

ADDRESS	LENGTH	BINARY CONTROL CARDS.
0	367	IDENT HELPIO
367		END

EXTERNAL SYMBOLS.

IPLIST	GF.IOTF	FB.LEN	FR.NAME	MYRESP	MAINCL	PTRBLK	EC:WRIT
OPERCL	GF.IOTL	FB.NAME	FR.ROOT	MYSUBP	N.BFILE	EC:RSTR	EC:READ
DDSIPL	ERRPACK	FB.SHAP	FR.SHAP	LOCK	M.DDREQ	EC:SAVE	EC:GEVH
GF.DDSF	D.ENTRY	FB.WD3	FR.WD3	UNLOCK	M.SLOTS	EC:GEVF	
GF.DDSL	SYSERR	FHRADDR	FILECAP	READCAP	M.WBUFS	EC:SEV	
IOTIPL	FHB	FR.FUND	HENTRY	WRITCAP	BLDREQ	EC:ZRM	
IOTBUF	FB.FUND	FR.MEMB	HOLDBLK	TEMPA	KLUDGE	EC:MMRO	

0
0
0PARAMS
MACROS
SYSCALL*
*IDENT
XTEXT
XTEXT
XTEXT

HELPIO

EXT
EXT
EXT
EXT
EXT
EXT
EXT
EXT
EXT
EXT
EXTIPLIST, OPERCL
ODSIPL, GF, DDSF, GF, DDSL
IOTIPL, IOTBUF, GF, IOTF, GF, IOTL
ERRPACK, D, ENTRY, SYSERR
FHB, FB, FUND, FR, LEN, FR, NAME, FR, SHAP, FR, WD3
FHRADDR, FR, FUND, FR, MEMB, FR, NAME, FR, ROOT
FR, SHAP, FR, WD3
FILECAP, HENTRY, HOLDBLK, MYRESP, MYSUBP
LOCK, UNLOCK, READCAP, WRITCAP, TEMPA
MAINCL, M, BFILE, M, DDREQ, M, SLOTS, M, WBUFS*
*

EXT

BLDREQ, KLUDGE, PTRBLK

MACSET

OPERCL, IPLIST, ECS

ENTRY HBW, PBW

Done

*
* MACRO FOR USE IN TEMPORARY KLUDGE TO COEXIST WITH DISK.S
*

LOCKOUT	MACRO	
	LOCAL	RETURN
	SB6	RETURN
	CB	KLUDGE
RETURN	BSS	0
	ENDM	

	MACRO	UNIT
GETSLOT	LOCAL	GOTSLOT,NONE,RET1,RET2
	GETEVF	(MAINCL,UNIT+M.SLOTS),NONE
	CB	GOTSLOT
NONE	SAVE	ERRPACK
	SB6	RET1
	CB	UNLOCK
RET1	GETEVH	(MAINCL,UNIT+M.SLOTS)
	SB7	ERRPACK+17B
	SB4	FHRAADR
	SB6	RET2
	CB	LOCK
RET2	RESTORE	ERRPACK
GOTSLOT	BSS	0
	ENDM	

```
*
* HBW..START HEADER BLOCK WRITE AND WAIT FOR COMPLETION
* ON ENTRY: FHR IN AND LOCKED
* B4 = CM ADDR OF ROOT PAGE SWITCH(IF MULTI-LEVEL)
* B5 = NO. OF POINTERS IN ROOT(IF MULTI-LEVEL)
* B7 = RETURN LINK
*
0 7170000002 HBW SX7 R.HBW INDICATE HEADER-BLOCK WRITE
      5170000000 X SA7 IOTBUF IOT WORD 1
1 5130000000 X SA3 FHRADDR
      20322 LX3 18
      10733 BX7 X3
2 5170000001 X SA7 IOTBUF+1 IOT WORD 2
      5130000000 X SA3 FR.NAME DISK ADDR / UNIQUE NAME
3 43644 BX6 60-24
      15236 BX2 -X6*X3 EXTRACT DISK ADDR
      43647 BX6 60-21
      15636 BX6 -X6*X3 DISK ADDR - CHECKSUM
4 21621 AX6 17
      63260 SB2 X6 UNIT NO.
      20602 LX6 2 UNIT NO. * 4
      53360 SB3 X6
5 43642 BX6 60-24-2
      15636 BX6 -X6*X3
      21630 AX6 24 KEEP ONLY HEADER BLOCK SIZE CODE
      53363 SB3 83+X6 UNIT NO. * 4 * SIZE CODE
6 6160000007 + LOCKOUT *** TEMPORARY ***
7 7160000000 X GETEVH (MAINCL,B2+M.SLOTS)
15 10477 BX4 X7 SLOT INDEX
      7160000000 X GETEVH (MAINCL,B3+M.WBUFS)
24 10377 BX3 X7 BUFFER INDEX
      7160000000 X READ (MAINCL,B2+M.BFILE),X3,TEMPA,1,FRET
*
* SET UP FILE-HEADER-BLOCK
*
37 5110000000 X SA1 FR.NAME
      10611 BX6 X1
40 5160000000 X SA6 FB.NAME
      5110000000 X SA1 FR.WD3
41 43702 BX7 2 CLEAR OPEN WRITE AND
      20771 LX7 60-3 FROZEN BITS
      15617 BX6 -X7*X1
42 5160000000 X SA6 FB.WD3
      5110000000 X SA1 FR.SHAP
43 10611 BX6 X1
      5160000000 X SA6 FB.SHAP
44 5110000000 X SA1 FR.FUND
      10611 BX6 X1
45 5160000000 X SA6 FB.FUND
      5110000000 X SA1
46 7160000000 X WRITE TEMPA
      *,X1,FHB,FB.LEN,FRET
```

