

LENGTH OF PRG 00576

1	2	3	4	5	6	7	8	9	10
				IDENT		DKHNDLR			
				MACRO	LAB,,	FUNCT			
				NAME	ISSUE				
			\$SLAB	ENA	\$FUNCT				
				RTJ	SEL				
				END					
	00000								
	00001		+001	X0	EQU	0			
	00002			X1	EQU	1			
	00003			X2	EQU	2			
				X3	EQU	3			
	00000			IMPURE	EQU	0			
	00022			CLOCK	EQU	228			

 *
 * THE FOLLOWING DEFINITIONS ARE USED TO DIFFERENTIATE BETWEEN *
 * DIFFERENT TYPES OF I/O OPERATIONS *
 *

00004				NOSUB	EQU	0043	DO NOT MAKE SUBSTUTUICNS
77775				MSFIO	EQU	-00002B	SEZ USER DISK PACK I/C
00001				NORELOC	EQU	1	USE MSF RELOCATION AREA INSTEAD
							OF DKPF
00222				GAMBLE	EQU	222B	CODE FOR A WRITE ONLY
00446				READ	EQU	442B+NOSUB	CODE FOR A READ
00332				WRITE	EQU	332B	CODE FOR WRITE AND CHECK
00336				WRITENS	EQU	WRITE+NOSUB	SAME AS WRITE BUT NO SUB
00445				MSFREAD	EQU	READ+MSFIO+NORELOC	READ ON USER DISK PACK
00335				MSFWRITE	EQU	WRITENS+MSFIO+NORELOC	WRITE ON USER DISK PACK
00444				MONREAD	EQU	MSFREAD-NORELOC	

00012				CCUNT	EQU	10	CONTROLS WAITING TIME FOR SEEKS
07773				DINT	EQU	7773B	
00040				DKPF	EQU	40B	USE STATE 2

00000				SELECT	EQU	00000B	
00000				SENSE	EQU	00000B	

00501	P			ENTRY		DKCLK	
00000	P			ENTRY		DKINT	
00446				ENTRY		READ	
00222				ENTRY		GAMBLE	
00444				ENTRY		MONREAD	
00445				ENTRY		MSFREAD	
00335				ENTRY		MSFWRITE	
00500				ENTRY		MXBTRET	
00434	P			ENTRY		MXIRERR	
00332				ENTRY		WRITE	
00336				ENTRY		WRITENS	

*
*
*

63				EXT		BIT23	
64				EXT		BLOCKTBL	
65				EXT		CONNECT	
66				EXT		D10	
67				EXT		DISKADD	
68				EXT		DKACTIVE	
69				EXT		DKCONTAB	TABLE OF CONTROLLERS
70				EXT		DKPOINT	
71				EXT		DKSTATAB	
72				EXT		MSUNITS	
73				EXT		MSUNITM1	MSUNITS-1
74				EXT		MXBT	
75				EXT		MXNE	
76							
77				EXT		MXQADD	DISK ADDRESS

78	EXT	MXQCOM	COMMAND AND COMPLETION RETURN
79	EXT	MXQERR	ERROR COUNT
80	EXT	MXQWC	WORD COUNT
81	EXT	MXQQ	18 BIT ABSOLUTE CORE ADDRESS
82	EXT	MXQISTAT	STATUS RETURNED BY INTSORT
83	EXT	MXQCSTAT	CHANNEL STATUS AFTER THE
84	*		CHANNEL INTERRUPT
85	EXT	MXWAITQ	QUEUE OF TRANSFERS TO BE DONE
86			
87	EXT	NBIT23	
88	EXT	NUMDKCON	NUMBER OF DISK CONTROLLERS
89	EXT	NUMDKM1	NUMDKCON - 1
90	EXT	OPMSG	
91	EXT	OPMSGX	
92	EXT	SYSERR	
93	EXT	UNCON	

