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C001          ASMB,L,C,R,B          DOS-M/DOS-III 2870/7900 DISC DRIVER
C002 00000          NAM DVR31,0,0
C003          ENT I.31,C.31
C004*
C005* NOTE: THIS DRIVER IS CONFIGURED BY THE
C006*       DISC-RESIDENT BOOTSTRAP PROGRAM.
C007*
C008*
C009 00000 000505R I.31  DEF D.END
C010*
C011 00001 003400          CCA
C012 00002 042000R          ADA I.31
C013 00003 072117R          STA C.31          SET RETURN FROM CONTINUATOR
C014*
C015 00004 160213          LDA EQT9,I          GET REQUEST CODE
C016 00005 001510          ERA,SLA          WRITE REQUEST?
C017 00006 025012R          JMP I.WRT          -YES
C018*
C019 00007 065317R          LDB STC          LOAD CONTROL FOR READ
C020 00010 062443R          LDA RDCMD          LOAD READ COMMAND
C021 00011 025026R          JMP I.SET
C022*
C023 00012 062511R I.WRT LDA WRCMD          LOAD WRITE COMMAND
C024 00013 005741          CLB,SEZ,CCE,RSS * CONTROL REQUEST?
C025 00014 025025R          JMP I.STF          -NO
C026 00015 160213          LDA EQT9,I          GET CONTROL WORD
C027 00016 001737          ALF,SLA,ALF          VALID CONTROL REQUEST?
C028 00017 025022R          JMP I.CTL          -YES
C029*
C030 00020 060055          LDA #+2          -NO, REJECT IT
C031 00021 026114R          JMP I.CLR
C032*
C033 00022 001727 I.CTL ALF,ALF
C034 00023 010077          AND M1777          MASK OFF LUN#
C035 00024 001225          RAL,ERA          SET BIT 15
C036 00025 065505R I.STF LDB STF          LOAD CONTROL FOR WRITE
C037*
C038 00026 075170R I.SET STB IOCTL          SET READ/WRITE CONTROL
C039 00027 072520R          STA IOCMD          STORE I/O COMMAND
C040 00030 002020          SSA          CONTROL REQUEST?
C041 00031 025043R          JMP CNFG          YES- SKIP JBIN CHECK
C042 00032 065514R          LDB B400          SET FOR FORWARD INCREMENT
C043 00033 160213          LDA EQT9,I          IS BIT 12 SET FOR JBIN
C044 00034 001710          ALF,SLA          READ/WRITE?
C045 00035 064075          LDB M1774          YES-SET FOR BACKWARD INCR
C046 00036 075524R          STB NXTTR          SAVE FOR COMPUTING NEXT TRACK
C047*
C048 00037 005400          CLB          IS CYCLIC CHECK DESIRED? (IE
C049 00040 001710          ALF,SLA          IS BIT 8 OF CONWD CLEAR?)
C050 00041 007400          CCB          NO , CYCLC=-1
C051 00042 075525R          STB CYCLC          YES, CYCLC= 0
C052 00043 064257 CNFG LDB CHAN
C053*
C054 00044 174210          STB EQT6,I          SAVE DMA CHNL#
C055 00045 044047          ADB #-4          *