*SAVE HOB BLK
SIZE CODE
SA6 TEMPB*

56	7211000000 X		Sx1	X1+FB.LEN	
	5150000000 X		SA5	FR.ROOT	
57	0325000061 +		PL	X5,HBW1	JUMP IF 1-LEVEL FILE
	6160000115 +		SB6	HBW2	JUMP RETURN
60	0200000305 +		JP	PACKP	
61	5150000000 X	HBW1	SA5	FR.SHAP	
	21562		AX5	60-10	
62	7160000000 X		INMAPRO	MYSUBP,HENTRY,FILECAP,0,HOLDBLK,X5	
74	7160000000 X		WRITE	(MAINCL,B2+M.BFILE),X1,HOLDBLK,X5,FRET	
106	7160000000 X		ZRMAP	MYSUBP,HENTRY,FILECAP	
115	76720		BR7	B2	
	20711		LX7	9	COMPUTE IOT ADDR
	12774		BX7	X7+X4	
			LX7	1	
116	7160000000 X		WB IOT	X7,IOTBUF	
130	13500		BX5	X0-X0	
	6150000001		SB5	1	REQUEST WAKEUP
131	6160000132 +		SB6	HBW3	
	0200000000 X		JP	BLDREQ	BUILD DISK DRIVER REQUEST
132	7160000000 X	HBW3	SENDEV	(MAINCL,B2+M.DDREQ),X4	
143	7160000000 X		GETEVH	MYRESP	
150	73670		SX6	X7	
	0270000000		JP	B7	

CALLX BLDREQ,B6

SA5 TEMPB

PICK UP HDR BLK SIZE CODE

PBW..START POINTER BLOCK WRITE AND RETURN

ON ENTRY..FHR IN AND LOCKED

X4 = COPY OF POINTER
X5 = DDS ADDRESS OF POINTER
B4 = CM ADDR OF UNPACKED PAGE SWITCH
B5 = NO. OF PTRS IN PTR BLK
B7 = RETURN LINK

USES..ALL REGISTERS EXCEPT B1. USES TEMPA.

151 7170000004)
5170000000 X
152 5130000000 X
20322
10733
153 5170000001 X

PBW

Sx7
SA7
SA3
Lx3
Bx7
SA7

R.PBW
TOTBUF
FHRADDR
18
X3
TOTBUF+1

MAKE POINTER BUSY

10744
20704
154 43671
11776
7160000004
155 12776
20776
5170000000 X
156 7160000000 X

Bx7
Lx7
Mx6
Bx7
Sx6
Bx7
Lx7
SA7
WDDDS

X4
4
60-3
X7*X6
S.GOING
X7*X6
60-4
TEMPA
X5. TEMPA.1

POSITION STATUS

CLEAR OLD STATUS
NEW STATUS = GOING OUT TO DISK
INSERT NEW STATUS
RESTORE POSITION

UPDATE POINTER IN DDS

170 43644
15246
43647
15626
171 21621
63260
20602
63360

Mx6
Bx2
Mx6
Bx6
Ax6
SB2
Lx6
SB3

60-24
-X6*X4
60-21
-X6*X2
17
X6
2
X6

DISK ADDRESS

DISK ADDR = CHECKSUM

UNIT NUMBER

UNIT NUMBER * 4

*** TEMPORARY ***

GET REQUEST SLOT
REQ SLOT INDEX

DISK BUFFER INDEX

(MAINCL,B2+M.BFILE),X3,TEMPA,I,FRET
BUFFER POINTER

INCR PAST CHECKWORD

172 6160000173 +
173 7160000000 X
222 10477
7160000000 X
231 10377
7160000000 X
244 5110000000 X
7160000000 X
254 7211000001
6160000256 +
255 0200000305 +