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*****
*
* THE FOLLOWING SECTION IS ENTERED WHENEVER THERE IS ANY
* KIND OF EQUIPMENT INTERRUPT. IT PLUGS A FEW POINTERS
* AND ENTERS THE RESEEK SECTION OR THE I/C COMPLETED SECTION
* DEPENDING UPON THE STATUS OF THE CONTROLLER IN DKONTAB.
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103
00000 00000 P 104 DKINT EQU * COME HERE ON EQUIPMENT INTERRUPTS
00001 77730000 105 VFD A12/DINT
00002 53100000 106 TIA X1 INTERRUPT CODE TO A
00003 14700077 107 ENQ 77B
00004 13000017 108 SHAQ 15 SET UP FOR MEG
00005 14177777 X 109 ENI NUMDKCON,X1
00006 06177777 X 110 MEQ DKONTAB,1 LOOK FOR THE CONTROLLER
00007 00000006 P 111 HLT *
00008 20100005 X 112 LDA DKONTAB,X1 LOAD A GOOD CONNECT CODE
00009 53500000 113 TAI X1 SAVE IN X1 FOR CONNECT ROUTINE
00010 53300000 114 TIA X3 RETURN ADDRESS TO X2
00011 53600000 115 TAI X2
00012 14700764 116 ENQ 500 SAY 1/2 SECOND
00013 14300014 P 117 ENI *,X3 TELL CONNECT WHERE WE ARE
00014 01077777 X 118 UJP CONNECT
00015 00700460 P 119 RTJ CHANINT FOR CHANNEL ERRORS ETC
00016 01200000 120 UJP 0,X2 THE CALL WAS QUEUED
00017 121
00020 17677000 122 ANA 77000B GET JUST THE CHANNEL AND EQUIPMEN
00021 14710077 123 ENQ 10077B FORM THE MASK FOR THE MEG
00022 12400011 124 SHQ 9
00023 14100004 X 125 ENI NUMDKCON,X1 ENTER THE NUMBER OF CONTROLLERS
00024 06100007 X 126 MEQ DKONTAB,1 LOOK FOR THE PROPER CONTROLLER
00025 00777777 X 127 RTJ SYSERR WE SHOULD HAVE NEVER GOT HERE
00026 20100024 X 128 LDA DKONTAB,X1
00027 44000244 P 128+001 SWA CONCODE SAVE THE CONNECT CODE
00030 47100164 P 130 STI CONNUM,X1 SAVE THE CONTROLLER NUMBER
00031 47200227 P 131 STI DKRETURN,X2 SAVE THE RETURN ADDRESS
00032 03300254 P 132 AZJ,LT DKOPINPR JUMP IF I/O IN PROGRESS
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*
* THIS SECTION PERFORMS A SEEK ON ALL UNITS ON A PARTICULAR
* CONTROLLER THAT HAVE TRANSFERS TO DO. IF ANY UNIT IS ON
* SECTOR AFTER THE SEEK IS PERFORMED THE REQUIRED I/O
* OPERATION IS STARTED.
*
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142
00033 00033 P 143 SEEKLOOP EQU * START AT THE FRONT OF THE TABLE
00034 14277777 144 ENI -0,X2
00035 47000236 P 144+001 STI CONFLAG,X0
00036 47000240 P 144+002 STI CONFLG1,X0
00037 20277777 X 146 NEXTUNIT LDA DKSTATAB,X2 LOAD A CONNECT CODE
00038 03300234 P 147 AZJ,LT EXITING JUMP IF EQUIPMENT IS NOT PRESENT
00040 36000244 P 147+001 SCA CONCODE CHECK FOR THE RIGHT CONTROLLER
00041 17677000 149 ANA 77000B SAVE JUST THE CONNECT CODE
00042 03100233 P 150 AZJ,NE ENDLOOP JUMP IF NOT THE RIGHT CONTROLLER
00043 20200036 X 151 LDA DKSTATAB,X2 LOAD THE CONNECT CODE AGAIN
00044 44000061 P 152 SWA CON
00045 12000011 153 SHA 9 GET THE LOGICAL PACK NUMBER
00046 17600037 154 ANA 37B
00047 53700000 155 TAI X3 PUT IT INTO X3
00050 20377777 X 156 LDA MXWAITQ,X3 GET THE TRANSFER BLOCK ADDRESS
00051 17677777 157 ANA 77777B SAVE JUST THE PCINTER FIELD
00052 03000233 P 158 AZJ,EQ ENDLOOP
00053 47200240 P 158+001 STI CONFLG1,X2
00054 47300112 P 159 STI UNIT,X3 SAVE THE UNIT NUMBER
00055 21377777 X 160 LDQ BLOCKTBL,X3 LOAD LOW FILE BLOCK ON THE
00056 41000560 P 161 STQ SEEKADD DEVICE AND SAVE FOR LATER
00057 53700000 162 TAI X3 BLOCK ADDRESS TO X3
00060 00060 P 163 SEKLUP02 EQU *
00061 14100002 164 ENI 2,X1 REJECT 3 TIMES
00062 77000000 165 CON CON CONNECT TO THE UNIT
00063 01000230 P 166 UJP CONERR
00064 77200001 167 EXS 0001B,SENSE IS IT READY
00065 77200002 168 EXS 0002B,SENSE IS IT BUSY
00066 01000231 P 169 UJP SELREADY IGNORE THE UNIT
00067 20000061 P 170 LDA CON LOAD THE CONNECT CODE
00067 44000244 P 171 SWA CONCODE SAVE CONNECT CODE FOR LATER
    