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C056	00046	062350R	LDA WCR3	*
C057	00047	001366	RAR,CLE,ELA	* CONFIGURE
C058	00050	030001	IOR B	*
C059	00051	072350R	STA WCR3	*
C060	00052	042451R	ADA B3700	* DMA
C061	00053	072346R	STA WCR2	*
C062	00054	072351R	STA WCR4	*
C063	00055	040067	ADA M100	* AND
C064	00056	072345R	STA WCR1	*
C065	00057	012360R	AND DMA2	*
C066	00060	030257	IOR CHAN	*
C067	00061	072360R	STA DMA2	*
C068	00062	042515R	ADA B500	* WCR
C069	00063	072362R	STA DMA3	*
C070	00064	042230R	ADA B1100	*
C071	00065	072352R	STA DMA1	* COMMANDS
C072	00066	042116R	ADA B3000	*
C073	00067	072353R	STA DMA4	*
C074*				
C075	00070	060041	LDA #-10	
C076	00071	170220	STA EGT14,I	SET RETRY COUNTER
C077*				
C078	00072	060162	LDA CRFLG	
C079	00073	066527R	LDB SHPOS	
C080	00074	002002	SZA	
C081	00075	064163	LDB UNPOS	
C082	00076	075522R	STB LSTSK	
C083	00077	064155	LDB SYSSC	
C084	00100	002002	SZA	
C085	00101	064161	LDB CUDSC	
C086	00102	174216	STB EGT12,I	SET REQUEST SUBCHANNEL
C087	00103	004065	CLE,ERB	
C088	00104	174207	STB EGT5,I	SET REQUEST DRIVE#
C089	00105	002441	CLA,SEZ,RSS	
C090	00106	062516R	LDA B1000	
C091	00107	170217	STA EGT13,1	STORE HEAD FLAG
C092*				
C093	00110	016357R	JSB STAT	CHECK STATUS
C094	00111	002011	SLA,RSS	DISC READY?
C095	00112	025216R	JMP C.IN	-YES, GO START OPERATION
C096*				
C097	00113	060056	LDA #+3	
C098	00114	036117R	I.CLR ISZ C.31	ADJUST RETURN ADDRESS
C099	00115	025472R	JMP C.CLR	GO CLEAN UP & EXIT
C100	00116	003000	B3000 OCT 3000	

< DRIVER 31 *CONTINUATION* SECTION >

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C102*
C103 00117 000000 C.31 NOP
C104*
C105 00120 150210 CPA EQT6,I DMA INTERRUPT?
C106 00121 025266R JMP C.CNT -YES, IGNORE
C107*
C108 00122 160210 LDA EQT6,I SPURIOUS INTERRUPT?
C109 00123 002003 SZA,RSS
C110 00124 025266R JMP C.CNT YES - IGNORE
C111*
C112 00125 164207 LDB EQT5,I GET REQ. DRV#
C113 00126 102501 LIA CC GET DRIVE ATTN. BITS
C114 00127 002003 SZA,RSS ANY ON??
C115 00130 025136R JMP C.STT -NO, MUST BE VALID INTERRUPT
C116 00131 005400 CLB
C117 00132 000033 SLA,RAR FOUND A BIT ?
C118 00133 025136R JMP C.STT -YES, GO CHECK STATUS ON DRIVE
C119 00134 005004 INB
C120 00135 025132R JMP *-3
C121*
C122 00136 015357R C.STT JSB STAT CHECK STATUS
C123 00137 005440 CLB,SEZ FIRST SEEK?
C124 00140 025436R JMP A.SK1 -YES, RE-INITIATE OPERATION
C125 00141 000010 SLA NOT READY?
C126 00142 025425R JMP A.NR -YES
C127 00143 125265R JMP C.RXT,I -NO, CONTINUE PROCESSING
C128*
C129 00144 044055 C.MOR ADB #+2 *
C130 00145 003004 CMA,INA * SET UP
C131 00146 170001 STA B,I *
C132 00147 042523R ADA BFLNG *
C133 00150 072523R STA BFLNG * TRIPLETS
C134 00151 044052 ADB #-1 *
C135 00152 003004 CMA,INA * FOR NEXT
C136 00153 140221 ADA EQT15,I *
C137 00154 170001 STA B,I * PART OF
C138 00155 044052 ADB #-1 *
C139 00156 062521R LDA TRK# * DISC TRANSFER
C140 00157 042524R ADA NXTTR *
C141 00160 170001 STA B,I *
C142*
C143 00161 015277R C.IO JSB SETUP SET UP FOR SEEK
C144 00162 065523R LDB BFLNG LOAD BUFFER LENGTH (NEG WORDS)
C145 00163 075277R STB SETUP AND SAVE
C146 00164 164221 LDB EQT15,I LOAD BUFFER ADDRESS
C147 00165 062520R LDA IOCMD LOAD READ/WRITE COMMAND
C148 00166 052443R CPA RDCMD IS THIS A READ?
C149 00167 005225 RBL,ERB -YES, INCLUDE DIRECTION BIT
C150 00170 000000 IOCTL NOP = STF FOR WRITE, STC FOR READ
C151 00171 015344R JSB RDWRT EXECUTE DATA TRANSFER
C152 00172 015411R JSB ANALYZ EXAMINE STATUS
C153 00173 055511R CPB WRCMD WAS THIS OPERATION A WRITE?
C154 00174 002001 RSS -YES, DO A CYCLIC CHECK
C155 00175 025216R JMP C.IN -NO
C156*

