

EVENT CHANNEL ROUTINES  
STORAGE ALLOCATION.

COMPASS - VER 2. 11/03/71 22.44.18.

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ADDRESS LENGTH BINARY CONTROL CARDS.

ADDRESS	LENGTH	IDENT	EVENT
0	343		
343		END	

BLOCKS	TYPE	ADDRESS	LENGTH
ABSOLUTE*	ABSOLUTE	0	167
PROGRAM*	LOCAL	0	343
EVENT	COMMON	0	50

ENTRY POINTS.

E.MEVCH	=	0	EVNT	=	0	GETEVF	=	137	UNHANG	=	311
L.MEVCH	=	31	EVENT1	=	13	HANG	=	150			
E.DSECH	=	31	EVENTCK	=	100	MEVHANG	=	215			
L.DSECH	=	17	EVCHANG	=	105	MEVHNSF	=	222			

EXTERNAL SYMBOLS.

MAKEOBJ	E.ECS	UHUNG1	S.QUANT	SYSFRET	GETCAP	NOCHAN	SIGIX
PUTCAP	E.MOT	S.CHARG	CLKWAIT	I.WAIT	CHKPTR	CHKSCHD	NEGIX
CAPAR	I.LOCK	S.OLDTM	DESCHEO	CAPTY	NEGPAR	S.USRB1	BIGG
SYSRET	SCHED	S.SYSTEM	SWAPOUT	DISASTR	BIGPAR	DELOBJ	NEGO

## IDENT EVENT

\*  
\* FCS ACTIONS CONTAINED IN THIS DECK  
\*  
\* MKEVCH CREATE EVENT CHANNEL  
\* DSECH DESTROY EVENT CHANNEL  
\* EVENT SEND EVENT  
\* EVCHANG GET EVENT OR HANG  
\* SETEVF GET EVENT OR F-RETURN  
\* MEVHANG GET EVENT FRM LIST OF CHANNELS OR HANG  
\* MEVHNGF GET EVENT FRM LST OF CHANNELS OR F-RETURN

\* EXTERNAL SUBROUTINES CONTAINED HEREIN  
\*  
\* EVENT1 SEND EVENT (CALLED BY INTERRUPT CODE)  
\* EVENTCK REPORT IF PROCESSES WAITING ON CHANNEL  
\* HANG GET EVENT (CALLED BY INTERRUPT CODE)  
\* UNHANG DECHAIN A PROCESS FROM ANY CHANNELS ITS HUNG ON\* INTERNAL SUBROUTINES CONTAINED HEREIN  
\*  
\* EVENT1.S SEND EVENT FROM ECO SYSTEM  
\* UNCHAIN UNDO 1 LINK IN EVENT CHANNEL PROCESS CHAIN

CREATE AN EVENT CHANNEL

PARAMETERS

API C..ALLOCATION BLOCK  
AP2 D..INDEX IN FULL C-LIST  
AP3 D..LENGTH OF EVENT QUEUE

INTSYS XTEXT  
ERRNUMS XTEXT  
BLKBOX XTEXT  
PROCSYM XTEXT  
TYPES XTEXT  
OPTIONS XTEXT  
INTSYS XTEXT  
  
\*  
RECS MACRO A  
+ RE A  
RJ ~~E~~X E..ECS  
  
RECS ENDM  
WECS MACRO A  
+ WE A  
RJ ~~E~~X E..ECS  
  
WECS ENDM  
ECSMAC XTEXT  
CRLOCK MICRO  
EXT EXT  
EXT  
  
19..\*/EEVENT/\*  
MAKEOBJ..PUTCAP..CAPAR..SYSRET  
E..ECS..E..MOT

## CREATE AN EVENT CHANNEL

## PARAMETERS

API C..ALLOCATION BLOCK  
 AP2 D..INDEX IN FULL C-LIST  
 AP3 D..LENGTH OF EVENT QUEUE

L	51	5111-00170 0331000100	MKEVCH	ECSCODE SA1 NG SA2 SA2 IX1 NG SA2 ZR IX1 PL	MEVCH B1+P.PARAM+2 TEST CAPABILITY INDEX X1.MKEVCH5 ERROR..INDEX NEGATIVE B1+P.CLIST SA2 B1+X2 X1-X2 X1.MKEVCH2 A2+2 X2.MKEVCH6 ERROR..INDEX TOO LARGE X1-X2 X1.MKEVCH1	
L	52	5121-00140 53221 37112				
L	53	0331-00066				
L	54	5022-00052 0302000101	MKFVCH1			
L	55	37112 0321000054				
L	56	5111-0017 5221777776	MKEVCH2	SA1 SX2 NG LX1 SB2 AX1 NZ SA5 SX7 SB4 JP	B1+P.PARAM+3 COMPUTE SPACE NEEDS X1=1 X2.MKEVCH4 ERROR..LESS THAN 1 EVENT IN QUEUE 1 X1+3 14 ERROR IF EVENT QUEUE LARGER THAN X1.MKEVCH4 X 2EXP17-1 B1+P.PARAM+1 CALL ALLOCATOR AT.EVCH MKEVCH3 RETURN LINK MAKEOBJ	
L	57	0332-00070 20101				
L	60	6221-00003 21120				
L	61	0311-00077 5151000067				
L	62	7170-00051 6140000064				
L	63	0200-00060 X				
L	64	10055 76120 7120000003	MKEVCH3	BX0 SX1 SX2 BX6 LX6 SX6 LX6 BX6 SA6	X5 B2 3 X2 18 X6+X2 18 X6+X1 B1	ECSC ANDR OF EVENT CHANNEL LENGTH OF EVENT CHANNEL
L	65	10622 20622 12662 20622				
L	66	12661 56610				
L	67	5150000001 X 613-777776 20536		SA5 SX5 SR3 LX5 PX6 BX7 LX6 BX6	CAPAB+1 X5 =1 30 B3,X5 X6 30 X6+X7	NOT INDEX OF EVENT CHANNEL
L	70	27635 10746 20636 12667				

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L	71	5161000001		SA6	B1+1	STORE CHAINING WORD
L	72	10611 5111000071 5161000002		SA1 BX6 SA6	B1+P <sub>0</sub> PARAM+3 X1 B1+2	3RD WORD OF EVENT CHANNEL
L	73	0120000003	56010	SA0 WECS	B1 3	WRITE OUT 3 WORD HEADER FOR EVENT CHAN
L	74	5111000070		SA1 SB5 SB6 JP	B1+P <sub>0</sub> PARAM+2 CAPAB SYSRET PUTCAP	PUT CAPABILITY FOR EVNET CHANNEL IN FULL C-LIST
L	75	6160000000 X	6150000000 X	MKEVCH4	ERROR	3,NEGO
L	76	6160000000 X	0200000000 X	MKEVCH4X	ERROR	3,BIGQ
L	77	6140000003		MKEVCH5	ERROR	2,NEGIX
L	100	6140000002		MKEVCH6	ERROR	2,BIGIX
L	101	6140000002		ENDECS		MEVCM
L	102					