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00070	47200236	P	171+001	STI	CONFLAG,X2	
00071	12077771		173	SHA	-6	
00072	17600003		174	ANA	3B	GET THE DEVICE TYPE
00073	53500000		175	TAI	X1	
00074	77100031		176	SEL	0031B,SELECT	RELEASE ON SECTOR INTERRUPTS
00075	14000000		177	NOP	0	
00076	20377777	X	178	LDA	MXQWC,X3	CHECK FOR USER DISK PACK
00077	12000007		179	SHA	7	
00100	03300103	P	180	AZJ,LT	*+3	JUMP IF A SYSTEM PACK
00101	20377777	X	181	LDA	MXQADD,X3	LOAD THE SECTOR ADDRESS
00102	01000106	P	182	UJP	*+4	
00103	20300101	X	183	LDA	MXQADD,X3	LOAD THE FILE BLOCK NUMBER
00104	31000560	P	184	SBA	SEEKADD	SUBTRACK LOW BLCK ON THE DEVICE
00105	50100555	P	185	MUA	SECPFB,X1	CONVERT TO SECTOR ADDRESS
00106	13077747		186	SHAQ	-24	
00107	51100552	P	187	DVA	SEPCPYL,X1	FIND CYLINDER ADDRESS
00110	12400014		188	SHQ	12	SECTOR BITS TO HIGH (Q)
00111	13000014		189	SHAQ	12	FORM SEEK ADDRESS
00112	14100000		190	ENI	IMPURE,X1	ENTER DEVICE NUMBER
00113	40177777	X	191	STA	DISKADD,X1	SAVE THE DISK ADDRESS
00114	40000560	P	192	STA	SEEKADD	
00115	14600010		193	ISSUE	(00108)	SELECT LOAD ADDRESS
00117	14600000		194	ENA	0	USE STATE ZERO FOR RELOCATION
00120	76000561	P	195	OUTW	0,SEEKADD,SEEKADD+1	DO THE SEEK
00121	00000560	P				
00122	01000120	P	196	UJP	*-2	ERRORS SHOULD NOT HAPPEN
00123	14100012		197	ENI	COUNT,X1	ENTER MAX WAITING TIME
00124	77300006		198	INS	0006B,SENSE	WAIT FOR THE CHANNEL TO FINISH
00125	02500124	P	199	IJD	*-1,X1	
00126	77300007		200	INS	0007B,SENSE	CHECK FOR CHANNEL PARITY ERROR
00127	01000437	P	201	UJP	SEEKERR	SOMETHING IS WRONG
00130	77200010		202	EXS	0010B,SENSE	ARE WE ON SECTOR
00131	77200002		203	EXS	0002B,SENSE	IS THE SEEK DONE
00132	02500130	P	204	IJD	*-2,X1	
00133	05100001		205	ISG	1,X1	
00134	01000233	P	206	UJP	ENDLOOP	FORGET THIS UNIT
00135	20300076	X	207	LDA	MXQWC,X3	LOAD THE I/O REQUEST
00136	03200141	P	208	AZJ,GE	NOTREAD	
00137	14704074		209	ENQ	4074B	SELECT READ AND INPW
00140	01000146	P	210	UJP	IOSHARE	
	00141	P	211			
00141	12000001		212	NOTREAD	EQU	*
00142	03300145	P	213	SHA	1	IS IT WRITE
00143	14704276		214	AZJ,LT	DKWRITE	
00144	01000146	P	215	ENQ	4276B	SELECT SEARCH COMPARE AND OUTW
	00145	P	216			
00145	14704176		217	UJP	IOSHARE	
	00146	P	218	DKWRITE	EQU	*
	00146	P	219	ENQ	4176B	SELECT WRITE AND OUTW
	00146	P	220			
00146	43001024	P	221	IOSHARE	EQU	*
00147	14600000		222	SQCH	DKIO	SAVE THE INPW OR OUTW
00150	40377777	X	223	ENA	0	
00151	13000022		224	STA	MXQISTAT,X3	CLEAR THE CHANNEL STATUS
00152	00700454	P	225	SHAQ	18	FUNCTION CODE TO (A)
00153	14600022		226	RTJ	SEL	
00155	14600024		227	ISSUE	(228)	INTERRUPT ON END OF OPERATION
00157	14100002		228	ISSUE	(248)	INTERRUPT ON ABNORMAL END OF OP
00160	20300135	X	229	ENI	DKPF/2+4,X1	
00161	12000010		230	LDA	MXQWC,X3	SHOULD WE LOCATE THRU THE MSF
00162	03300252	P	231	SHA	8	AREA
00163	21377777	X	232	AZJ,LT	MSFREL	
00164	14600000		233	LQ	MXQQ,X3	GET THE CORE ADDRESS
00165	12000001		234	CONNUM	ENA	ENTER THE CONTROLLER NUMBER
00166	53600000		235	SHA	1	USE 2 PF LOCATIONS / CONTROLLER
00167	14600000		236	TAI	X2	STARTING LOCATION TO X2
00170	12400006		237	ENA	0	
00171	13000007		238	SHQ	6	
00172	12000002		239	SHAQ	7	PAGE NUMBER OF THE XFER TO A
00173	77644040		240	SHA	2	FORM 1/4 PAGE NUMBER
00174	15600004		241	APF	DKPF,X2	SET THE PAGE FILE
00175	77644041		242	INA	4B	POINT TO THE NEXT PAGE
00176	53200000		243	APF	DKPF+1,X2	
00177	13000013		244	TIA	X2	FORM THE NEW ADDRESS
	00200	P	245	SHAQ	11	
00200	44000206	P	246	SETADD	EQU	*
00201	30300160	X	247	SWA	DKIO+1	SAVE THE FWA
00202	44000205	P	248	ADA	MXQWC,X3	ADD IN THE LENGTH
			249	SWA	DKIO	SAVE THE LWA