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< DRIVER 31 *CONTINUATION* SECTION >

C157	00176	066525R	LDB CYCLC	WAS CYCLIC CHECK REQUESTED?
C158	00177	006002	SZB	
C159	00200	026216R	JMP C.IN	NO - SKIP IT
C160*				
C161	00201	016277R	JSB SETUP	
C162	00202	062523R	LDA BFLNG	*
C163	00203	003004	CMA,INA	* CONVERT BUFFER LENGTH
C164	00204	040073	ADA B177	* TO
C165	00205	001727	ALF,ALF	* SECTOR COUNT
C166	00206	001200	RAL	*
C167	00207	010072	AND M77	*
C168	00210	102600	OTA DC	OUTPUT SECTOR COUNT
C169	00211	103700	STC DC,C	TO DATA CHANNEL
C170	00212	062513R	LDA CHCMD	LOAD CHECK DATA COMMAND
C171	00213	016271R	JSB C.CC	
C172	00214	016265R	JSB C.RXT	GO TO CONTINUATION EXIT
C173	00215	016411R	JSB ANLYZ	EXAMINE STATUS
C174*				
C175	00216	164214	C.IN LDB EQT10,I	GET REQUEST TRIPLET ADDRESS
C176	00217	006004	INB	
C177	00220	160001	LDA B,I	GET BUFFER ADDRESS
C178	00221	002003	SHA,RSS	ZERO?
C179	00222	026472R	JMP C.CLR	-YES, GO SET UP COMPLETION
C180	00223	170221	STA EQT15,I	-NO, SAVE BUFFER ADDRESS
C181	00224	006004	INB	
C182	00225	160001	LDA B,I	GET CHAR/WORD COUNT
C183	00226	002021	SHA,RSS	
C184	00227	003005	CMA,INA,RSS	
C185	00230	001100	B1100 OCT 1100	*ARS* INSTRUCTION
C186	00231	002003	SHA,RSS	-PROTECT AGAINST 0 BFR LENGTH
C187	00232	003400	CCA	
C188	00233	072523R	STA BFLNG	-STORE NEG. WORD COUNT
C189	00234	044051	ADB #-2	
C190	00235	160001	LDA B,I	GET TRACK/SECTOR
C191	00236	010075	AND M1774	
C192	00237	072521R	STA TRK#	SAVE TRACK#
C193	00240	120001	XOR B,I	
C194	00241	170223	STA EQT17,I	SAVE SECTOR#
C195*				
C196	00242	003004	CMA,INA	*
C197	00243	040116	ADA NSPCY	* CHECK IF TRANSFER
C198	00244	001727	ALF,ALF	* GOES BEYOND
C199	00245	001300	RAR	* END OF
C200	00246	042523R	ADA BFLNG	* CURRENT CYLINDER
C201	00247	002020	SHA	*
C202	00250	026144R	JMP C.MOR	-YES,GO SET UP NEXT TRANSFER
C203*				
C204	00251	001727	ALF,ALF	*
C205	00252	001200	RAL	* SET TRACK/SECTOR
C206	00253	010074	AND M377	* ADDRESS
C207	00254	003004	CMA,INA	* ONE PAST
C208	00255	040116	ADA NSPCY	* CURRENT TRANSFER
C209	00256	050116	CPA NSPCY	* IN BASE PAGE
C210	00257	062524R	LDA NxtTR	* FOR DISC MONITOR
C211	00260	042521R	ADA TRK#	* (TSONE)

