTCYDV	2		15/32 D						
LTCYDW	2		15/34 D						
LTCYDX	4		15/11 D						
LTCYDY	2		15/13 D						
LTCYDZ	2		15/15 D						
LTCYEA	2		15/47 D						
LTCYEB	2		15/49 D						
LTCYEC	1		15/54 D						
LTCYED	1		15/56 D						
LTCYEE	1		16/01 D						
LTCYEF	1		16/03 D						
LTCYEG	0		16/15 D						
LTCYEH	0		16/17 D						
LTCYEI	1		16/22 D						
LTCYEJ	1		16/24 D						
LTCYEK	2		16/26 D						
LTCYEL	3		16/28 D						
LTCYEM	2		16/08 D						
LTCYEN	2		16/10 D						
LTCYEO	0		16/33 D						
LTCYEP	0		16/35 D						
LTCYES	1		16/40 D						
LTCYEU	1		16/42 D						
LTCYEV	2		16/44 D						
LTCYEW	3		16/46 D						
MA	77	NOSTEXT	33/50	43/15	50/01	67/13	75/53	108/21	131/01
			34/17	43/52	54/06	67/43	78/05	108/25	
			37/02	46/11	56/40	72/06	85/40	128/37	
			37/13	46/22	65/43	74/38	88/03	128/40	
MCLTDA	0		15/17 D						
MCLTDB	7224		15/25 D						
MCLTDC	7350		15/27 D						
MCLTDD	7136		15/02 D						
MCLTDE	4001		14/26 D						
MCLTDF	7344		15/36 D						
MCLTDG	6566		15/04 D						
MCLTDH	7344		15/38 D						
MCLTDI	7144		14/39 D						
MCLTDJ	7152		14/41 D						
MCLTDK	7144		14/48 D						
MCLTDL	7152		14/50 D						
MCLTDM	7224		14/43 D						
MCLTDN	7730		15/40 D						

SYMBOLIC REFERENCE TABLE.

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MCLTDP       4001                  14/27 D
MCLTDQ       7224                  14/52 D
MCLTDR       7777                  14/54 D
MCLTDV          0                  15/32 D
MCLTDW          0                  15/34 D
MCLTDX       7144                  15/11 D
MCLTDY       7132                  15/13 D
MCLTDZ       6134                  15/15 D
MCLTEA       7746                  15/47 D
MCLTEB       7746                  15/49 D
MCLTEC       7776                  15/54 D
MCLTED       7776                  15/56 D
MCLTEE       7762                  16/01 D
MCLTEF       7762                  16/03 D
MCLTEG       7751                  16/15 D
MCLTEH       7751                  16/17 D
MCLTEI       7737                  16/22 D
MCLTEJ       7737                  16/24 D
MCLTEK       7727                  16/26 D
MCLTEL       7752                  16/28 D
MCLTEM       7747                  16/08 D
MCLTEN       7751                  16/10 D
MCLTEO       7755                  16/33 D
MCLTEP       7755                  16/35 D
MCLTES       7754                  16/40 D
MCLTEU       7754                  16/42 D
MCLTEV       7764                  16/44 D
MCLTEW       7744                  16/46 D
MDGL            6   NOSTEXT      106/25    124/16    124/18    131/44
MDLDA           0                  15/17 D
MDLDB           0                  15/25 D
MDLDC           0                  15/27 D
MDLDD           0                  15/02 D
MDLDE           0                  14/26 D
MDLDF           0                  15/36 D
MDLDG           0                  15/04 D
MDLDH           0                  15/38 D
MDLDI           0                  14/39 D
MDLDJ           0                  14/41 D
MDLDK           0                  14/48 D
MDLDL           0                  14/50 D
MDLDM           0                  14/43 D
MDLDN           0                  15/40 D
MDLDP           0                  14/27 D
MDLDQ           0                  14/52 D
MDLDR           0                  14/54 D
MDLDV           0                  15/32 D
MDLDW           0                  15/34 D
MDLDX           0                  15/11 D
MDLDY           0                  15/13 D
MDLDZ           0                  15/15 D
MDLEA       30467                  15/47 D
MDLEB       30467                  15/49 D
MDLEC       46062                  15/54 D
MDLED       46062                  15/56 D
MDLEE       46062                  16/01 D
MDLEF       46062                  16/03 D
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SYMBOLIC REFERENCE TABLE.

MDLEG	46061		16/15 D
MDLEH	46061		16/17 D
MDLEI	46061		16/22 D
MDLEJ	46061		16/24 D
MDLEK	46061		16/26 D
MDLEL	46061		16/28 D
MDLEM	46062		16/08 D
MDLEN	46062		16/10 D
MDLEO	30523		16/33 D
MDLEP	30523		16/35 D
MDLES	30523		16/40 D
MDLEU	30523		16/42 D
MDLEV	30523		16/44 D
MDLEW	30523		16/46 D
MLIDDA	13		15/17 D
MLIDDB	14		15/25 D
MLIDDC	115		15/27 D
MLIDDD	110		15/02 D
MLIDDE	0		14/26 D
MLIDDF	120		15/36 D
MLIDDG	111		15/04 D
MLIDDH	121		15/38 D
MLIDDI	2		14/39 D
MLIDDJ	3		14/41 D
MLIDDK	4		14/48 D
MLIDDL	5		14/50 D
MLIDDM	7		14/43 D
MLIDDN	124		15/40 D
MLIDDP	0		14/27 D
MLIDDQ	17		14/52 D
MLIDDR	15		14/54 D
MLIDDV	6		15/32 D
MLIDDW	6		15/34 D
MLIDDX	10		15/11 D
MLIDDY	11		15/13 D
MLIDDZ	12		15/15 D
MLIDEA	130		15/47 D
MLIDEB	131		15/49 D
MLIDEC	132		15/54 D
MLIDED	133		15/56 D
MLIDEE	134		16/01 D
MLIDEF	137		16/03 D
MLIDEG	142		16/15 D
MLIDEH	143		16/17 D
MLIDEI	144		16/22 D
MLIDEJ	147		16/24 D
MLIDEK	145		16/26 D
MLIDEL	146		16/28 D
MLIDEM	135		16/08 D
MLIDEN	136		16/10 D
MLIDEO	162		16/33 D
MLIDEP	163		16/35 D
MLIDES	164		16/40 D
MLIDEU	167		16/42 D
MLIDEV	165		16/44 D
MLIDEW	166		16/46 D
MSD	110	NOSTEXT	18/12 D

SYMBOLIC REFERENCE TABLE.

MSFW	527	NOSTEXT	4/09		38/01	39/01	47/01	50/21 S
			30/08		38/03	40/08	47/03	
MSGH	7510		21/10	L				
MS2W	36	NOSTEXT	71/20		82/26	128/33		
MXDE	23		26/44	L	26/46			
MXNT	53		16/57	D				
MXSL	24		17/44	D				
NCPL	70	NOSTEXT	82/22					
NFTP	24		28/48	D				
NORE	6		23/34	D	26/36	26/37		
NRDE	16		26/37	L	61/49	61/53	128/29	
NRVE	10		26/30	L				
NTDA	2140		15/17	D	93/02	95/49	101/18	
NTDB	3222		15/25	D				
NTDC	3346		15/27	D				
NTDD	3136		15/02	D				
NTDE	0		14/26	D				
NTDF	3344		15/36	D				
NTDG	2566		15/04	D				
NTDH	3344		15/38	D				
NTDI	3140		14/39	D				
NTDJ	3150		14/41	D				
NTDK	3140		14/48	D				
NTDL	3150		14/50	D				
NTDM	3222		14/43	D				
NTDN	3727		15/40	D				
NTDP	0		14/27	D				
NTDQ	3222		14/52	D				
NTDR	3777		14/54	D				
NTDV	1456		15/32	D				
NTDW	3144		15/34	D				
NTDX	3140		15/11	D				
NTDY	3130		15/13	D				
NTDZ	2134		15/15	D				
NTEA	3746		15/47	D				
NTEB	3746		15/49	D				
NTEC	3776		15/54	D				
NTED	3776		15/56	D				
NTEE	3762		16/01	D				
NTEF	3762		16/03	D				
NTEG	3751		16/15	D				
NTEH	3751		16/17	D				
NTEI	3737		16/22	D				
NTEJ	3737		16/24	D				
NTEK	3727		16/26	D				
NTEL	3752		16/28	D				
NTEM	3747		16/08	D				
NTEN	3751		16/10	D				
NTEO	3755		16/33	D				
NTEP	3755		16/35	D				
NTES	3754		16/40	D				
NTEU	3754		16/42	D				
NTEV	3764		16/44	D				
NTEW	3744		16/46	D				
NUDA	100		15/17	D				
NUDB	100		15/25	D				
NUDC	100		15/27	D				

SYMBOLIC REFERENCE TABLE.

NUDD	74		15/02 D					
NUDE	0		14/26 D					
NUDF	10		15/36 D					
NUDG	74		15/04 D					
NUDH	10		15/38 D					
NUDI	100		14/39 D					
NUDJ	100		14/41 D					
NUDK	100		14/48 D					
NUDL	100		14/50 D					
NUDM	100		14/43 D					
NUDN	10		15/40 D					
NUDP	0		14/27 D					
NUDQ	100		14/52 D					
NUDR	100		14/54 D					
NUDV	10		15/32 D					
NUDW	10		15/34 D					
NUDX	100		15/11 D					
NUDY	100		15/13 D					
NUDZ	100		15/15 D					
NUEA	40		15/47 D					
NUEB	10		15/49 D					
NUEC	40		15/54 D					
NUED	10		15/56 D					
NUEE	10		16/01 D					
NUEF	10		16/03 D					
NUEG	40		16/15 D					
NUEH	10		16/17 D					
NUEI	10		16/22 D					
NUEJ	10		16/24 D					
NUEK	10		16/26 D					
NUEL	10		16/28 D					
NUEM	10		16/08 D					
NUEN	10		16/10 D					
NUEO	40		16/33 D					
NUEP	10		16/35 D					
NUES	10		16/40 D					
NUEU	10		16/42 D					
NUEV	10		16/44 D					
NUEW	10		16/46 D					
OA	76	NOSTEXT	33/45	43/11	46/07			
ON	70	NOSTEXT	35/09	36/40	44/29	46/08	74/39	
ORET	46	NOSTEXT	85/24					
PARE	10		26/31 L	61/45	61/49			
PDDDA	1		15/17 D					
PDDDB	1		15/25 D					
PDDDC	1		15/27 D					
PDDDD	1		15/02 D					
PDDDE	1		14/26 D					
PDDDF	1		15/36 D					
PDDDG	1		15/04 D					
PDDDH	1		15/38 D					
PDDDI	1		14/39 D					
PDDDJ	1		14/41 D					
PDDDK	1		14/48 D					
PDDDL	1		14/50 D					
PDDDM	1		14/43 D					
PDDDN	1		15/40 D					

SYMBOLIC REFERENCE TABLE.

