

00010

XLIST

01970

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00030
00040
00050
00060      EXTERNAL BUFCLC,ERROR,IOSETC,IOIERR,BUFCLR
00070      EXTERNAL SETBYT,UINTQ,WAIT1,WSYNC,ADRCK
00080      EXTERNAL UXIT,USRJDA,JOBJDA,ILLMOD,PUUOAC,PIOMOD
00090      EXTERNAL JOB,ASSIN,PJOBN,ADRERR,USRREL,CUXIT1,CUXIT2
00100      EXTERNAL SETIOS
00110
00120      ;FOR PURPOSES OF COMMENTING THIS SUBROUTINE THE
00130      ;TERM BUFFER HEADER SHALL REFER TO THE 3 WORD HEADER
00140      ;WHICH IS USED BY THE USER PROGRAM AND THIS EXEC FOR
00150      ;REFERING TO THE RING BUFFERS.
00160
00170      ;THE CONTENTS OF THE 3 WORD HEADER (AS SET BY THE MONITOR FOR THE USE
00180      ;                                FROM USERS PROGRAM BY AN INPUT OR AN OUTPUT UO
00190      ;                                BIT 18-35=ADDRESS OF SECOND WORD OF THE
00200      ;                                CURRENT BUFFER IN RING.
00210      ;                                WORD 2:  BYTE POINTER TO CURRENT ITEM.
00220      ;                                WORD 3:  POSITIVE ITEM COUNT (NO. OF ITEMS LEFT ON
00230      ;                                INPUT, NO. OF FREE ITEMS TO GO ON OUTPUT).
00240
00250      ;EACH BUFFER IN THE RING HAS FOLLOWING FORMAT (AS THE USER SEES IT)
00260
00270      ;                                WORD 1:  RESERVED FOR BLOCK NUMBER FOR FIXED ADDRESS DEVIC
00280      ;                                WORD 2:  BIT 0=USE BIT FOR THIS BUFFER
00290      ;                                BIT 1-17=NO. OF WORDS WHICH FOLLOW (LENGTH OF BUF
00300      ;                                BIT 18-35=ADDRESS OF SECOND WORD OF NEXT BUFFER I
00310      ;                                WORD 3:  LH=LINK TO NEXT BLOCK (SET BY MONITOR FOR DECTAPE
00320      ;                                RH=NO. OF WORDS OF DATA WHICH FOLLOW (USUALLY
00330      ;                                SET BY EXEC EXCEPT IF THE USER HAS SPECIFIED
00340      ;                                THAT HE WANTS TO COMPUTE WORD COUNT
00350      ;                                HIMSELF INSTEAD OF HAVING THE MONITOR DO IT
00360      ;                                USING THE BYTE POINTER IN THE 3 WORD HEADER).

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00370
00380 ,H. R. MORSE      2/21/65
00390 ,CALLING SEQUENCE
00400 ,      CLOSE D,
00410 ,      EXIT      ALWAYS RETURNS HERE
00420 , THIS ROUTINES PROCESSES THE CLOSE UUO AND DETERMINES WHETHER THE
00430 , OUTPUT ROUTINE SHOULD BE CALLED IF OUTPUT WERE ACTIVE, CLEARS
00440 , THE INPUT BUFFER AREA IF INPUT WERE ACTIVE, AND CLEARS THE
00450 , ITEM COUNTS OF BOTH INPUT AND OUTPUT HEADERS SERVING TO BOTH
00460 , TERMINATE THE USE OF THE DEVICE AND SET THE I/O ROUTINES TO
00470 , ACCEPT ANOTHER INPUT OR OUTPUT COMMAND IN A CLEAR STATE.
00480 , IN THE CASE OF OUTPUT DEVICES, THE CLOSE ROUTINE OF THE DEVICE HANDL
00490 , ING ROUTINE IS CALLED IN CASE ANY SPECIAL HANDLING IS REQUIRED.
00500 , MONITOR INTERFACE
00510 ,      STORAGE: 30
00520 ,      ROUTINES CALLED: DCL, WAIT1, UXIT
00530 ,      SYMBOLS SET/USED:
00540 ,      ACCUMULATORS:      DAT      S/U      PROG U
00550 ,      DEVDAT      U      TAC      S/U
00560 ,      IOS      S/U      TAC1 S/U
00570 ,      PDP      U
00580 ,      DEVICE DATA BLOCK: DEVBUFF U
00590 ,      DEVIOS      S/U
00600 ,      DEVSER      U
00610 ,      IO STATUS WORD:      IOACT      S      IODTER S
00620 ,      IOBEG      S      IOEND      S
00630 ,      IOBKTL      S      IOFST      S
00640 ,      IODEND      S      IOIMPM S
00650 ,      IODERR      S      IOSTRT S
00660 ,      IODISC      S      IOW      S
00670 ,      JOB BUFFER AREA:      IOUSE      S
00680 ,      JBFCTR      S

