



00014 P  
00070 P  
00034

67+004 MTSTATP EQU  
67+005 TNUMP EQU,C  
67+006 MTERRL EQU,C

MTERR+3  
MTERR+20  
\*-MTERR

LENGTH OF MESSAGE IN CHARACTERS

```

71 *****
72 **
73 **
74 ** ROUTINE TO INITIATE MAGNETIC TAPE OPERATIONS.
75 ** TAPE CONTROLLER MUST NOT BE BUSY ON REQUESTED CHANNEL
76 ** ENTER WITH
77 ** IMMEDIATE RETURN ADDRESS IN INDEX THREE
78 ** REQUEST ADDRESS IN INDEX TWO
79 ** WORD COUNT IN INDEX ONE IF APPLICABLE
80 ** UNIT NUMBER IN OPCODE OF Q
81 ** STARTING ADDRESS IN Q REGISTER IF APPLICABLE
82 ** BIT 23 OF A SEZ BINARY
83 ** LOWER CHARACTER OF A SELECTS DENSITY
84 ** ON CALL TO COMPLETION ROUTINE, A CONTAINS THE COUNT OF WORDS
85 ** READ, AND THE STATUS BITS EOT, FP, BRP, FMR, AND LPB.
86 ** INDEX THREE CONTAINS THE RETURN ADDRESS.
87 **
88 **
89 *****
    
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00020	47300145	P	92	TPINIT	STI	RETURN,X3	SAVE THE RETURN ADDRESS
00021	47200052	P	93		STI	FUNCTION,X2	SAVE FUNCTION
00022	40000002	P	94		STA	BINDEN	SAVE BINARY AND DENSITY INDICATOR
00023	12077765		95		SHA	-10	SET BINARY BIT INTO STATAB
00024	17620000		96		ANA	SBINBIT	
00025	40000001	P	97		STA	STATAB	THIS IS FIRST BIT TO GET SET
00026	14400000		98		ENA,S	0	
00027	13000006		99		SHAQ	6	GET UNIT NUMBER TO A
00030	40000005	P	100		STA	TPI	SAVE UNIT NUMBER
00031	13000003		101		SHAQ	3	WHICH PAGE FILE SECTION TO A
00032	44000141	P	102		SWA	PFPA	SAVE FCR INPUT/OUTPUT COMMANDS
00033	14400000		103		ENA,S	0	PREVENT TROUBLE ON AIA
00034	40000006	P	104		STA	TPRLNG	FOR STATUS REQUEST
00035	13000017		105		SHAQ	15	STARTING ADDRESS TO A
00036	44000143	P	106		SWA	TPOPC1	
00037	40000004	P	107		STA	TPBGNA	SAVE BEGINNING ADDRESS
00040	53140000		108		AIA	X1	ADD WORD COUNT
00041	44000142	P	109		SWA	TPOPM1	STORE END ADDRESS
00042	00700146	P	110		RTJ	TPCON	CONNECT TO UNIT
00043	04000001		110+001	TWWD1	ISE	IMPURE+1,X0	
00044	77200002		111		EXS	2,SENSE	CHECK FOR BUSY
00045	01000122	P	112		UJP	TPBUSY	
	000046	P	113	TWWD	EQU	*	
00046	53020022		114		TMA	CLOCK	
00047	48000000	P	115		STA	TXSTART	SAVE THE STARTING CLOCK VALUE
00050	47000373	P	116		STI	TPDELY,0	RESET FLAG
00051	00700243	P	117		RTJ	TPSLN	SELECT INTERRUPTS AND MODE
00052	01000000		118	FUNCTION	UJP	IMPURE	CALL APPROPRIATE ROUTINE

118+003 \*\*  
 118+004 \*\*  
 118+005 \*\*

\*\*\*\*\*  
 \*  
 \* THESE ROUTINES ARE TO PERFORM THE VARIOUS ALLOWED FUNCTIONS \*  
 \*  
 \*\*\*\*\*

00053	14700074	00053 P	123	TREAD	EQU	*		
00054	14600400		124		ENQ	74B	ENTER CODE FOR READ	
00055	01000136 P		125		ENA	READBIT	ENTER BIT FOR READ	
			126		UJP	TPIO	GO GIVE INPUT	
			126+001					
00056	14700076	00056 P	127	TWRITE	EQU	*		
00057	14601000		128		ENQ	76B	ENTER CODE FOR WRITE	
00060	77200004		129		ENA	WRITBIT		
00061	01000136 P		130		EXS	4,SENSE	CHECK FOR WRITE ENABLE	
			131		UJP	TPIO		
00062	14277777 X		132	TPVL	EQU	*		
00063	01000165 P		133		ENI	TXPV,X2	GIVE PROTECT VICLATION	
			134		UJP	TGRID	GET RID OF UNIT	
			134+001					
00064	77200004	00064 P	135	TWFM	EQU	*		
00065	01000067 P		136		EXS	4,SENSE	CHECK FOR WRITE ENABLE	
00066	01000062 P		137		UJP	*+2	OKAY	
00067	14600015		138		UJP	TPVL	NAUGHTY	
			138+001		ENA	15B		
			138+002					
00070	00700130 P	00070 P	140	TPNFR	EQU	*		
			140+001		RTJ	SEL	COME HERE FOR BAD FUNCTIONS	
00071	14200073 P	00071 P	140+002	TPNFR0	EQU	*		