PDDDP	1	14/27	D
PDDDQ	1	14/52	D
PDDDR	1	14/54	D
PDDDV	1	15/32	D
PDDDW	1	15/34	D
PDDDX	1	15/11	D
PDDDY	1	15/13	D
PDDDZ	1	15/15	D
PDDEA	1	15/47	D
PDDEB	2	15/49	D
PDDEC	1	15/54	D
PDDED	1	15/56	D
PDDEE	2	16/01	D
PDDEF	2	16/03	D
PDDEG	1	16/15	D
PDDEH	1	16/17	D
PDDEI	2	16/22	D
PDDEJ	2	16/24	D
PDDEK	3	16/26	D
PDDEL	4	16/28	D
PDDEM	3	16/08	D
PDDEN	4	16/10	D
PDDEO	1	16/33	D
PDDEP	1	16/35	D
PDDES	2	16/40	D
PDDEU	2	16/42	D
PDDEV	3	16/44	D
PDDEW	4	16/46	D
PKDA	2	15/17	D
PKDB	3	15/25	D
PKDC	2	15/27	D
PKDD	10	15/02	D
PKDE	0	14/26	D
PKDF	3	15/36	D
PKDG	3	15/04	D
PKDH	2	15/38	D
PKDI	10	14/39	D
PKDJ	10	14/41	D
PKDK	10	14/48	D
PKDL	10	14/50	D
PKDM	3	14/43	D
PKDN	1	15/40	D
PKDP	0	14/27	D
PKDQ	3	14/52	D
PKDR	1	14/54	D
PKDV	1	15/32	D
PKDW	1	15/34	D
PKDX	10	15/11	D
PKDY	10	15/13	D
PKDZ	4	15/15	D
PKEA	10	15/47	D
PKEB	6	15/49	D
PKEC	2	15/54	D
PKED	2	15/56	D
PKEE	1	16/01	D
PKEF	1	16/03	D
PKEG	1	16/15	D

SYMBOLIC REFERENCE TABLE.

PKEH	1		16/17 D								
PKEI	1		16/22 D								
PKEJ	1		16/24 D								
PKEK	1		16/26 D								
PKEL	1		16/28 D								
PKEM	1		16/08 D								
PKEN	1		16/10 D								
PKEO	1		16/33 D								
PKEP	1		16/35 D								
PKES	1		16/40 D								
PKEU	1		16/42 D								
PKEV	1		16/44 D								
PKEW	1		16/46 D								
PNUNDA	1		15/17 D								
PNUNDB	1		15/25 D								
PNUNDC	1		15/27 D								
PNUNDD	1		15/02 D								
PNUNDE	1		14/26 D								
PNUNDF	1		15/36 D								
PNUNDG	1		15/04 D								
PNUNDH	1		15/38 D								
PNUNDI	1		14/39 D								
PNUNDJ	1		14/41 D								
PNUNDK	1		14/48 D								
PNUNDL	1		14/50 D								
PNUNDM	1		14/43 D								
PNUNDN	1		15/40 D								
PNUNDP	1		14/27 D								
PNUNDQ	1		14/52 D								
PNUNDR	1		14/54 D								
PNUNDV	1		15/32 D								
PNUNDW	1		15/34 D								
PNUNDX	1		15/11 D								
PNUNDY	1		15/13 D								
PNUNDZ	1		15/15 D								
PNUNEA	1		15/47 D								
PNUNEB	1		15/49 D								
PNUNEC	1		15/54 D								
PNUNED	1		15/56 D								
PNUNEE	1		16/01 D								
PNUNEF	1		16/03 D								
PNUNEG	1		16/15 D								
PNUNEH	1		16/17 D								
PNUNEI	2		16/22 D								
PNUNEJ	2		16/24 D								
PNUNEK	3		16/26 D								
PNUNEL	4		16/28 D								
PNUNEM	2		16/08 D								
PNUNEN	2		16/10 D								
PNUNEO	1		16/33 D								
PNUNEP	1		16/35 D								
PNUNES	2		16/40 D								
PNUNEU	2		16/42 D								
PNUNEV	3		16/44 D								
PNUNEW	4		16/46 D								
PPFW	1100	NOSTEXT	20/18	38/04	38/05	47/04	47/05				
PRS	1052		30/16	37/48 L	40/16	46/40	46/48 L	49/06	49/36 S		

SYMBOLIC REFERENCE TABLE.

PSBFDB	10	15/25	D
PSBFDC	1	15/27	D
PSBFDE	40	14/26	D
PSBFDF	4	15/36	D
PSBFDH	1	15/38	D
PSBFDN	10	15/40	D
PSBFDP	40	14/27	D
PSBFDV	4	15/32	D
PSBFDW	4	15/34	D
PSBFEA	1	15/47	D
PSBFEB	1	15/49	D
PSBFEC	1	15/54	D
PSBFED	1	15/56	D
PSBFEE	1	16/01	D
PSBFEF	1	16/03	D
PSBFEG	1	16/15	D
PSBFEH	1	16/17	D
PSBFEI	1	16/22	D
PSBFEJ	1	16/24	D
PSBFEK	1	16/26	D
PSBFEL	1	16/28	D
PSBFEM	1	16/08	D
PSBFEN	1	16/10	D
PSBFEO	4	16/33	D
PSBFEP	4	16/35	D
PSBFES	2	16/40	D
PSBFEU	2	16/42	D
PSBFEV	2	16/44	D
PSBFEW	2	16/46	D
PSLTDA	1510	15/17	D
PSLTDB	240	15/25	D
PSLTDC	26	15/27	D
PSLTDD	240	15/02	D
PSLTDE	0	14/26	D
PSLTDF	114	15/36	D
PSLTDG	1064	15/04	D
PSLTDH	26	15/38	D
PSLTDI	330	14/39	D
PSLTDJ	710	14/41	D
PSLTDK	162	14/48	D
PSLTDL	344	14/50	D
PSLTDM	2400	14/43	D
PSLTDN	430	15/40	D
PSLTDP	0	14/27	D
PSLTDQ	1200	14/52	D
PSLTDR	3600	14/54	D
PSLTDV	144	15/32	D
PSLTDW	144	15/34	D
PSLTDX	144	15/11	D
PSLTDY	310	15/13	D
PSLTDZ	644	15/15	D
PSLTEA	5	15/47	D
PSLTEB	12	15/49	D
PSLTEC	37	15/54	D
PSLTED	37	15/56	D
PSLTEE	74	16/01	D
PSLTEF	74	16/03	D

SYMBOLIC REFERENCE TABLE.

PSLTEG	65	16/15 D			
PSLTEH	65	16/17 D			
PSLTEI	62	16/22 D			
PSLTEJ	62	16/24 D			
PSLTEK	65	16/26 D			
PSLTEL	63	16/28 D			
PSLTEM	57	16/08 D			
PSLTEN	75	16/10 D			
PSLTEO	324	16/33 D			
PSLTEP	324	16/35 D			
PSLTES	152	16/40 D			
PSLTEU	152	16/42 D			
PSLTEV	150	16/44 D			
PSLTEW	150	16/46 D			
PSNI	77	56/16	56/23	118/43	
PSPTDA	34	15/17 D			
PSPTDB	40	15/25 D			
PSPTDC	3	15/27 D			
PSPTDD	40	15/02 D			
PSPTDE	0	14/26 D			
PSPTDF	46	15/36 D			
PSPTDG	57	15/04 D			
PSPTDH	13	15/38 D			
PSPTDI	30	14/39 D			
PSPTDJ	30	14/41 D			
PSPTDK	30	14/48 D			
PSPTDL	30	14/50 D			
PSPTDM	40	14/43 D			
PSPTDN	25	15/40 D			
PSPTDP	0	14/27 D			
PSPTDQ	40	14/52 D			
PSPTDR	40	14/54 D			
PSPTDV	24	15/32 D			
PSPTDW	24	15/34 D			
PSPTDX	25	15/11 D			
PSPTDY	25	15/13 D			
PSPTDZ	34	15/15 D			
PSPTEA	3	15/47 D			
PSPTEB	6	15/49 D			
PSPTEC	6	15/54 D			
PSPTED	6	15/56 D			
PSPTEE	13	16/01 D			
PSPTEF	13	16/03 D			
PSPTEG	5	16/15 D			
PSPTEH	5	16/17 D			
PSPTEI	11	16/22 D			
PSPTEJ	11	16/24 D			
PSPTEK	16	16/26 D			
PSPTEL	22	16/28 D			
PSPTEM	21	16/08 D			
PSPTEN	26	16/10 D			
PSPTEO	15	16/33 D			
PSPTEP	15	16/35 D			
PSPTES	15	16/40 D			
PSPTEU	15	16/42 D			
PSPTEV	23	16/44 D			
PSPTEW	31	16/46 D			

SYMBOLIC REFERENCE TABLE.

PTCYDA	36	15/17	D	15/17		
PTCYDB	12	15/25	D	15/25		
PTCYDC	17	15/27	D	15/27		
PTCYDD	12	15/02	D	15/02		
PTCYDE	0	14/26	D	14/26		
PTCYDF	4	15/36	D	15/36		
PTCYDG	30	15/04	D	15/04		
PTCYDH	4	15/38	D	15/38		
PTCYDI	22	14/39	D	14/39		
PTCYDJ	23	14/41	D	14/41		
PTCYDK	23	14/48	D	14/48		
PTCYDL	23	14/50	D	14/50		
PTCYDM	50	14/43	D	14/43		
PTCYDN	23	15/40	D	15/40		
PTCYDP	0	14/27	D	14/27		
PTCYDQ	50	14/52	D	14/52		
PTCYDR	50	14/54	D	14/54		
PTCYDV	12	15/32	D	15/32		
PTCYDW	12	15/34	D	15/34		
PTCYDX	23	15/11	D	15/11		
PTCYDY	23	15/13	D	15/13		
PTCYDZ	36	15/15	D	15/15		
PTCYEA	4	15/47	D	15/47		
PTCYEB	4	15/49	D	15/49		
PTCYEC	7	15/54	D	15/54		
PTCYED	7	15/56	D	15/56		
PTCYEE	7	16/01	D	16/01		
PTCYEF	7	16/03	D	16/03		
PTCYEG	11	16/15	D	16/15		
PTCYEH	11	16/17	D	16/17		
PTCYEI	11	16/22	D	16/22		
PTCYEJ	11	16/24	D	16/24		
PTCYEK	11	16/26	D	16/26		
PTCYEL	11	16/28	D	16/28		
PTCYEM	7	16/08	D	16/08		
PTCYEN	7	16/10	D	16/10		
PTCYEO	17	16/33	D	16/33		
PTCYEP	17	16/35	D	16/35		
PTCYES	17	16/40	D	16/40		
PTCYEU	17	16/42	D	16/42		
PTCYEV	17	16/44	D	16/44		
PTCYEW	17	16/46	D	16/46		
PTYE	1	23/29	D	26/31		
RAME	3	26/25	L	61/43	61/44	78/09
RART	2	17/34	D	26/25		
RATDA	0	15/17	D			
RATDB	3	15/25	D			
RATDC	3	15/27	D			
RATDD	0	15/02	D			
RATDE	0	14/26	D			
RATDF	4	15/36	D			
RATDG	0	15/04	D			
RATDH	4	15/38	D			
RATDI	0	14/39	D			
RATDJ	0	14/41	D			
RATDK	0	14/48	D			
RATDL	0	14/50	D			

SYMBOLIC REFERENCE TABLE.

RATDM	0	14/43 D
RATDN	3	15/40 D
RATDP	0	14/27 D
RATDQ	0	14/52 D
RATDR	0	14/54 D
RATDV	3	15/32 D
RATDW	3	15/34 D
RATDX	0	15/11 D
RATDY	0	15/13 D
RATDZ	0	15/15 D
RATEA	3	15/47 D
RATEB	3	15/49 D
RATEC	3	15/54 D
RATED	3	15/56 D
RATEE	3	16/01 D
RATEF	3	16/03 D
RATEG	3	16/15 D
RATEH	3	16/17 D
RATEI	3	16/22 D
RATEJ	3	16/24 D
RATEK	3	16/26 D
RATEL	3	16/28 D
RATEM	3	16/08 D
RATEN	3	16/10 D
RATEO	3	16/33 D
RATEP	3	16/35 D
RATES	3	16/40 D
RATEU	3	16/42 D
RATEV	3	16/44 D
RATEW	3	16/46 D
RBTDA	0	15/17 D
RBTDB	3	15/25 D
RBTDC	3	15/27 D
RBTDD	0	15/02 D
RBTDE	0	14/26 D
RBTDF	5	15/36 D
RBTDG	0	15/04 D
RBTDH	5	15/38 D
RBTDI	0	14/39 D
RBTDJ	0	14/41 D
RBTDK	0	14/48 D
RBTDL	0	14/50 D
RBTDM	0	14/43 D
RBTDN	3	15/40 D
RBTDP	0	14/27 D
RBTDQ	0	14/52 D
RBTDR	0	14/54 D
RBTDV	3	15/32 D
RBTDW	3	15/34 D
RBTDX	0	15/11 D
RBTDY	0	15/13 D
RBTDZ	0	15/15 D
RBTEA	3	15/47 D
RBTEB	3	15/49 D
RBTEC	3	15/54 D
RBTED	3	15/56 D
RBTEE	3	16/01 D

SYMBOLIC REFERENCE TABLE.