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			00690	
			00700	INTERNAL CLOSE1
			00710	
000000	663300	002000	00720	CLOSE1: TLOE DEVDAT,CLOSB ;HAS A CLOSE ALREADY BEEN DONE?
000001	254000	000000	00730	JRST UXIT ;YES, FOR THIS CHANNEL
000002	135040	000000	00740	LDB TAC,PUUOAC ;USER DEVICE CHANNEL NO.
000003	502301	000000	00750	HLLM DEVDAT,USRJDA(TAC)
000004	261140	000005	00760	PUSH PDP,DAT
000005	135040	000000	00770	LDB TAC,PIOMOD
000006	305040	000016	00780	CAIGE TAC,DR
000007	254000	000013'	00790	JRST UCLS4
000010	200046	000003	00800	MOVE TAC,DEVSER(DEVDAT)
000011	260141	000001	00810	PUSHJ PDP,DCL(TAC)
000012	254000	000060'	00820	JRST UCLS3
000013	260140	000000	00830	UCLS4: PUSHJ PDP,WAIT1; WAIT UNTIL DEVICE IS INACTIVE.
000014	606600	000002	00840	TRNN UUO,CLSIN ;SUPPRESS INPUT?
000015	607300	200000	00850	TLNN DEVDAT,IBUFB ;NO, WAS INPUT BUFFER SPECIFIED?
000016	254000	000041'	00860	JRST UCLS2 ;NO
000017	550106	000006	00870	HRRZ TAC1,DEVBUF(DEVDAT)
000020	505100	000007	00880	HRLI TAC1,PROG
000021	550260	000002	00890	HRRZ DAT,@TAC1 ;FIRST WORD OF 3 WORD BUFFER HEADER
000022	540120	000002	00900	HRR TAC1,@TAC1 ;REMEMBER CURRENT BUFFER IN TAC1
000023	515040	400000	00910	HRLZI TAC,IOUSE ;USED BOTH FOR HEADER AND EACH BUFFER
000024	322240	000034'	00920	JUMPE DAT,UCLS1 ;HAS A RING BEEN SETUP?(NO IF 0)
000025	505240	000007	00930	HRLI DAT,PROG ;YES
000026	540260	000005	00940	UCLS0: HRR DAT,@DAT; ADVANCE CURRENT INPUT BUFFER ADDRESS
			00950	ADRCHK DAT ;IS ADDRESS OK?
000027	260140	000000		PUSHJ PDP,ADRCK
000030	550040	000005		HRRZ TAC,DAT
000031	412060	000005	00960	ANDCAM TAC,@DAT ;YES, CLEAR USE BIT.
000032	312100	000005	00970	CAME TAC1,DAT; DONE?
000033	254000	000026'	00980	JRST UCLS0
000034	505240	000007	00990	UCLS1: HRLI DAT,PROG
000035	540246	000006	01000	HRR DAT,DEVBUF(DEVDAT)
000036	436060	000005	01010	IORM TAC,@DAT ;FLAG AS VIRGIN BUFFER IN 3 WORD HEADER
000037	271240	000002	01020	ADDI DAT,2; JBFCTR:=0
000040	402020	000005	01030	SETZM @DAT ;CLEAR INPUT ITEM COUNT.
000041	606600	000001	01040	UCLS2: TRNN UUO,CLSOUT ;SUPPRESS OUTPUT?
000042	607300	100000	01050	TLNN DEVDAT,OBUFF ;NO,WAS OUTPUT BUFFER SPECIFIED?
000043	254000	000060'	01060	JRST UCLS3 ;NO
000044	544246	000006	01070	HRL DAT, DEVBUF(DEVDAT) ;VIRGIN OUBPUT BUFFER?
000045	505240	000007	01080	HRLI DAT, PROG
000046	337020	000005	01090	SKIPG @DAT
000047	254000	000060'	01100	JRST UCLS3 ;YES
000050	200046	000003	01110	MOVE TAC,DEVSER(DEVDAT)
000051	260141	000001	01120	PUSHJ PDP,DCL(TAC); CLOSE OUTPUT BUFFER
000052	544246	000006	01130	HRL DAT,DEVBUF(DEVDAT)
000053	505240	000007	01140	HRLI DAT,PROG
000054	515040	400000	01150	HRLZI TAC,IOUSE
000055	436060	000005	01160	IORM TAC,@DAT
000056	271240	000002	01170	ADDI DAT,2
000057	402020	000005	01180	SETZM @DAT; JBFCTR:=0
000060	260140	000013'	01190	UCLS3: PUSHJ PDP,WAIT1
000061	262140	000005	01200	POP PDP,DAT
000062	630000	000473'	01210	TDZ IOS,[XWD IOEND,IODEND]
000063	661000	000002	01220	TLO IOS,IOBEG
000064	202006	000002	01230	MOVEM IOS,DEVIOS(DEVDAT); IODISC:=0

000065 254000 000001' 01240

JRST UXIT;

EXIT THIS UUO

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01250
01260 ,DEC 06 00 EX UUO L PT PRE 02 INBUF,OUTBUF
01270 ,H. R. MORSE 64-12-26
01280 ,CALLING SEQUENCE
01290 , INBUF D,N
01300 , EXIT RETURNS HERE IF MEMORY NOT EXCEEDED
01310 ,CALLING SEQUENCE
01320 , OUTBUF D,N
01330 , EXIT RETURNS HERE IF MEMORY NOT EXCEEDED
01340 , SETS UP AN N BUFFER RING FOLLOWING THE USERS PROGRAM FOR DEVICE
01350 , D AND INITIALIZES THE JOB BUFFER AREA HEADER:
01360 , JBFADR0:=1, JBFADR 1-17:=0
01370 , JBFADR 18-35:=ADDRESS OF FIRST BUFFER IN RING
01380 ,INPUT SETS DEVIAD:=ADDRESS OF FIRST BUFFER IN RING
01390 ,OUTPUT SET DEVOAD:=ADDRESS OF FIRST BUFFER IN RING
01400 ,BUFPNT IS RESTORED.
01410 ,MONITOR INTERFACE
01420 , STORAGE:13
01430 , ROUTINES CALLED: BUFCLC, UXIT
01440 , SYMBOLS SET/USED:
01450 , ACCUMULATORS: BUFPNT S/U PROG U
01460 , DEVDAT U TAC S/U
01470 , PDP U TAC1 S/U
01480 , DEVICE DATA BLOCK: DEVBUF U
01490 , DEVIAD S
01500 , DEVOAD S
01510 , JOB BUFFER AREA: JBFADR S

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		01520		
		01530		INTERN UINBF, UOUTBF
		01540		
		01550		
000066	261140 000012	01560	UOUTBF:	PUSH PDP,BUFPNT; SAVE BUFPNT ON STACK
000067	260140 000000	01570		PUSHJ PDP,BUFCLC; SET UP BUFFER RING
000070	544046 000006	01580		HLR TAC,DEVBUF(DEVDAT);TAC:=OUTPUT BUFFER AREA HEADER ADDRE
000071	542506 000010	01590		HRRM BUFPNT,DEVOAD(DEVDAT);DEVOAD:=ADDRESS OF FIRST BUFFER
		01600		IN RING
000072	505040 000007	01610	UOBF1:	HRLI TAC,PROG; RELOCATE BUFFER AREA HEADER ADDRESS
000073	202520 000001	01620		MOVEM BUFPNT,@TAC; JBFADR:=IOUSE,ADDRESS OF FIRST BUFFER
		01630		IN RING
000074	262140 000012	01640		POP PDP,BUFPNT; RESTORE BUFPNT FROM STACK
000075	254000 000065'	01650		JRST UXIT; EXIT THIS UO
000076	261140 000012	01660	UINBF:	PUSH PDP,BUFPNT; SAVE BUFPNT ON STACK
000077	260140 000067'	01670		PUSHJ PDP,BUFCLC; SET UP BUFFER RING
000100	542506 000007	01680		HRRM BUFPNT,DEVIAD(DEVDAT); DEVIAD:=ADDRESS OF FIRST BUFFER
		01690		IN RING
000101	540046 000006	01700		HRR TAC,DEVBUF(DEVDAT); TAC:=INPUT BUFFER AREA HEADER ADDRE
000102	254000 000072'	01710		JRST UOBF1