00203	77511377		250		CIL0	3778	WATCH OUT FOR CHRISTMAS LITES
00204	53100000		251		TIA	X1	RELOCATION STATE TO A
00205	00000000		252		VFD	A6/IMPURE,A18/IMPURE	,09/004,A15/IMPURE
00207	01000205	P	253	DKIO	UJP	*-2	SHOULD NOT BE ERRORS
			254				
00210	20377777	X	255		LDA	MXQCSTAT,X3	PICK UP THE STATUS WORD
00211	17607777		256		ANA	77778	SAVE LAST TIMES STATUS
00212	12000014		257		SHA	12	
00213	40300210	X	258		STA	MXQCSTAT,X3	AND STORE IT EACH
			259				
00214	54200164	P	260		LDI	CONNUM,X2	GET THE CONTROLLER NUMBER
00215	20077777	X	261		LDA	BIT23	SAY IO IS HAPPENING ON THIS
00216	35200026	X	262		SSA	DKCONTAB,X2	CONTROLLER
00217	40200216	X	263		STA	DKCONTAB,X2	
00220	77550000		264		CIA		GET THE CHANNEL NUMBER
00221	53500000		265		TAI	X1	
00222	53300000		266		TIA	X3	GET THE LOGICAL PACK NUMBER
00223	40177777	X	267		STA	DKACTIVE,X1	SAY WHICH UNIT HAS THE CONTROLLER
00224	40277777	X	268		STA	DKPOINT,X2	
00225	20000061	P	269		LDA	CON	GET THE CONNECT CODE OF THE UNIT
00226	44200217	X	270		SWA	DKCONTAB,X2	THAT IS ACTIVE
00227	01000000		271	DKRETURN	UJP	IMPURE	EXIT
			272				
			273				
			274				
00230	02500061	P	275	CONERR	IJD	CON,X1	LOOP A FEW TIMES
00231	77100020		276	SELREADY	SEL	00208,SELECT	SELECT READY AND NOT BUSY
00232	14000000		277		NOP	0	
			278				
00233	02200036	P	279	ENDLOOP	IJI	NEXTUNIT,X2	GO TRY ANOTHER UNIT
			280				
	00234	P	281	EXITING	EQU	*	
00234	14100012		282		ENI	COUNT,X1	
00235	14600030		282+001		ENA	308	SELECT END OF SEEK
00236	04000000		283	CONFLAG	ISE	IMPURE,0	SKIP IF A CONNECT CODE IS IN
00237	01000243	P	283+001		UJP	*+4	
00240	04000000		283+002	CONFLG1	ISE	IMPURE,X0	
00241	01000250	P	283+003		UJP	DKEXIT	
00242	14600020		283+004		ENA	208	SELECT READY NOT BUSY
00243	44000246	P	283+005		SWA	DKEXIT.1	
00244	77000000		285	CONCODE	CON	IMPURE,0	CONNECT TO THE UNIT
00245	02500236	P	286		IJD	CONFLAG,X1	
00246	77100000		286+001	DKEXIT.1	SEL	IMPURE,SELECT	SELECT THE FUNCTION
00247	02500236	P	288		IJD	CONFLAG,X1	
			289				
00250	54200227	P	290	DKEXIT	LDI	DKRETURN,X2	LOAD THE RETURN ADDRESS
00251	01077777	X	291		UJP	UNCON	GO RELEASE THE CHANNEL
			292				
			293				
	00252	P	294	MSFREL	EQU	*	
00252	20300163	X	295		LDA	MXQQ,X3	LOAD THE FIRST WORD ADDRESS
00253	02100200	P	296		IJI	SETADD,X1	

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*****
*
* THIS SECTION IS ENTERED AFTER A TRANSFER IS FINISHED. IT
* CHECKS TO SEE IF ANY ERRORS WERE DISCOVERED DURING CHANNEL
* INTERRUPT PROCESSING OR IF ANY ERROR STATUS HAS COME UP
* SINCE THEN. IN EITHER CASE THE ERROR COUNTER FOR THE
* TRANSFER IS INCREMENTED AND CHECKED TO SEE IF TOO MANY
* ERRORS HAVE OCCURED. IF TOO MANY HAVE, EXIT IS MADE TO MXBT,
* OTHERWISE THE UNIT IS RESEEKED. EVERY EIGHT ERRORS A RESTORE
* IS DONE ON THE UNIT IN HOPES THAT THE NEW SEEK WILL CAUSE
* MARGINAL ADDRESSING PROBLEMS TO GO AWAY. IF THE TRANSFER IS
* OK, A CHECK FOR PREVIOUS ERRORS IS MADE AND A MESSAGE IS
* PRINTED GIVING THE STATUS OF THE LAST ERROR ON THE DEVICE.
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313

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00254 44000255 P
00255 77000000
00256 01000250 P
00257 77100023
00260 01000250 P
00261 37077777 X
00262 77100025
00263 01000250 P
00264 40100226 X
00265 20100224 X
00266 53700000
00267 77550000
00270 42001357 P 00273 3
00271 15600010
00272 42001363 P 00274 3
00273 53020000
00274 53010000
00275 13077775
00276 17677777
00277 17777777
00300 16477777
00301 53040000
00302 21300150 X
00303 40300302 X
00304 77205026
00305 01000402 P
00306 20300213 X
00307 17605164
00310 03100406 P
00311 13000030
00312 03100430 P
00313 20300201 X
00314 03300325 P
00315 12000001
00316 03200325 P
00317 12000001
00320 03200325 P
00321 17477776
00322 12000026
00323 40300313 X
00324 01000033 P