RBTEF	3		16/03 D									
RBTEG	3		16/15 D									
RBTEH	3		16/17 D									
RBTEI	3		16/22 D									
RBTEJ	3		16/24 D									
RBTEK	3		16/26 D									
RBTEL	3		16/28 D									
RBTEM	3		16/08 D									
RBTEN	3		16/10 D									
RBTEO	3		16/33 D									
RBTEP	3		16/35 D									
RBTES	3		16/40 D									
RBTEU	3		16/42 D									
RBTEV	3		16/44 D									
RBTEW	3		16/46 D									
RDCT	103		18/07 D	50/40	72/32	90/23 S						
RDFE	21		26/42 L									
RDS	530	NOSTEXT	30/19 L	40/19 L	60/47 S	90/32	107/13	113/10	119/56	125/25		
			31/41	41/30	61/24 S	93/39	108/19	115/31	124/57			
RDSA	556		31/24 D	95/04 S	106/16 S	107/02 S	113/09 S	113/20	118/51 S			
RDSB	562		31/06 S	41/11 S	60/24	61/28 S	88/09					
			31/37 D	41/27 D	60/42 S	62/30	90/04					
RDSC	546		31/12 L	115/25 S	115/47							
RDSD	563		31/40 D	60/52 S	60/54 S	61/14 S	61/15	61/15 S				
RDS1	554		31/18	31/22 L	41/13	41/17 L						
RDS2	556		31/21	31/23 L	41/16	41/18 L	41/19	50/06	119/01			
RDS3	557		31/35 L	41/25 L	60/56	87/50	87/56					
RDS3.1	563		31/38 L	61/19								
RDS4	564		31/41 L	113/21								
RDS.	544		30/20	31/06 L	40/20	41/11 L						
REC.AD	0		26/32 D									
REC.CF	2		26/27 D									
REC.CP	2		26/23 D									
REC.CR	1		26/40 D									
REC.CS	2		26/24 D									
REC.DF	0		26/29 D									
REC.FT	2		26/26 D									
REC.ID	2		26/28 D									
REC.IW	0		26/35 D									
REC.LN	1		26/36 D									
REC.ME	0		26/31 D									
REC.NR	1		26/37 D									
REC.RA	2		26/25 D									
REC.RD	1		26/42 D									
REC.RS	1		26/39 D									
REC.SA	1		26/43 D									
REC.SK	0		26/34 D									
REC.ST	1		26/33 D									
REDP	0		17/10 D	50/10								
RESE	17		26/38 L	62/04								
RICHI$	1		9/18 D									
RICHL$	1		9/19 D									
RIREL$	1		9/20 D									
RJMI	200		95/53									
RPPM	100	NOSTEXT	74/40									
RSTO	5		17/30 D									
RSVE	5		23/33 D	26/39	26/40							

SYMBOLIC REFERENCE TABLE.

RTCL	106	NOSTEXT	125/46	
RTC.AD	0		26/32 D	
RTC.CF	12		26/27 D	
RTC.CP	4		26/23 D	
RTC.CR	76		26/40 D	
RTC.CS	2		26/24 D	
RTC.DF	0		26/29 D	
RTC.FT	4		26/26 D	
RTC.ID	12		26/28 D	
RTC.IW	4		26/35 D	
RTC.LN	0		26/36 D	
RTC.ME	12		26/31 D	
RTC.NR	12		26/37 D	
RTC.RA	2		26/25 D	
RTC.RD	77		26/42 D	
RTC.RS	76		26/39 D	
RTC.SA	77		26/43 D	
RTC.SK	4		26/34 D	
RTC.ST	12		26/33 D	
SCDT	12		17/45 D	
SCLL	20	NOSTEXT	124/18	125/52
SC1DA	0		15/17 D	
SC1DB	0		15/25 D	
SC1DC	0		15/27 D	
SC1DD	7		15/02 D	
SC1DE	0		14/26 D	
SC1DF	0		15/36 D	
SC1DG	4		15/04 D	
SC1DH	0		15/38 D	
SC1DI	7		14/39 D	
SC1DJ	7		14/41 D	
SC1DK	7		14/48 D	
SC1DL	7		14/50 D	
SC1DM	7		14/43 D	
SC1DN	0		15/40 D	
SC1DP	0		14/27 D	
SC1DQ	7		14/52 D	
SC1DR	7		14/54 D	
SC1DV	0		15/32 D	
SC1DW	0		15/34 D	
SC1DX	0		15/11 D	
SC1DY	0		15/13 D	
SC1DZ	0		15/15 D	
SC1EA	0		15/47 D	
SC1EB	0		15/49 D	
SC1EC	0		15/54 D	
SC1ED	0		15/56 D	
SC1EE	0		16/01 D	
SC1EF	0		16/03 D	
SC1EG	0		16/15 D	
SC1EH	0		16/17 D	
SC1EI	0		16/22 D	
SC1EJ	0		16/24 D	
SC1EK	0		16/26 D	
SC1EL	0		16/28 D	
SC1EM	0		16/08 D	
SC1EN	0		16/10 D	

SYMBOLIC REFERENCE TABLE.

SC1EO	0	16/33 D
SC1EP	0	16/35 D
SC1ES	0	16/40 D
SC1EU	0	16/42 D
SC1EV	0	16/44 D
SC1EW	0	16/46 D
SC2DA	0	15/17 D
SC2DB	0	15/25 D
SC2DC	0	15/27 D
SC2DD	3	15/02 D
SC2DE	0	14/26 D
SC2DF	0	15/36 D
SC2DG	0	15/04 D
SC2DH	0	15/38 D
SC2DI	4	14/39 D
SC2DJ	4	14/41 D
SC2DK	4	14/48 D
SC2DL	4	14/50 D
SC2DM	4	14/43 D
SC2DN	0	15/40 D
SC2DP	0	14/27 D
SC2DQ	4	14/52 D
SC2DR	4	14/54 D
SC2DV	0	15/32 D
SC2DW	0	15/34 D
SC2DX	0	15/11 D
SC2DY	0	15/13 D
SC2DZ	0	15/15 D
SC2EA	0	15/47 D
SC2EB	0	15/49 D
SC2EC	0	15/54 D
SC2ED	0	15/56 D
SC2EE	0	16/01 D
SC2EF	0	16/03 D
SC2EG	0	16/15 D
SC2EH	0	16/17 D
SC2EI	0	16/22 D
SC2EJ	0	16/24 D
SC2EK	0	16/26 D
SC2EL	0	16/28 D
SC2EM	0	16/08 D
SC2EN	0	16/10 D
SC2EO	0	16/33 D
SC2EP	0	16/35 D
SC2ES	0	16/40 D
SC2EU	0	16/42 D
SC2EV	0	16/44 D
SC2EW	0	16/46 D
SDDA	1	15/17 D
SDDB	0	15/25 D
SDDC	0	15/27 D
SDDD	1	15/02 D
SDDE	1	14/26 D
SDDF	0	15/36 D
SDDG	1	15/04 D
SDDH	0	15/38 D
SDDI	1	14/39 D

SYMBOLIC REFERENCE TABLE.

SDDJ	1	14/41 D				
SDDK	1	14/48 D				
SDDL	1	14/50 D				
SDDM	1	14/43 D				
SDDN	0	15/40 D				
SDDP	1	14/27 D				
SDDQ	1	14/52 D				
SDDR	1	14/54 D				
SDDV	0	15/32 D				
SDDW	0	15/34 D				
SDDX	1	15/11 D				
SDDY	1	15/13 D				
SDDZ	1	15/15 D				
SDEA	1	15/47 D				
SDEB	1	15/49 D				
SDEC	1	15/54 D				
SDED	1	15/56 D				
SDEE	1	16/01 D				
SDEF	1	16/03 D				
SDEG	1	16/15 D				
SDEH	1	16/17 D				
SDEI	1	16/22 D				
SDEJ	1	16/24 D				
SDEK	1	16/26 D				
SDEL	1	16/28 D				
SDEM	1	16/08 D				
SDEN	1	16/10 D				
SDEO	1	16/33 D				
SDEP	1	16/35 D				
SDES	1	16/40 D				
SDEU	1	16/42 D				
SDEV	1	16/44 D				
SDEW	1	16/46 D				
SKTE	13	26/34 L				
SKTO	17	17/31 D				
SLDA	1510	15/17 D	15/17	96/36		
SLDB	1200	15/25 D	15/25	96/37		
SLDC	1300	15/27 D	15/27	96/38		
SLDD	240	15/02 D	15/02			
SLDE	0	14/26 D	14/26			
SLDF	1140	15/36 D	15/36			
SLDG	1064	15/04 D	15/04			
SLDH	1300	15/38 D	15/38			
SLDI	153	14/39 D	14/39	96/24		
SLDJ	343	14/41 D	14/41	96/25		
SLDK	160	14/48 D	14/48	96/26	99/07	
SLDL	343	14/50 D	14/50	96/27	99/31	
SLDM	1200	14/43 D	14/43	96/28		
SLDN	2140	15/40 D	15/40			
SLDP	0	14/27 D	14/27			
SLDQ	1200	14/52 D	14/52	96/29		
SLDR	3600	14/54 D	14/54			
SLDV	1440	15/32 D	15/32			
SLDW	1440	15/34 D	15/34			
SLDX	142	15/11 D	15/11	96/33		
SLDY	306	15/13 D	15/13	96/34		
SLDZ	644	15/15 D	15/15	96/35		

SYMBOLIC REFERENCE TABLE.

SLEA	240		15/47 D	15/47		
SLEB	500		15/49 D	15/49		
SLEC	1740		15/54 D	15/54		
SLED	1740		15/56 D	15/56		
SLEE	3600		16/01 D	16/01		
SLEF	3600		16/03 D	16/03		
SLEG	3240		16/15 D	16/15		
SLEH	3240		16/17 D	16/17		
SLEI	3100		16/22 D	16/22		
SLEJ	3100		16/24 D	16/24		
SLEK	3240		16/26 D	16/26		
SLEL	3140		16/28 D	16/28		
SLEM	2740		16/08 D	16/08		
SLEN	3640		16/10 D	16/10		
SLEO	3240		16/33 D	16/33		
SLEP	3240		16/35 D	16/35		
SLES	3240		16/40 D	16/40		
SLEU	3240		16/42 D	16/42		
SLEV	3200		16/44 D	16/44		
SLEW	3200		16/46 D	16/46		
SLM	107	NOSTEXT	18/11 D	93/09	125/38	
SMSX	473		18/19 D	37/55	46/51	
SOH1DA	0		15/17 D			
SOH1DB	0		15/25 D			
SOH1DC	0		15/27 D			
SOH1DD	26622		15/02 D			
SOH1DE	0		14/26 D			
SOH1DF	0		15/36 D			
SOH1DG	26622		15/04 D			
SOH1DH	0		15/38 D			
SOH1DI	16245		14/39 D			
SOH1DJ	16245		14/41 D			
SOH1DK	16245		14/48 D			
SOH1DL	16245		14/50 D			
SOH1DM	11072		14/43 D			
SOH1DN	0		15/40 D			
SOH1DP	0		14/27 D			
SOH1DQ	11072		14/52 D			
SOH1DR	11072		14/54 D			
SOH1DV	0		15/32 D			
SOH1DW	0		15/34 D			
SOH1DX	0		15/11 D			
SOH1DY	0		15/13 D			
SOH1DZ	0		15/15 D			
SOH1EA	0		15/47 D			
SOH1EB	0		15/49 D			
SOH1EC	0		15/54 D			
SOH1ED	0		15/56 D			
SOH1EE	0		16/01 D			
SOH1EF	0		16/03 D			
SOH1EG	0		16/15 D			
SOH1EH	0		16/17 D			
SOH1EI	0		16/22 D			
SOH1EJ	0		16/24 D			
SOH1EK	0		16/26 D			
SOH1EL	0		16/28 D			
SOH1EM	0		16/08 D			

SYMBOLIC REFERENCE TABLE.