## DESTROY AN EVENT CHANNEL

## PARAMETERS:

API CAPABILITY FOR THE EVENT CHANNEL

IF PROCESSES ARE HUNG ON THE EVENT CHANNEL,  
THEY ARE SENT SYSTEM YOU LOOSE EVENTS BEFORE  
THE CHANNEL IS DESTROYED

L	51 515100067	DSECH	ECS CODE	DSECH	
	56610		SA5	B1+P.PARAM+1	FETCH EVENT CHANNEL MOT
	73650		SA0	B1	
L	52 6110000001		SX0	X5	
L	53 54201		RECS	1	
	43147		SA2	A0	CHECK THAT THE UNIQUE NAME
	13452		MX1	39	MATCHES
	11414		BX4	X5=A2	
L	54 J314000077 *		BX4	X1*X4	
	15621		NZ	X4,ERRMOT	ERROR IF UNIQUE NAMES DONT MATCH
L	55 516100067		BX6	=X1*X2	SAVE ECS A(EVENT CHANNEL)
			SA6	B1+P TEMP2	

\* SEND EVENTS ON THE CHANNEL UNTIL THE RESPONSE INDICATES THAT  
\* THE EVENT WASN'T GORILLED UP BY A PROCESS

\* WAIT FOR PENDING INTERRUPTS IF ANY

L	56 4360*	DSECH1	MX6	0	. CLEAR PPU LOCKOUT
	5160000000 X		SA6	=XI,LOCK	
L	57 6160000454		SB6	I,PAUSE	
	7160000001		SX6	1	
L	60 5110000000 X	DSECH2	SA1	=XI,WAIT	. SEE IF INTERRUPT PENDING
	6166777776		SB6	RA=1	
L	61 0450000275 *		EQ	RA,B0,DISAS	. PENDING INTERRUPT DIDNT OCCUR
	6311000060		NZ	X1,DSECH2	. INTERRUPT STILL PENDING
L	62 5160000000 X		SA6	I,LOCK	. HELOCK INTERRUPTS
	43774		MX7	60	. YOU LOOSE EVENT
	43600		MX6	0	. PSEUDO-UNIQUE NAME FOR SYSTEM
L	63 511100067		SA1	B1+P TEMP2	. RETRIEVE ECS A(EVCH)
	6160000056		SB6	P TEMP1	. CELL FOR RESPONSE
L	64 617000045		SB7	DSECH3	. SETLINK
	0400000016 *		EQ	EVENT1,S	. GO SEND EVENT ON CHANNEL
L	65 511100056	DSECH3	SA1	B1+P TEMP1	. GET RESPONSE
	7211777775		SX1	X1=EC,PASS	
L	66 030100056		ZR	X1,DSECH1	. LOOP IF EVENT WAS PASSED TO PROCESS

\* DESTROY THE EVENT CHANNEL

L	515100067		SA5	B1+P.PARAM+1	. RETRIEVE UN.MOT OF EVH
L	67 6170000011 *		SB7	EVENT,5	. UNLOCK INTERRUPTS AFTER CHANNEL
	0400000000 X		EQ	=XDELOBJ	. DESTROYED
L	70		ENDECS	DSECH	

			THIS ROUTINE DISPOSES OF AN EVENT ON A SPECIFIED EVENT CHANNEL AND RETURNS TO THE CALLER THE PRECISE ACTION TAKEN	
			SUBROUTINES CALLED : UNHANG+ AND UNCHAIN+ AND UNHUNG1+	
			ENTRY FROM USER CALL PARAMETERS ARE IN THE ACTUAL PARAMETER AREA. AP1 = CAPABILITY FOR AN EVENT CHANNEL AP2 = EVENT DATUM	
1	EC.QUE	EQU	1 EVENT QUEUED	
2	EC.PASS	EQU	2 EVENT PASSED TO PROCESS	
3	EC.LOSE	EQU	3 YOU LOSE EVENT PUT ON QUEUE	
4	EC.FULL	EQU	4 FULL QUEUE	
	*			
		EXT ENTRY	I.LOCK,SCHED,UNHUNG, EVNT,EVENT1	
	*			
0	716000001	EVNT	SX6	1 LOCK OUT PPU INTERRUPTS
	516000000 X		SA6	I.LOCK
	*			
1	512100067		SA2	B1+P.PARAM+1 GET MOT INDEX AND UNIQ. NAME OF EV CH
	73020		SX0	X2
	56010		SA0	
2	0110600001		RECS	B1 1 FETCH MOT ENTRY OF EVENT CHANNEL
3	54100		SA1	A0
	13221		BX2	X2-X1
	43447		MX4	39
	11224		BX2	X2*X4
4	031200077		NZ	X2,ERRMOT . ERROR UNIQUE NAMES DON'T MATCH
	15114		BX1	=X4*X1 ABS ECS ADDRESS OF EVENT CHAN
5	512100070		SA2	B1+P.PARAM+2 GET EVENT DATUM
	5141000126		SA4	R1+P.GRHEAD GET MOT OF USER PROCESS INTO X6
6	10720		BX7	X2
	20452		LX4	6+36
	7264000000		SX6	X4+0
7	6160000156		SB6	P,XPACK+14 LOC TO RETURN RESULT OF ACTION
	6170000011		SB7	EVENT.5
10	0200000013		JP	EVENT1
	*			
	*			
11	13666	EVENT.5	BX6	X6-X6 RELEASE PPU LOCK OUT
	5160000000 X		SA6	I.LOCK
12	0200000000 X		JP	SYSRET

\*
 \*

ENTRY POINT FROM PPU INTERRUPT  
REGISTER ALLOCATION EXPECTED FROM PPU  
 X1 = ECS ADDRESS OF EVENT CHANNEL  
 X6 = PROCESS MOT  
 X7 = EVENT DATUM  
 B1 = ORIG OF SCRATCH AREA  
 B6 = ADDR REL TO B1 TO RETURN RESULT  
 B7 = RETURN LINK

\*
 \*

13 7306+  
56010  
14 0110000001  
15 5621/  
43247  
11623  
20647

EVENT1 SX0 X6 READ MOT ENTRY FOR SENDING PROCESS  
 SA0 B1  
 RECS I  
 SA2 B1  
 MX3 39  
 BX6 X2\*B3 39  
 LX6 B1

SETUP PROC UNIQUE NAME IN LOW BITS OF X6

\*
 \*

16 10011  
5101000000  
17 0110000003  
20 1020/  
5010000001  
26151

EVENT1.5 BX0 X1  
 SA0 B1+0  
 RECS 3  
 BX2 X0 REAR EVENT CHAN HEADER  
 SA1 A0+1 SAV= ECS ADDRESS IN X2  
 UX1 A0+1 . GET PROCESS CHAINING WORD  
 GE B5,A1 B5,A1 . IF CHAINING INDEX GE 0,  
 B5,B0,EVENT12 B5,B0,EVENT12 . A PROCESS IS WAITING FOR AN EVENT

\*
 \*

21 0650000045 +

PROCESS QUEUE EMPTY, PUT EVENT IN CHANNEL

\*
 \*

22 2713/  
63210  
63310  
20122  
63410

SAT A0 LENGTH OF EVENT CHANNEL  
 SB2 X1  
 LX1 6+18  
 SB3 X1 INPUTINTER  
 LX1 18  
 SB4 X1  
 SA3 B1+2 OUTPUTINTER

\*
 \*

23 513100002

A0 CHECK FOR ROOM IN QUEUE  
 EXPCT ECS ADDR EVENT CHAN IN X0  
 X3,EVENT10 B1+3 JP IF NO ROOM

\*
 \*

24 0303000041 +  
5161000003

EVENT8 ZR X6+EVENT10  
 SA6 B1+3 SAVE X6  
 SX6 X3-1 DECREMENT EMPTY COUNT  
 SA6 A3  
 ZR X6+EVENT11 JP IF YOU LOSE TIME  
 SX6 EC.QUE RESPONSE TO CALLER