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01720
01730
01740 ,DEC 06 00 EX UUO L PT PRE 03 INIT
01750 ,H. R. MORSE AND D. A. WITCRAFT 2/21/65
01760 ,CALLING SEQUENCE
01770 , INIT D,MODUS D=JOB DEVICE CHANNEL
01780 , MODUS=IORDEL,IOCON,IOWC,MODE.
01790 , SIXBIT/NAME/ DEVICE NAME
01800 , XWD OBUF,IBUF BUFFER AREA HEADER ADDRESSES
01810 , EXIT1 DEVICE NOT AVAILABLE
01820 , EXIT2 DEVICE PROPERLY ASSIGNED
01830 ,THE LEFT HALF OF NAME CONTAINS THE THREE LETTER DEVICE MNEMONIC,
01840 , THE RIGHT HALF IS EITHER ZERO (SYSTEM WILL ASSIGN AN ARBITRARY
01850 , UNIT) OR NON-ZERO TO REQUEST A SPECIFIC UNIT (LEFT JUSTIFIED).
01860 ,IF THE SELECTED DEVICE IS NOT AVAILABLE, CONTROL RETURNS TO EXIT1.
01870 ,OTHERWISE, THE DEVICE IS ASSIGNED TO THE USER AND ATTACHED TO HIS
01880 ,CHANNEL D. THE DEVICE IS INITIALIZED IN THE FOLLOWING MANNER AFTER
01890 ,IOACT IS ZERO:
01900 , IOBEG:=1
01910 , DATA MODE:=BITS 32-35 OF AC UUO
01920 , IOCON:=BIT 31 OF AC UUO
01930 , IOWC:=BIT 30 OF AC UUO
01940 , IORDEL:=BIT 29 OF AC UUO
01950 , IOACT:=IODEND:=IOBKTL:=IODTER:=IODERR:=IOIMPM:=0
01960 , JBFADR:=JBFCTR:=0 FOR THE SPECIFIED BUFFERS.
01970 , DEVBUF:=OBUF,IBUF
01980 ,MONITOR INTERFACE
01990 , STORAGE: 20
02000 , ROUTINES CALLED: UINTQ, ASSIGN(UASG1),USEL,UNITZ,UXIT
02010 , SYMBOLS SET/USED:
02020 , ACCUMULATORS: DEVDAT U
02030 , PDP U TAC U
02040 , PROG U TAC1 S/U
02050 , DEVICE DATA BLOCK: DEVBUF S

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			02060		
			02070		
000103	135040	000002'	02080	UNIT:	INTERN UNIT,UNIT1
000104	332301	000003'	02090		LDB TAC,PUUOAC ;USER DEVICE CHANNEL NO.
000105	260140	000430'	02100		SKIPE DEVDAT,USRJDA(TAC) ;IS A DEVICE ALREADY HERE?
000106	200600	000040	02110		PUSHJ PDP,RELEA0 ;YES, RELEASE IT
000107	260140	000000	02120		MOVE UUO,40 ;RESTORE AC UUO FROM LOC 40
000110	350003	000000	02130		PUSHJ PDP,UINTQ ;GET SIXBIT DEVICE NAME FROM USER
000111	200200	000000	02140	UNIT1:	AOS (PDP)
000112	260140	000000	02150		MOVE ITEM,JOB ;CALLED BY SAVGET
000113	254000	000000	02160		PUSHJ PDP,ASSIN; TRY TO ASSIGN DEVICE
000114	135040	000103'	02170		JRST CUXIT1; NOT AVAILABLE
000115	552301	000104'	02180		LDB TAC,PUUOAC
000116	515040	000002	02190		HRRZM DEVDAT,USRJDA(TAC) ;STORE DDB ADR IN DEVICE TABL
000117	202046	000002	02200		HRLZI TAC,IOBEG
000120	260140	000000	02210		MOVEM TAC,DEVIOS(DEVDAT)
			02220		PUSHJ PDP,SETIOS ;SET DDB IOS STATUS WORD
					;FROM RT. HALF OF UUO
000121	260140	000107'	02230		PUSHJ PDP,UINTQ
000122	505300	400000	02240		HRLI DEVDAT, INITB ;SET INIT UUO BIT
000123	607040	777777	02250		TLNN TAC,-1
000124	254000	000127'	02260		JRST UNIT4 ;OUTPUT NOT SPECIFIED
000125	502046	000006	02270		HLLM TAC,DEVBUF(DEVDAT)
000126	661300	100000	02280		TLO DEVDAT,OBUEB ;SET OUTPUT BUFFER SPECIFIED BIT
000127	606040	777777	02290	UNIT4:	TRNN TAC,-1; IS IBUF SPECIFIED?
000130	254000	000133'	02300		JRST UNIT5 ;INPUT BUF NOT SPECIFIED
000131	542046	000006	02310		HRRM TAC,DEVBUF(DEVDAT); DEVBUF 18-35:=IBUF
000132	661300	200000	02320		TLO DEVDAT,IBUEB ;SET INPUT BUFFER SPECIFIED BIT
000133	550100	000001	02330	UNIT5:	HRRZ TAC1,TAC; TAC1:=PROG,IBUF
000134	260140	000142'	02340		PUSHJ PDP,UNITZ; JBFADR:=JBFCTR:=0 FOR IBUF
000135	544100	000001	02350		HLR TAC1,TAC; TAC1:=PROG,OBUEB
000136	260140	000142'	02360		PUSHJ PDP,UNITZ; JBFADR:=JBFCTR:=0 FOR OBUF
000137	135040	000114'	02370		LDB TAC,PUUOAC ;STORE UUO BITS FOR THIS CHANNEL
000140	502301	000115'	02380		HLLM DEVDAT,USRJDA(TAC)
000141	254000	000000	02390		JRST CUXIT2

		02400	
		02410	,DEC 06 00 EX COM L PT PRE 03 UINITZ
		02420	,H. R. MORSE 64-12-26
		02430	,CALLING SEQUENCE
		02440	, PUSHJ PDP,UINITZ
		02450	, EXIT RETURNS HERE IF MEMORY NOT EXCEEDED.
		02460	,SETS JBFADR:=JBFCTR:=0 FOR THE BUFFER AREA HEADER WHOSE ADDRESS
		02470	,IS IN AC TAC1. ALSO,JBFPTR 0-5:=JBFPTR 12-17:=0,JBFPTR 6-11:=BYTE S
		02480	,MONITOR INTERFACE
		02490	, STORAGE:15
		02500	, ROUTINES CALLED: ADRCK, SETBYT
		02510	, SYMBOLS SET/USED:
		02520	, ACCUMULATORS: PDP U TAC S/U
		02530	, TAC1 S/U
		02540	, JOB BUFFER AREA: JBFADR S
		02550	, JBFCTR S
		02560	, JBFPTR S
		02570	INTERN UINITZ
		02580	
000142	606100 777777	02590	UINITZ: TRNN TAC1,-1; IS BUFFER SPECIFIED?
000143	263140 000000	02600	POPJ PDP,;RETURN
000144	505100 000007	02610	HRLI TAC1,PROG
000145	260140 000027	02620	PUSHJ PDP,ADRCK ;CHECK 3 WORD BUFFER HEADER
000146	551042 000002	02630	HRRZI TAC,2(TAC1)
000147	402020 000002	02640	SETZM @TAC1; JBFADR:=0
000150	350000 000002	02650	AOS TAC1
000151	261140 000001	02660	PUSH PDP,TAC
000152	261140 000002	02670	PUSH PDP,TAC1
000153	350000 000002	02680	AOS TAC1
000154	402020 000002	02690	SETZM @TAC1; JBFCTR:=0
000155	260140 000000	02700	PUSHJ PDP,SETBYT; JBFPTR 6-11:=BYTE SIZE
000156	621040 770077	02710	TLZ TAC,770077
000157	262140 000002	02720	POP PDP,TAC1
000160	502060 000002	02730	HLLM TAC,@TAC1
000161	262140 000001	02740	POP PDP,TAC
000162	263140 000000	02750	POPJ PDP,; RETURN