< DRIVER 31 *CONTINUATION* SECTION >

C212	00261	072526R	STA SVTSN	SAVE UNTIL COMPLETION RETURN
C213	00262	002400	CLA	
C214	00263	006004	INB	
C215	00264	026160R	JMP C.10-1	GO START I/O
C216*				
C217	00265	000000	C.RXT NOP	
C218*				
C219	00266	002400	C.CNT CLA	
C220	00267	036117R	ISZ C.31	INCREMENT TO CONTINUATION RETURN
C221	00270	126117R	JMP C.31,I	AND EXIT
C222*				
C223	00271	000000	C.CC NOP	
C224	00272	130207	IOR EQT5,I	INCLUDE DRV# IN I/O COMMAND
C225	00273	106701	CLC CC	MAKE SURE CMND CHNL CLEAR
C226	00274	102601	OTA CC	OUTPUT DISC COMMAND
C227	00275	103701	STC CC,C	TO COMMAND CHANNEL
C228	00276	126271R	JMP C.CC,I	
C229*				
C230	00277	000000	SETUP NOP	
C231	00300	164223	LDB EQT17,I	GET SECTOR#
C232	00301	046510R	ADB MSPTK	
C233	00302	006021	SSB,RSS	SECTOR# > 11 (23 FOR M.V.)
C234	00303	046514R	ADB B400	-YES, SET BOTTOM HEAD BIT
C235	00304	006020	SSB	
C236	00305	046507R	ADB NSPTK	-NO, RESET SECTOR#
C237	00306	144217	ADB EQT13,I	INCLUDE HEAD BIT FOR SUBCHNL#
C238	00307	062521R	LDA TRK#	LOAD TRACK#
C239	00310	001767	ALF,CLE,ALF	AND ROTATE TO LO 8 BITS
C240	00311	016315R	JSB SEEK	
C241	00312	102300	SFS DC	WAIT FOR 2ND WORD TO BE ACCEPTED
C242	00313	026312R	JMP *-1	
C243	00314	126277R	JMP SETUP,I	
C244*				
C245	00315	000000	SEEK NOP	
C246	00316	102600	OTA DC	OUTPUT TRACK#
C247	00317	103700	STC DC,C	TO DATA CHANNEL
C248	00320	052522R	CPA LSTSK	CURRENT TRK# = LAST TRK#?
C249	00321	002300	CCE	-YES
C250	00322	072522R	STA LSTSK	UPDATE LAST TRK# ACCESSED
C251	00323	062512R	LDA SKCMD	LOAD SEEK COMMAND
C252	00324	001225	RAL,ERA	SET BIT 15=1 FOR ADDRESS COMMAND
C253	00325	016271R	JSB C.CC	
C254	00326	102300	SFS DC	MAKE SURE TRACK# ACCEPTED
C255	00327	026326R	JMP *-1	
C256	00330	106600	OTB DC	OUTPUT HEAD/SECTOR
C257	00331	103700	STC DC,C	TO DATA CHANNEL
C258*				
C259	00332	066522R	LDB LSTSK	
C260	00333	060155	LDA SYSSC	
C261	00334	001100	ARS	
C262	00335	150207	CPA EQT5,I	REQUEST ON SYSTEM DRIVE?
C263	00336	076527R	STB SHPOS	-YES
C264	00337	060161	LDA CUDSC	
C265	00340	001100	ARS	
C266	00341	150207	CPA EQT5,I	REQUEST ON CURRENT USER DRIVE?