\*
 \*

25 726377776  
54630

PLAC EVENT IN QUEUE

\*
 \*

26 0306000043 +  
7160000001

SA7 B1+4  
 SA6 B1+B6  
 SB3 B3+2 RESPONSE TO CALLER  
 INCREMENT IN POINTER

\*
 \*

27 517100004  
56616

\*
 \*

30 013300002

EVENT CHANNEL ROUTINES  
SUBROUTINE TO DISPOSE OF EVENT ON CHANNEL

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0732000032 +		LT	B3,B2,EVENT9	JP IF NO WRAP AROUND
21 6130000003		SB3	3	
32 56110	EVENT9	SA1	B1	FIX POINTER E IN HEADER
20120		LX1	6+18	
73510		SX5	X1	X5 = IN POINTER
13115		BX1	X1-X5	
33 76430		SX4	B3	
12614		BX6	X1-X4	
20644		LX6	36	
54610		SA6	A1	
34 56010		SA0	B1	
35 0120000003		WECS	3	COPY EVENT CHANNEL HEADER OUT
36 5101000003		SA0	B1+3	
36005		IX0	X0-X5	
37 6120000002		WECS	2	COPY OUT EVENT
40 0270000000		JP	B7	RETURN
*				
41 7160000004	EVENT10	SX6	EC,FULL	EVENT QUEUE FULL
56616		SA6	B1+B6	CALLER NOTIFICATION
42 0270000000		JP	B7	
*				
43 7160000003	EVENT11	SX6	EC,LOSE	*YOU LOSE* EVENT
43774		MX7	60	=0 IS *YOU LOSE* EVENT DATUM
44 0200000007 +		JP	EVENT8,7	
*				
*				
*				
45 6155777737	EVENT12	SB5	B5=P,PROCRO=P,PROCPW=1	
27656		PX6	B5,X6	. INSERT THE CHAINING WORD IN THE EVENT
43547		MX5	39	
46 516100001		SA6	B1+1	. SAVE THE EVENT
5171000002		SAT	R1+2	
47 21130		AX1	30	. READ PROCESS MOT
15011		BX0	X1	
7170000002		SX7	EC,PASS	. SEND REPLY = EVENT PASSED TO PROCESS
50 011000001		RECS	1	
51 56714		SAT	B1+B6	
54160		SA1	A0	
15015		BX6	=X5*PX1	
52 0110000061		RECS	I	. READ PROCESS CONTROL WORD
53 54400		SA4	A0	
20475		LX4	PF,E	. CHECK FOR PSFUD0-PROCESS
0334000071 +		NG	X4,EVENT17	
54 10604		BX6	X0	. SAVE ERS A (PROCESS)
5161000003		SA6	B1+3	
20475		LX4	60=PF,E+PF,C	
55 0324000061 +		PL	X4,EVENT13	. SKIP IF PROCESS NOT IN CORE
5130000000 X		SA3	=XS-USRBI	. FIND USERBI
56 62520		SB5	X3	
5131000001		SA3	R1+1	
57 5121000002		SA2	B1+2	

EVENT CHANNEL ROUTINES  
SUBROUTINE TO DISPOSE OF EVENT ON CHANNEL

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	10633	RX6	X3
	10722	BX7	X2
60	5165000156	SA6	R5+P,XPACK+14
	5175000157	SA7	R5+P,XPACK+15
61	10101	BX1	X0 . PRESERVE ECS A (PROCESS)
	7160000030	SX6	P,XPACK+14=P,ROHFA
	36006	IX0	X0+X6
62	5101000011	SA8	B1+1 . WRITE EVENT INTO ECS COPY OF PROCESS
	43531	MX5	1 . BIT FOR FLAG SETTING
	20466	LX4	60=PF,C . GET X4 BACK IN SHAPE
63	8120000012	WECS	2
64	10911	BX0	X1
	26565	LX5	60=PF,V . SET EVENT FLAG
	12645	BX6	X4+X5
	20571	LX5	PF,V+60=PF,H
65	15660	BX6	=Y5*X6 . CLEAR HUNG FLAG
	66470	SR4	87 . PRESERVE EXIT
	6170000067 *	SB7	EVENT16 . RETLINK
66	0400000000 X	EQ	=EXCHKSCHD . RESCHEDULE PROCESS IF ITS NOT OTHERWISE BLOCKED
	*		***** NOTE THIS WON'T WORK ON TWO CPU'S
67	6674	EVENT16	SB7 B4 . RESTORE RETLINK
	5111000003	SA1	B1+3 . RESTORE ECS A (PROCESS)
	10011	BX0	X1
	0400000311 *	EQ	UNHANG
	*		MUST UNCHAIN PSEUDO PROCESS
	*		FROM PROCESS QUEUE
71	5160000075 *	EVENT17	SB6 . REL A (CHAIN WORD)
	7145000040	SX4	R5+P,PROCNO+P,PROCRW-1
72	10100	BX1	X0 . SAVE ECS ADDR OF PSEUDO PROCESS
	36040	IX0	TO PASS TO #UNHUNG1*
73	5110000001	RECS	EC5 ADDR OF CHAINING WD OF PSEUDO PROC
74	54200	SA2	READ CHAINING WD
	0200000320 *	JP	UNCHAIN
75	5121000001	EVENT18	SA2 B1+1 . FETCH UP EVENT
	5141000002	SA4	B1+2
76	10622	8X6	X2
	10744	BX7	X4
	0200000000 X	JP	UNHUNG1
77	6140000001	ERRMOT	ERROR I,NUCHAN

\*  
\*  
\*  
\*  
\*  
\*

THIS ROUTINE CHECKS THE PROCESS QUE OF A SPECIFIED  
EVENT CHANNEL TO SEE IF ANY PROCESSES ARE HUNG ON IT.

PARAMETERS ARE:

\*  
\*  
\*  
\*  
\*  
\*

X1 = ECS ADDRESS OF EVENT CHANNEL

B1 = SCRATCH AREA

B7 = RETURN

\*  
\*  
\*  
\*  
\*  
\*

RETURNS: B2 LESS THAN 0 IF NO PROCESS HUNG  
B2 GREATER THAN 0 IF A PROCESS HUNG

\*  
\*  
\*  
\*  
\*  
\*

USES: X0=A0,X2=A2,X3,A4,B2

ENTRY EVENTCK

\*

100 10011  
56010  
101 011000002  
102 512100001  
26222  
103 062000104  
57001  
104 64200  
0270000000

	EVENTCK		EVENTCK	
	BX0	X1	.	ECS ADDRESS OF EVENT CHANNEL
	SAD	B1	.	SCRATCH AREA
	RECS	2	.	READ EACH HEADER TO SCRATCH AREA
	SA2	B1+1	.	PETCH CHAINING WORD
	UX2	B2,K2	.	GET CHAINING WORD OFFSET
	GE	B2,B0,EVENTCK1	.	JUMP IF PROCESS WAITING
	SA0	=R1		
	SB2	A0	.	MOVE FLAG TO B2
	JP	B7	.	EXIT