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DKOPINPR EQU *
CON02 CON IMPURE,0
UJP DKEXIT
SEL 0023B,SELECT
UJP DKEXIT
LPA NBIT23
SEL 0025B,SELECT
UJP DKEXIT
STA DKONTAB,X1
LDA DKPOINT,X1
TAI X3
CIA
SACH TMA+3
INA 10B
SACH TMA+3
TMA TMA IMPURE
TMQ TMQ IMPURE
SHAQ -2
ANA 77777B
ANQ 77777B
XQA,S 77777B
AQA
LDQ MXQISTAT,X3
STA MXQISTAT,X3
EXS 5026B,SENSE
UJP DKERR
LDA MXQCSTAT,X3
ANA 5164B
AZJ,NE DKERR02
SHAQ 24
AZJ,NE INSORTER
LDA MXQWC,X3
AZJ,LT DKDONE
SHA 1
AZJ,GE DKDONE
SHA 1
AZJ,GE DKDONE
ANA,S 77776B
SHA 22
STA MXQWC,X3
UJP SEEKLOOP

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SAVE THE CONNECT CODE
THE CONNECT SHOULD NOT REJECT
RELEASE EOP
CLEAR THE ICP BIT
RELEASE ABNORMAL EOP
POINT TO THE PROPER BLOCK
COMPUTE THE LEFT OVER WORD
COUNT
CURRENT ADDRESS TO A
ENDING ADDRESS TO Q
CONVERT TO WORDS
LEFT OVER WORD COUNT IS NOW IN A
LOAD THE CHANNEL STATUS
SAVE IN THE MXQ ELEMENT
CHECK FOR ANY ERRORS
JUMP IF THERE IS ONE
WERE THERE ANY PREVIOUS ERRORS
JUST LOOK AT THE ERROR BITS
JUMP IF AN ERROR
CHANNEL STATUS TO A
JUMP IF ANY CHANNEL ERRORS
LOAD THE I/O REQUEST
JUMP IF A READ
JUMP IF IT WAS A WRITE CHECK
JUMP IF NO WRITE CHECK WANTED
CLEAR THE WRITE BIT
STORE THE I/O COMMAND BACK
GO LOOK FOR SOMETHING TO DO
WERE THERE ANY ERRORS
JUMP IF THERE WERE
LOAD THE UNIT NUMBER
LOGICIAL UNIT NUMBER TO X1
CLEAR BIT 23 ON THE MXQ ELEMENT
GET THE NEXT POINTER
ENTER THE RETURN
LINK THE BLOCK INTO THE
ENTER THE RETURN
GET THE STATUS WORD
PRINT 4 CHARACTER STATUS

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00325 20377777 X
00326 12077763
00327 03100340 P
00330 00330 P
00331 20377777 X
00332 12077755
00333 53500000
00334 24000215 X
00335 37300000
00336 40100050 X
00337 14100033 P
00340 00340 P
00341 14200330 P
00342 00341 P
00343 20300306 X
00344 14177774

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DKDONE EQU *
LDA MXQERR,X3
AZJ,NE DKDONE04
DKDONE02 EQU *
LDA MXQCOM,X3
SHA -18
TAI X1
LCA BIT23
LPA 0,X3
STA MXWAITQ,X1
ENI SEEKLOOP,X1
UJP MXNE
DKDONE04 EQU *
ENI DKDONE02,X2
ERRPRINT EQU *
LDA MXQCSTAT,X3
ENI -3,X1

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WERE THERE ANY ERRORS
JUMP IF THERE WERE
LOAD THE UNIT NUMBER
LOGICIAL UNIT NUMBER TO X1
CLEAR BIT 23 ON THE MXQ ELEMENT
GET THE NEXT POINTER
ENTER THE RETURN
LINK THE BLOCK INTO THE
ENTER THE RETURN
GET THE STATUS WORD
PRINT 4 CHARACTER STATUS