SOH1EN	0	16/10 D
SOH1EO	0	16/33 D
SOH1EP	0	16/35 D
SOH1ES	0	16/40 D
SOH1EU	0	16/42 D
SOH1EV	0	16/44 D
SOH1EW	0	16/46 D
SOH2DA	0	15/17 D
SOH2DB	0	15/25 D
SOH2DC	0	15/27 D
SOH2DD	45710	15/02 D
SOH2DE	0	14/26 D
SOH2DF	0	15/36 D
SOH2DG	33260	15/04 D
SOH2DH	0	15/38 D
SOH2DI	27650	14/39 D
SOH2DJ	27650	14/41 D
SOH2DK	27650	14/48 D
SOH2DL	27650	14/50 D
SOH2DM	23730	14/43 D
SOH2DN	0	15/40 D
SOH2DP	0	14/27 D
SOH2DQ	23730	14/52 D
SOH2DR	23730	14/54 D
SOH2DV	0	15/32 D
SOH2DW	0	15/34 D
SOH2DX	0	15/11 D
SOH2DY	0	15/13 D
SOH2DZ	0	15/15 D
SOH2EA	0	15/47 D
SOH2EB	0	15/49 D
SOH2EC	0	15/54 D
SOH2ED	0	15/56 D
SOH2EE	0	16/01 D
SOH2EF	0	16/03 D
SOH2EG	0	16/15 D
SOH2EH	0	16/17 D
SOH2EI	0	16/22 D
SOH2EJ	0	16/24 D
SOH2EK	0	16/26 D
SOH2EL	0	16/28 D
SOH2EM	0	16/08 D
SOH2EN	0	16/10 D
SOH2EO	0	16/33 D
SOH2EP	0	16/35 D
SOH2ES	0	16/40 D
SOH2EU	0	16/42 D
SOH2EV	0	16/44 D
SOH2EW	0	16/46 D
SPSCDA	0	15/17 D
SPSCDB	0	15/25 D
SPSCDC	1	15/27 D
SPSCDD	0	15/02 D
SPSCDE	0	14/26 D
SPSCDF	0	15/36 D
SPSCDG	0	15/04 D
SPSCDH	0	15/38 D

SYMBOLIC REFERENCE TABLE.

SPSCDI	0		14/39 D				
SPSCDJ	0		14/41 D				
SPSCDK	0		14/48 D				
SPSCDL	0		14/50 D				
SPSCDM	0		14/43 D				
SPSCDN	0		15/40 D				
SPSCDP	0		14/27 D				
SPSCDQ	0		14/52 D				
SPSCDR	0		14/54 D				
SPSCDV	0		15/32 D				
SPSCDW	0		15/34 D				
SPSCDX	0		15/11 D				
SPSCDY	0		15/13 D				
SPSCDZ	0		15/15 D				
SPSCEA	0		15/47 D				
SPSCEB	0		15/49 D				
SPSCEC	2		15/54 D				
SPSCED	2		15/56 D				
SPSCEE	2		16/01 D				
SPSCEF	2		16/03 D				
SPSCEG	4		16/15 D				
SPSCEH	4		16/17 D				
SPSCEI	4		16/22 D				
SPSCEJ	4		16/24 D				
SPSCEK	4		16/26 D				
SPSCEL	4		16/28 D				
SPSCEM	2		16/08 D				
SPSCEN	2		16/10 D				
SPSCEO	7		16/33 D				
SPSCEP	7		16/35 D				
SPSCES	7		16/40 D				
SPSCEU	7		16/42 D				
SPSCEV	7		16/44 D				
SPSCEW	7		16/46 D				
STAE	22		26/43 L				
STBM	43	NOSTEXT	94/25				
STFS	0		94/21				
STSA	104		18/08 D				
STSB	105		18/09 D	37/48			
STSE	3		23/31 D	26/29	26/33	26/34	
STSW	20	NOSTEXT	85/22				
SURT	2		17/36 D				
SUS.AD	1		26/32 D				
SUS.CF	1		26/27 D				
SUS.CP	1		26/23 D				
SUS.CR	0		26/40 D				
SUS.CS	1		26/24 D				
SUS.DF	0		26/29 D				
SUS.FT	1		26/26 D				
SUS.ID	1		26/28 D				
SUS.IW	1		26/35 D				
SUS.LN	0		26/36 D				
SUS.ME	1		26/31 D				
SUS.NR	1		26/37 D				
SUS.RA	1		26/25 D				
SUS.RD	0		26/42 D				
SUS.RS	0		26/39 D				

SYMBOLIC REFERENCE TABLE.

SUS.SA	0		26/43 D			
SUS.SK	1		26/34 D			
SUS.ST	1		26/33 D			
SYM.AD	100		26/32 D			
SYM.CF	23		26/27 D			
SYM.CP	24		26/23 D			
SYM.CR	103		26/40 D			
SYM.CS	51		26/24 D			
SYM.DF	64		26/29 D			
SYM.FT	50		26/26 D			
SYM.ID	5		26/28 D			
SYM.IW	107		26/35 D			
SYM.LN	0		26/36 D			
SYM.ME	40		26/31 D			
SYM.NR	43		26/37 D			
SYM.RA	63		26/25 D			
SYM.RD	0		26/42 D			
SYM.RS	56		26/39 D			
SYM.SA	102		26/43 D			
SYM.SK	106		26/34 D			
SYM.ST	102		26/33 D			
TCHA	1031		37/07	37/33 L		
TCHA.J	1033		46/16	46/37 L		
TDEI	7767		60/12	62/36 L		
TDGL	0	NOSTEXT	95/19			
TH	72	NOSTEXT	65/32	90/11	116/12	
TLDA	430		15/17 D			
TLDB	645		15/25 D			
TLDC	672		15/27 D			
TLDD	630		15/02 D			
TLDE	0		14/26 D			
TLDF	671		15/36 D			
TLDG	536		15/04 D			
TLDH	671		15/38 D			
TLDI	630		14/39 D			
TLDJ	632		14/41 D			
TLDK	630		14/48 D			
TLDL	632		14/50 D			
TLDM	645		14/43 D			
TLDN	766		15/40 D			
TLDP	0		14/27 D			
TLDQ	645		14/52 D			
TLDR	1000		14/54 D			
TLDV	314		15/32 D			
TLDW	631		15/34 D			
TLDX	630		15/11 D			
TLDY	626		15/13 D			
TLDZ	427		15/15 D			
TLEA	772		15/47 D			
TLEB	772		15/49 D			
TLEC	1000		15/54 D			
TLED	1000		15/56 D			
TLEE	775		16/01 D			
TLEF	775		16/03 D			
TLEG	773		16/15 D			
TLEH	773		16/17 D			
TLEI	770		16/22 D			

TLEJ	770		16/24	D	
TLEK	766		16/26	D	
TLEL	773		16/28	D	
TLEM	772		16/08	D	
TLEN	773		16/10	D	
TLEO	774		16/33	D	
TLEP	774		16/35	D	
TLES	773		16/40	D	
TLEU	773		16/42	D	
TLEV	775		16/44	D	
TLEW	771		16/46	D	
TLME	4007		23/35	D	
TR	73	NOSTEXT	82/28		88/05
TTDA	0		15/17	D	15/17
TTDB	0		15/25	D	15/25
TTDC	0		15/27	D	15/27
TTDD	0		15/02	D	15/02
TTDE	1		14/26	D	14/26
TTDF	0		15/36	D	15/36
TTDG	0		15/04	D	15/04
TTDH	0		15/38	D	15/38
TTDI	1		14/39	D	14/39
TTDJ	1		14/41	D	14/41
TTDK	0		14/48	D	14/48
TTDL	0		14/50	D	14/50
TTDM	1		14/43	D	14/43
TTDN	0		15/40	D	15/40
TTDP	1		14/27	D	14/27
TTDQ	0		14/52	D	14/52
TTDR	0		14/54	D	14/54
TTDV	0		15/32	D	15/32
TTDW	0		15/34	D	15/34
TTDX	0		15/11	D	15/11
TTDY	0		15/13	D	15/13
TTDZ	0		15/15	D	15/15
TTEA	0		15/47	D	15/47
TTEB	0		15/49	D	15/49
TTEC	0		15/54	D	15/54
TTED	0		15/56	D	15/56
TTEE	0		16/01	D	16/01
TTEF	0		16/03	D	16/03
TTEG	0		16/15	D	16/15
TTEH	0		16/17	D	16/17
TTEI	0		16/22	D	16/22
TTEJ	0		16/24	D	16/24
TTEK	0		16/26	D	16/26
TTEL	0		16/28	D	16/28
TTEM	0		16/08	D	16/08
TTEN	0		16/10	D	16/10
TTEO	0		16/33	D	16/33
TTEP	0		16/35	D	16/35
TTES	0		16/40	D	16/40
TTEU	0		16/42	D	16/42
TTEV	0		16/44	D	16/44
TTEW	0		16/46	D	16/46