00072	01000505 P	00072 P	140+003		ENI	*+2,X2	SPECIFY RETURN ADDRESS	
			140+004		UJP	TPTIMUP1		
00073	47000043 P	00073 P	140+005	TPNFR1	EQU	*		
			140+006		STI	TWWD1,X0	DON'T LET ANYONE ELSE THRU.	
			140+007					
00074	14600020	00074 P	140+008	TPNFR2	EQU	*		
00076	54200145 P	00076 P	140+009		ISSUE	(20B)	LOAD THE RETURN ADDRESS	
00077	01077777 X	00077 X	143		LDI	RETURN,X2	RELEASE CHANNEL	
			144		UJP	UNCON		
			144+001					
00100	14600013	00100 P	145	TSFPPM	EQU	*		
00101	01000070 P	00101 P	146		ENA	13B	SELECT SEARCH END OF FILE FORWARD	
			146+001		UJP	TPNFR		
			146+002					
00102	77200020	00102 P	148	TSBPFM	EQU	*		
00103	01000406 P	00103 P	149		EXS	20B,SENSE	CHECK FOR LOAD POINT	
00104	14600014	00104 P	150		UJP	TPRELS		
00105	01000120 P	00105 P	151		ENA	14B	SELECT SEARCH END OF FILE BACKWAR	
			152		UJP	FINISH		
			152+001					
00106	14600041	00106 P	153	TFWSP	EQU	*		
00110	14600012	00110 P	154		ISSUE	(41B)	SELECT REVERSE READ	
00111	01000070 P	00111 P	155		ENA	12B	SELECT BACKSPACE	
			155+001		UJP	TPNFR		
			155+002					
00112	14600010	00112 P	157	TREWIND	EQU	*		
00114	01000445 P	00114 P	157+001		ISSUE	(10B)	SELECT REWIND	
			157+002		UJP	TSTATUS	RETURN AND GIVE STATUS	
			157+003					
00115	77200020	00115 P	160	TBKSP	EQU	*		
00116	01000445 P	00116 P	161		EXS	20B,SENSE	CHECK FOR LOAD POINT	
			161+001		UJP	TSTATUS		
			161+002					
00117	14600012	00117 P	163		ENA	12B	SELECT BACKSPACE	
00120	00700130 P	00120 P	164	FINISH	EQU	*		
00121	01000073 P	00121 P	165		RTJ	SEL	ISSUE FUNCTION	
			165+001		UJP	TPNFR1		
			165+002					
00122	47200373 P	00122 P	167	TPBUSY	EQU	*		
00123	01000074 P	00123 P	167+001		STI	TPJELY,X2	SAY WE WERE DELAYED	
			167+002		UJP	TPNFR2		

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167+005 **
167+006 ** ROUTINE TO PROCESS SELECT FUNCTION ON THE CONNECTED DRIVE
167+007 ** ENTER WITH THE SELECT FUNCTION IN THE LOWER 6 BITS OF A
167+008 **

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00124 53010022 175 REJ TMQ CLOCK LOAD THE VALUE OF THE CLOCK AND
00125 03500133 P 176 AQJ,NE NEWCLK SEE IF IT'S COUNTED UP YET
00126 77100000 177 ISUF SEL IMPURE,SELECT ISSUE THE I/O FUNCTION
00127 01000124 P 178 UJP REJ BAD NEWS, REJECTED
00130 01000000 179 SEL UJP IMPURE TO ISSUE SELECT COMMANDS
00131 44000126 P 180 SWA ISUF SAVE FUNCTION CODE
00132 14100005 181 ENI 5,X1 ENTER COUNT OF MILLISECONDS
00133 53020022 182 NEWCLK TMA CLOCK LOAD REFERENCE CLOCK VALUE
00134 02500126 P 183 IJD ISUF,X1 JUMP IF STILL LIFE LEFT
00135 01000164 P 184 UJP UNERR SO SORRY CHARLIE

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188 *****
189 **
190 **
191 ** ROUTINE TO ISSUE THE I/O COMMAND TO THE TAPE UNIT
192 ** ENTER WITH
193 ** STATUS BITS IN A REG.
194 ** OP-CODE IN LOWER CHARACTER POSITION OF Q REG
195 ** CHANNEL NUMBER IN CHANNEL INDEX
196 **
197 **
198 *****

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00136 00136 P 201 TPIO EQU *
00136 35000001 P 202 SSA STATAB SET A INTO STATUS
00137 40000001 P 203 STA STATAB STORE STATUS BACK
00140 43000610 P 00142 0 204 SQCH TPOPM1 STORE OP-CODE
00141 14600000 206 PFPA ENA IMPURE WHICH PAGE FILE PORTION
00142 74000000 207 TPOPM1 74 IMPURE,IO I/O COMMAND WORD
00143 00400000 208 TPOPC1 00 IMPURE,4 SUB INSTRUCTION WORD
00144 01000142 P 209 UJP REJECT
00145 01000000 210 RETURN UJP IMPURE RETURN