165	7160000001	
		5160000600 X
166	5111000126	
		20152
		73110
167	512100067	
		73020
		56010
168	0110000001	
169	54200	
		43047
		13223
		11202
170	0312000077	+
		15230
171	6120000041	
		6170000115
172	02000000150	+
173	0332000120	+
		5161000156
174	5171000157	
		7160000000
175	5160000000 X	
		0200000000 X
176	5111000126	
		20152
		73010
177	56010	
		43647
178	0110000001	
179	54200	
		15026
		43301
		20372

\*\*\* THIS ROUTINE GETS AN EVENT FROM AN EVENT CHANNEL OR HANGS IT CALLS ↑HANG#

ENTRY IS FROM THE USER

S.CHARG,S.OLDIM,S.SYSTM  
S.QUANT  
CLKWAIT  
DESCRED,SWAPOUT  
EVCHANG  
I SET PPU LOCKOUT  
I LOCK . X6 STAYS POS FOR HANG

SA1 B1+P.ROHEAD PREPARE TO CALL CHANG#  
LX1 6+36  
SX1 X1 . MOT OF PROCESS FOR HANG  
SA2 R1+P.PARAM+1 MOT AND UNIQUE NAME OF EVENT CHAN  
SX0 X2  
SA0 B1  
RECS 1  
SA3 A0  
MX0 60-21  
BX2 X2=X3  
BX2 X0\*X2  
NZ X2,ERRMOT ERROR=UNIQUE NAMES DID NOT MATCH  
BX2 =X0\*X3 ABS ECS ADDRESS OF EVENT CHAN  
SB2 P.PROCRO+P.PKUCRW CHAINING WORD INDEX  
SR7 EVCHNG1 RETURN LINK  
JP HANG

EVCHNG1 NG X2,EVCHNG2 JP IF NO EVENT  
SA6 B1+P.XPACK+14 PASS EVENT TO USER REGISTERS  
SA7 B1+P.XPACK+15

SX6 0 CLEAR PPU LOCKOUT  
SA6 I.LOCK

JP SYSRET

NO EVENT... MUST HANG

EVCHNG2 SAI B1+P.ROHEAD  
LX1 6+36  
SX0 X1  
SA0 B1  
MX6 39  
RECS 1 . HEAD MOT  
SA2 A0  
BX0 -X6\*X2  
MX3 1  
LX3 60-PF,R

EVENT CHANNEL ROUTINES  
HANG ON EVENT CHANNEL

124 0110000001  
125 54207

15623

20364

12663

126 54625

6175000131 +

73110

127 0120000001

128 0400000000 X

131 13664

5150000000 X

132 5110000000 X

5120000000 X

133 513100132

10611

54620

134 37510

36753

5140000000 X

135 54735

36654

54640

136 0400000000 X

RECS

SA2

BX6

LX3

BX6

SA6

SB7

SX1

WECS

EQ

I

A0

=X3\*X2

. CLEAR SCHEDULED FLAG

PF.R+60=PF.H

X6+X3

. SET HANGING FLAG

A2

EVCHNG3

X1

1

DESCHE

DESCHED

READ PROCESS HEADER WORD

AN

=X3\*X2

. SET HANGING FLAG

PF.R+60=PF.H

X6+X3

. SET HANGING FLAG

A2

EVCHNG3

X1

1

WECOS

EQ

WRITE NEW HEADER WORD

DESCHE

DESCHED THE PROCESS

CLEAR PPU LOCKOUT

BX6

SA6

I.LOCK

SA1

S.CHARG

SA2

S.OLDUTM

SA3

B1+P.SYSTIM

BX6

X1

SA6

A2

IX5

X1-X2

IX7

X5+X3

SA4

S.SYSTIM

SA7

A3

IX6

X5+X4

SA6

A4

EQ

UPDATE SYSTEM TIME CLOCKS

SWAPOUT

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\*  
\*  
\*  
137 GETEVF  
137 7160000001 5160000000 X  
140 5121000047 73020  
141 0110000061 56410  
142 5436+ 43047  
143 0312000077 + 11202  
144 6120000041 17666  
145 6170000146 + 04000000150 +  
146 0322000115 + 7160000000  
147 5160000000 X 0400000000 X

GETEVF IS AN ECS ACTION WHICH GETS AN EVENT OR FRETURNS  
IF THERE IS AN EVENT, IT IS EQUIVALENT TO `EVCHANG`  
PARAMETER: API: C = EVENT CHANNEL  
ENTRY GETEVF  
EXT SYSFRET  
RSS 0  
SX6 1  
SA6 I,LOCK .LOCK OUT PPU INTERRUPTS  
SA2 R1,P,PARAM+1 .MOT AND UNIQUE NAME OF EVCH  
SX0 X2  
SA0 B1  
RECS 1  
SA2 A0 .MOT ENTRY  
MX0 30  
BX2 X2=X3  
BX2 X0\*X2  
NZ X2,ERRMOT .UNIQUE NAMES DID NOT MATCH  
BX6 =X6-X6 .DO NOT HANG  
BX2 =X0\*X3  
SB2 P,PHOCRO+P,PHOCRW  
SB7 #+1 .RETURN LINK  
EQ HANG  
PL X2-EVCHNG1 .EVENT OBTAINED - BRANCH TO OTHER ACTIO  
SX6 0  
SA6 I,LOCK .UNLOCK  
EQ SYSFRET

THIS ROUTINE HANGS A SPECIFIED PROCESS OR PSEUDO  
PROCESS ON AN EVENT CHANNEL IF THE EVENT QUEUE  
OF THE EVENT CHANNEL IS EMPTY ... OTHERWISE  
IT RETURNS AN EVENT FROM THE EVENT CHANNEL

PARAMETERS      B1 = ORIG OF SCRATCH AREA  
                  B2 = CHAIN WD INDEX TO USE WITH PROCES  
                  B7 = RETURN LINK  
                  X1 = MOT INDEX OF PROCESS  
                  X2=ABS ECS ADDRESS OF EVENT CHAN  
                  X6 = NEGATIVE FOR #DO NOT HANG#

RETURNS      X2 = NEGATIVE IF PROCESS HUNG  
                  X2 = POSITIVE IF EVENT FOUND  
                  X6 / X7 = EVENT

REGISTERS USED      A0 = Y0  
                  A2 = Y2  
                  A3 = Y3  
                  A4 = X4  
                  A6 = X6  
                  X7  
                  B4 = B5, B6

		ENTRY	HANG	
150	5101000000	HANG	SAC	B1+0
	10022		BX0	X2
151	0110060003		RECS	3
152	54300		SAB	A0
	63430		SB4	X3
	20330		LX3	6+18
	63530		SB5	X3
153	20320		LX3	18
	63620		SR6	X3
	0555000201 *		NE	B5+B6,HANG2
154	5040000002		S44	A0+2
	0304000201 *		ZR	X4,HANG2
155	0336000214 *		NG	X6,HANG4
				DONT HANG WAS SPECIFIED
				MUST HANG PROCES ON PROCESS QUEUE
			LX1	30
	20136		PX7	B2,X1
	27721			
156	5030000001		SA3	A0+1
	43636		MX6	30
	15236		BX2	-X6*X3
			AX7	30
157	21734		BX3	X6*X3
	11343			