T0	0	NOSTEXT	35/08 S	37/08 S	61/12 S	75/01 S	95/32 S	118/23 S	122/39 S	125/26 S	
			35/12 S	45/44 S	61/18	79/25	95/34	118/26	122/41	129/24 S	
			36/38 S	45/48 S	65/34 S	84/26 S	95/46	122/12	125/01 S	129/24 S	
			36/42 S	46/15 I	65/34 S	84/28	110/52 S	122/18 S	125/01 S		
			37/06 I	46/17 S	75/01 S	84/30	110/55	122/23 S	125/26 S		
T1	1	NOSTEXT	49/35	54/05 S	61/35	67/29	84/03	90/24	115/22 S	122/19	
			49/36	54/08	62/19 I	71/12	84/13 I	102/36 S	115/23	122/22 S	
			49/37 S	57/37 I	62/27 I	71/14 I	84/19 I	102/40 S	115/25	131/22 S	
			52/34	57/53 I	64/57 I	74/07	87/52	103/19 S	115/26 S	131/23 S	
			52/35 S	58/46	65/06 I	75/11	88/30	103/24 S	116/13 S	131/24	
			53/09 S	60/30 I	67/08 I	78/22	90/06	108/07 S	116/17 S		
			53/33 S	61/07 I	67/12 I	81/54	90/07 S	108/11 S	122/16 S		
T2	2	NOSTEXT	47/06	54/03 S	61/29	67/40 S	78/08	82/44	85/39 S	99/32 S	
			49/15 S	54/30	62/31 S	68/13	79/33 S	84/23 S	85/42	102/39 S	
			50/12	55/49	63/01	70/06 S	79/34	84/24	86/13	102/43 S	
			50/19 I	57/09	64/37 S	70/07	79/37	84/29 I	87/48	116/14 S	
			50/43	58/20 S	64/38	70/12 I	79/42	84/37 S	90/09	116/19 S	
			52/41 S	58/25	64/43 I	72/36	79/48	85/01 S	97/07 S		
			52/42	60/12	64/49 S	74/51 S	80/48	85/13 S	97/12		
			52/47 I	60/43 S	67/32 S	76/39	82/06	85/29 S	99/08 S		
T3	3	NOSTEXT	72/04	78/14 S	93/57 S	95/55	99/03	102/05	106/46	120/21	
			72/08 S	78/42	95/36 S	96/04	99/27	102/34	107/08	120/24	
			74/19	80/01 S	95/37	97/06	100/05	102/37	107/10	120/34 S	
			75/08	80/35 S	95/40	97/17	100/33	103/16	115/29 S	120/45 S	
			75/22 S	93/38 S	95/42	97/33	100/49	106/37 S	115/39 S	121/05 I	
			78/07	93/48	95/44	97/37	101/39	106/38	120/20 S	121/07	
T4	4	NOSTEXT	33/51	43/16	50/02	64/41	74/12	79/54 S	84/27	128/38	
			37/03	46/12	50/20	67/44 S	74/29 S	80/22	108/22		
			37/14 S	46/23 S	52/45	70/10	79/19	80/32 S	120/05		
T5	5	NOSTEXT	49/46	66/05 S	79/56 S	82/15	82/27 S	95/11 S	114/52 S	130/54	
			65/33 S	66/52 S	82/08 S	82/18	94/23	105/45 S	118/06 S	131/13 S	
			65/35 S	75/25	82/11	82/20	94/50 S	105/50	124/11 S		
T6	6	NOSTEXT	67/23 S	93/54 S	97/22 S	99/34 S	101/06 S	101/43 S	119/53 S	131/05 S	
			75/04	94/16	97/35 S	99/48 S	101/20 S	102/11 S	124/55 S	131/31 S	
			78/38 S	97/05 S	97/40	100/09 S	101/22 S	103/22 S	125/14 S	131/34	
			93/36 S	97/11 S	97/42 S	100/20 S	101/24	103/28 S	125/23 S	131/36 S	
			93/41 S	97/15 S	99/02 S	100/39 S	101/26 S	106/39 S	125/43		
			93/43	97/20	99/10 S	100/53 S	101/28 S	107/09 S	129/22 S		
T7	7	NOSTEXT	31/19	43/22	75/54	80/29 S	106/50 S	124/34 S	131/33 S		
			32/14	61/31 S	78/35 S	80/30 S	107/11 S	125/37 S	131/39		
			33/55	65/31 S	78/40	90/03 S	108/10 S	129/21 S	131/51 S		
			41/14	67/25	79/26 S	93/08 S	108/15 S	130/45 S			
			41/55	75/06	80/02 S	94/54 S	119/54 S	131/07 S			
UERR	106		18/10 D	70/24	70/57	90/15	106/10 S				
UJNI	300		56/06	56/33	61/03						
UTEM	115	NOSTEXT	75/57	131/04							
WDS	532	NOSTEXT	30/23 L	40/23 L	43/48	61/26 S	128/27				
			32/34	42/15	61/23	90/08 S					
WDSA	602		31/20	32/16 D	33/56 S	41/15	41/57 D	43/23 S			
WDSB	611		32/07 S	32/24 D	41/52 S	42/06 D	60/37 S	64/47 S			
WDSC	616		32/05 S	32/32 D	41/50 S	42/13 D	60/41	61/27	61/30 S	90/05 S	
WDSD	620		32/34 L	132/09 S	132/12 S						
WDSE	101	NOSTEXT	18/05 D	60/39	90/13						
WDS1	604		32/13	32/18 L	41/54	42/02 L					
WDS2	606		32/17	32/19 L	42/01	42/03 L	131/55 S	132/07 S			
WDS3	612		32/22	32/25 L	42/04	42/07 L	107/04 S				
WDS4	613		32/30 L	42/11 L	67/16	87/50	128/49				

SYMBOLIC REFERENCE TABLE.

WDS5	617		31/38	32/33 L	41/28	42/14 L	61/15					
WDS.	571		30/24	32/05 L	40/24	41/50 L						
WEP	1055		49/15 L	61/25								
WEP1	1060		49/11	49/17 L								
WLSF	0	NOSTEXT	60/38	64/46								
WRIP	1		17/11 D	50/09								
ZERL	66	NOSTEXT	65/57									
ZSCL	500		126/41									
(0TJ)	0		94/46 D									
(7BI)	0		35/23 D	44/51 D								
(7CI)	0		50/31 D									
(7DI)	0		53/51 D									
(7EI)	0		54/10 D	58/21 D	67/45 D							
(7EK)	0		62/32 D									
(7EP)	0		85/51 D									
(7FI)	0		54/11 D									
(7GI)	0		75/27 D	78/15 D								
(7HI)	0		82/29 D									
(7JI)	0		78/49 D									
(7KI)	0		84/08 D									
(7SI)	0		49/10 D	84/20 D								
(7WI)	0		49/16 D									
.AI	43		14/37 D	14/50	15/04 D	15/23	15/36	15/49 D	16/15 D	16/40 D		
			14/39	14/50 D	15/07	15/25	15/36 D	15/54	16/22	16/44		
			14/39 D	14/52	15/11	15/25 D	15/38	15/54 D	16/22 D	16/44 D		
			14/41	14/52 D	15/11 D	15/27	15/38 D	16/01	16/26	16/46		
			14/41 D	14/54	15/13	15/27 D	15/40	16/01 D	16/26 D	16/46 D		
			14/43	14/54 D	15/13 D	15/30	15/40 D	16/08	16/28	16/49		
			14/43 D	14/57	15/15	15/32	15/43	16/08 D	16/28 D	16/50		
			14/46	15/02	15/15 D	15/32 D	15/47	16/10	16/33	16/55		
			14/48	15/02 D	15/17	15/34	15/47 D	16/10 D	16/33 D			
			14/48 D	15/04	15/17 D	15/34 D	15/49	16/15	16/40			