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00343	14700000			377	ENQ	0	
00344	13000003			378	SHAQ	3	
00345	43402742	P	00570 2	379	SQCH	MESSST+3,X1	
00346	02100343	P		380	IJI	*-3,X1	
00347	20300325	X		381	LDA	MXQERR,X3	GET THE ERRCR CCUNT
00350	13077733			382	SHAQ	-36	
00351	51077777	X		383	DVA	D10	
00352	42002710	P	00562 0	384	SACH	MESSCNT	SAVE THE COUNT
00353	43002711	P	00562 1	385	SQCH	MESSCNT+1	
00354	20300330	X		386	LDA	MXQCOM,X3	LOAD THE UNIT NUMBER
00355	12077755			387	SHA	-18	
00356	53500000			388	TAI	X1	UNIT NUMBER TO X1
00357	13077747			389	SHAQ	-24	
00360	51000351	X		390	DVA	D10	
00361	42002717	P	00563 3	391	SACH	MESSUNIT	SAVE THE LOGICAL UNIT NUMBER
00362	43002720	P	00564 0	392	SQCH	MESSUNIT+1	
00363	20100113	X		393	LDA	DISKADD,X1	LOAD THE DISK ADDRESS
00364	14177770			394	ENI	-7,X1	8 CHARACTER ADDRESS
00365	14700000			395	ENQ	0	
00366	13000003			396	SHAQ	3	
00367	43402733	P	00566 3	397	SQCH	MESSADD+7,X1	
00370	02100365	P		398	IJI	*-3,X1	
00371	20300323	X		399	LDA	MXQWC,X3	LOAD THE I/O REQUEST
00372	12077752			400	SHA	-21	
00373	17600003			401	ANA	3B	
00374	53500000			402	TAI	X1	
00375	22402704	P	00561 0	403	LACH	IOTYPE,X1	
00376	42002713	P	00562 3	404	SACH	MESSREQ	
00377	11002710	P	00562 0	405	ECHA	MESS	ENTER THE ADDRESS OF THE MESSAGE
00400	14700034			406	ENQ	MESSL	ENTER THE LENGTH
00401	01077777	X		407	UJP	OPMSG	GO COMPLAIN
				408			
	00402	P		409	EQU	*	
00402	77200000			410	COPY	0	GET THE CURRENT STATUS
00403	17607777			411	ANA	7777B	JUST THE STATUS
00404	35300341	X		412	SSA	MXQCSTAT,X3	
00405	40300404	X		413	STA	MXQCSTAT,X3	SAVE THE NEW STATUS
				414			
	00406	P		415	EQU	*	
00406	20300347	X		416	LDA	MXQERR,X3	GET THE ERROR COUNT
00407	15410000			417	INA,S	10000B	CHALK UP ANOTHER ONE
00410	40300406	X		418	STA	MXQERR,X3	
00411	13077763			419	SHAQ	-12	HAVE WE EXCEEDED THE LIMIT
00412	12477763			420	SHQ	-12	
00413	14277777	X		421	ENI	MXBT,X2	ENTER THE RETURN FOR ERRPRINT
00414	03600341	P		422	AQJ,GE	ERRPRINT	JUMP IF TOO MANY ERRORS
00415	17600007			423	ANA	7B	DO WE WANT TO DO THE RESTORE
00416	15477775			424	INA,S	-2	
00417	03100422	P		425	AZJ,NE	*+3	
00420	77100001			426	SEL	0001B,SELECT	
00421	14000000			427	NOP	0	
00422	20300405	X		428	LDA	MXQCSTAT,X3	CHECK THE LAST ERROR STATUS
00423	17600010			429	ANA	0010B	CHECK FOR ADDRESS ERROR BIT
00424	03000033	P		430	AZJ,EQ	SEEKLOOP	JUMP IF NOT ADDRESS ERROR
00425	77100020			431	SEL	0020B,SELECT	SELECT READY AND NOT BUSY INTERRU
00426	14000000			432	NOP	0	THE HARDWARE IS DOING A RESTORE
00427	01000033	P		433	UJP	SEEKLOOP	TRY TO DO ANOTHER TRANSFER
				434			
				435			
	00430	P		436	EQU	*	
00430	17600010			437	ANA	10B	LEAVE THE MEMORY PARITY ERROR BIT
00431	03000033	P		438	AZJ,EQ	SEEKLOOP	JUMP IF NOT MEMORY PARITY ERRCR
00432	20300371	X		439	LDA	MXQWC,X3	LOAD THE I/O REQUEST
00433	03300033	P		440	AZJ,LT	SEEKLOOP	DO READS AGAIN
				441			
	00434	P		442	EQU	*	
00434	14477776			443	ENA,S	-1	SET THE IR RETURN
00435	34300354	X		444	RAD	MXQCOM,X3	
00436	01000330	P		445	UJP	DKDONE02	
				446			
				447			
	00437	P		448	EQU	*	
00437	77550000			449	CIA		GET THE CHANNEL NUMBER
00440	53500000			450	TAI	X1	CHANNEL TO X1
00441	14600001			451	ENA	1	FORM THE MASK FOR THE CLCA
00442	12100000			452	SHA	0,X1	
00443	16612000			453	XOA	1200B	FOR THE CLCA
00444	44000445	P		454	SWA	*+1	
00445	77512000			455	CLCA	IMPURE	TURN OFF GREEN LITES

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00447	53020022		458	REJ	TMA	CLOCK	GET THE CURRENT CLOCK
00450	15477776		459		INA,S	-1	WAIT MAX OF 1 MSEC.
00451	03600231	P	460		AQJ,GE	SELREADY	JUMP IF WE LOST
00452	77100000		461	SELCODE	SEL	IMPURE,SELECT	
00453	01000447	P	462		UJP	REJ	
00454	01000000		463	SEL	UJP	IMPURE	
00455	44000452	P	464		SWA	SELCODE	SAVE THE FUNCTION CODE
00456	53010022		465		TMQ	CLOCK	GET THE CURRENT CLOCK
00457	01000452	P	466		UJP	SELCODE	
			467				
			468				
00460	01000000		469	CHANINT	UJP	IMPURE	
00461	13000030		470		SHAQ	24	ERROR BITS TO Q
00462	77550000		471		CIA		GET THE CHANNEL NUMBER
00463	53500000		472		TAI	X1	
00464	20100223	X	473		LDA	DKACTIVE,X1	GET THE PROPER UNIT
00465	03000460	P	474		AZJ,EQ	CHANINT	WERE NOT USING THE CHANNEL
00466	53700000		475		TAI	X3	
00467	13000030		476		SHAQ	24	ERROR BITS BACK TO A
00470	40300303	X	477		STA	MXQISTAT,X3	SAVE THE STATUS FROM INTSORT
00471	03100460	P	478		AZJ,NE	CHANINT	
00472	77205024		479		EXS	5024B,SENSE	COPY STATUS IF ABNORMAL OR
00473	77200000		480		COPY	0	COMPARE ERROR
00474	17607777		481		ANA	7777B	SAVE JUST THE STATUS
00475	35300422	X	482		SSA	MXQCSTAT,X3	GET THE STATUS FROM LAST TIME
00476	40300475	X	483		STA	MXQCSTAT,X3	SAVE THE CHANNEL STATUS
00477	01000460	P	484		UJP	CHANINT	EXIT BACK TO INTSORT