```

```

214 *****
215 **
216 **
217 ** ROUTINE TO CONNECT TO TAPE UNITS.
218 **
219 **
220 *****
    
```

```

00146 01000000 223 TPCON UJP IMPURE
00147 54100005 P 224 LDI TPI,X1 LOAD UNIT NUMBER
00150 16100000 225 MTCCN XOI IMPURE,X1 MAKE INTO CONNECT CODE
00151 54200145 P 226 LDI RETURN,X2 LOAD THE RETURN ADDRESS
00152 14711610 227 ENQ TIMELIM ENTER LIMIT ON CHANNEL TIME
00153 14300153 P 228 ENI *,X3
00154 01077777 X 229 UJP CONNECT CALL ROUTINE TO CONNECT TO UNIT
00155 00700225 P 230 RTJ CHANINT CALL HERE ON CHANNEL INTERRUPT
00156 01200000 231 UJP 0,X2 CHANNEL BUSY RETURN
00157 47200145 P 232 STI RETURN,X2 SAVE THE RETURN ADDRESS
00160 20000005 P 233 LDA TPI CHECK FOR INTERRUPT NOT EXPECTED
00161 03300165 P 234 AZJ,LT TGRID TRY TO GET RID OF IT
00162 77200001 235 EXS 1,SENSE CHECK FOR READY
00163 01000146 P 236 UJP TPCON
    
```

```

*****
236+003 **
236+004 ** THIS ROUTINE WILL RELEASE AND DISCONNECT THE SELECTED DRIVE
236+005 ** CLEARING ALL INTERRUPT SELECTS AND STATUS BEFORE EXIT
236+006 **
236+007 ** CALLING SEQUENCE --
236+008 **
236+009 ** ENI <RETURN ADDRESS>,X2
236+010 ** UJP TGRID RELEASE AND CLEAR DEVICE
236+011 **
236+012 ** -- OR --
236+013 **
236+014 ** UJP UNERR UNIT NOT READY
236+015 ** (RETURNS TO TXNR IN UIO)
236+016 **
*****
    
```

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00164 00164 P 239 UNERR EQU *
00164 14277777 X 240 ENI TXNR,X2 NOT READY RETURN
00165 00165 P 241 EQU *
00165 47200203 P 242 STI TGRAD,X2 SAVE UIO RETURN ADDRESS
00166 14200003 243 ENI 3,X2 COUNT OF FUNCTIONS
00167 21000204 P 244 LDQ TBFUNC LOAD FUNCTIONS TO ISSUE
00170 00170 P 245 EQU *
00170 13000006 246 SHAQ 6
00171 42000753 P 00172 3 247 SACH *+7 STORE NEXT FUNCTION
00172 77100000 248 SEL IMPURE,SELECT
00173 02600170 P 249 IJD TGNXT,X2
00174 02600170 P 250 IJD TGNXT,X2 ISSUE ALL FOUR
00175 47000001 P 251 STI STATAB,0 CLEAR STATUS
00176 14477777 252 ENA,S 777778
00177 42000024 P 00005 0 253 SACH TPI SAY NOTHING DCING
00200 14200202 P 255 ENI *+2,X2 ENTER RETURN ADDRESS
00201 01000077 X 256 UJP UNCON RELEASE CHANNEL
00202 54200145 P 257 LDI RETURN,X2 LOAD THE RETURN ADDRESS
00203 01000000 258 UJP IMPURE ERROR RETURN
00204 21232505 259 TBFUNC OCT 21232505 FUNCTION CODES FOR
260 * RELEASE READY AND NOT BUSY INT.
261 * RELEASE END OF OPERATION INT.
262 * RELEASE ABNORMAL END INTERRUPT
263 * SELECT CLEAR
    
```



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264+002 **
264+003 ** THIS ROUTINE WILL PROCESS CHANNEL INTERRUPTS ON THE DRIVE **
264+004 **
*****
    
```

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00205 17600010 P 267 MPCHK EQU *
00206 03000212 P 268 ANA 108 CHECK FOR MEMORY PARITY ERROR
00207 20000001 P 269 AZJ,EQ GIVINT JUMP IF NOT MEMCRY PARITY
00210 17601000 270 LDA STATAB
00211 03177777 X 271 ANA WRITBIT CHECK FOR WRITE
00212 77550000 P 272 AZJ,NE TXMP BAD NEWS
00213 42001063 P 00214 3 273 GIVINT EQU * CHANNEL NUMBER TO A
00214 53020000 274 CIA
00215 15400003 275 SACH *+7
00216 12077775 276 TMA IMPURE GET BEGIN ADDRESS
00217 17677777 277 INA,S 3
00220 31000004 P 278 SHA -2 MAKE WORD ADDRESS
00221 40000006 P 279 ANA 77777B
00222 77100020 280 SBA TP8GNA SUBTRACT STARTING ADDRESS
00223 01000234 P 281 STA TPRLNG SAVE RECORD LENGTH
00224 01000505 P 281+001 SEL 208,SENSE SELECT READY NOT BUSY
00225 01000000 281+002 UJP CHTRUB BAD NEWS
00226 44000404 P 281+003 UJP TPTIMUP1 GO SET TIME LIMIT
00227 54200225 P 284 CHANINT UJP IMPURE CALLED ON CHANNEL INTERRUPT
00230 47200145 P 285 SWA PARFLAG SET ERROR INDICATORS
00231 03000212 P 286 LDI CHANINT,X2 LOAD THE RETURN ADDRESS
00232 05600400 287 STI RETURN,X2
00233 01000205 P 288 AZJ,EQ GIVINT JUMP OFF IF NO ERRORS
00234 14477777 289 ASG 4008 SKIP IF CHANNEL OVERTIME
00235 42000024 P 00005 0 290 UJP MPCHK GO SELECT INTERRUPT AND SCRAM
00236 47177777 X 291 CHTRUB ENA,S 77777B
00237 14677777 X 292 SACH TPI SAY NOTHING DCING
00240 35077777 X 292+001 STI IOCL,X1 SAVE CHANNEL NUMBER FOR USE LATER
00241 40000240 X 292+002 ENA IOCLBIT BIT TO SET
00242 01000164 X 292+003 SSA FLAGS SET INTO SCHEDULR FLAGS WORD
292+004 STA FLAGS AND RESTORE IT
293 UJP TXNR GIVE NOT READY RETURN
    