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.A1             4                  14/26 D  14/48    15/04 D  15/25    15/40 D  16/01    16/17 D  16/33
                                   14/26    14/48 D  15/04    15/25 D  15/40    16/01 D  16/17    16/33 D
                                   14/26 D  14/48    15/04 D  15/25    15/40 D  16/01    16/17 D  16/33
                                   14/26    14/48 D  15/04    15/25 D  15/40    16/01 D  16/17    16/33 D
                                   14/26 D  14/48    15/04 D  15/25    15/40 D  16/01    16/17 D  16/33
                                   14/26    14/48 D  15/04    15/25 D  15/40    16/01 D  16/17    16/33 D
                                   14/26 D  14/48    15/04 D  15/25    15/40 D  16/01    16/17 D  16/33
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                                   14/26 D  14/48    15/11 D  15/27    15/40 D  16/01    16/22 D  16/35
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                                   14/26 D  14/48    15/11 D  15/27    15/40 D  16/01    16/22 D  16/35
                                   14/26    14/48 D  15/11    15/27 D  15/40    16/03 D  16/22    16/35 D
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                                   14/26    14/50 D  15/11    15/27 D  15/40    16/03 D  16/22    16/35 D
                                   14/26 D  14/50    15/11 D  15/27    15/40 D  16/03    16/22 D  16/35
                                   14/26    14/50 D  15/11    15/27 D  15/40    16/03 D  16/22    16/35 D
                                   14/26 D  14/50    15/11 D  15/27    15/40 D  16/03    16/22 D  16/35
                                   14/26    14/50 D  15/11    15/27 D  15/40    16/03 D  16/22    16/35 D
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                                   14/26    14/50 D  15/11    15/27 D  15/40    16/03 D  16/22    16/35 D
                                   14/26 D  14/50    15/11 D  15/27    15/40 D  16/03    16/22 D  16/35
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                                   14/26 D  14/50    15/11 D  15/27    15/40 D  16/03    16/22 D  16/35
                                   14/26    14/50 D  15/11    15/27 D  15/40    16/03 D  16/22    16/35 D
                                   14/26 D  14/50    15/11 D  15/27    15/47 D  16/03    16/22 D  16/35
                                   14/26    14/50 D  15/11    15/27 D  15/47    16/03 D  16/22    16/35 D
                                   14/27 D  14/50    15/11 D  15/27    15/47 D  16/03    16/22 D  16/35
                                   14/27    14/50 D  15/11    15/27 D  15/47    16/03 D  16/22    16/35 D
                                   14/27 D  14/50    15/11 D  15/27    15/47 D  16/03    16/22 D  16/35
                                   14/27    14/50 D  15/11    15/27 D  15/47    16/03 D  16/22    16/35 D
                                   14/27 D  14/50    15/11 D  15/27    15/47 D  16/03    16/22 D  16/35
                                   14/27    14/50 D  15/11    15/27 D  15/47    16/03 D  16/22    16/35 D
                                   14/27 D  14/50    15/11 D  15/27    15/47 D  16/03    16/22 D  16/35
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14/27      14/50 D    15/11      15/27 D    15/47      16/03 D    16/22      16/40 D
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14/27 D    14/50      15/11 D    15/32      15/47 D    16/03      16/22 D    16/40
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14/27 D    14/50      15/11 D    15/32      15/47 D    16/03      16/22 D    16/40
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14/27 D    14/50      15/11 D    15/32      15/47 D    16/03      16/22 D    16/40
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14/39      14/52 D    15/13      15/32 D    15/49      16/08 D    16/24      16/40 D
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14/39 D    14/52      15/13 D    15/34      15/49 D    16/08      16/24 D    16/42
14/39      14/52 D    15/13      15/34 D    15/49      16/08 D    16/24      16/42 D
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14/39 D   14/52     15/13 D   15/34     15/49 D   16/08     16/24 D   16/42
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14/39     14/52 D   15/15     15/34 D   15/49     16/08 D   16/26     16/42 D
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14/39     14/52 D   15/15     15/34 D   15/49     16/08 D   16/26     16/42 D
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14/39 D   14/52     15/15 D   15/34     15/49 D   16/08     16/26 D   16/42
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14/39 D   14/54     15/15 D   15/34     15/49 D   16/10     16/26 D   16/42
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14/41     14/54 D   15/15     15/36 D   15/54     16/10 D   16/26     16/44 D
14/41 D   14/54     15/15 D   15/36     15/54 D   16/10     16/26 D   16/44
14/41     14/54 D   15/15     15/36 D   15/54     16/10 D   16/26     16/44 D
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14/41 D   14/54     15/15 D   15/36     15/54 D   16/10     16/26 D   16/44
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                                   14/41 D   14/54     15/17 D   15/36     15/54 D   16/10     16/28 D   16/44
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                                   14/41     14/54 D   15/17     15/36 D   15/54     16/10 D   16/28     16/44 D
                                   14/41 D   14/54     15/17 D   15/36     15/54 D   16/10     16/28 D   16/44
                                   14/41     14/54 D   15/17     15/36 D   15/54     16/10 D   16/28     16/44 D
                                   14/41 D   14/54     15/17 D   15/36     15/54 D   16/10     16/28 D   16/44
                                   14/41     14/54 D   15/17     15/36 D   15/54     16/10 D   16/28     16/44 D
                                   14/41 D   14/54     15/17 D   15/36     15/54 D   16/10     16/28 D   16/44
                                   14/41     14/54 D   15/17     15/36 D   15/54     16/10 D   16/28     16/44 D
                                   14/41 D   14/54     15/17 D   15/36     15/54 D   16/10     16/28 D   16/44
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                                   14/41     15/02 D   15/17     15/36 D   15/54     16/15 D   16/28     16/44 D
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                                   14/48 D   15/04     15/25 D   15/40     16/01 D   16/17     16/33 D
.A2             1                  14/26 D   14/48     15/11 D   15/27     15/47 D   16/03     16/24 D   16/40
                                   14/26     14/50 D   15/11     15/32 D   15/47     16/08 D   16/24     16/42 D
                                   14/27 D   14/50     15/13 D   15/32     15/49 D   16/08     16/26 D   16/42
                                   14/27     14/52 D   15/13     15/34 D   15/49     16/10 D   16/26     16/44 D
                                   14/39 D   14/52     15/15 D   15/34     15/54 D   16/10     16/28 D   16/44
                                   14/39     14/54 D   15/15     15/36 D   15/54     16/15 D   16/28     16/46 D
                                   14/41 D   14/54     15/17 D   15/36     15/56 D   16/15     16/33 D   16/46
                                   14/41     15/02 D   15/17     15/38 D   15/56     16/17 D   16/33
                                   14/43 D   15/02     15/25 D   15/38     16/01 D   16/17     16/35 D
                                   14/43     15/04 D   15/25     15/40 D   16/01     16/22 D   16/35
                                   14/48 D   15/04     15/27 D   15/40     16/03 D   16/22     16/40 D
.DLY          255   NOSTEXT        65/34     75/01     85/21    125/01    125/26    129/24
.DST1         625                  18/22 D   42/33
.EMS          535   NOSTEXT        30/43 D   71/04     93/42    108/24    115/16    120/01    129/15
                                   40/43 D   90/19    107/26    113/11    115/41    125/35
.EMSX         534                  30/43 L   30/48     40/43 L   40/48
.EST          245   NOSTEXT        49/46     79/31     95/12    131/14
```

SYMBOLIC REFERENCE TABLE.

.NT	52		14/20 D	14/48	15/04 D	15/27	15/40 D	16/03	16/22 D	16/40	
			14/26	14/48 D	15/11	15/27 D	15/47	16/03 D	16/24	16/40 D	
			14/26 D	14/50	15/11 D	15/32	15/47 D	16/08	16/24 D	16/42	
			14/27	14/50 D	15/13	15/32 D	15/49	16/08 D	16/26	16/42 D	
			14/27 D	14/52	15/13 D	15/34	15/49 D	16/10	16/26 D	16/44	
			14/39	14/52 D	15/15	15/34 D	15/54	16/10 D	16/28	16/44 D	
			14/39 D	14/54	15/15 D	15/36	15/54 D	16/15	16/28 D	16/46	
			14/41	14/54 D	15/17	15/36 D	15/56	16/15 D	16/33	16/46 D	
			14/41 D	15/02	15/17 D	15/38	15/56 D	16/17	16/33 D	16/57	
			14/43	15/02 D	15/25	15/38 D	16/01	16/17 D	16/35		
			14/43 D	15/04	15/25 D	15/40	16/01 D	16/22	16/35 D		
.RDS2	556		18/21 D	41/19							
.SMS	475	NOSTEXT	94/51	106/07	113/03	114/53	118/07	124/12	131/49		

SYMBOL QUALIFIER = COMSDFS

D6DI	0		49/42								
D6DJ	0		49/43	85/43							
HS0005	5		26/28								
HS0023	23		26/27								
HS0024	24		26/23								
HS0040	40		26/31								
HS0043	43		26/37								
HS0050	50		26/26								
HS0051	51		26/24								
HS0056	56		26/39								
HS0063	63		26/25								
HS0064	64		26/29								
HS0100	100		26/32								
HS0102	102		26/33	26/43							
HS0103	103		26/40								
HS0106	106		26/34								
HS0107	107		26/35								
RS0200	200		85/43								

SYMBOL QUALIFIER = MACRO$

CFI	7701		79/25 D								
DELAY	100		65/34 D	75/01 D	85/21 D	125/01 D	125/26 D	129/24 D			
ENDMS	67		71/04 D	93/42 D	108/24 D	115/16 D	120/01 D	129/15 D			
			90/19 D	107/26 D	113/11 D	115/41 D	125/35 D				
ENTRY	7732		49/33 D	55/47 D	64/34 D	74/05 D	81/52 D	87/46 D			
			52/24 D	60/10 D	72/01 D	77/57 D	84/01 D	90/01 D			
EXECUTE	120		94/46 D								
ISTORE	7655		61/15 D								
MONITOR	210		33/52 D	43/19 D	50/05 D	75/57 D	85/22 D	108/23 D	129/25 D		
			37/04 D	46/13 D	74/40 D	79/28 D	94/25 D	128/39 D	131/04 D		

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MSERR        7773                35/23 D   49/16 D   54/10 D   62/32 D   78/15 D   84/08 D
                                 44/51 D   50/31 D   54/11 D   67/45 D   78/49 D   84/20 D
                                 49/10 D   53/51 D   58/21 D   75/27 D   82/29 D   85/51 D
MSOVL       10003                47/06 D   54/30 D   63/01 D   72/36 D   80/48 D   86/13 D
                                 50/43 D   58/46 D   68/13 D   76/39 D   82/44 D   88/30 D
OVERFLOW      240               126/41 D
PAUSE         111                85/22 D  129/25 D
SETMS         301                94/51 D  106/07 D  106/08 D  113/03 D  114/53 D  118/07 D  124/12 D  131/49 D
SFA           226                49/46 D   79/31 D   95/12 D  131/14 D


                                      SYMBOL QUALIFIER =  7BI


DBI          7661                49/33 L   50/38
DBI1         7663                49/35 L   49/38
DBI2         7770                50/14     50/24     50/29 L
LEN           132                47/06 D   47/06
LN          10003                47/06 D   47/06     50/41
OFFW         7500                47/06 D   47/06     48/03
.1            730                49/46 D   50/31 D   50/31
.2             13                49/47 D   49/51 D   49/51