	12637	BX6	X3+X7	
	54630	SA6	A3	
*		WECS	3	WRITE OUT EVENT CHAN HEADER
*		LX2	30	
*		UX3	B5,X2	GET POINTER FROM OLD END OF QUEUE
160	0120000003	AX3	30	
		SX0	X3	
161	26234	RECS	1	
	26352	MX6	39	
	21336	SA3	A0	
	73030	BX0	=X4+X3	
162	0110000001	GE	B5,B0,HANG1	JP IF QUEUE NOT PREVIOUSLY EMPTY
163	43647	SB5	=B5	
	54300	SX3	B5	CHANGING WORD INDEX OF OLD END OF QUEUE
	15036	IXC	X0+X3	
164	0650000145 +	RECS	1	READ POINTER FROM OLD END OF Q
	67505	SA3	A0	
165	76351	MX6	30	
	36043	BX4	X6+X3	SAVE PTR TO EVENT CHAN FOR Q TAIL
166	0110000001	LX2	30	
167	54300	BX2	X2+X4	PTO WORD FOR NEW Q TAIL
	43636	BX3	=X6+X3	
	11463	LX7	30	
	20236	BX6	X3+X7	
170	12224	SA6	A3	
	15336	WECS	1	WRITE REPAIRER PTR FOR OLD END OF Q
	20736			
	12637	LXI	30	
171	54630	SX0	X1+0	
172	0120000001	MX6	39	
		RECS	1	READ MOT ENTRY OF NEW PROCESS
		SA3	A0	
173	24124	BX0	=X4+X3	
	7201000000	SX3	B2	
	43647	IX0	X0+X3	
174	0110000001	BX6	X2	
175	54300	SA6	A0	
	15032	WECS	1	WRITE PTR TO NEW END ON QUEUE
	436320			
	36003	MX2	1	
176	10622	JP	B7	SIGNAL NO EVENT
	54600			RETURN
177	0120000001			
				GET EVENT FROM EVENT QUEUE
200	43201	HANG2	SA2	EMPTY COUNT
	0270000000	S85	B6+2	INCREMENT OUT POINTER
		LT	B5,R4,HANG3	JP IF NO WRAP AROUND
		S85	3	
201	5020000002			
	6155000002			
202	0754000203 +			
	6150000003			

EVENT CHANNEL ROUTINES  
HANG

203	43672	HANG3	MX6	59	X6 = -1 TO INCREMENT EMPTY COUNT
	37626		IX6	X2-X6	
	54620		SA6	A2	
	73230		SX2	X3	OLD OUT POINTER
204	13332		BX3	X3-X2	
	76650		SX6	B5	
	12663		BX6	X6+X3	
	20622		LX6	I8	
205	5063000000		SA6	A3+0	
206	0120000003		WECS	3	WRITE OUT EVENT CHANNEL HEADER
207	36002		IX0	X0+X2	ADDR OF EVENT
210	0110000002		RECS	2	READ EVENT
211	54300		SA3	A0	GET EVENT INTO X6 /X7
	16623		BX6	X3	
	6142777737		SB4	B2=P, PROCRO=P, PROCDW+1	PUT THE CHAINING WORD
212	27646		PX6	B4,X6	INDEX INTO THE EVENT
	5030000001		SA3	A0+1	
	10733	*	BX7	X3	
213	13222		BX2	X2-X2	SET X2 NON-NEGATIVE
	0276000000		JP	B7	RETURN
214	17222	HANG4	BX2	=X2=X2	SET X2 TO #No EVENT#
	0276000000		JP	B7	

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EVENT CHANNEL ROUTINES  
HANG ON MULTIPLE EVENT CHANNELS

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215 6120000046  
5121000126  
216 21225  
43060  
5111000067  
217 15221  
37212  
03320010223 \*

220 6140000002  
221 6140000001  
  
222 6120000045  
5111000067  
223 933100221 +  
0301000221 +  
224 63612  
56350  
6140000036  
225 0746000220 +  
5111000066  
226 6170000227 +  
0400000000 X

227 6040000000  
6170000000  
230 56147

\*  
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\*  
\*

EXT  
ENTRY  
MEVHANG  
SR2  
SA2  
LX2  
MX0  
SA1  
BX2  
IX2  
NG

\*  
\*  
\*  
\*  
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\*  
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ER21  
ER20  
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\*  
\*  
\*

MEVHNGF  
SR2  
SA1  
NG  
ZR  
SB6  
SR3  
SB4  
LT  
SA1  
SB7  
EQ

\*

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\*

THIS ROUTINE GETS AN EVENT FROM ONE OF A LIST OF EVENT CHANNELS. MEVHANG HANGS ON ALL THE CHANNELS IF NONE HAS AN EVENT. MEVHNGF F-RETURNS IF AN EVENT ISN'T AVAILABLE ON AT LEAST ONE OF THE CHANNELS.

HANG, UNCHAIN, AND GETCAP ARE CALLED

AP1 = POINTER TO LIST OF INDICES OF CAPABILITIES FOR EVENT CHANNELS

AP2 = NUMBER OF EVENT CHANNELS IN THE LIST

ALL CAPABILITIES ARE CHECKED FOR APPROPRIATE TYPE AND OPTION BITS. INDEPENDENT OF THE EXISTENCE OR NON-EXISTENCE OF EVENTS ON ONE OF THE CHANNELS.

I, WAIT  
MEVHANG, MEVHNGF  
41=OB, GTEVF \*HANG FLAG TO R2  
B1+P, ROHEAD LENGTH OF QUEUEING BUFFER+1 TO X1  
24  
4R  
B1+P, PARAM+1 ERROR IF NUMBER OF CHANNELS AS LARGE AS  
=X0\*X2  
X1=X2 SIZE OF QUEUEING BUFFER  
X2, MEV1

SOME ERRORS

2,BIGPAR  
1,NEGPAR

F-RETURN ENTRY (SAVE PARAS AS ABOVE)

41=OB, GTEVF  
B1+P, PARAM+1 ERROR IF CHANNEL COUNT NEGATIVE  
X1, ER20  
X1, ER20  
X1 ERROR IF CHANNEL COUNT EXCEEDS  
R4  
P, PARAM-2 (AVAILABLE SCRATCH SPACE =2)  
R4, 86, ER21  
B1+P, PARAM+0 CHECK OUT LIST OF EVCHS  
MEV1, 5 RETLINK  
EXCHKPTR GO GET ABS ADR, ETC.

CHECK ALL CAPABILITIES FOR TYPE AND OPTIONS. READ THE NOT ENTRY AND CHECK THAT THE EVENT CHANNEL STILL EXISTS. SAVE THE ABSOLUTE EEEC ADDRESSSES OF THE CHANNELS IN THE PARAMETER AREA.

A0+0 . GIVES ABS ADR OF LIST  
B0+0 INITIAL TALLY  
B4+B7 FETCH INDEX FROM LIST

EVENT CHANNEL ROUTINES  
HANG ON MULTIPLE EVENT CHANNELS

```

        6160000232 +
231 0400100000 X
232 54100
      63510
      6160001757
233 0565000307 +
      22121
234 0321000307 +
      5010000001
235 43347
      15013
      56010
236 0110000001
237 54200
      13121
      11113
240 0311000310 +
      6161000070
241 15722
      56747
      6177000001
242 0773000230 +

```

MEV?