```

```

297 *****
298 **
299 **
299+001 ** ROUTINE TO RELEASE INTERRUPTS AND SET STATUS FOR MOTION **
302 **
303 **
304 *****
    
```

```

00243 01000000 307 TPSLN UJP IMPURE
00244 14600021 308 ISSUE (218) RELEASE READY AND NOT BUSY INT.
00246 14600023 309 ISSUE (238) RELEASE E-O-P INTERRUPT
00250 54100002 P 310 LDI BINDEN,X1
00251 22400040 P 00010 0 311 LACH DENTAB,X1 LOAD FUNCTION CODE FOR DENSITY
00252 00700130 P 312 RTJ SEL
00253 20000001 P 312+001 LDA STATAB GET DYNAMIC STATUS
00254 12077774 312+002 SHA -3 RRBIT TO BIT00
00255 17600001 312+003 ANA 1 MASK TO 1 BIT
00256 15600040 312+004 INA 408 MAKE INTO A 408 OR 41B
00257 00700130 P 318 RTJ SEL
00260 21000001 P 319 LDQ STATAB
00261 17720000 320 ANQ SBINBIT CHECK FOR BINARY
00262 14400002 321 ENA,S 2 BCD
00263 04500000 322 QSE,S 0
00264 14400001 323 ENA,S 1 BINARY
00265 00700130 P 324 RTJ SEL
00266 01000243 P 325 UJP TPSLN DONE
    
```

```

329 *****
330 **
331 **
332 ** SECTION TO PERFORM ERROR RECOVERY OPERATIONS.
333 ** ALCNT SPECIFIES HOW MANY RETRIES ARE TO BE MADE ON READ OPS.
334 ** IF A PARITY ERROR OCCURS ON A WRITE OPERATION, ONE TRY IS
335 ** MADE WITHOUT WRITING BLANK TAPE.
336 **
337 **
338 *****
    