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00500 54300227 P 497
00501 47300551 P 498 MXBTRET LDI DKRETURN,X3 LOAD THE RETURN ADDRESS
00502 77550000 P 499 DKCLK STI DKCLKRET,X3 SAVE THE RETURN
00503 42002637 P 500 00547 3 CIA SACH DKCLK12+3 SAVE THE CHANNEL INDEX
00504 14177777 X 501 ENI MSUNITS,X1 REGISTER
00505 20000333 X 502 DKCLK02 LDA BIT23 LOOK FOR BIT23
00506 21000505 X 503 LDQ BIT23
00507 06100335 X 504 MEQ MXWAITQ,1
00510 01000522 P 505 UJP DKCLK04
00511 53100000 P 506 TIA X1 LOGICIAL DEVICE NUMBER TO A
00512 13077747 P 507 SHA -24
00513 51000360 X 508 DVA D10
00514 42002764 P 509 SACH READYUNT STORE THE UNIT NUMBER IN THE
00515 43002765 P 00575 0 510 SQCH READYUNT+1 MESSAGE
00516 110002744 P 00575 1 511 ECHA READYMES
00517 14700023 P 00571 0 512 ENQ READYMSL
00520 14200505 P 513 ENI DKCLK02,X2
00521 01077777 X 514 UJP OPMSGX GO COMPLAIN
515
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00522 14177777 X 517 DKCLK04 ENI MSUNITM1,X1
00523 20100507 X 518 LDA MXWAITQ,X1
00524 05600001 P 519 ASG 1 SKIP IF A POINTER IS PRESENT
00525 01000530 P 520 UJP *+3 JUMP IF NOT
00526 35000506 X 521 SSA BIT23
00527 40100523 X 522 STA MXWAITQ,X1
00530 02500523 P 523 IJD *-5,X1 LOOP THRU ALL UNITS
524
525
00531 14177777 X 526 ENI NUMDKM1,X1
527
00532 20100264 X 527 DKCLK06 LDA DKCONTAB,X1 ARE WE USING THIS CONTROLLER
00533 03300546 P 528 AZJ,LT DKCLK10 JUMP IF WE ARE
00534 47100545 P 529 STI DKCLK08,X1 SAVE INDEX 1
00535 12077760 P 530 SHA -15 FAKE AN EQUIPMENT INTERRUPT
00536 53500000 P 531 TAI X1
00537 77540000 P 532 ACI IS THE CHANNEL BUSY
00540 77300007 P 533 INS 0007B,SENSE
00541 01000545 P 534 UJP DKCLK08 JUMP IF IT IS
00542 14300545 P 535 ENI DKCLK08,X3 ENTER THE RETURN
00543 05600100 P 536 ASG 1003 SKIP IF NOT ON LINE
00544 01000000 P 537 UJP DKINT
00545 14100000 P 538 DKCLK08 ENI IMPURE,X1 RESTORE X1
539
00546 02500532 P 540 DKCLK10 IJD DKCLK06,X1 CHECK ALL CONTROLLERS
541
542
00547 14600000 P 543 DKCLK12 ENA IMPURE RESTORE THE CHANNEL INDEX
00550 77540000 P 544 ACI REGISTER
00551 01000000 P 545 DKCLKRET UJP IMPURE EXIT

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00552	00552 P	547	SEPCYL	EQU	*	SECTORS PER CYLINDER
00553	00000240	548		DEC	160	853/854
00554	000010000	549		DEC	4096	813/814
	00000430	550		DEC	280	841
		551				
		552				
	00555 P	553	SECPFB	EQU	*	SECTORS PER FILE BLOCK
00555	00000010	554		DEC	8	853/854
00556	00000010	555		DEC	8	813/814
00557	00000004	556		DEC	4	841
		557				
		558				
00560	00000000	559	SEEKADD	VFD	A24/IMPURE	
		560				
00561	51236666	561	IOTYPE	BCD	1,RCWW	
		562				
	02710 P	563	MESS	EQU,C	*	
00562	67676000	564	MESSCNT	BCD,C	3,XX	
00562	67676067	565	MESSREQ	BCD,C	4,X U=	
00563	60641367	566	MESSUNIT	BCD,C	5,XX A=	
00565	00010203	567	MESSADD	BCD,C	11;01234567 S=	
00567	60621367	568	MESSST	BCD,C	5,XXXX^	
	00034	569	MESSL	EQU,C	*-MESS	
		570				
00571	51252124	571	READYMES	BCD,C	16,READY DISK UNIT	
00575	67677700	572	READYUNT	BCD,C	3,XX^	
	00023	573	READYMSL	EQU,C	*-READYMES	
00575		574		BSS	0	FIX THE P COUNTER
		575		END		