                                      SYMBOL QUALIFIER =  7CI


CH01$        7702                53/22 D   54/27
CH02$        7704                53/22     53/23 D
CH03$        7706                53/23     53/24 D
CH04$        7711                53/24     53/26 D
CH05$        7716                53/26     53/30 D
CH06$        7720                53/30     53/31 D
CH07$        7741                53/31     53/45 D
CH08$        7743                53/45     53/47 D
CH09$        7743                53/47     54/18 D
CH1$           11                53/22 D   53/23     53/24 D   53/30     53/31 D   53/47
                                 53/22     53/23 D   53/26     53/30 D   53/45     53/47 D
                                 53/22 D   53/24     53/26 D   53/31     53/45 D
DCI          7637                52/24 L   54/25
DCIA         7771                53/50 S   53/56 S   54/12 D
DCI1         7645                52/33 L   52/36
DCI11        7761                53/41     54/03 L
DCI12        7762                53/52     54/04 L
DCI2         7652                52/41 L   52/49
DCI3         7671                53/09 L   53/31     53/47
DCI4         7700                53/02     53/15 L
DCI5         7702                52/57     53/22 L
DCI6         7711                53/11     53/23     53/26 L
DCI7         7712                53/22     53/27 L
DCI8         7752                52/26     53/32     53/36     53/48     53/54 L
DCI9         7756                53/15     54/01 L
FWDL$           1                51/29 D
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LEN            144                50/43 D   50/43
LN           10003                50/43 D   50/43     54/28
OFFW          7510                50/43 D   50/43     51/03     52/32     52/34 S   53/45 S   53/46     54/08
TCHS          7743                53/22 D   53/23 D   53/26 D   53/31 D   53/47 D
                                  53/22 D   53/24 D   53/30 D   53/45 D   54/18
.1             130                52/56 D   52/56     53/12 D   53/12     54/10 D   54/10
.2          770077                52/56 D


                                        SYMBOL QUALIFIER =  7DI


DDI           7550                55/47 L   58/41
DDIC          7650                56/17 S   56/50 D
DDID          7662                56/24 S   57/05 D
DDIE          7674                56/05 S   56/28 S   57/15 D
DDIF          7675                56/37 S   57/19 D
DDIG          7677                56/30 S   57/21 L
DDIH          7703                56/06     56/07     56/08 S   56/32 S   57/32 D
DDII          7735                56/33     56/34     56/35 S   58/03 D
DDIJ          7756                58/15 S   58/19 D
DDI1          7561                55/52     55/56 L
DDI13         7650                56/48 L
DDI14         7662                56/53     56/55     57/03 L
DDI15         7667                56/48     57/03     57/09 L
DDI17         7703                57/08     57/11     57/23     57/29 L
DDI18         7714                57/25     57/39 L
DDI18.1       7716                56/06     56/07     57/43 L
DDI18.2       7734                57/36     57/54 L
DDI19         7735                57/34     58/01 L
DDI2          7600                56/03     56/12 L
DDI20         7754                56/14     57/45     57/54     58/15 L   58/27     58/30     58/33
DDI21         7756                57/49     57/51     58/06     58/09     58/11     58/14     58/17 L   58/34
DDI22         7757                55/54     57/39     58/20 L
DDI23         7764                56/33     56/34     58/25 L
DDI3          7604                56/01     56/16 L
DDI4          7615                56/20     56/23 L
DDI6          7620                56/10     56/25 L
DDI7          7621                56/13     56/27 L
DDI8          7640                56/25     56/37 L
DDI9          7642                56/22     56/38 L
LEN            233                54/30 D   54/30
LN           10003                54/30 D   54/30     58/44
OFFW          7510                54/30 D   55/03     56/44     57/06     57/29     57/46     58/07     58/28
                                  54/30     56/42 S   56/51     57/12     57/43     58/01     58/12     58/31
.1             130                56/02 D   56/02     58/21 D   58/21
.2          777775                56/02 D   56/02


                                        SYMBOL QUALIFIER =  7EI


DEI           7542                60/10 L   62/54
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DEIA	7723	61/03	61/04	61/05 S	62/03 D				
DEI1	7552	60/19 L	62/38						
DEI10	7715	61/39	61/44 L						
DEI11	7716	61/37	61/45 L						
DEI12	7717	61/49 L	62/43						
DEI13	7720	61/53 L	62/44						
DEI14	7721	61/54 L							
DEI15	7723	62/01 L	62/41						
DEI17	7742	61/03	61/04	62/22 L					
DEI18	7754	62/05	62/15	62/17	62/21	62/23	62/28 L		
DEI3	7565	60/23	60/27 L						
DEI4	7573	60/21	60/26	60/31 L					
DEI5	7575	60/35 L	62/39						
DEI6	7611	60/40	60/42 L						
DEI6.0	7650	60/53	61/12 L						
DEI6.1	7641	60/45	60/48	61/03 L					
DEI7	7666	60/46	61/23 L						
DEI8	7706	60/36	61/08	61/35 L	62/40				
DEI9	7714	60/31	61/43 L	62/42					
LEN	240	58/46 D	58/46						
LN	10002	58/46 D	58/46	62/56					
OFFW	7510	58/46 D	58/46	59/03					
.1	132	60/25 D	60/44 D	61/43 D	62/04 D	62/14 D	62/16 D	62/32 D	
		60/25	60/44	61/43	62/04	62/14	62/16	62/32	
.2	777775	60/25 D	60/44 D	62/04 D	62/04	62/14 D	62/14	62/16 D	62/16

SYMBOL QUALIFIER = 7FI

BUF	7510	66/07 D	66/08	66/44 S	67/03 S	67/05	67/09		
CH01$	7537	64/50 D	68/10						
CH02$	7566	64/50	65/19 D						
CH03$	7624	65/19	65/37 D						
CH04$	7626	65/37	65/42 D						
CH05$	7631	65/42	65/45 D						
CH06$	7653	65/45	66/31 D						
CH07$	7656	66/31	66/33 D						
CH08$	7672	66/33	66/44 D						
CH09$	7711	66/44	67/03 D						
CH10$	7743	67/03	67/23 D						
CH11$	7766	67/23	67/42 D						
CH12$	7766	67/42	68/01 D						
CH1$	14	64/50 D	65/19	65/37 D	65/45	66/31 D	66/44	67/03 D	67/42
		64/50	65/19 D	65/42	65/45 D	66/33	66/44 D	67/23	67/42 D
		64/50 D	65/37	65/42 D	66/31	66/33 D	67/03	67/23 D	
DFI	7517	64/34 L	68/08						
FTO	7521	64/36 L							
FTO1	7522	64/37 L	64/45						
FTO10	7703	66/49	66/52 L						
FTO11	7713	66/45	67/04 L						
FTO12	7745	67/04	67/24 L						
FTO13	7746	66/02	67/25 L						
FTO14	7760	67/31	67/36 L						
FTO15	7765	65/07	67/17	67/26	67/34	67/37	67/40 L		

FTO16	7766	66/34	67/24	67/42 L					
FTO3	7556	65/03	65/05 L						
FTO3.1	7562	65/14 L	65/25						
FTO4	7566	64/53	64/55	65/19 L					
FTO4.1	7601	65/17	65/26 L						
FTO5	7605	65/21	65/29 L						
FTO6	7606	65/15	65/26	65/31 L					
FTO7	7611	65/34 L	65/37						
FTO8	7667	66/24	66/42 L	66/53					
FTO9	7674	66/32	66/45 L						
FWDL$	1	63/34 D							
LEN	264	63/01 D	63/01						
LN	10003	63/01 D	63/01	68/11					
OFFW	7510	63/01 D	63/01	63/03	66/07				
RCM	7644	66/25 D	66/42	67/21					
RCMX	7643	66/24 L	66/38						
RCM1	7655	65/36	66/32 L						
TCHS	7766	64/50 D	65/19 D	65/42 D	66/31 D	66/44 D	67/23 D	68/01	
		64/50 D	65/37 D	65/45 D	66/33 D	67/03 D	67/42 D		
.1	130	64/52 D	64/54 D	65/24 D	65/34 D	67/38 D	67/45 D		
		64/52	64/54	65/24	65/34	67/38	67/45		
.3	5	65/34 D	65/34 D	65/34 D	65/34 D	65/34 D			
		65/34	65/34	65/34	65/34	65/34			

SYMBOL QUALIFIER = 7GI

CH01$	7654	70/35 D	72/33						
CH02$	7662	70/35	70/39 D						
CH03$	7673	70/39	70/53 D						
CH04$	7701	70/53	70/56 D						
CH05$	7701	70/56	72/24 D						
CH1$	5	70/35 D	70/35 D	70/39 D	70/53 D	70/56 D			
		70/35	70/39	70/53	70/56				
DCPA	7714	70/23 S	70/38 S	71/08 L					
DCPB	7752	70/53	71/30 L						
DCP1	7613	70/06 L	70/14	72/15					
DCP11	7740	71/07	71/10	71/24 L	72/18				
DCP2	7637	70/20	70/23 L						
DCP3	7662	70/28	70/39 L						
DCP4	7663	70/27	70/48 L						
DCP5	7675	70/48	70/54 L						
DCP6	7702	70/21	70/57 L	72/16					
DCP8	7715	71/03	71/10 L						
DCP9	7716	71/11 L	72/17						
DC1	0	72/15 L							
DC11	3	72/18 L							
DC6	1	72/16 L							
DC9	2	72/17 L							
DGI	7757	72/01 L	72/31						
FWDL$	1	69/29 D							
LEN	170	68/13 D	68/13						
LN	10003	68/13 D	68/13	72/34					
OFFW	7541	68/13 D	68/13	69/03					

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PCE          7761                72/03 L
TCHS         7701                70/35 D   70/35 D   70/39 D   70/53 D   70/56 D   72/24
TPCE         7772                72/04     72/13 L


                                 SYMBOL QUALIFIER =  7HI

DHI          7574                74/05 L   76/34
ILJF           23                75/30
LEN           207                72/36 D   72/36
LN          10003                72/36 D   72/36     76/37
OFFW         7541                72/36 D   72/36     73/03
RCW          7576                74/07 L
RCWA         7647                74/48 L   74/49 S
RCWC         7730                74/16 S   74/39     75/30 L
RCWD         7661                74/14 S   74/56 D
RCW0         7613                74/11     74/19 L
RCW0.1       7625                74/17     74/28 L
RCW1         7632                74/36 L   74/42
RCW2         7646                74/47 L   75/10
RCW3         7653                74/31     74/48     74/51 L
RCW4         7655                74/50     74/53 L
RCW5         7662                74/52     74/54     75/01 L
RCW6         7715                75/15     75/19 L
RCW7         7716                74/15     75/18     75/20 L
RCW8         7717                74/15     74/55     75/22 L
SCT          7736                74/30     74/53     75/52 D
SCTA         7757                74/19     76/09 L
SCTB         7764                74/21 S   75/56     76/04 S   76/16 L
SCTC         7771                74/13 S   74/20 S   74/22 S   74/23 S   76/02 S   76/22 L
SCTX         7735                75/52 L   76/06
.1            330                75/01 D   75/01     75/27 D   75/27
.2              5                75/01 D   75/01 D   75/01 D   75/01 D   75/01 D   75/01 D
                                  75/01     75/01     75/01     75/01     75/01     75/01
.3             31                75/01 D   75/01 D   75/01 D   75/01 D   75/01 D   75/01 D
                                  75/01     75/01     75/01     75/01     75/01     75/01


                                 SYMBOL QUALIFIER =  7II

DII          7613                77/57 L   80/43
FCM          7670                78/31     79/18 L
FCMA         7731                79/20 S   79/46 D
FCMB         7735                79/21 S   79/51 D
FCM1         7700                79/24 L   79/36     79/41
FCM2         7704                79/28 L   79/29     79/52
FCM3         7710                79/27     79/31 L
FCM4         7733                79/43     79/48 L
FCM5         7740                79/47     79/54 L
FCM6         7746                80/04 L   80/36
FCT          7750                78/29     80/21 L
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FCTA          7754   80/23 S   80/25 D
FCT1          7763   80/30 L   80/33
ICR           7615   78/05 L
ICRA          7646   78/30 S   78/33 D   80/04
ICRB          7663   78/28 S   78/48 D
ICR0          7624   78/12 L   78/27     78/46
ICR1          7625   78/14 L   78/27
ICR2          7632   78/10     78/22 L
ICR3          7645   78/26     78/31 L
LEN            170   76/39 D   76/39
LN           10003   76/39 D   76/39     80/46
OFFW          7541   76/39 D   76/39     77/03
.1               1   78/15 D   78/15     78/49 D   78/49     79/22 D   79/22     79/25 D   79/31 D
.2               0   79/32 D
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SYMBOL QUALIFIER = 7JI