```

```

00267 00267 P 341 ERREC EQU *
00270 77200001 342 EXS 1,SENSE CHECK FOR READY
00271 01000272 P 343 UJP *+2
00272 01000164 P 344 UJP UNERR NOT READY
00273 77200000 344+001 COPY SENSE GET LAST STATUS OF THE TAPE
00274 44000426 P 344+002 SWA MTSTATUS SAVE IN CASE IT IS NEEDED
00275 00700243 P 345 RTJ TPSLN
00276 14600001 345+001 ENA 1 UPDATE ERROR COUNTER
00277 34000416 P 345+002 RAD ERRCNT FOR DISPLAY PURPOSES
00300 10000003 P 345+003 SSH ERK CHECK TO SEE IF TIME TO QUIT
00301 01000304 P 345+004 UJP NIRIN NOPE -- CONTINUE WITH OPERATION
00302 20077777 X 350 LDA BIT17 LOAD IRRECOVERABLE ERROR BIT
00303 34000005 P 351 RAD TPRNG SET INTO WORD RETURNED TO UIO
00304 01000406 P 352 UJP TPRELS OTHERWISE, SAME RETURN
00305 00304 P 353 EQU *
00306 20000001 P 354 LDA STATAB GET STATUS FOR THIS UNIT
00307 17601400 355 ANA READBIT+WRTBIT
00310 12000002 356 SHA 2 GENERATE EREAD, EWRT BITS
00311 35000001 P 357 SSA STATAB SET INTO STATUS
00312 40000001 P 358 STA STATAB
00313 12000017 358+001 SHA 23-8 CHECK READ BIT
00314 03300320 P 358+002 AZJ,LT EREAD THEN DC READ RECOVERY
00315 12000027 358+003 SHA 24+8-9 CHECK WRITE BIT
00317 03200445 P 358+004 AZJ,GE TSTATUS OK IF NOT READ OR WRITE
00320 14600012 364 ISSUE (128) SELECT BACKSPACE
00321 01000074 P 364+001 UJP TPNFR2
00322 00320 P 366 EQU *
00323 20000001 P 367 LDA STATAB GET STATUS FOR THIS UNIT
00324 16620010 368 XOA SBINBIT+RRBIT REVERSE PARITY AND DIRECTION
00325 40000001 P 369 STA STATAB
00326 00700243 P 370 RTJ TPSLN SELECT OPPOSITE PARITY
00327 20000001 P 371 LDA STATAB LOAD STATUS BACK
00328 16620010 372 XOA SBINBIT+RRBIT REVERSE PARITY AND DIRECTION
00329 40000001 P 373 STA STATAB SET BACK CORRECTLY
00330 14400000 374 ENA,S 0
00331 74000010 P 375 INPW,INT IO,CHBUF,CHBUF+1 CHECK FOR WRONG PARITY
00332 00400007 P 376 UJP *-2 REJECT
00333 01000330 P 377 UJP RETURN RETURN
00334 01000145 P 378 EQU *
00335 00334 P 378 TREGO EQU *
00336 20000001 P 379 LDA STATAB LOAD STATUS FOR THIS UNIT
00337 17471777 380 ANA,S -EREADBIT-EWRTBIT REMOVE ERROR INDICATORS
00340 40000001 P 381 STA STATAB
00341 17600400 382 ANA READBIT CHECK FOR READ OR WRITE
00342 03100354 P 383 AZJ,NE TRRD JUMP IF READ
00343 00700243 P 384 RTJ TPSLN GO SELECT INTERRUPTS
00344 20000003 P 385 LDA ERK CHECK FOR TIME TO WRITE BLANK TAP
00345 05600003 385+001 ASG ALCNT*2+1 SKIP IF TIME TO SKIP BAD SPOT
00346 01000056 P 385+002 UJP TWRITE OTHERWISE JUST DO AGAIN
00347 14600001 388 ENA ALCNT ENTER ALLOWED COUNT
00351 40000003 P 389 STA ERK RESET COUNTER
00352 14600016 390 ISSUE (168) SKIP BAD SPOT
00353 14604000 391 ENA EWRTBIT ERROR ON WRITE
00354 34000001 P 392 RAD STATAB SET INTO STATUS
00355 01000074 P 392+001 UJP TPNFR2
00356 00354 P 394 EQU *
00357 14620000 395 ENA SBINBIT ENTER BINARY INDICATOR
00358 77202000 396 EXS 20008,SENSE CHECK FOR PARITY ERROR
00359 14400000 397 ENA,S 0
00360 36000001 P 398 SCA STATAB CHANGE MODE IF CKAY
00361 40000001 P 399 STA STATAB
00362 00700243 P 400 RTJ TPSLN GO SELECT MODES AND INTERRUPTS
00363 01000053 P 401 UJP TREAD
    
```



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405 *****
406 **
407 **
408 ** ROUTINE FOR PROCESSING TAPE UNIT INTERRUPTS.
409 **
410 **
411 *****
    
```

00363	00363	P	411+002	TPINT	EQU	*	
	77730000		411+003		VFD	A12/DINT	ALLOW NO INTERFERENCE
00364	47300145	P	411+004		STI	RETURN,X3	SAVE RETURN ADDRESS
	00365	P	411+005	TPINT0	EQU	*	
00365	00700146	P	415		RTJ	TPCON	CONNECT TO INTERRUPTING UNIT
00366	20000474	P	415+001		LDA	TPTIMRT	GET INTERRUPT TO KILL
00367	04000000		415+002	TPINT1	ISE	IMPURE,X0	SKIP IF NOT A TIMED INTERRUPT
00370	00777777	X	415+003		RTJ	TIMEKILL	KILL THE INTERRUPT IF HERE
00371	47000367	P	415+004		STI	TPINT1,X0	CLEAR TIMED INTERRUPT FLAG
	00372	P	415+005	TPINT2	EQU	*	
00372	47300043	P	415+006		STI	TWWD1,X3	ALLOW MORE OPERATIONS
00373	04000000		415+007	TPDELY	ISE	IMPURE,0	SKIP IF NOT DELAYED
00374	01000046	P	415+008		UJP	TWWD	WE WAS DELAYED, Y=ALL
00375	20000001	P	418		LDA	STATAB	LOAD STATUS
00376	17606000		419		ANA	ERADBIT+EWRTBIT	
00377	03100334	P	420		AZJ,NE	TREGO	JUMP FOR ERROR RECOVERY
00400	77200010		421		EXS	10B,SENSE	CHECK FOR FILE MARK
00401	01000445	P	422		UJP	TSTATUS	RETURN STATUS ONLY
00402	77202400		423		EXS	2400B,SENSE	CHECK FOR ERRORS
00403	01000267	P	424		UJP	ERREC	TRY FOR RECOVERY
00404	04000000		425	PARFLAG	ISE	IMPURE,0	SKIP IF NO CHANNEL ERRORS
00405	01000267	P	426		UJP	ERREC	TRY FOR RECOVERY