		02760		
		02770		
		02780	INTERNAL IN	
		02790		
000163	603000 000020	02800	IN:	TLNE IOS,IO ;IS THIS DEVICE ALREADY DOING OUTPUT?
000164	260140 000060'	02810		PUSHJ PDP,WAIT1 ;YES,WAIT TILL IT IS FINISHED
000165	135040 000137'	02820		LDB TAC,PUUOAC ;SET BIT THAT SAYS AN INPUT UO0 HAS OCC
000166	661300 010000	02830		TLO DEVDAT,INPB ;FOR THIS DEVICE
000167	502301 000140'	02840		HLLM DEVDAT,USRJDA(TAC) ;IN LH OF CURRENT JOB DEVICE
000170	135040 000005'	02850		LDB TAC,PIOMOD ;IO MODE
000171	301040 000016	02860		CAIL TAC,DR ;IS THE IO MODE DUMP MODE?
000172	254000 000271'	02870		JRST INDMP ;YES
000173	540246 000006	02880	IN1:	HRR JBUF,DEVBUF(DEV DAT) ;NO, GET ADDRESS OF 3 WORD BU
000174	515040 400000	02890		HRLZI TAC,IOUSE ;BUFFER INUSE BIT
000175	505240 000007	02900		HRLI JBUF,PROG ;SET INDEX FIELD FOR RELOCATION USING A
000176	260140 000145'	02910		PUSHJ PDP,ADRCK ;CHECK BUFFER HEADER
000177	551045 000002	02920		HRRZI TAC,2(JBUF) ;END ADDRESS OF 3 WORD HEADER
000200	200120 000005	02930		MOVE TAC1,@JBUF ;GET WORD 1 OF 3 WORD BUFFER HEADER (PO
000201	505100 000007	02940		HRLI TAC1,PROG ;SET INDEX FIELD COR RELOCATION USING A
000202	337020 000005	02950		SKIPG @JBUF ;HAS A BUFFER RING BEEN SET UP (RH NON-
		02960		;WHICH HAS BEEN REFERENCED BY PREVIOUS
000203	254000 000256'	02970		JRST INPUTF ;NO. GO SET UP BUFFER IF NECESSARY AND
		02980		ADRCHK TAC1 ;YES, CHECK ADDRESS TO SEE IF IN BOUNDS
000204	260140 000176'		PUSHJ PDP,ADRCK	
000205	550040 000002		HRRZ TAC,TAC1	
000206	413060 000002	02990		ANDCAB TAC,@TAC1 ;FLAG THIS BUFFER AS BEING FILLED (USE
		03000		;AND GET POINTER TO NEXT BUFFER
000207	542060 000005	03010		HRRM TAC,@JBUF ;SET WORD 1 IN 3 WORD HEADER TO NEXT BU
		03020		ADRCHK TAC ;AND CHECK ITS ADDRESS TO SEE IF IN BOUNDS
000210	260140 000204'		PUSHJ PDP,ADRCK	
000211	550040 000001		HRRZ TAC,TAC	
		03030		
000212	200006 000002	03040	INPUT0:	MOVE IOS,DEVIOS(DEV DAT) ;GET IO STATUS WORD
000213	606000 010000	03050		TRNN IOS,IOACT ;IS THE DEVICE ALREADY ACTIVE (FILLING
000214	254000 000220'	03060		JRST INPT0B ;NO.
000215	606000 000040	03070		TRNN IOS,IOCON ;DOES THE USER WANT TO STOP AFTER EVERY
000216	254000 000224'	03080		JRST INPT0C ;NO. HE WANTS NORMAL CONTINUOUS OVERLAP
000217	260140 000000	03090		PUSHJ PDP,WSYNC ;YES, WAIT TILL DEVICE FINISHES WITH ON
000220	505040 000007	03100	INPT0B:	HRLI TAC,PROG ;SET FOR RELOCATION
000221	540060 000001	03110		HRR TAC,@TAC ;GET POINTER 1 BLOCK AHEAD OF NEXT BBUF
000222	331020 000001	03120		SKIPL @TAC ;IS THE USE BIT SET?
000223	260140 000276'	03130		PUSHJ PDP,CALIN
000224	540120 000002	03140	INPT0C:	HRR TAC1,@TAC1
000225	335020 000002	03150	INPT0A:	SKIPGE @TAC1
000226	254000 000236'	03160		JRST INPUT2
000227	260140 000217'	03170	INPUT1:	PUSHJ PDP,WSYNC
000230	335020 000002	03180		SKIPGE @TAC1
000231	254000 000236'	03190		JRST INPUT2
000232	612000 000474'	03200		TDNE IOS,[XWD IOEND,IODERR]
000233	254000 000250'	03210		JRST INEOF
000234	200006 000002	03220		MOVE IOS,DEVIOS(DEV DAT)
000235	254000 000227'	03230		JRST INPUT1
		03240		
000236	271100 000001	03250	INPUT2:	ADDI TAC1,1
000237	550220 000002	03260		HRRZ ITEM,@TAC1
000240	275100 000001	03270		SUBI TAC1,1
000241	261140 000004	03280		PUSH PDP,ITEM ;SAVE WORD COUNT AS STORED BY IO SERVIC

000242	260140	000000	03290
000243	262140	000004	03300
000244	135040	000170'	03310
000245	306040	000010	03320
000246	202220	000005	03330
000247	254000	000075'	03340