SB6	MEV2	RETURN LINK
EQ	=XGETCAP	RETURNS ADDRESS OF CAP IN A0
SA1	A0	
SB5	X1	ERROR IF CAP NOT FOR EVENT CHANNEL
SB6	T.EVCH	
NE	B6,B5,ER72	
LX1	B2,X1	
PL	X1,ER72	ERROR IF OB.GTEV (OR OB.GTEVF) ISN T ON
SA1	A0+1	
MX3	60-21	
RX0	=X3*X1	
SA0	81	
RECS	1	READ MOT ENTRY FOR CHANNEL
SA2	A1	
BX1	X2=X1	
BX1	X1*X3	
NZ	X1,ERRMOT1	ERROR IF UNIQUE NAMES DON T MATCH
SB6	B1+P.PARAM+2	
BX7	=X3*X2	SAVF ECS ADDRESS OF EVCH
SA7	B6+B7	
SB7	B7+1	
LT	B7,B3,MEV3	

CHECK FOR EVENTS WITHOUT HANGING ON THE CHANNELS

```

        6170000247 +
243 7652+
      6120000041
      66332
244 7160000081
      5160000000 X
245 66412
      5124000027
      43601
246 0400000150 +
247 6122000001
      0322000115 +
250 5120000000 X
      0302000256 +
251 7160000000
      5160000000 X
252 6140000454
253 5120000000 X
      0440000275 +
254 6144777776
      0312000253 +
255 7160000001
      5160000000 X
256 0723000245 +
      63450
257 6120000045
      0442000000 X

```

\*

\*

\*

SB7	MEV4	RETURN LINK
SX5	B2	SAVE HANG/FRETURN FLAG IN XS
SB2	P.PROCRO+P.PROCRW	
SB3	B1+B2	SETUP TALLY AND ENDTEST
SX6	I	LOCK OUT THE PBU S
SA6	I.LOCK	
SB4	B1+B2	FETCH ECS ADDR OF CHANNEL
SA2	B4+P.PARAM+2=P.PRO-R0+P.PROCRW	
MX6	I	DON T HANG FLAG
EQ	HANG	GO LOOK FOR AN EVENT
SB2	B2+1	ADVANCE COUNT
PL	X2,EVCHNG1	GOT AN EVENT
SA2	I.WAIT	CHECK FOR INTERRUPT PENDING
ZR	X2,MEVS	
SK6	0	
SA6	I.LOCK	
SR4	I.PAUSE	
SA2	I.WAIT	
EQ	B4,B0,DISAS	INTERRUPT FAILED TO TUN
SB4	B4+1	
NZ	X2,MEVSP1	
SX6	I	
SA6	I.LOCK	RELOCK INTERRUPTS
LT	B2,B3,MEV6	
SB4	X5	RECOVER ENTRY FLAG
SB2	41-OB.GTEVF	IF NO EVENT AND F=RETURN CASE, INITIATE F=RETURN
EQ	B4,B2,=XSYSRET	

\*

EVENT CHANNEL ROUTINES  
HANG ON MULTIPLE EVENT CHANNELS

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260	5111000126		S1	B1+P.ROHEAD	NO EVENT WAS WAITING AND HE WANTS TO HANG. SIGH. PROCEED
	21122		A1	I8	WITH THE MESSY BUSINESS OF HANGING ON THE CHANNELS
	73110		SX1	X1	PTR TO PROCESS MOT TO X1
261	73015		SX0	X1	
	66300		S83	B0	SET INITIAL TALLY
	6170000266 +		S87	MEV7	RETURN LINK
262	5101000056		S80	B1+P.TEMP1	GET ECS ADDRESS OF PROCESS INTO TEMP1
263	0110000001		RECS	I	FOR LATER CHECKING
264	6141000470	MEV9	SB4	B1+P.PARAM+2	ECS ADDR OF EVCH TO X2
	56243		SA2	B4+83	
	43600		MX6	0	SET HANG FLAG
265	612300041		SB2	P.PROCRO+P.PROCRW+R3	CHAINING WORD INDEX TO 82
	0400000150 +		EQ	HANG	GO TEST FOR EVENT AND HANG
266	0322000324 +	MEV7	PL	X2,MEV8	AN EVENT SNUCK IN SINCE WE LOOKED LAST
	6133000001		SB3	B3+1	
267	512100047		SA2	B1+P.PARAM+1	
	63220		SB2	X2	
270	0632000120 +		GE	B3,B2,EVCHNG2	HUNG ON ALL CHANNELS. GO SWAP PROCESS OUT
	5120000000 X		SA2	I,WAIT	IF NO INTERRUPT PENDING, PROCEED
271	0302000264 +		BB1		TEST MACRO, NORMALLY NULL
	6140000454		ZR	X2,MEV9	TO HANG ON NEXT CHANNEL
272	7160000000		SB4	I,PAUSE	RELEASE PPU LOCKOUT AND WAIT FOR INTERRUPT
	5160000000 X		SX6	0	
273	5120000000 X	MEV12	SA6	I,LOCK	
	0302000276 +		SA2	I,WAIT	
274	514477776		ZR	X2,MEV11	JUMP OUT AFTER INTERRUPT OCCURS
	0540000273 +		SB4	B4+1	
275	0100000000 X	DISAS	NE	B4,B0,MEV12	
276	7160000001	MEV11	RJ	EXDISASTR	INTERRUPT FAILED TO RUN
	5160000000 X		SX6	I	RELLOCK INTERRUPTS
277	512100056		SA6	I,LOCK	
	43047		SA2	R1+P.TEMP1	AFTER AN INTERRUPT, READ THE PROCESS
	56810		MX0	39	HEADER FORM ECS AND SEE IF IT GOT AN EVENT
300	1502		SA0	R1	ON ONE OF THE CHANNELS IT WAS HUNG ON
301	0110000001		BX0	=X0*X2	
302	56200		RECS	I	
	20257		SA2	A0	
	0322000264 +		LX2	PF,V	
303	0400000011 +		PL	X2,MEV9	NO EVENT, GO HANG SOME MORE
			EQ	EVENT.5	
					CAUGHT IN THE ACT. +
304	5161000156	MEV8	SA6	B1+P.XPACK+14	STORE EVENT IN USER X6,X7
	5171000157		SAT	B1+P.XPACK+15	
305	5121000056		SA2	B1+P.TEMP1	UNCHAIN FROM ANY CHANNELS WHERE
	43047		MX0	39	ALREADY HUNG ON
	15020		BX0	=X0*X2	
306	6170000011 +		SB7	EVENT.5	
	0400000311 +		EQ	UNHANG	

EVENT CHANNEL ROUTINES  
HANG ON MULTIPLE EVENT CHANNELS

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367 614700001  
310 614700001

\*  
\*  
\*

ER72      ERROR  
EPRMOT1    ERROR

CAP TYPE OR OPTIONS BAD ERROR

(R7+1),CAPTY  
(R7+1),NOCHAN

\*  
\* THIS ROUTINE UNCHAINS A PROCESS FROM ANY EVENT CHANNELS THAT IT  
\* HAPPENS TO BE HUNG ON ( WORKS FOR 0 CHANNELS)  
\*  
\* AT ENTRY:  
\* X0 = ECS A (PROCESS)  
\* B7 = RETLINK  
\*  
\* USES A0, X0, X2, A3, X3, X4, X5, A6, A0, A7, X7, R6, B6  
\* USES 1 WORD OF SCRATCH AT B1  
\*