LOCKOUT
GETSLOT
Bx4
GETEVH
Bx3
READ
SA1
WRITE
Sx1
SB6
JP

B2
X7
(MAINCL,B3+M.WBUFS)
X7
(MAINCL,B2+M.BFILE),X3,TEMPA,I,FRET
TEMPA
*,X1,FR.MEMB,I,FRET
X1+1
PBW1
PACKP

ZR X5, PBWA JUMP IF NOT TO SET PTR BUSY

PBWA

I/O ROUTINES APPEARING IN HELPER SUBPROCESS
WRITE POINTER BLOCK

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256	76720	PBW1	Sx7	B2	
	20711		Lx7	9	
	12774		Bx7	X7+X4	
	20701		Lx7	1	
257	7160000000 X		WRIOT	X7,IOTBUF	WRITE ENTRY IN IOT
271	13500		Bx5	X0-X0	BLOCK SIZE = 64 WORDS
	6150000001		Sb5	1	SET WAKEUP FLAG
272	6160000273 *		Sb6	PBW2	
	0200000000 X		Jp	BLDREQ	
273	7160000000 X	PBW2	SENDEV	(MAINCL*B2+M.BDREQ)*(X4)	
304	0270000000		Jp	B7	

Address	Instruction	Register	Operation	Comment
305	10611	PACKP	SA6	SAVE FILE ADDR IN BUFFER FILE
	5160000000 X			
	56140			
306	7150000000 X	PACKPA	SA1	DDS ADDR OF 1ST PAGE
307	7160000000 X		SA5	CM ADDR TO PLACE PAGE
321	7255000010		SA5	READ A PAGE
	5011000001		SA1	CM ADDR TO PLACE NEXT PAGE
322	0301000324 +		NR	PICK UP NEXT PAGE DDS ADDR
	7170000200 X		SA1	JUMP IF NO MORE PAGES
323	13775		SA7	
	0317000307 +		SA7	CHECK FOR END OF PTR BLK
324	13600	PACKPB	SA6	JUMP IF MORE TO DO
	53650		SA6	MARK END OF PTR BLK
	5150000000 X		SA5	
325	43601		SA5	PICK UP 1ST PTR
	11556		SA5	
	76650		SA5	EXTRACT TYPE BIT FROM 1ST PTR
	12665		SA5	NUMBER OF POINTERS IN PTR BLK
326	54550		SA5	COMBINE WITH TYPE FLAG
	54650		SA5	RESTORE 1ST PTR
	43744		SA5	STORE PTR BLK CONTROL WORD
327	18657	PACKP1	SA7	MASK FOR DISK ADDRESSES
	5055000001		SA7	EXTRACT DISK ADDR
330	0305000344 +		NR	NEXT POINTER
	15557		SA5	JUMP IF NO POINTER
	20630		SA5	EXTRACT DISK ADDR
331	12665		SA5	POSITION LAST DISK ADDR
	5055000001		SA5	COMBINE TWO DISK ADDRS
332	0305000345 +		NR	NEXT POINTER
	15557		SA5	JUMP IF NO POINTER
	63550		SA5	
333	21514		SA5	SAVE LO-ORDER 12 BITS
	20614		SA5	EXTRACT HI-ORDER 12 BITS
	12665		SA5	POSITION LAST TWO DISK ADDRESSES
334	5066000001		SA6	INSERT HI-ORDER 12 BITS OF THIRD
	76550		SA5	STORE 1ST PACKED WORD
	43660		SA5	
			SA5	RESTORE LO-ORDER 12 BITS