PUSHJ PDP,IOSETC
POP PDP,ITEM
LDB TAC,PIOMOD
CAIN TAC, I
MOVEM ITEM,@JBUF
JRST UXIT

;GET DEVICE DATA MODE
;IMAGE MODE?
;YES, STORE WORD COUNT NOT ITEM COUNT

ADDRESS	DATA	ADDRESS	DATA
000250	551000 020000	03350	
000251	436006 000002	03360	INEOF: HRRZI IOS, IODEND
000252	254000 000247'	03370	IORM IOS, DEVIOS(DEV DAT)
		03380	JRST UXIT
		03390	
		03400	
		03410	
000253	540100 000014	03420	INPUTA: HRR TAC1, UUO
000254	412060 000002	03430	ANDCAM TAC, @TAC1
000255	254000 000212'	03440	JRST INPUT0
		03450	
		03460	; HERE ON FIRST INPUT AFTER INIT, INIT & LOOKUP, OR INIT & LOOKUP & IN
000256	412060 000005	03470	INPUTF: ANDCAM TAC, @JBUF ; MARK THAT BUFFERS HAVE BEEN REFERENCED
000257	540060 000005	03480	HRR TAC, @JBUF ; PICKUP ADDRESS OF FIRST BUFFER IN RING
000260	542046 000007	03490	HRRM TAC, DEVIAD(DEV DAT) ; SET CURRENT RING BUFFER ADDR
		03500	; IN DEVICE DATA BLOCK
000261	336020 000005	03510	SKIPN @JBUF ; HAS A RING BEEN SET UP YET?
000262	254000 000265'	03520	JRST INPUT3 ; NO. GO SET UP A 2 BUFFER RING
000263	260140 000276'	03530	PUSHJ PDP, CALIN ; YES. GO START IO SERVICE ROUTINE
		03540	; FILLING BUFFER
000264	254000 000225'	03550	JRST INPT0A
000265	541600 000002	03560	INPUT3: HRR I UUO, 2 ; BUFFERS NOT SETUP YET.
		03570	; SET UP 2
000266	260140 000076'	03580	PUSHJ PDP, UINBF
000267	513000 000014	03590	HLLZS UUO ; CLEAR RIGHT HALF
000270	254000 000173'	03600	JRST IN1
		03610	
		03620	
000271	260140 000227'	03630	INDMP: PUSHJ PDP, WSYNC
000272	200046 000003	03640	MOVE TAC, DEVSER(DEV DAT)
000273	260141 000007	03650	PUSHJ PDP, DDI(TAC)
000274	260140 000164'	03660	PUSHJ PDP, WAIT1
000275	254000 000252'	03670	JRST UXIT

			03680		
			03690		
			03700		
			03710		
000276	603000	000040	03720	CALIN:	TLNE IOS,IOEND
000277	263140	000000	03730		POPJ PDP,
000300	260140	000271	03740		PUSHJ PDP,WSYNC
000301	261140	000002	03750		PUSH PDP,TAC1
000302	200046	000003	03760		MOVE TAC,DEVSER(DEVDAT)
000303	260141	000003	03770		PUSHJ PDP,DIN(TAC)
000304	262140	000002	03780		POP PDP,TAC1
000305	263140	000000	03790		POPJ PDP,
			03800		
			03810		

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03820
03830 ,DEC 06 00 EX COM L PT PRE 03 OUTPUT
03840 ,H.R. MORSE 2/21/65
03850 ,CALLING SEQUENCE
03860 , OUTPUT D,
03870 , EXIT
03880 ,OR
03890 , OUTPUT D, ADR
03900 , EXIT
03910
03920 ,IF INPUT IS ACTIVE, WAIT FOR IT TO COMPLETE.
03930 ,IF DUMP MODE WAS SELECTED BY THE LAST INIT UO, THEN A CHECK IS MADE
03940 , TO SEE IF DUMP FILES ARE LEGAL FOR THIS DEVICE. IF DUMP FILES AR
03950 , NOT LEGAL, (IORET=0) AN ERROR MESSAGE IS PRINTED ON THE TTY AND
03960 , CONTROL IS TRANSFERRED TO THE COMMAND INPUT ROUTINE.
03970 , OTHERWISE,THE PROGRAM WAITS UNTIL THE DEVICE IS INACTIVE AND THEN
03980 , WRITES THE DUMPFIL AND RETURNS CONTROL TO THE USERS PROGRAM
03990 ,IF THE MODE IS NOT DUMP, THEN
04000 ,1) IF ADR IS NOT ZERO, WAIT FOR DEVICE TO BECOME INACTIVE THEN SET T
04010 , CURRENT BUFFER ADDRESS EQUAL TO ADR AND AN INDICATOR (JBFADR0)
04020 , SPECIFYING THAT THIS BUFFER RING HAS NEVER BEEN REFERENCED FROM T
04030 , USERS PROGRAM BY AN INPUT OR AN OUTPUT UO. OTHERWISE, GO TO
04040 , 2) DIRECTLY.
04050
04060 ,2) IF THE BUFFER RING HAS NEVER BEEN REFERENCED (JBFADR0=1), THE
04070 , BUFFER IS CLEARED, IOUSE SET TO ZERO AND
04080 , IF THE CURRENT BUFFER ADDRESS IS ZERO, A TWO BUFFER RING IS SE
04090 , THEN GO TO 8
04100 ,
04110 ,3) IF THE BUFFER RING HAS BEEN REFERENCED (JBFADR0=0 ,THEN A C
04120 , MADE TO DETERMINE IF THE WORD COUNT IS TO BE COMPUTED.
04130 , IF THE WORD COUNT IS TO BE COMPUTED (IOWC=0), IT IS SET EQUAL
04140 , TO THE ADDRESS FOR THE LAST DATA WORD MINUS THE ADDRESS OF THE
04150 , BUFFER MINUS ONE.
04160
04170 ,4) IOUSE IS SET TO ONE, INDICATING THAT THE BUFFER IS FULL OR BEING
04180 , EMPTIED, AND THE CURRENT BUFFER ADDRESS IS ADVANCED.
04190
04200 ,5) IF THE DEVICE IS NOT ACTIVE (IOACT=0), OUTPUT IS STARTED.
04210 ,6) IF THE CURRENT BUFFER IS FULL OR BEING EMPTIED (IOUSE=1),
04220 , THE PROGRAM WAITS UNTIL THE DEVICE IS INACTIVE.
04230 ,7) THE CURRENT BUFFER IS CLEARED.
04240 ,8) THE ITEM POINTER IS INITIATED TO THE CURRENT BUFFER ADDRESS+1
04250 , AND THE ITEM COUNT IS SET TO THE PRODUCT OF THE BUFFER SIZE
04260 , MINUS ONE AND THE INTEGER PART OF 36/BYTE SIZE.
04270 ,9) RETURN TO THE USERS PROGRAM