< DRIVER 31 *CONTINUATION* SECTION >

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C267 00342 074163      STB UHPOS      -YES
C268 00343 125315R     JMP SEEK,I     SEEK COMPLETE
C269*
C270 00344 000000      RDWRT NOP
C271*
C272 00345 105702      WCR1  CLC 2
C273 00346 105602      WCR2  OTB 2      OUTPUT BFR ADDRS TO WCR
C274 00347 065277R     LDB SETUP
C275 00350 102702      WCR3  STC 2
C276 00351 105602      WCR4  OTB 2      OUTPUT BFR LGTH TO WCR
C277 00352 103706      DMA1  STC 6,C    START DMA
C278 00353 105706      DMA4  CLC 6      INHIBIT DMA INTERRUPT
C279 00354 015271R     JSB C.CC
C280 00355 015265R     JSB C.RXT      GO TO CONTINUATION EXIT
C281 00356 125344R     JMP RDWRT,I     DATA TRANSFER COMPLETE
C282*
C283 00357 000000      STAT  NOP
C284*
C285 00360 102106      DMA2  STF 6
C286 00361 062506R     LDA DMACW
C287 00362 102606      DMA3  OTA 6      SET DMA FOR DISC
C288*
C289 00363 103700      STC DC,C      SET DATA CHANNEL TO SEND STATUS
C290 00364 105701      CLC CC      MAKE SURE COMMAND CHNL CLEAR
C291 00365 105601      OTB CC      OUTPUT STATUS COMMAND
C292 00366 103701      STC CC,C      TO COMMAND CHANNEL
C293 00367 102300      SFS DC      DATA CHANNEL READY?
C294 00370 025367R     JMP *-1      -NO
C295 00371 102500      LIA DC      GET STATUS FROM DATA CHANNEL
C296 00372 170222      STA EQT16,I    AND SAVE
C297*
C298 00373 010074      AND M377
C299 00374 072411R     STA ANLYZ
C300 00375 160206      LDA EQT4,I
C301 00376 010075      AND M1774
C302 00377 032411R     IOR ANLYZ
C303 00400 170206      STA EQT4,I      UPDATE STATUS IN EQT
C304*
C305 00401 160222      LDA EQT16,I    GET STATUS
C306 00402 001266      RAL,CLE,ELA    SET FIRST SEEK STATUS IN *E*
C307 00403 001727      ALF,ALF      SET NOT READY BIT IN LOW *A*
C308 00404 154207      CPB EQT5,I    CURRENT DRIVE#?
C309 00405 125357R     JMP STAT,I     -YES, RETURN
C310*
C311 00406 005440      CLB,SEZ      FIRST SEEK?
C312 00407 074327      STB #BDTR     -YES, CLEAR FILE TABLE FLAG
C313 00410 025266R     JMP C.CNT
C314*
C315 00411 000000      ANLYZ  NOP
C316 00412 065520R     LDB IOCMD
C317 00413 160222      LDA EQT16,I    GET STATUS
C318 00414 005021      SSB,RSS      TRYING TO FLAG DEFECTIVE CYL?
C319 00415 002111      CLE,SLA,RSS   ANY ERROR?
C320 00416 125411R     JMP ANLYZ,I    -NO, EXIT
C321 00417 001375      KAR,CLE,SLA,ERA *DATA ERROR?

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< DRIVER 31 *CONTINUATION* SECTION >

C322	00420	025423R		JMP A.PTY	-YES
C323	00421	001333		RAR,SLA,RAR	FLAGGED CYL.?
C324	00422	025464R		JMP A.FLG	-YES
C325*					
C326	00423	134220	A.PTY	ISZ EQT14,I	INCREMENT ERROR RETRY COUNTER
C327	00424	025437R		JMP A.TRY	GO EXECUTE RETRY
C328	00425	002444	A.NR	CLA,SEZ,INA	DATA ERROR?
C329	00426	060056		LDA #+3	-YES, SET PARITY ERROR
C330	00427	164216		LDB EQT12,I	GET ERROR SUBCHANNEL
C331	00430	074126		STB RONBF	
C332	00431	164223		LDB EQT17,I	GET SECTOR#
C333	00432	074130		STB RONBF+2	
C334	00433	066521R		LDB TRK#	LOAD VIOLATING TRACK#
C335	00434	074127		STB RONBF+1	
C336	00435	025472R		JMP C.CLR	GO TO COMPLETION EXIT
C337*					
C338	00436	074327	A.SK1	STB #BDTR	CLEAR FILE TABLE FLAG
C339	00437	060073	A.TRY	LDA B177	
C340	00440	005500		CLB,CLE	
C341	00441	015315R		JSB SEEK	SEEK CYLINDER 127
C342	00442	015265R		JSB C.RXT	GO TO CONTINUATION EXIT
C343*					
C344	00443	020000	RDCMD	OCT 020000	<XOR A> EQUIVALENT TO <CLA>
C345	00444	005500		CLB,CLE	
C346	00445	015315R		JSB SEEK	SEEK CYLINDER 0
C347	00446	015265R		JSB C.RXT	GO TO CONTINUATION EXIT
C348	00447	025161R		JMP C.IO	GO RESTART OPERATION
C349*					
C350	00450	015277R	A.DCY	JSB SETUP	
C351	00451	003700	B3700	OCT 3700	<CCA,CCE> INSTRUCTION
C352	00452	072277R		STA SETUP	SET BFR LNG = -1
C353	00453	065517R		LDB DFALT	
C354	00454	062443R		LDA RDCMD	
C355	00455	103700		STC DC,C	
C356	00456	015344R		JSB RDWRT	
C357	00457	062521R		LDA TRK#	
C358	00460	010075		AND M1774	
C359	00461	072521R		STA TRK#	
C360	00462	034327		ISZ #BDTR	
C361	00463	025161R		JMP C.IO	GO RE-INITIATE OPERATION
C362*					
C363	00464	000010	A.FLG	SLA	DEFECTIVE CYLINDER?
C364	00465	025450R		JMP A.DCY	-YES
C365*					
C366	00466	056511R		CPB WRCMD	
C367	00467	002401		CLA,RSS	
C368	00470	025423R		JMP A.PTY	
C369	00471	102031		HLT 31B	-NO, PROTECTED - CRASH!
C370*					
C371	00472	005400	C.CLR	CLB	
C372	00473	074162		STB CRFLG	RESET REQ. FLAG TO SYSTEM
C373	00474	174210		STB EQT6,I	CLEAR TO PREVENT SPUR. INT.
C374	00475	065526R		LDB SVTSN	SET NEXT AVAILABLE TR/SECT
C375	00476	074174		STB TSONE	IN BASE PAGE
C376	00477	007400		CCB	