NO LINES WITH ERRORS

BIT23	X		63	261	00215P	365	00333P	503	00505P	504	00506P	521	00526P
BLOCKTBL	X		64	160	00055P								
CHANINT		00460P	469	119	00016P	474	00465P	478	00471P	484	00477P		
CLOCK		00022	15	458	00447P	465	00456P						
CON		00061P	165	152	00044P	170	00066P	269	00225P	275	00230P		
CON02		00255P	316	315	00254P								
CONCODE		00244P	285	128+1	00027P	147+1	00040P	171	00067P				
CONFERR		00230P	275	166	00062P								
CONFLAG		00236P	283	144+1	00034P	171+1	00070P	286	00245P	288	00247P		
CONFGL1		00240P	283+2	144+2	00035P	158+1	00053P						
CONNECT	X		65	118	00015P								
CONNUM		00164P	234	130	00030P	260	00214P						
COUNT		00012	39	197	00123P	282	00234P						
D10	X		66	383	00351P	390	00360P	509	00513P				
DINT		07773	41	105	00000P								
DISKADD	X		67	191	00113P	393	00363P						
DKACTIVE	X		68	267	00223P	473	00464P						
DKCLK	E	00501P	499	49	00000P								
DKCLK02		00505P	503	514	00520P								
DKCLK04		00522P	517	506	00510P								
DKCLK06		00532P	527	540	00546P								
DKCLK08		00545P	538	529	00534P	534	00541P	535	00542P				
DKCLK10		00546P	540	528	00533P								
DKCLK12		00547P	543	501	00503P								
DKCLKRET		00551P	545	499	00501P								
DKCONTAB	X		69	110	00005P	112	00007P	126	00024P	128	00026P	262	00216P
DKDONE		00325P	357	270	00226P	323	00264P	527	00532P			263	00217P
DKDONE02		00330P	361	347	00314P	349	00316P	351	00320P				
DKDONE04		00340P	371	372	00340P	445	00436P						
DKERR		00402P	409	360	00327P								
DKERR02		00406P	415	340	00305P								
DKEXIT		00250P	290	343	00310P								
DKEXIT.1		00246P	286+1	283+3	00241P	317	00256P	319	00260P	322	00263P		
DKINT	E	00000P	104	283+5	00243P								
DKIO		00205P	252	50	00000P	537	00544P						
DKOPINPR		00254P	314	222	00146P	247	00200P	249	00202P				
DKPF		00040	43	132	00032P								
DKPOINT	X		70	229	00157P	241	00173P	243	00175P				
DKRETURN		00227P	271	268	00224P	324	00265P						
DKSTATAB	X		71	131	00031P	290	00250P	498	00500P				
DKWRITE		00145P	218	146	00036P	151	00043P						
ENDLOOP		00233P	279	214	00142P								
ERRPRINT		00341P	374	150	00042P	158	00052P	206	00134P				
EXITING		00234P	281	422	00414P								
GAMBLE	E	00222	30	147	00037P								
IMPURE		00000	14	52	00000P								
				165	00061P	190	00112P	234	00164P	252	00205P	252	00205P
				271	00227P	283	00236P	283+2	00240P	285	00244P	286+1	00246P
				330	00273P	331	00274P	455	00445P	461	00452P	463	00454P
				338	00545P	543	00547P	545	00551P	559	00560P		469
				345	00312P								00460P
INSORTER		00430P	436	210	00140P	216	00144P						
IOSHARE		00146P	221	403	00375P								
IOTYPE		00561P	561	569	00571P	405	00377P						
MESS		00562P	563	397	00367P								
MESSADD		00565P	567	384	00352P	385	00353P						
MESSCNT		00562P	564	406	00400P								
MESSL		00034	569	404	00376P								
MESSREQ		00562P	565	379	00345P								
MESSST		00567P	568	391	00361P	392	00362P						
MESSUNIT		00563P	566	53	00000P								
MONREAD	E	00444	36	34	00000P	35	00000P						
MSFIO		77775	26	36	00000P	54	00000P						
MSFREAD	E	00445	34	232	00162P								
MSFREL		00252P	294	55	00000P								
MSFWRITE	E	00335	35	517	00522P								
MSUNITM1	X		73	502	00504P								
MSUNIT2	X		72	421	00413P								
MXBT	X		74	56	00000P								
MXBTRET	E	00500P	498	57	00000P								
MXIRERR	E	00434P	442	369	00337P								
MXNE	X		75	181	00101P	183	00103P						
MXQADD	X		77	362	00330P	386	00354P	444	00435P				
MXQCOM	X		78	255	00210P	258	00213P	341	00306P	375	00341P	412	00404P
MXQCSTAT	X		83	428	00422P	482	00475P	483	00476P			413	00405P
				358	00325P	381	00347P	416	00406P	418	00410P		
MXQERR	X		79	224	00150P	337	00302P	338	00303P	477	00470P		
MXQISTAT	X		82	233	00163P	295	00252P						
MXQQ	X		81	178	00076P	207	00135P	230	00160P	248	00201P	346	00313P
MXQWC	X		80									354	00323P