426+003  
426+004  
426+005

\*\*\*\*\*  
\*\* SECTION OF CODE TO RETURN STATUS TO USER PROGRAM \*\*  
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Address	Hex	Op	Label	Op	Comment
00406	20000001	P	00406	TPRELS	EQU * TO RELEASE UNIT
00407	17600400	P	429+001	LDA	STATAB GET UNIT STATUS OF THIS OPERATION
00410	14700066	P	429+002	ANA	READBIT CHECK FOR READ
00411	04600000	P	429+003	ENQ	H#W# THEN ASSUME A WRITE
00412	14700051	P	429+004	ASE	0 SKIP IF NOT A READ
00413	14200445	P	429+005	ENQ	H#R# CODE FOR A READ
00414	43000054	P	429+006	ENI	TSTATUS,X2
00415	12077767	P	429+007	EQU	* TPRELS1
00416	14700000	P	429+008	SQCH	MTFUN SAVE LAST TAPE OPERATION CODE
00417	03600445	P	429+009	SHA	-8 A=0 IF WRITE;A=1 IF READ
00420	14600000	P	429+010	ENQ	IMPURE NUMBER OF ERRORS ON THIS FUNCTION
00421	51077777	X	429+011	AQJ,GE	TSTATUS JUMP IF NO APPARENT ERRORS
00422	42000044	P	429+012	ENA	0 FOR DIVIDE
00423	43000045	P	429+013	DVA	D10 CHANGE INTO 2 DECIMAL DIGITS
00424	22000027	P	429+014	SACH	MTERR SAVE FIRST DIGIT
00425	42000052	P	429+015	SQCH	MTERR+1 AND SECOND DIGIT
00426	14700000	P	429+016	LACH	TPI+3 GET UNIT NUMBER FOR MESSAGE
00427	12400014	P	429+017	SACH	MTUNIT AND PLACE INTO THE MESSAGE
00430	14300432	P	429+018	ENQ	IMPURE LAST STATUS TO G
00431	01077777	X	429+019	SHQ	12 TO UPPER 12 BITS
00432	40000014	P	429+020	ENI	*+2,X3 RETURN ADDRESS
00433	54100005	P	429+021	UJP	OCTPACK CONVERT INTO BCD IN A
00434	20177777	X	429+022	STA	MTSTATP PLACE INTO MESSAGE
00435	14100006	P	429+023	LDI	TPI,X1 GET TAPE UNIT INDEX
00436	13077747	X	429+024	LDA	TNUMLIST,X1 GET TAPE NUMBER ON THE DRIVE
00437	51000421	X	429+025	ENI	6,X1 OUTPUT 7 DIGITS
00440	43400070	P	429+026	SHAQ	-24 DOWN FOR DIVIDE
00441	02500436	P	429+027	DVA	D10 EXTRACT A DIGIT
00442	11000044	P	429+028	SQCH	TNUMP,X1 OUTPUT THE DIGIT
00443	14700034	P	429+029	IJD	*-3,X1 AND LOOP TO OUTPUT THE REST
00444	01077777	X	429+030	ECHA	MTERR MESSAGE ADDRESS
00445	47000416	P	429+031	ENQ	MTERR LENGTH OF MESSAGE
00446	20000001	P	429+032	UJP	OPMSGX INFORM XE'S OF PROBLEM
00447	17620000	P	429+033	EQU	* TSTATUS
00450	04600000	P	429+034	STI	ERRCNT,0 CLEAR ERROR COUNTER BEFORE EXIT
00451	20077777	X	432	LDA	STATAB LEAVE BINARY INDICATOR
00452	77200040	X	433	ANA	SBINBIT
00453	35077777	X	434	ASE	0
00454	77200004	X	435	LDA	BIT18 BIT 18 SEZ BINARY RECORD PROCESSE
00455	01000457	P	436	EXS	409,SENSE CHECK FOR END OF TAPE
00456	35077777	X	437	SSA	EODB SET END OF DATA IF SO
00457	77200020	X	438	EXS	4,SENSE CHECK FOR WRITE ENABLE
00460	35077777	X	439	UJP	*+2
00461	77200010	X	440	SSA	BIT23 SET FP BIT
00462	35077777	X	441	EXS	208,SENSE CHECK FOR LOAD POINT
00463	40000006	P	442	SSA	LPB SET LOAD POINT STATUS
00464	40000006	P	443	EXS	108,SENSE CHECK FOR FILE MARK STATUS
00465	47000001	P	444	SSA	FMRBIT SET BIT IN IF SO
00466	14600001	P	445	SSA	TPRLNG SET STATUS INTO WORD COUNT
00467	40000003	P	446	STA	TPRLNG
00470	14200472	P	447	STI	STATAB,0 KILL STATUS
00471	01000165	P	448	ENA	ALCNT ENTER ALLOWED PARITY ERRORS
00472	20000006	P	449	STA	ERK FIX UP COUNTER
00473	01077777	X	449+001	ENI	*+2,X2 RETURN ADDRESS FROM SUBROUTINE
			449+002	UJP	TGRID CLEAR CONTROLLER AND DRIVE
			449+003	LDA	TPRLNG GET RECORD LENGTH AND STATUS
			461	UJP	TXNE NORMAL END RETURN

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461+004 **
461+005 **
461+006 **
461+007 **
461+008 **
461+009 **

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TPTIMEUP IS CALLED WHEN A TAPE OPERATION THAT DOES NOT TIE  
THE CHANNEL UP HAS BEEN ACTIVE FOR ONE MINUTE  
THIS ALLOWS FOR CHECKING AND RECOVERY WHEN SCMEONE  
RUNS OFF THE END OF THE TAPE

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00474 02000476
00475 01357750