< DRIVER 31 *CONTINUATION* SECTION >

C377	00500	174207	STB EQT5,I	CLEAR DRIVE#
C378	00501	164215	LDB EQT11,I	GET USER'S CHAR/WORD COUNT
C379	00502	005020	SSB	AND SET
C380	00503	007004	CMB,INB	POSITIVE
C381	00504	125117R	JMP C.31,I	EXIT

** CONSTANT AND VARIABLE STORAGE AREA **

C383*

C384*

C385* WARNING: THE FOLLOWING 4 CONSTANTS ARE SET

C386* BY THE DISC-RESIDENT BOOTSTRAP.

C387* CHECK THE BOOTSTRAP BEFORE

C388* MAKING ANY CHANGES!

C389*

C390	00505	102100	STF	STF	DC	WRITE CONTROL
C391	00506	120000	DMACW	OCT	120000	DMA CONTROL WORD
C392	00507	000000	NSPTK	NOP		#SECTORS/TRACK
C393	00510	000000	MSPTK	NOP		NEG #SECTORS/TRACK
C394	00505		D.END	EQU	STF	LAST INSTR. TO BE CONFIGURED

C395*

C396	00511	010000	WRCMD	OCT	010000	WRITE COMMAND
C397	00512	130000	SKCMD	OCT	130000	SEEK COMMAND (15-BIT GOES TO E)
C398	00513	060000	CHCMD	OCT	060000	CHECK DATA COMMAND

C399*

C400	00514	000400	B400	OCT	400	
C401	00515	000500	B500	OCT	500	
C402	00516	001000	B1000	OCT	1000	LOWER DISC HEAD BIT

C403*

C404 00517 100521R DFALT DEF TRK#,I

C405*

C406	00520	000000	IOCMD	NOP		STORAGE FOR READ/WRITE COMMAND
C407	00521	000000	TRK#	NOP		TRACK#
C408	00522	000000	LSTSK	NOP		LAST TRACK ACCESSED
C409	00523	000000	BFLNG	NOP		BUFFER LENGTH
C410	00524	000000	NXTTR	NOP		NEXT TRACK INCR/DECR
C411	00525	000000	CYCLC	NOP		CYCLIC CHECK FLAG
C412	00526	000000	SVTSN	NOP		SAVED TZONE VALUE