		ENTRY	UNHANG	
311	7150000041	UNHANG	SX5	P, PROCRO+P, PROCRW
	36505		IX5	X0+A5 . GET ADDRESS OF CHAINING WORDS
	43700		MX7	0
312	7140000001		SX4	1
	6160000313	UNHANG1	S86	UNHANG1 . RETLIN FORM UNCHAIN
313	10055		BX0	X5 . READ ONE CHAINING WORD
	56010		SA0	B1
314	0110000001		RECS	1
315	5020000000		SA2	A0+0
	54700		SA7	A0 . CLEAR AND REWRITE THE WORD
	36554		IX5	X5+X4 . ADVANCE TO NEXT CHAIN WORD
316	0120000001		WECS	1
317	0312000320		NZ	X2, UNCHAIN . CONTINUE UNTIL ZERO WORD
	0270000000		JP	B7 . EXIT

\*\*\*\*\*  
THIS ROUTINE DELINKS A PROCESS CHAINING WD FROM  
A PROCESS QUEUE

PARAMETERS X2 = CHAINING WD TO UNCHAIN  
B6 = RETURN LINK

REGISTERS USED A0=X0, X2, A3=X3,B5, A6=X6  
USES CELL AT A0 FOR SCRATCH

320	26352	UNCHAIN	UX3	B5,X2	EXPAND CHAINING WORD ( FORE POINTER )
	21336		AX3	30	
	43647		MX6	39	
			SX0	X3	READ MOT OF NEXT IN CHAIN
321	011000001		RECS	1	
322	0650000323		GE	B5-B0,UNCHAIN1 TEST FOR LAST IN QUEUE	
	67505		SB5	=B5	
323	54304	UNCHAIN1	SAB	A0	READ PROPER CHAINING WD OF NEXT IN Q
	15036		BX0	=X6*X3	
			SX3	B5	
	76350		IX0	X0+X3	
			RECS	1	
324	011000001		SAB	A0+0	PATCH CHAINING WORD OF NEXT IN Q
325	503000000		MX6	30	
	43636		BX3	X6*X3	
			BK6	=X6*X2	
	11363		BK6	X6+X3	
326	15624		SA6	A3+0	
	12663		WECS	1	WRITE OUT REPAIRED CHAINING WORD
	5063000000				
327	0120000001				
330	20234		LX2	30	FIX PROCEDING ELEMENT IN QUEUE
	26352		UX3	B5,X2	EXPAND BACK PONTER
	21336		AX3	30	
	43647		MX6	39	
331	73037		SX0	X3	GET MOT OF PROCEDING PROC
332	011000001		RECS	1	
333	0650000334		GE	B5-B0,UNCHAIN2 TEST FOR FIRST IN QUEUE	
	67505		SB5	=B5	
334	54304	UNCHAIN2	SAB	A0	
	15036		BX0	=X6*X3	
			SX3	B5	CHAINING WD INDEX
	76350		IX0	X0+X3	
			RECS	1	
335	011000001		SAB	A0+0	PATCH OF CHAINING WORD
336	503000000		MX6	30	
	43636		BX3	X6*X3	
			BK6	=X6*X2	
	15336		LX6	30	
337	15624		BX6	X6+X3	
	20636		SA6	A3+0	
	12663		WECS	1	WRITE OUT MODIFIED CH WD
340	5063000000				
341	0120000001				

EVENT CHANNEL ROUTINES  
DELINK ONE LNK OF EVENT CHANNEL PROCESS CHAIN

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342 026000000

JP

B6

RETURN

EVENT CHANNEL ROUTINES  
DELTNK ONE LTNK OF EVENT CHANNEL PROCESS CHAIN

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END

36124      STORAGE USED  
              6600 ASSEMBLY

1470 STATEMENTS  
8.361 SECONDS

406 SYMBOLS  
329 REFERENCES

**EVENT CHANNEL ROUTINES  
SYMBOLIC REFERENCE TABLE**

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EVENT CHANNEL ROUTINES  
SYMBOLIC REFERENCE TABLE.

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E*EVCH	0	EVENT	4/08 L						
E*OT	0	EXTERNAL*	EXTERNAL*	19/02					
GETCAP	0	EXTERNAL*	EXTERNAL*	14/04 E	14/06 L				
GETEVF	137	PROGRAM*	PROGRAM*	12/31	14/22	15/25 E	15/27 L	19/35	20/16
HANG	150	PROGRAM*	PROGRAM*	16/15	16/17 L				
HANG1	165	PROGRAM*	PROGRAM*	15/38	15/40	16/50 L			
HANG2	201	PROGRAM*	PROGRAM*	16/52	17/01 L				
HANG3	203	PROGRAM*	PROGRAM*	15/42	17/23 L				
HANG4	214	PROGRAM*	EXTERNAL*	6/30 S	7/22 S	12/14 S	13/14 S	14/25 S	19/41 S
T*LOCK	0			6/37 S	7/45 S	12/38 S	14/08 S	19/31 S	19/48 S
T*PAUSE	654			6/31	19/42	20/25			20/27 S
T*WAIT	0	EXTERNAL*	EXTERNAL*	6/33	19/38	19/43	20/22	20/28	20/34 S
L*SFCH	17			7/01 D					
E*EVCH	31			5/26 D					
MAKEOBJ	0	EXTERNAL*	EXTERNAL*	4/31					
MEVHANG	215	PROGRAM*	PROGRAM*	18/17 E	18/18 L				
MEVHMGE	222	PROGRAM*	PROGRAM*	18/17 E	18/34 L				
MEV1	223	PROGRAM*	PROGRAM*	18/25	18/36 L				
MEV11	276	PROGRAM*	PROGRAM*	20/29	20/33 L				
MEV12	273	PROGRAM*	PROGRAM*	20/28 L	20/31				
MEV1.5	227	PROGRAM*	PROGRAM*	18/43	18/51 L				
MEV2	232	PROGRAM*	PROGRAM*	19/01	19/03 L				
MEV3	239	PROGRAM*	PROGRAM*	18/53 L	19/22				
MEV4	247	PROGRAM*	PROGRAM*	19/26	19/36 L				
MEV5	256	PROGRAM*	PROGRAM*	19/39	19/49 L				
MEV5P1	259	PROGRAM*	PROGRAM*	19/43 L	19/46				
MEV6	245	PROGRAM*	PROGRAM*	19/32 L	19/49				
MEV7	266	PROGRAM*	PROGRAM*	20/09	20/17 L				
MEV8	224	PROGRAM*	PROGRAM*	20/17	20/47 L				
MEV9	254	PROGRAM*	PROGRAM*	20/12 L	20/24	20/42			
UKEVCH	51			4/09 L					
UKEVCH1	54			4/15 L	4/18				
UKEVCH2	56			4/14	4/21 L				
UKEVCH3	54			4/30	4/35 L				
UKEVCH4	76			4/23	5/21				
UKEVCH4X	77			4/27	5/22				
UKEVCH5	100			4/10	5/23				
UKEVCH6	101			4/16	5/24				
NEGATX	0	EXTERNAL*	EXTERNAL*	5/24					
NEGPAR	0	EXTERNAL*	EXTERNAL*	18/31					
NEGO	0	EXTERNAL*	EXTERNAL*	5/22					
NORHAN	0	EXTERNAL*	EXTERNAL*	10/46	21/06				
OB.GETEV	3			18/18					
OB.GTEVF	4			18/34	19/51				
OF.C	6			9/48	10/10				
OF.E	5			9/44	9/48				
OF.H	12			10/15	13/04				
OF.R	2			12/53	13/04				
OF.V	7			10/13	10/15	20/41			
PUTCAP	0	EXTERNAL*	EXTERNAL*	5/20					
P.CLTST	160			4/11					

EVENT CHANNEL ROUTINES  
SYMBOLIC REFERENCE TABLE.