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461+011
461+012 TPTIMRT VFD 06/02,03/0,A15/TPTIMEUP
461+013 TPTIME DEC 385000 TIME FOR FULL MOVEMENT ON 2400 TA
461+014
461+015 TPTIMEUP EQU *
461+016 STI RETURN,X3 SAVE THE RETURN ADDRESS
461+017 STI TPINT1,X0 SAY NO TIME INTERRUPT
00476 00476 P 461+018 ENQ H#A# SAY ABNORMAL CONDITION
00477 47300145 P 461+019 ENA 1 SAY ONE ERROR
00500 14700021 461+020 SWA ERRCNT
00501 14600001 461+021 ENI TPINT0,X2 PLACE TO RETURN TO.
00502 44000416 P 461+022 UJP TPRELS1 GO WRITE MESSAGE FIRST
00503 14200365 P 461+023
00504 01000414 P 461+024
461+025 TPTIMUP1 EQU *
00505 20000475 P 461+026 LDA TPTIME GET THE TIME LIMIT
00506 21000474 P 461+027 LQJ TPTIMRT
00507 00777777 X 461+028 RTJ TIMSET
00510 47200367 P 461+029 STI TPINT1,X2 AND SAY IT IS A TIMED INTERRUPT
00511 01200000 461+030 UJP 0,X2 RETURN TO CALLER
464 END

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NO LINES WITH ERRORS

ALCNT		00001	34+1	61	00003P	385+1	00343P	388	00345P	448	00466P
BINDEN		00002P	60	94	00022P	310	00250P				
BIT17	X		20	350	00301P						
BIT18	X		21	435	00451P						
BIT20	X		22	38	00000P						
BIT21	X		23	37	00000P						
BIT22	X		24	41	00000P						
BIT23	X		25	440	00456P						
CHANINT		00225P	284	230	00155P	286	00227P				
CHBUF		00007P	66	375	00330P	375	00330P				
CHTRUB		00234P	291	281+2	00223P						
CLOCK		00022	36	114	00046P	175	00124P	182	00133P		
CONNECT	X		26	229	00154P						
D10	X		25+1	429+13	00421P	429+27	00437P				
DENTAB		00010P	67	311	00251P						
DINT		07773	39+2	411+3	00363P						
*EINT		07774	39+1								
EOD3	X		37	437	00453P						
EREAD		00320P	366	358+2	00312P						
EREADBIT		02000	57	380	00335P	419	00376P				
ERK		00003P	61	345+3	00277P	385	00342P				
ERRCNT		00416P	429+10	345+2	00276P	429+35	00445P	461+20	00502P	449	00467P
ERREC		00267P	341	424	00403P	426	00405P				
EWRTBIT		04000	58	380	00335P	391	00351P	419	00376P		
FINISH		00120P	164	152	00105P						
FLAGS	X		25+4	292+3	00240P	292+4	00241P				
FMRBIT	X		38	444	00462P						
FUNCTION		00052P	118	93	00021P						
GIVINT		00212P	273	269	00206P	288	00231P				
IMPURE		00000	39	48	00001P	60	00002P	61	00003P	62	00004P
				66	00007P	110+1	00043P	118	00052P	177	00126P
				207	00142P	208	00143P	210	00145P	223	00146P
				258	00203P	276	00214P	284	00225P	307	00243P
				425	00404P	429+10	00416P	429+18	00426P	415+2	00367P
				207	00142P	375	00330P			415+7	00373P
				66	00007P					179	00130P
				207	00142P					225	00150P
				258	00203P					248	00172P
				425	00404P					415+7	00373P
IO		00000	40	207	00142P						
IOCL	X		25+2	292+1	00236P						
IOCLBIT	X		25+3	292+2	00237P						
ISUF		00126P	177	180	00131P	183	00134P				
LPB	X		41	442	00460P						
MPCHK		00205P	267	290	00233P						
MTCON		00150P	225	7	00000P						
MTERR		00011P	67+1	67+2	00020P	67+3	00020P	67+4	00020P	67+5	00020P
				429+15	00423P	429+30	00442P			67+6	00020P
				429+31	00443P					429+14	00422P
MTERRL		00034	67+6	429+31	00443P						
MTFUN		00013P	67+3	429+8	00414P						
MTSTATP		00014P	67+4	429+22	00432P						
MTSTATUS		00426P	429+18	344+2	00273P						
MTUNIT		00012P	67+2	429+17	00425P						
NEWCLK		00133P	182	176	00125P						
NIRIN		00304P	353	345+4	00300P						
OGTPACK	X		26+1	429+21	00431P						
OPMSGX	X		31+1	429+32	00444P						
PARFLAG		00404P	425	285	00226P						
PFPA		00141P	206	102	00032P						
READBIT		00400	55	125	00054P	355	00305P	382	00337P	429+2	00407P
REJ		00124P	175	178	00127P						
RETURN		00145P	210	92	00020P	143	00076P	226	00151P	232	00157P
				377	00333P	411+4	00364P	461+16	00476P	257	00202P
				368	00321P	372	00325P			287	00230P
RRBIT		00010	54	96	00024P	320	00261P	368	00321P	372	00325P
SBINBIT		20000	59	5	00075P	5	00107P	5	00113P	395	00354P
SEL		00130P	179	140+1	00070P	5	00075P	5	00113P	165	00120P
				5	00247P	312	00252P	318	00257P	5	00316P
				177	00126P	248	00172P			5	00350P
SELECT		00000	42	111	00044P	130	00060P	136	00064P	149	00102P
SENSE		00000	43	281+1	00222P	342	00267P	344+1	00272P	161	00115P
				436	00452P	438	00454P	441	00457P	161	00115P
				97	00025P	202	00136P	203	00137P	161	00115P
				319	00260P	354	00304P	357	00307P	270	00207P
STATAB		00001P	48	371	00324P	373	00326P	379	00334P	367	00320P
				399	00360P	418	00375P	429+1	00406P	392	00352P
				244	00167P			432	00446P	398	00357P
				9	00000P					312+1	00253P
				10	00000P					369	00322P
TBFUNC		00204P	259	249	00173P	250	00174P			367	00320P
TBKSP		00115P	160	242	00165P					392	00352P
TFWSP		00106P	153	242	00165P					398	00357P
TGNXT		00170P	245	134	00063P	234	00161P	449+2	00471P		
TGRAD		00203P	258	373	00326P						
TGRID		00165P	241	373	00326P						
TIMEKILL	X		26+2	415+3	00370P						
TIMELIM		11610	44	227	00152P						
TIMSET	X		26+3	461+28	00507P						