C414*
C415* STATUS BIT MEANINGS
C416*
C417* 15 - ATTENTION - OPERATION COMPLETED
C418* 14 - FIRST SEEK - DRIVE HAS GONE FROM NOT READY TO READY
C419* 13 - OVERRUN - LATE DATA TRANSFER - HARDWARE FAILURE
C420* 12 - READ/WRITE UNSAFE - HARDWARE FAILURE (2870 ONLY)
C421* 11 - ACCESS UNSAFE - HARDWARE FAILURE
C422* 10 - ACCESS HUNTING - HARDWARE FAILURE (2870)
C423* TOO MANY DRIVES SELECTED (7900)
C424* 9 - SEEK INCOMPLETE - HARDWARE FAILURE (2870)
C425* DRIVE NOT ON LINE (7900)
C426* 8 - SEEK CHECK - SOFTWARE ERROR (E.G., CYL# > 202)
C427* 7 - (NOT USED)
C428* 6 - NOT READY (ALSO SET WHEN BITS 11 AND/OR 12 SET)
C429* 5 - END OF CYLINDER - SOFTWARE ERROR - ATTEMPTED TO
C430* WRITE PAST THE END OF A CYLINDER
C431* 4 - ADDRESS ERROR - ADDRESS ISSUED DOES NOT AGREE WITH
C432* DISC ADDRESS - HARDWARE FAILURE OR DISC NOT
C433* INITIALIZED - OR - IF BIT 3 IS ALSO ON, THEN
C434* THE CYLINDER BEING PROCESSED HAS BEEN FLAGGED
C435* DEFECTIVE.
C436* 3 - FLAGGED CYLINDER - SET IF CYLINDER BEING PROCESSED
C437* HAS BEEN FLAGGED PROTECTED OR (IF BIT 4 IS ALSO SET)
C438* DEFECTIVE - OR - INITIALIZE DATA COMMAND HAS BEEN
C439* ISSUED WITH DISC PROTECT OVERRIDE SWITCH OFF
C440* 2 - DRIVE BUSY - SEEK IN PROCESS
C441* 1 - DATA ERROR - CYCLIC CHECK INCORRECT
C442* 0 - ANY ERROR - TURNED ON WHEN ANY OF THE ABOVE EXCEPT
C443* BIT 15 OR, ON A READ OR CHECK DATA, BIT 3, IS SET.
C444*
C445* NOTE: ANY HARDWARE FAILURE WHICH DOES NOT SET BIT 6 MAY BE
C446* RECOVERABLE ON RETRY.
C447*

** SYSTEM BASE PAGE COMMUNICATION AREA **

C449*

C450* SYSTEM BASE PAGE CONSTANTS

C451*

C452 00053 # EQU 53B

C453 00067 M100 EQU #+12

C454 00072 M77 EQU #+15

C455 00073 B177 EQU #+16

C456 00074 M377 EQU #+17

C457 00075 M1774 EQU #+18

= OCT 177400

C458 00077 M1777 EQU #+20

C459*

C460 00000 A EQU 0

C461 00001 B EQU 1

C462*

C463 00000 DC EQU 0

DATA CHANNEL (HIGH PRIORITY)

C464 00001 CC EQU 1

COMMAND CHANNEL (LOW PRIORITY)