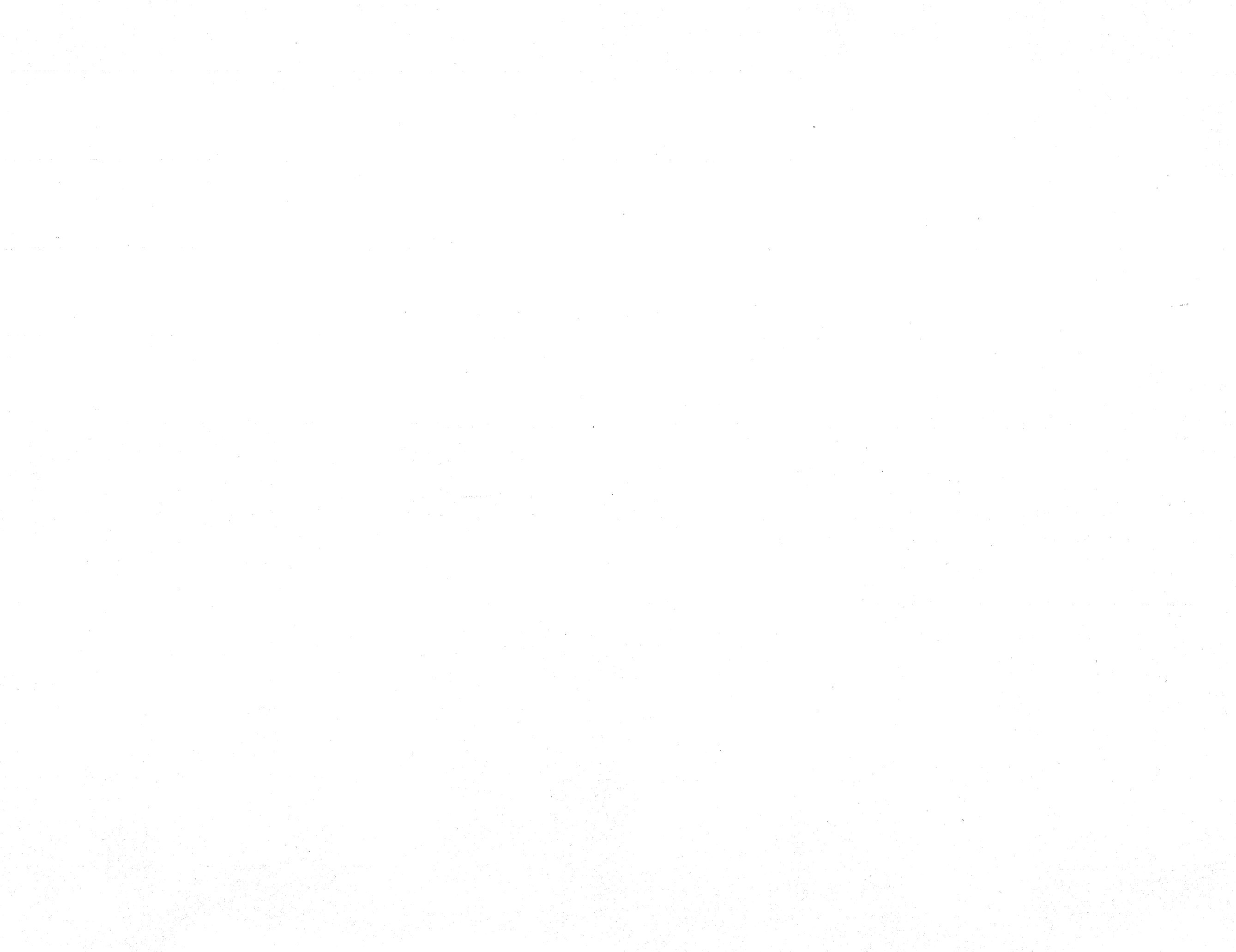
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P.PARAM	56		4/09	5/04	6/50	12/19	18/35	19/33
			4/21	5/17	7/24	14/09	18/42	20/12
			4/28	6/12	7/34	18/22	19/18	20/19
P.PARAML	42		18/40					
P.PROCRO	12		9/30	12/29	17/15	19/33	22/13	
P.PROCWR	27		10/31	14/20	19/28	20/15		
			9/30	12/29	17/15	19/33	22/13	
P.PROHEAD	126		10/31	14/20	19/28	20/15		
P.SYSTIM	132		7/35	10/06	12/16	12/44	18/19	20/04
P.TEMP1	56		13/17					
P.TEMP2	57		6/41	6/44	20/10	20/35	20/49	
P.PACK	140		6/22 S	6/40				
SCHED	3	EXTERNAL*	7/39	10/03 S	10/04 S	10/06	12/34 S	12/35 S
EWROUT	0	EXTERNAL*					20/47 S	20/48 S
EYRFET	0	EXTERNAL*	13/26					
EYSRFT	0	EXTERNAL*	14/26	19/52				
E.CHARG	0	EXTERNAL*	5/19	7/46	12/40			
E.SLDTM	0	EXTERNAL*	13/15					
E.QUANT	0	EXTERNAL*	13/16					
E.SYSTIM	0	EXTERNAL*	13/22					
E.USRP1	0	EXTERNAL*	9/50					
T.FVCH	1757		19/05					
UNICHAIN	220	PROGRAM*	10/97	22/25	23/11 L			
UNICHAIN1	223	PROGRAM*	23/16	23/18 L				
UNICHAIN2	234	PROGRAM*	23/38	23/40 L				
UNIANG	211	PROGRAM*	10/26	20/53	22/12 E	22/13 L		
UNIHANG1	213	PROGRAM*	22/17	22/18 L				
UNIUNG1	0	EXTERNAL*	10/43					



22.43.56. 11/03/71 SCOPR2D OF 08/27/71  
22.43.57.4: CM=18422/044000B AT CP= 0 SEC  
22.44.58.10MPASS.I=EVENT,S=0  
22.44.58. ASSEMBLY COMPLETE.  
22.45.59.END  
22.45.60.COPYL,BINARY,LGO,NEBIN  
22.45.64. EVENT UPDATE  
22.45.65.COPYL.DONE  
22.45.66.END  
22.45.69.END  
22.45.70.7: USER CPU = 8.632 SEC  
22.45.70.7: SCOPE CPU = 6.110 SEC  
22.45.71.7: SCOPE EDS = 7.112 SEC  
22.45.71.7: SCOPE SWAP = 16.716 SEC  
22.45.71.7: DISK CPU = 9.891 SEC  
22.45.72.7: DISK EDS = 10.397 SEC  
22.45.72.7: DISK SWAP = 1.195 SEC  
22.45.72.7: SYSTEM = 1157 LINES

22.47,66. 1170 LINES PRINTED BY PRINTER DRIVER ON LP 2.