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04280
04290 ,MONITOR INTERFACE
04300 , STORAGE: 54
04310 , ROUTINES CALLED: ADRCK, BUFCLR, CALOUT, INOUT, IOSETC, OUTA,
04320 , OUTBUF, UXIT, WSYNC,
04330 , SYMBOLS SET/USED:
04340 , ACCUMULATORS: DEVDAT U PROG U
04350 , IOS U TAC S/U
04360 , ITEM S/U TAC1 S/U
04370 , JBUF S/U UUO S
04380 , PDP U
04390 , DEVICE DATA BLOCK: DEVBUF U DEVOAD S
04400 , IO STATUS WORD: IOACT U
04410 , IOWC U
04420 , JOB BUFFER AREA: JBFADR S/U
04430 , JBFCTR S
04440 , JBFPTR S/U
04450 , BUFFER SIZE U
04460 , IOUSE S/U
04470 , WORD COUNT S
```

			04480		
			04490		
			04500	INTERN OUT	
			04510		
000306	607000	000020	04520	OUT: TLNN IOS,IO	;IS THIS DEVICE ALREADY DOING INPUT?
000307	260140	000274'	04530	PUSHJ PDP,WAIT1	;YES, WAIT TILL IT BECOMES INACTIVE
000310	135040	000165'	04540	LDB TAC,PUUOAC	
000311	661300	004000	04550	TLO DEVDAT,OUTPB	
000312	502301	000167'	04560	HLLM DEVDAT,USRJDA(TAC)	
000313	135040	000244'	04570	LDB TAC,PIOMOD	
000314	301040	000016	04580	CAIL TAC,DR	
000315	254000	000402'	04590	JRST OUTDMP	
000316	260140	000407'	04600	PUSHJ PDP,OUTA	
000317	544246	000006	04610	OUT1: HLR JBUF,DEVBUF(DEVDAT)	
000320	260140	000210'	04620	PUSHJ PDP,ADRCK	;CHECK END OF 3 WORD HEADER
000321	551045	000002	04630	HRRZI TAC,2(JBUF)	
000322	505240	000007	04640	HRLI JBUF,PROG	
000323	515040	400000	04650	HRLZI TAC, IOUSE	
000324	337120	000005	04660	SKIPG TAC1, @JBUF	;HAS THIS BUFFER EVER BEEN
			04670		;REFERENCED?(JBFADR0=0?)
000325	254000	000361'	04680	JRST OUTF	
000326	350000	000005	04690	AOS JBUF	
000327	550060	000005	04700	HRRZ TAC, @JBUF	
000330	271100	000001	04710	ADDI TAC1, 1	
000331	274040	000002	04720	SUB TAC, TAC1	
000332	505100	000007	04730	HRLI TAC1,PROG	
000333	602000	000020	04740	TRNE IOS, IOWC	;COMPUTE WORD COUNT?(IOWC=0?)
000334	254000	000340'	04750	JRST OUT2	
			04760	ADRCHK TAC1	;PROCEED IF ADDRESS OF WORD COUNT
000335	260140	000320'		PUSHJ PDP,ADRCK	
000336	550040	000002		HRRZ TAC,TAC1	
			04770		;<PROTECTION ADDRESS
000337	542060	000002	04780	HRRM TAC, @TAC1	;WORD COUNT:=C(JBFPTR18-35)
			04790		; -C(JBFADR18-35)-
000340	275240	000001	04800	OUT2: SUBI JBUF,1	
000341	275100	000001	04810	SUBI TAC1,1	
000342	515040	400000	04820	HRLZI TAC, IOUSE	
000343	437060	000002	04830	IORB TAC, @TAC1	;IOUSE:=1
			04840	ADRCHK TAC1	
000344	260140	000335'		PUSHJ PDP,ADRCK	
000345	550040	000002		HRRZ TAC,TAC1	
000346	542060	000005	04850	HRRM TAC,@JBUF	;ADVANCE CURRENT BUFFER ADDRE
000347	200006	000002	04860	MOVE IOS,DEVIOS (DEVDAT)	
000350	606000	010000	04870	TRNN IOS,IOACT	
000351	260140	000421'	04880	PUSHJ PDP, CALOUT	;START OUTPUT
000352	544246	000006	04890	HLR JBUF,DEVBUF(DEVDAT)	
000353	505240	000007	04900	HRLI JBUF,PROG	
000354	200120	000005	04910	MOVE TAC1,@JBUF	
000355	505100	000007	04920	HRLI TAC1,PROG	
000356	337020	000002	04930	SKIPG @TAC1	;IOUSE=1?
000357	260140	000300'	04940	PUSHJ PDP, WSYNC	;WAIT FOR DEVICE TO BECOME IN
000360	254000	000372'	04950	JRST OUTS	

000361	332120	000005	04960		
000362	254000	000367'	04970	OUTF:	SKIPE TAC1,@JBUF
000363	541600	000002	04980		JRST OUTF1
000364	260140	000066'	04990		HRRI UU0,2
000365	544246	000006	05000		PUSHJ PDP,UOUTBF
000366	505240	000007	05010		HLR JBUF,DEVBUF(DEVDAT)
000367	515040	400000	05020		HRLI JBUF,PROG
000370	413060	000005	05030	OUTF1:	HRLZI TAC, IOUSE
000371	542046	000010	05040		ANDCAB TAC, @JBUF ;IOUSE:=0
000372	550060	000005	05050		HRRM TAC,DEVOAD(DEVDAT)
000373	260140	000000	05060	OUTS:	HRRZ TAC,@JBUF
000374	540120	000005	05070		PUSHJ PDP,BUFCLR
000375	505100	000007	05080		HRR TAC1,@JBUF
000376	135200	000475'	05090		HRLI TAC1,PROG
000377	275200	000001	05100		LDB ITEM,[POINT 17,@TAC1,17]
000400	260140	000242'	05110		SUBI ITEM,1
			05120		PUSHJ PDP,IOSETC ;JBFCTR18-35:=CURRENT BUFFER
			05130		;ADDRESS+1
			05140		;JBFCTR:=(BUFFER SIZE-1)*[36/BYTE
			05150		;SIZE]
000401	254000	000275'	05160		JRST UXIT ;RETURN TO USERS PROGRAM
			05170		
000402	260140	000357'	05180	OUTDMP:	PUSHJ PDP,WSYNC
000403	200046	000003	05190		MOVE TAC,DEVSER(DEVDAT)
000404	260141	000006	05200		PUSHJ PDP,DDO(TAC)
000405	260140	000307'	05210		PUSHJ PDP,WAIT1
000406	254000	000401'	05220		JRST UXIT

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05230
05240
05250      ,DEC 06 00 EX COM L PT PRE 01 OUTA
05260      ,H.R. MORSE      64-12-26
05270
05280      ,CALLING SEQUENCE:
05290      ,      PUSHJ PDP,OUTA
05300      ,      EXIT      ALWAYS RETURNS HERE
05310      ,IF THE ADDRESS FIELD OF AC UUO IS ZERO,EXIT. OTHERWISE,CHECK IOACT.
05320      ,IF IOACT=1, WAIT FOR IOACT=0.
05330      ,SET JBFADR18-35:=ADDRESS FIELD OF AC UUO. JBFADR0:=1 AND EXIT.
05340
05350      ,MONITOR INTERFACE
05360      ,      STORAGE:13
05370      ,      ROUTINES CALLED:      WSYNC