C465*

C466*

C467* I/O MODULE/DRIVE COMMUNICATION

C468*

C469 00100 . EQU 100B

C470 00203 EQT1 EQU .+67

C471 00204 EQT2 EQU .+68

C472 00205 EQT3 EQU .+69

C473 00206 EQT4 EQU .+70

C474 00207 EQT5 EQU .+71

C475 00210 EQT6 EQU .+72

C476 00211 EQT7 EQU .+73

C477 00212 EQT8 EQU .+74

C478 00213 EQT9 EQU .+75

C479 00214 EQT10 EQU .+76

C480 00215 EQT11 EQU .+77

C481 00216 EQT12 EQU .+78

C482 00217 EQT13 EQU .+79

C483 00220 EQT14 EQU .+80

C484 00221 EQT15 EQU .+81

C485 00222 EQT16 EQU .+82

C486 00223 EQT17 EQU .+83

C487*

C488 00116 NSPCY EQU .+14

#SECTORS/CYLINDER

C489 00126 RONBF EQU .+22

C490 00155 SYSSC EQU .+45

SYSTEM SUBCHANNEL#

C491 00161 CUDSC EQU .+49

USER SUBCHANNEL#

C492 00162 CRFLG EQU .+50

REQ. FLAG: 0=SYS, 1=USER

C493 00163 UHPOS EQU .+51

USER LAST TRACK ACCESSED

C494 00527 000377 SHPOS OCT 377

SYSTEM LAST TRACK ACCESSED

C495 00174 TSONE EQU .+60

LAST DISC ADDRESS USED + 1

C496 00257 CHAN EQU .+111

C497 00327 #BDTR EQU .+151

C498*

C499

END

** NO ERRORS *TOTAL **RTE ASMB 92067-16011**

#	00452	00030	00055	00075	00097	00129	00134
	00138	00189	00329	00453	00454	00455	00456
	00457	00458					
#DTR	00497	00312	00338	00360			
.	00469	00470	00471	00472	00473	00474	00475
	00476	00477	00478	00479	00480	00481	00482
	00483	00484	00485	00486	00488	00489	00490
	00491	00492	00493	00495	00496	00497	
@A	00460						
A.DCY	00350	00364					
A.FLG	00363	00324					
A.NR	00328	00126					
A.PTY	00325	00322	00368				
A.SK1	00338	00124					
A.TRY	00339	00327					
ANLYZ	00315	00152	00173	00299	00302	00320	
B	00461	00058	00131	00137	00141	00177	00182
	00190	00193					
B1000	00402	00090					
B1100	00185	00070					
B177	00455	00164	00339				
B3000	00100	00072					
B3700	00351	00060					
B400	00400	00042	00234				
B500	00401	00068					
BFLNG	00409	00132	00133	00144	00162	00188	00200
C.31	00103	00003	00013	00098	00220	00221	00381
C.CC	00223	00171	00228	00253	00279		
C.CLR	00371	00099	00179	00336			
C.CNT	00219	00106	00110	00313			

CROSS-REFERENCE SYMBOL TABLE

5:25 PM WED., 28 FEB., 1979

C.IN	00175	00095	00155	00159			
C.IO	00143	00215	00348	00361			
C.MOR	00129	00202					
C.RXT	00217	00127	00172	00280	00342	00347	
C.STI	00122	00115	00118				
CC	00464 00292	00113	00225	00226	00227	00290	00291
CHAN	00496	00052	00066				
CHCMD	00398	00170					
CNFG	00052	00041					
CRFLG	00492	00078	00372				
CUDSC	00491	00085	00264				
CYCLC	00411	00051	00157				
D.END	00394	00009					
DC	00463 00256	00168 00257	00169 00289	00241 00293	00246 00295	00247 00355	00254 00390
DFALT	00404	00353					
DMA1	00277	00071					
DMA2	00285	00065	00067				
DMA3	00287	00069					
DMA4	00278	00073					
DMACW	00391	00286					
EQT1	00470						
EQT10	00479	00175					
EQT11	00480	00378					
EQT12	00481	00086	00330				
EQT13	00482	00091	00237				
EQT14	00483	00076	00326				
EQT15	00484	00136	00146	00180			

EQT16	00485	00296	00305	00317			
EQT17	00486	00194	00231	00332			
EQT2	00471						
EQT3	00472						
EQT4	00473	00300	00303				
EQT5	00474 00377	00088	00112	00224	00262	00266	00308
EQT6	00475	00054	00105	00108	00373		
EQT7	00476						
EQT8	00477						
EQT9	00478	00015	00026	00043			
I.31	00009	00003	00012				
I.CLR	00098	00031					
I.CIL	00033	00028					
I.SET	00038	00021					
I.STF	00036	00025					
I.WRT	00023	00017					
IOCMD	00406	00039	00147	00316			
IOCTL	00150	00038					
LSTSK	00408	00082	00248	00250	00259		
M100	00453	00063					
M1774	00457	00045	00191	00301	00358		
M1777	00458	00034					
M377	00456	00206	00298				
M77	00454	00167					
MSPTK	00393	00252					
NSPCY	00488	00197	00208	00209			
NSPTK	00392	00236					

NXTTR	00410	00046	00140	00210			
RDCMD	00344	00020	00148	00354			
RDWRT	00270	00151	00281	00356			
RQNB	00489	00331	00333	00335			
SEEK	00245	00240	00268	00341	00346		
SETUP	00230 00352	00143	00145	00161	00243	00274	00350
SHPOS	00494	00079	00263				
SKCMD	00397	00251					
STAT	00283	00093	00122	00309			
STC	00247	00019					
STF	00390	00036	00394				
SVTSN	00412	00212	00374				
SYSSC	00490	00083	00260				
TRK#	00407 00359	00139 00404	00192	00211	00238	00334	00357
TSONE	00495	00375					
UHPOS	00493	00081	00267				
WCR1	00272	00064					
WCR2	00273	00061					
WCR3	00275	00056	00059				
WCR4	00276	00062					
WRCMD	00396	00023	00153	00366			