```
DJI           7702   81/52 L   82/39
IRM           7704   81/54 L
IRMA          7756   82/03 S   82/10 S   82/14 S   82/21 S   82/28     82/32 L
IRM1          7716   82/01     82/06 L
IRM2          7725   82/04     82/11 L
LEN            101   80/48 D   80/48
LN           10003   80/48 D   80/48     82/42
OFFW          7541   80/48 D   80/48     81/03
.1            1430   82/29 D   82/29
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SYMBOL QUALIFIER = 7KI

```
CH01$         7651   84/43 D   86/10
CH02$         7656   84/43     84/47 D
CH03$         7661   84/47     84/49 D
CH04$         7675   84/49     85/07 D
CH05$         7706   85/07     85/15 D
CH06$         7744   85/15     85/35 D
CH07$         7747   85/35     85/37 D
CH08$         7764   85/37     85/47 D
CH09$         7764   85/47     86/01 D
CH1$            11   84/43 D   84/47     84/49 D   85/15     85/35 D   85/47
                     84/43     84/47 D   85/07     85/15 D   85/37     85/47 D
                     84/43 D   84/49     85/07 D   85/35     85/37 D
DKI           7567   84/01 L   86/08
EXD1          7613   84/05     84/16 L
EXD10         7735   85/16     85/20     85/29 L   85/37
EXD11         7764   84/56     85/09     85/31     85/36     85/47 L
EXD12         7773   85/45     85/51 L
EXD2          7625   84/23 L   84/31
EXD3          7636   84/35 L   85/11
EXD4          7654   84/45 L   84/47
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EXD5	7661	84/38	84/44	84/46	84/49 L				
EXD6	7666	85/01 L	85/15						
EXD7	7700	85/03	85/09 L						
EXD8	7702	85/11 L	85/25						
EXD9	7704	85/08	85/13 L						
FWDL$	1	83/26 D							
LEN	214	82/44 D	82/44						
LN	10003	82/44 D	82/44	86/11					
OFFW	7541	82/44 D	82/44	83/03					
TCHS	7764	84/43 D	84/47 D	85/07 D	85/35 D	85/47 D			
		84/43 D	84/49 D	85/15 D	85/37 D	86/01			
.1	101	84/08 D	84/08	84/20 D	84/20	85/51 D	85/51		
.2	3	85/21 D	85/21	85/21 D	85/21	85/21 D	85/21	85/21 D	85/21
.3	1	85/21 D	85/21	85/21 D	85/21	85/21 D	85/21	85/21 D	

SYMBOL QUALIFIER = 7SI

DSI	7733	87/46 L	88/25						
DSI1	7740	87/49	87/51 L						
DSI2	7747	87/54	88/03 L						
LEN	50	86/13 D	86/13						
LN	10003	86/13 D	86/13	88/28					
OFFW	7541	86/13 D	86/13	87/03					

SYMBOL QUALIFIER = 7WI

DWI	7732	90/01 L	90/31						
LEN	50	88/30 D	88/30						
LN	10002	88/30 D	88/30	90/33					
OFFW	7503	88/30 D	88/30	89/03					
PWI	7734	90/03 L							
PWIA	7766	90/12 S	90/22 D						
PWI1	7763	90/10	90/18	90/20 L					
PWI2	7773	90/14	90/26 L						

SYMBOL QUALIFIER = 0TI

CHS	402	99/06	99/30	102/33 D					
CHSX	401	102/33 L	102/41						
CHS1	413	102/40 L	102/44						
FCE	323	93/13	101/16 D						
FCEX	322	101/16 L	101/30						
FFI	6	92/46 D							
FFIA	17	92/57 L	95/52 S						
FFIB	27	93/07 D	95/45 S						

FFIC	34	93/11	L	95/54	S						
FFID	14	92/55	D	95/50	S						
FFIX	5	91/02		92/46	L	92/48	92/49	93/15	98/01		
FFI1	13	92/53	L	93/10							
FFI2	26	92/57		93/06	L						
FLT	100	94/15	D	97/36		99/24	100/10	100/54	101/23	101/44	103/13
		97/16		97/43		99/47	100/30	101/07	101/27	102/10	103/27
		97/23		98/56		99/49	100/38	101/21	101/29	102/12	
FLTA	104	94/19	D	95/24	S						
FLTX	77	94/15	L	94/20		94/26					
FPA	314	96/36		101/04	D						
FPAX	313	101/04	L	101/08							
FPB	351	96/37		101/38	D						
FPBX	350	101/38	L	101/45							
FPB1	360	101/42		101/44	L						
FPC	364	96/38		102/04	D						
FPCX	363	102/04	L	102/13							
FPC1	375	102/09		102/11	L						
FPC2	376	102/08		102/12	L						
FPI	375	96/24		97/04	D						
FPIX	374	97/04	L	97/19		97/24					
FPI1	406	97/10		97/12	L						
FPJ	426	96/25		97/32	D						
FPJX	425	97/32	L	97/39		97/44					
FPK	165	96/26		99/01	D						
FPKX	164	98/55		99/01	L	99/14					
FPK1	174	99/07	L	99/11							
FPK2	202	99/05		99/13	L						
FPK5	160	98/54	L	99/09							
FPK6	162	98/56	L								
FPL	212	96/27		99/26	D						
FPLX	211	99/23		99/26	L	99/38					
FPL1	220	99/31	L	99/35							
FPL2	226	99/29		99/37	L						
FPL4	205	99/22	L	99/33							
FPL5	207	99/24	L								
FPM	232	96/28		99/46	D						
FPMX	231	99/46	L	99/50							
FPQ	242	96/29		100/04	D						
FPQX	241	100/04	L	100/11							
FPQ1	251	100/08		100/10	L						
FPX	255	96/33		100/19	D						
FPXX	254	100/19	L	100/22							
FPY	265	96/34		99/37		100/32	D				
FPYX	264	100/32	L								
FPY1	276	100/37		100/39	L						
FPY2	262	100/30	L	100/36		100/40					
FPZ	301	96/35		100/48	D						
FPZX	300	100/48	L	100/55							
FPZ1	310	100/52		100/54	L						
PFLA	150	94/47		95/08	L	96/02	96/08	98/44			
POM	42	92/56		93/05		93/33	D				
POMA	66	93/34	S	93/51	L						
POMB	72	93/55	L	95/43	S						
POMX	41	93/33	L	93/49							
POM1	62	93/48	L	94/01							
POM2	40	93/31	L	93/44							

PRS	147	92/47	95/06 D							
PRSB	133	94/53 D	95/41 S							
PRSC	136	94/56 D	95/39 S							
PRSX	146	95/06 L	95/31	95/38						
PRS1	242	95/48	95/55 L							
PRS2	247	95/56	96/02 L							
PRS3	116	94/45 L	96/08							
PRS4	123	94/49 L	95/57							
PTF	423	99/13	100/21	103/15 D						
PTFX	422	103/15 L								
PTF1	432	103/22 L	103/26							
PTF2	433	103/20	103/23 L							
PTF3	420	103/13 L	103/25	103/29						
REL=	0	92/40 D	103/36 D							
TALP	261	95/37	95/40	95/42	95/44	95/55	96/04	96/23 L	96/23	
T8	16	92/32 D	93/14	93/31 S	95/02 S					
T9	17	92/33 D	93/03 S	93/35	94/57 S	95/51	101/17			
ZTJ	156	98/45 D								
ZTJX	155	98/45 L	98/46							
.PIO	1	94/51 D	94/51							
.1	1	94/51 D	95/12 D							
.2	261	94/51 D	94/51	95/13 D	96/25	96/28	96/31	96/34	96/37	
		94/51	94/51 D	96/23 D	96/26	96/29	96/32	96/35	96/38	
		94/51 D	94/51	96/24	96/27	96/30	96/33	96/36	96/39	
.3	20051	94/51 D	94/51	94/51 D	94/51	94/51 D	94/51	94/51 D	94/51	

SYMBOL QUALIFIER = 0PI

CBD	413	110/49 D	111/30	111/36	111/39					
CBDX	412	110/49 L	111/05							
CSD	434	108/40	111/27 D							
CSDX	433	111/27 L	111/41							
C2D	460	105/48	108/30							
DM0401	401	108/48								
FSN	331	106/49 S	108/09	109/08 L						
HI0100	100	108/49								
MSGA	301	105/49 S	105/53 S	106/19 S	108/31 S	108/34	108/46 L	109/05		
MSGB	315	105/46 S	106/20 S	108/29 S	108/37	108/48 L	108/56	109/06		
MSG1L	12	108/41	108/56 D							
PRS	6	105/38 D								
PRSA	173	107/19 S	107/24 D							
PRSB	202	107/23	107/31 L	107/37						
PRSBL	12	107/16	107/37 D							
PRSX	5	104/02	105/38 L	106/56	107/28					
PRS1	127	106/56 L	107/07							
PRS2	131	106/53	107/01 L							
PRS3	166	107/20 L	107/25							
PRS4	200	107/15	107/21	107/28 L						
PSP	216	106/54	108/06 D							
PSPB	226	106/29 S	108/14 D							
PSPX	215	108/06 L	108/43							
PSP1	223	108/11 L	108/16							
PSP2	231	108/12	108/18 L							

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PSP4          214                 108/04 L  108/20
REL=            0                 104/37 D  111/55 D
TALP          332                 106/35    106/46    107/08    107/10    109/19 L  109/19
TDMA          327                 105/40 S  105/42 S  108/41    109/04 L
TDSS          372                 106/46    107/10    110/14 L  110/14
TDST          352                 107/08    109/43 L  109/43
.PIO            1                 106/07 D  106/07



                                        SYMBOL QUALIFIER =  0RI


PRS             6                 112/40 D
PRSX            5                 112/02    112/40 L  112/43
REL=            0                 112/29 D  113/27 D
RUR            14                 112/41    113/02 D
RURA           42                 113/06    113/14 L
RURB           43                 113/08    113/19 L
RURX           13                 113/02 L  113/12
.PIO            1                 113/03 D  113/03
.1          20041                 113/03 D
.2              2                 113/03 D  113/03    113/03 D  113/03    113/03 D  113/03
.3          20041                 113/03 D  113/03    113/03 D  113/03    113/03 D  113/03



                                        SYMBOL QUALIFIER =  0SI


FTC            30                 114/56    115/18 D
FTCA           37                 114/55 S  115/24 D
FTCB           71                 115/36 S  115/38 S  115/42 L
FTCX           27                 115/18 L  115/32    115/44
FTC1           36                 115/23 L  115/27
FTC2           46                 115/30 L  115/40
FTC3           25                 115/16 L  115/34
FTD           110                 115/49    116/04 D
FTDA          123                 116/07 S  116/11 L
FTDB          127                 116/09 S  116/15 L  116/18    116/20
FTDX          107                 116/04 L  116/21
PRS             6                 114/49 D
PRSX            5                 114/02    114/49 L  114/57
RDSA          556                 115/50    115/51    115/52 L  116/15
REL=            0                 114/25 D  116/27 D
TFTC           76                 114/56    115/23    115/46 L  115/54
TFTCL          11                 115/21    115/54 D
.PIO            1                 114/53 D  114/53
.1          20041                 114/53 D
.2              2                 114/53 D  114/53    114/53 D  114/53    114/53 D  114/53
.3          20041                 114/53 D  114/53    114/53 D  114/53    114/53 D  114/53
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                                  SYMBOL QUALIFIER =  0CI

CDD           355                120/55    122/15 D
CDDX          354                122/15 L
CDD1          361                122/19 L  122/24
CDD2          350                122/10 L  122/21
COD           370                120/07    122/38 D
CODX          367                122/38 L  122/44
DM0401        401                119/11
FIP           164                119/05    119/51 D
FIPC          207                118/14 S  120/13 D
FIPE          240                118/44 S  120/37 D
FIPF          262                118/25 S  120/52 D
FIPH          306                120/19    121/13 L
FIPX          163                119/51 L  119/57    121/10
FIP4          215                120/14    120/18 L
FIP6          261                120/35    120/50 L
FIP7          265                120/48    120/55 L
HI0101        101                118/45    119/12
HI0104        104                118/45
MSGA          134                118/48 S  119/26    120/08 S  120/25 S  120/43 S
                                 119/09 L  119/27    120/22 S  120/32    120/56 S
MSGB          147                118/46 S  119/11 L  119/27    120/23 S  120/41 S
                                 118/49 S  119/17    120/06 S  120/26 S  120/57 S
MSGBL          12                119/17 D  121/08
PRS             6                117/57 D
PRSA           71                118/15 S  118/36    118/42 D
PRSX            5                117/02    117/57 L  119/07
PRS2           54                118/17    118/22    118/28 L
PRS3           55                118/19    118/33 L
PRS4           67                118/38    118/40 L
PRS5          100                118/27    118/35    118/47 L
PRS6          105                118/28    118/50 L
PRS7          124                118/54    119/03 L
REL=            0                117/26 D  122/49 D
TDAI          330                118/16    118/37    120/12    121/29 L  121/29
TDMA          161                118/02 S  118/03 S  119/25 L  121/08
.PIOCH          2                118/07 D  118/07
.1              5                118/07 D  118/18 D  118/18    118/20 D  118/20
.2            330                118/07 D  118/07 D  118/18 D  121/29 D  121/33    121/37    121/41    121/45
                                 118/07    118/07    118/18    121/30    121/34    121/38    121/42
                                 118/07 D  118/07 D  118/20 D  121/31    121/35    121/39    121/43
                                 118/07    118/07    118/20    121/32    121/36    121/40    121/44
.3          20052                118/07 D  118/07    118/07 D  118/07    118/07 D  118/07    118/07 D  118/07



                                  SYMBOL QUALIFIER =  CNTL


T401            4                121/18 L  121/41    121/42    121/43    121/44
T422           14                118/39    118/40    121/22 L
T424           16                118/39    121/23 L
T454            2                121/17 L
T462           12                121/21 L  121/37    121/38
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T464            20              121/24 L  121/40
T710             0              121/16 L
T721             6              121/19 L
T722            10              121/20 L  121/39



                                SYMBOL QUALIFIER =  0SC


AB              25              123/37 D  124/17 S  124/20
CN              20              123/36 D  124/19 S  124/49    124/53    125/45 S  125/49 S  125/53
MS              36              123/42 D  124/14 S  125/50
REL=             1              123/49 D
SC              33              123/39 D  124/45 S  125/09 S  125/19 S  125/27 S
SCP              6              124/06 D
SCPX             5              123/02    124/06 L  124/30    125/54
SCP1            32              124/26 L  124/33
SCP10          160              125/28    125/35 L
SCP2            55              124/44 L  125/39
SCP3            72              124/52    124/55 L
SCP4            75              124/46    125/01 L
SCP5           120              125/11 L  125/31
SCP6           121              125/12 L  125/29
SCP7           137              125/17    125/25 L
SCP8           141              125/05    125/26 L
SCP9           152              124/35    125/27 L
SI              34              123/40 D  125/11 S  125/12
SU              32              123/38 D  124/22 S  125/36
TDVP           207              124/31    124/51    125/08    125/10    125/16    125/20    125/30    126/04 L
TDVPL          240              124/29    126/36 L
TI              35              123/41 D  124/27 S  124/51    125/10    125/20
                                124/25 S  124/31    125/08    125/16    125/30
.PIO             1              124/12 D  124/12
.4             500              126/41 D  126/46



                                SYMBOL QUALIFIER =  0SD


ANU             72              128/18    129/18 D
ANUA            74              129/20 D  131/48 S
ANUX            71              129/18 L  129/27
ANU2            67              129/15 L  129/23
CGS            116              129/48 L  131/56
CGSA           123              128/25 S  128/44 S  129/55 D  130/03 S
CGS1           117              129/50 L  129/56
CGS2           121              129/49    129/52 L
CGS3           132              130/01    130/04 L
DUNF            14              130/27    132/18
PILL             7              132/18
PRD            222              128/22    131/11 D
PRDA           346              130/28 S  131/02    132/18 L
PRDB           173              130/38 S  130/43 S  130/48 D




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PRDC	207	127/48 S	131/03 D				
PRDX	221	131/11 L	132/15				
PRD1	240	131/23 L	131/27				
PRD10	220	131/06	131/09 L	131/19	131/25	131/38	
PRD2	245	131/28 L					
PRD5	325	132/03	132/05 L				
PRD6	135	130/21 L	131/41				
PRD7	142	130/23	130/26 L				
PRD8	171	130/46 L	131/08				
PRD9	216	130/55	131/07 L				
PRS	6	127/46 D					
PRSX	5	127/02	127/46 L	127/51			
PUTLS	3	130/46					
PUTP	3	130/34					
REL=	0	127/35 D	132/35 D				
SPDF	15	130/25	130/27				
SPUF	16	130/25					
SUE	21	127/49	128/21 D				
SUEX	20	128/21 L	128/23				
SUE1	25	128/19	128/24 L				
SUE2	45	128/37 L	132/04				
SUE3	64	128/46	128/48 L				
SUE4	15	128/18 L	128/30	128/36	132/04	132/05	132/10
TPRD	353	131/20	132/24 L				
UNCT	0	130/37	132/18				
.PIO	1	131/49 D	131/49				

15.10.44.UCLP, 17, 031,   12.608KLNS.