05380      ,      SYMBOLS SET/USED:
05390      ,      ACCUMULATORS:      DEVDAT U
05400      ,      IOS U      PROG U
05410      ,      JBUF S/U      TAC S/U
05420      ,      PDP S/U      UUO S/U
05430      ,      DEVICE DATA BLOCK:      DEVIOS U      DEVBUF U
05440      ,      IO STATUS WORD:      IOACT U
05450      ,      JOB BUFFER AREA:      IOUSE U
05460      ,      JBFADR S
05470
05480      INTERN OUTA
05490      OUTA:      TRNN UUO, 777777      ;IS BUFFER ADDRESS SPECIFIED?
05500      POPJ PDP,      ;NO
05510      PUSHJ PDP,WAIT1
05520      HLR JBUF,DEVBUF(DEVDAT)
05530      HRLI JBUF,PROG
05540      HRRM UUO,@JBUF
05550      HRRM UUO,DEVOAD(DEVDAT)
05560      HRLZI TAC,IOUSE
05570      ANDCAM TAC,@JBUF
05580      POPJ PDP,      ;RETURN
000407      606600 777777
000410      263140 000000
000411      260140 000405'
000412      544246 000006
000413      505240 000007
000414      542620 000005
000415      542606 000010
000416      515040 400000
000417      412060 000005
000420      263140 000000

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		05590	
		05600	
		05610	,DEC 06 00 EX COM L PT PRE 03 CALOUT
		05620	,H.R. MORSE 2/21/65
		05630	
		05640	,CALLING SEQUENCE
		05650	, PUSHJ PDP,CALOUT
		05660	, EXIT
		05670	
		05680	,DISPATCH TO DEVICE SERVICE ROUTINE DOU TO INITIATE OUTPUT.
		05690	
		05700	,MONITOR INTERFACE
		05710	, STORAGE:2
		05720	, SYMBOLS SET/USED:
		05730	, ACCUMULATORS: DEV DAT U
		05740	, TAC U
		05750	, DEVICE DATA BLOCK: DEV SER U
		05760	
		05770	INTERN CALOUT
000421	606000 010000	05780	CALOUT: TRNN IOS,IOACT
000422	254000 000426'	05790	JRST CALOU1
000423	606000 000040	05800	TRNN IOS,IOCON
000424	263140 000000	05810	POPJ PDP,
000425	260140 000402'	05820	PUSHJ PDP,WSYNC
000426	200046 000003	05830	CALOU1: MOVE TAC,DEV SER(DEV DAT)
000427	254001 000002	05840	JRST DOU(TAC)

		05850	
		05860	,RELEASE A DEVICE
		05870	
		05880	INTERNAL RELEA1,RELEA2,RELEA3,RELEA5
		05890	
000430	200006 000002	05900	RELEA0: MOVE IOS,DEVIOS(DEVDAT) ;CALLED FROM INIT
		05910	RELEA2:RELEA3:
000431	620600 777777	05920	RELEA1: TRZ UUO,-1 ;CLOSE BOTH INPUT AND OUTPUT
000432	260140 000000'	05930	PUSHJ PDP,CLOSE1
000433	260140 000411'	05940	PUSHJ PDP,WAIT1 ;WAIT FOR DEVICE TO BECOME INACTIVE
000434	200046 000003	05950	RELEA5: MOVE TAC, DEVSER(DEVDAT) ;RELEASE WITHOUT WAITING
000435	260141 000000	05960	PUSHJ PDP, DRL (TAC)
000436	135040 000310'	05970	LDB TAC,PUUOAC
000437	402001 000312'	05980	SETZM USRJDA(TAC)
000440	201040 000017	05990	MOVEI TAC,17 ;IS THE DEVICE ON AONTER USER CHANNEL?
000441	550101 000437'	06000	RELEA4: HRRZ TAC1,USRJDA(TAC)
000442	302106 000000	06010	CAIE TAC1,(DEVDAT)
000443	365040 000441'	06020	SOJGE TAC,RELEA4
000444	325040 000406'	06030	JUMPGE TAC,UXIT ;EXIT IF ON ANOTHER CHANNEL
000445	201100 200000	06040	MOVEI TAC1,ASSPRG ;OTHERWISE CLEAR ASSIGNED BY PROG. BIT
000446	413106 000004	06050	ANDCAB TAC1,DEVMOD(DEVDAT)
000447	616100 000476'	06060	TDNN TAC1,[XWD TTYUSE,ASSCON] ;ASSIGNED BY CONSOLE OR TTY I
000450	137600 000000	06070	DPB UUO,PJOBN ;NO, CLEAR JOB NUMBER
000451	254000 000444'	06080	JRST UXIT
		06090	

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06100
06110
06120 ,DEC 06 00 EX UUO L PT PRE 01 STATO
06130 ,H.R. MORSE 64-12-26
06140
06150 ,CALLING SEQUENCE
06160 , STATO D,MASK
06170 , EXIT1 ALL SELECTED BITS ARE 0
06180 , EXIT2 SOME SELECTED BITS ARE 1
06190 ,TESTS BITS OF I/O STATUS WORD OF DEVICE ON USERS CHANNEL D WHICH
06200 ,ARE SELECTED BY MASK.
06210
06220 ,MONITOR INTERFACE
06230 , STORAGE: 3
06240 , ROUTINES CALLED: UXIT
06250 , SYMBOLS SET/USED:
06260 , ACCUMULATORS: IOS U
06270 , PDP U
06280 , UUO U
06290
06300 INTERN USTATO
06310
000452 602014 000000 06320 USTATO: TRNE IOS,(UUO) ;SKIP IF ANY INDICATED BITS ARE ONE
000453 350003 000000 06330 AOS (PDP)
000454 254000 000451' 06340 JRST UXIT

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		06350	
		06360	
		06370	,DEC 06 00 EX UUO L PT PRE 01 STATUS
		06380	,H.R. MORSE 64-12-26
		06390	
		06400	,CALLING SEQUENCE
		06410	, STATUS D,ADR
		06420	, EXIT ALWAYS RETURNS HERE
		06430	,STORES I/O STATUS WORD OF DEVICE ON CHANNEL D IN LOCATION ADR.
		06440	
		06450	,MONITOR INTERFACE
		06460	, STORAGE: 3
		06470	, ROUTINES CALLED: UXIT
		06480	, SYMBOLS SET/USED:
		06490	, ACCUMULATORS: IOS U
		06500	, PROG U
		06510	, UUO U
		06520	
		06530	INTERN USTATS
		06540	EXTERNAL ADRERR,USRREL
		06550	
		06560	
000455	200040 000000	06570	USTATS: MOVE TAC,USRREL ;CHECK TO SEE IF IN BOUNDS
000456	307054 000000	06580	CAIG TAC,(UUO)
000457	260140 000000	06590	PUSHJ PDP,ADRERR
000460	505600 000007	06600	HRLI UUO,PROG ;LOAD STATUS INTO INDICATED ADDRESS.
000461	552020 000014	06610	HRRZM IOS,@UUO
000462	254000 000454'	06620	JRST UXIT

		06630	
		06640	
		06650	,CALLING SEQUENCE