TNUMLIST	X	26+4	429+24	00434P					
TNUMP		00016P	67+5	429+28	00440P				
TPBNA		00004P	62	107	00037P	280	00220P		
TPBUSY		00122P	167	112	00045P				
TPCON		00146P	223	110	00042P	236	00163P	415	00365P
TPDELY		00373P	415+7	116	00050P	167+1	00122P		
TPI		00005P	64	100	00030P	224	00147P	233	00160P
				429+23	00433P			253	00177P
TPINIT		00020P	92	8	00000P				
TPINT		00363P	411+2	8	00000P				
TPINT0		00365P	411+5	461+21	00503P				
TPINT1		00367P	415+2	415+4	00371P	461+17	00477P	461+29	00510P
* TPINT2		00372P	415+5						
TPIO		00136P	201	126	00055P	131	00061P		
TPNFR		00070P	140	146+1	00101P	155+1	00111P		
* TPNFR0		00071P	140+2						
TPNFR1		00073P	140+5	165+1	00121P				
TPNFR2		00074P	140+8	167+2	00123P	364+1	00317P	392+1	00353P
TPOPC1		00143P	208	106	00036P				
TPOPM1		00142P	207	109	00041P	204	00140P	209	00144P
TPRELS		00406P	429	150	00103P	352	00303P		
TPRELS1		00414P	429+7	461+22	00504P				
TURLNG		00006P	65	104	00034P	281	00221P	351	00302P
TPSLN		00243P	307	117	00051P	325	00266P	345	00274P
TPTIME		00475P	461+13	461+26	00505P			445	00463P
TPTIMEUP		00476P	461+15	461+12	00474P			446	00464P
TPTIMRT		00474P	461+12	415+1	00366P	461+27	00506P	370	00323P
TPTIMUP1		00505P	461+25	140+4	00072P	281+3	00224P	384	00341P
TPVL		00062P	132	138	00066P			449+3	00472P
TREAD		00053P	123	11	00000P	401	00362P	400	00361P
TREGO		00334P	378	420	00377P				
TREWIND		00112P	157	12	00000P				
TRRD		00354P	394	383	00340P				
TSBPFM		00102P	148	13	00000P				
TSFPFM		00100P	145	14	00000P				
TSTATUS		00445P	429+34	15	00000P	157+2	00114P	161+1	00116P
				429+11	00417P			358+4	00314P
TWFM		00064P	135	17	00000P			422	00401P
TWRITE		00056P	127	16	00000P	385+2	00344P		
TWWD		00046P	113	415+8	00374P				
TWWD1		00043P	110+1	140+6	00073P	415+6	00372P		
TXMP	X		27	272	00211P				
TXNE	X		28	461	00473P				
TXNR	X		29	240	00164P	293	00242P		
TXPV	X		30	133	00062P				
TXSTART	E	00000P	47	19	00000P	115	00047P		
UNCON	X		31	144	00077P	256	00201P		
UNERR		00164P	239	184	00135P	344	00271P		
WRITBIT		01000	56	129	00057P	271	00210P	355	00305P
X0		00000	31+2	110+1	00043P	140+6	00073P	415+2	00367P
X1		00001	32	108	00040P	181	00132P	415+4	00371P
				310	00250P	311	00251P	461+17	00477P
				429+29	00441P			224	00147P
X2		00002	33	93	00021P	140+3	00071P	225	00150P
				231	00156P	240	00164P	229+1	00236P
				250	00174P	242	00165P	429+25	00435P
				255	00200P	257	00202P	429+28	00440P
				445+1	00470P	461+21	00503P	429+29	00433P
X3		00003	34	92	00020P	228	00153P	429+24	00434P
								461+17	00477P
								167+1	00122P
								226	00151P
								243	00166P
								249	00173P
								286	00227P
								287	00230P
								461+30	00511P
								415+6	00372P
								429+20	00430P
								461+16	00476P