335	15656		Bx6	-X6*X5	EXTRACT LO-ORDER 12 BITS
	5055000001		SA5	A5+1	NEXT POINTER
336	0305000347 +		ZR	X5,PACKP4	JUMP IF NO POINTER
	15557		Bx5	-X7*X5	EXTRACT DISK ADDRESS
	20630		Lx6	24	POSITION LO-ORDER 12 BITS OF THIRD
337	12665		Bx6	X6+X5	
	5055000001		SA5	A5+1	NEXT POINTER
340	0305000350 +		ZR	X5,PACKP5	JUMP IF NO POINTER
	15557		Bx5	-X7*X5	EXTRACT DISK ADDRESS
	20630		Lx6	24	POSITION LAST TWO DISK ADDRESSES
341	12665		Bx6	X6+X5	COMBINE THREE DISK ADDRESSES
	5066000001		SA6	A6+1	STORE 2ND PACKED WORD
		*			
342	5055000001		SA5	A5+1	1ST PTR OF NEXT GROUP
	0305000351 +		ZR	X5,PACKP6	NO MORE POINTERS
343	0200000327 +		JP	PACKP1	LOOP BACK FOR REST OF PTRS
		*			
		*			
344	20630	PACKP2	Lx6	24	QUIT AFTER 1ST POINTER
345	20614	PACKP3	Lx6	12	QUIT AFTER 2ND POINTER
	5066000001		SA6	A6+1	STORE PARTIAL WORD 1
	13600		Bx6	X0-X0	
346	5066000001		SA6	A6+1	STORE EMPTY WORD 2
	0200000351 +		JP	PACKP6	
		*			
		*			
347	20630	PACKP4	Lx6	24	QUIT AFTER 3RD POINTER
350	20630	PACKP5	Lx6	24	QUIT AFTER 4TH POINTER
	5066000001		SA6	A6+1	STORE PARTIAL WORD 2
		*			
351	6150777776 X	PACKP6	SB5	PTRBLK-1	
	65565		SB5	A6-B5	COUNT OF WORDS STORED
352	5110000000 X		SA1	TEMPA	ADDRESS IN BUFFER FILE
	7160000000 X		WRITE	(MAINCL,B2+M,BFILE),X1,PTRBLK,B5,FRET	
		*			
365	0260000000		JP	B6	RETURN

366 0100000000 X

*
FRET RJ SYSERR
*
*

367

END

42036

STORAGE USED
6600 ASSEMBLY

1021 STATEMENTS
10.540 SECONDS

131 SYMBOLS
279 REFERENCES

000016 INVENTED SYMBOLS

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[illegible]

I/O ROUTINES APPEARING IN HELPER SUBPROCESS
SYMBOLIC REFERENCE TABLE.

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PAGE 12

LOCK	0	EXTERNAL*	6/44							
MAINCL	0	EXTERNAL*	4/30	4/34	5/26	6/44	6/48	9/40		
			4/32	5/13	6/44	6/46	7/12			
MYRESP	0	EXTERNAL*	5/27							
MYSUBP	0	EXTERNAL*	5/12	5/14						
M.BFILE	0	EXTERNAL*	4/34	5/13	6/48	9/40				
M.DDREQ	0	EXTERNAL*	5/26	7/12						
M.SLOTS	0	EXTERNAL*	4/30	6/44	6/44					
M.WBUPS	0	EXTERNAL*	4/32	6/46						
OPERCL	0	EXTERNAL*	2/20							
OP!!!!CL	0	EXTERNAL*	2/20 D	4/33	5/12	5/26	6/44	6/47	9/39	
			4/29	4/53	5/13	6/43	6/44	6/49		
			4/31	5/11	5/25	6/44	6/45	7/11		
PACKP	305	PROGRAM*	5/07	6/52	8/14 L					
PACKPA	307	PROGRAM*	8/19 L	8/25						
PACKPB	324	PROGRAM*	8/22	8/26 L						
PACKP1	327	PROGRAM*	8/37 L	9/17						
PACKP2	344	PROGRAM*	8/39	9/21 L						
PACKP3	345	PROGRAM*	8/44	9/22 L						
PACKP4	347	PROGRAM*	9/03	9/30 L						
PACKP5	350	PROGRAM*	9/08	9/31 L						
PACKP6	351	PROGRAM*	9/16	9/26	9/35 L					
PBW	151	PROGRAM*	6/14 L							
PBW1	256	PROGRAM*	6/51	7/01 L						
PBW2	273	PROGRAM*	7/08	7/11 L						
PTRBLK	0	EXTERNAL*	8/18	8/23	8/29	9/35	9/40			
READCAP	0	EXTERNAL*	8/19							
R.HBW	2		4/09							
R.PBW	4		6/14							
SYSERR	0	EXTERNAL*	5/20	5/20	6/32	6/32	7/06	7/12	8/20	10/02
			5/20	5/26	6/32	7/06	7/06	8/20	8/20	
S.GOING	4		6/27							
TEMPA	0	EXTERNAL*	4/34	4/52	6/30 S	6/32	6/48	6/48	8/15 S	9/37
UNLOCK	0	EXTERNAL*	6/44							
WRITCAP	0	EXTERNAL*	5/19	6/31	7/05					