		06660	, SETSTS D,BITS
		06670	, EXIT ALWAYS RETURN HERE
		06680	
		06690	INTERNAL USETST
		06700	EXTERNAL WAIT1,SETIOS
		06710	
000463	260140 000433'	06720	USETST: PUSHJ PDP,WAIT1 ;WAIT TILL DEVICE INACTIVE
000464	205000 000002	06730	MOVSI IOS, IOBEG
000465	436006 000002	06740	IORM IOS,DEVIOS(DEVDAT)
000466	542606 000002	06750	HRRM UUO,DEVIOS(DEVDAT)
000467	254000 000462'	06760	JRST UEXIT

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06770
06780
06790      ,DEC 06 00 EX UUO L PT PRE 01 STATZ
06800      ,H.R. MORSE      64-12-26
06810
06820      ,CALLING SEQUENCE
06830      ,          STATZ D,MASK
06840      ,          EXIT1          SOME SELECTED BITS ARE 1
06850      ,          EXIT2          ALL SELECTED BITS ARE 0
06860
06870      ,TESTS BITS OF I/O STATUS WORD OF DEVICE ON USERS
06880      ,CHANNEL D WHICH ARE SELECTED BY MASK.
06890
06900
06910      ,MONITOR INTERFACE
06920      ,          STORAGE:          3
06930      ,          ROUTINES CALLED:  UXIT
06940      ,          SYMBOLS SET/USED:
06950      ,          ACCUMULATORS:    IOS U
06960      ,                               PDP U
06970      ,                               UUO U
06980
06990
07000
07010      INTERN USTATZ
07020
07030      USTATZ:  TRNN IOS,(UUO)      ;SKIP IF ALL INDICATED BITS ARE ZERO
07040      AOS (PDP)
07050      JRST UXIT
07060
07070
07080
07090      END,

000470  606014 000000
000471  350003 000000
000472  254000 000467'

000473  000040 020000
000474  000040 200000
000475  222120 000002
000476  010000 400000

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THERE ARE NO ERRORS

PROGRAM BREAK IS 000477

IOCONT - CONTROL FOR IO PROGRAMMED OPERATORS
SYMBOL TABLE

PAGE 25

A	000000	INT
AC1	000015	INT
AC2	000016	INT
AC3	000017	INT
ADRCK	000344'	EXT
ADRERR	000457'	EXT
AL	000001	INT
ASSCON	400000	INT
ASSIN	000112'	EXT
ASSPRG	200000	INT
R	000014	INT
BUFCLC	000077'	EXT
BUFCLR	000373'	EXT
BUFPNT	000012	INT
BUFWRD	000013	INT
CALIN	000276'	
CALOU1	000426'	
CALOUT	000421'	INT
CLOSB	002000	INT
CLOSE1	000000'	INT
CLSIN	000002	INT
CLSOUT	000001	INT
CUXIT1	000113'	EXT
CUXIT2	000141'	EXT
D	000017	INT
DAT	000005	INT
DCL	000001	INT
DCW	020000	INT
DDI	000007	INT
DDO	000006	INT
DDTMEM	000037	INT
DDTSYM	000036	INT
DEN	000004	INT
DEVADR	000007	INT
DEVBUF	000006	INT
DEVCHR	000001	INT
DEVCTR	000011	INT
DEVDAT	000006	INT
DEVIAD	000007	INT
DEVIOS	000002	INT
DEVLOG	000005	INT
DEVMOD	000004	INT
DEVNAM	000000	INT
DEVOAD	000010	INT
DEVPTR	000010	INT
DEVSER	000003	INT
DGF	000012	INT
DIN	000003	INT
DLK	000005	INT
DOU	000002	INT
DR	000016	INT
DRL	000000	INT
DSI	000011	INT
DSO	000010	INT
DTW	040000	INT

DVAVAL	000040	INT
DVCDR	100000	INT
DVDIR	000004	INT
DVDIRI	400000	INT
DVIN	000002	INT
DVLPT	040000	INT
DVMTA	000020	INT
DVOUT	000001	INT
DVTY	000010	INT
ENTRB	020000	INT
ERROR	000000	EXT
I	000010	INT
IB	000013	INT
IBUFB	200000	INT
ILLMOD	000000	EXT
IN	000163'	INT
IN1	000173'	
INDMP	000271'	
INFOF	000250'	
INITB	400000	INT
INPB	010000	INT
INPT0A	000225'	
INPT0B	000220'	
INPT0C	000224'	
INPUT0	000212'	
INPUT1	000227'	
INPUT2	000236'	
INPUT3	000265'	
INPUTA	000253'	
INPUTF	000256'	
IO	000020	INT
IOACT	010000	INT
IOREG	000002	INT
IORCTL	040000	INT
IOCON	000040	INT
IODEND	020000	INT
IODERR	200000	INT
IODISC	400000	INT
IODONE	400000	INT
IODTER	100000	INT
IOEND	000040	INT
IOFST	000004	INT
IOIERR	000000	EXT
IOIMPM	400000	INT
IONRCK	000100	INT
IORDEL	000100	INT
IORET	000020	INT
IOS	000000	INT
IOSETC	000400'	EXT
IOSTRT	000010	INT
IOUSE	400000	INT
IOW	000001	INT
IOWC	000020	INT
IOWS	400000	INT
ITEM	000004	INT

IOCONT - CONTROL FOR IO PROGRAMMED OPERATORS
SYMBOL TABLE

PAGE 27

JBFAOR	000000	INT
JBFCOR	000002	INT
JBFPOR	000001	INT
JBUF	000005	INT
JDAT	000011	INT
JERR	002000	INT
JIOU	100000	INT
JNA	004000	INT
JOR	000111	EXT
JOBJDA	000000	EXT
LOOKB	040000	INT
MTW	010000	INT
OBUFF	100000	INT
OUT	000306	INT
OUT1	000317	
OUT2	000340	
OUTA	000407	INT
OUTDMP	000402	
OUTF	000361	
OUTF1	000367	
OUTPB	004000	INT
OUTS	000372	
PDP	000003	INT
PICHN	000100	INT
PIOMOD	000313	EXT
PJOBN	000450	EXT
PROG	000007	INT
PUUOAC	000436	EXT
RELEA0	000430	
RELEA1	000431	INT
RELEA2	000431	INT
RELEA3	000431	INT
RELEA4	000441	
RELEA5	000434	INT
RUN	200000	INT
RUNARL	204000	INT
SETBYT	000155	EXT
SETIOS	000120	EXT
TAC	000001	INT
TAC1	000002	INT
TEM	000010	INT
TTYATC	020000	INT
TTYUSE	010000	INT
UCLS0	000026	
UCLS1	000034	
UCLS2	000041	
UCLS3	000060	
UCLS4	000013	
UINBF	000076	INT
UINIT	000103	INT
UINIT1	000111	INT
UINIT4	000127	
UINIT5	000133	
UINITZ	000142	INT
UINTQ	000121	EXT

UORF1	000072'
UOUTBF	000066' INT
USETST	000463' INT
USRJDA	000441' EXT
USRMOD	010000 INT
USRREL	000455' EXT
USTATO	000452' INT
USTATS	000455' INT
USTATZ	000470' INT
UUO	000014 INT
UXIT	000472' EXT
WAIT1	000463' EXT
WSYNC	000425' EXT

END OF ASSEMBLY