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IDENTIFICATION

PRODUCT CODE: AC-E974B-MC
PRODUCT NAME: CXLPHB0 LPA11-XX MODULE
PRODUCT DATE: SEPTEMBER 1978
MAINTAINER: DEC/X11 SUPPORT GROUP

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1.0 ABSTRACT

LPH IS AN IOMOD THAT EXERCISES THE LPA11-XX OPTION. WHEN MULTI-USER MICRO-CODE IS LOADED IN THE SYSTEM, WE EXERCISE ALL DEVICES ON THE LPA-11'S I/O BUS. WHEN DEDICATED USER MICRO-CODE IS LOADED IN THE LPA11, ONLY A/D'S ON THE LPA11'S I/O BUS ARE EXERCISED. ALSO HIGH-SPEED SAMPLE TAKING IS ENABLED IF TWO A/D'S ARE PRESENT. A 150 KILO-HERTZ SAMPLE RATE IS USED. SAMPLING AT THIS RATE MAY PRODUCE DATA LATENCY PROBLEMS IN OTHER NPR DEVICES IF THERE IS A NUMBER OF NPR DEVICES ON THE PDP-11 SYSTEM. THE VALUE OF "SR2" DETERMINE THE SAMPLE RATE USED FOR THE A/D.

2.0 REQUIREMENTS

HARDWARE: ONE LPA-11XX
INCLUDES: 1 KMC-11; 1 M8200-YC; 1 M8254
1 CLOCK

STORAGE:: LPH REQUIRES:
1. DECIMAL WORDS: 5630
2. OCTAL WORDS: 12776
3. OCTAL BYTES: 25774

3.0 PASS DEFINITION

APPROXIMATELY 20K OF NPR DATA TRANSFERS FOR A SUCCESSFULL PASS.

4.0 EXECUTION TIME

ONE PASS OF LPH TAKES APPROXIMATELY 60 SECONDS.

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5.0 CONFIGURATION REQUIREMENTS

DEFAULT PARAMETERS:

DEVADR: 170460, VECTOR: 300, BR1:6

DEVcnt: N/A, SR1: 0, SR2: 0

REQUIRED PARAMETERS

SR1 MUST BE SET UP TO REFLECT THE TRUE LPA11-KX
SYSTEM CONFIGURATION (SEE OPERATIONS OPTIONS)

NOTE: THIS MODULE WILL ERROR UNLESS A CLOCK HAS
BEEN SPECIFIED IN SR1:
ON LARGER SYSTEMS, SR2 MAY BE CHANGED TO LOWER THE
A/D TRANSFER RATE.

6.0 DEVICE/OUTPUT SET-UP

ALL DEVICES CONNECTED TO THE DR11K OUTPUTS SHOULD BE
REMOVED.

7.0 MODULE OPERATION

1. LPH LOADS AND VERIFIES EITHER DEDICATED OR MULTI-USER
MICRO-CODE INTO THE KMC-11 AS INDICATED BY BIT 6 OF "SR1".
2. TESTS THAT THE MICRO-CODE CAN BE STARTED.
3. BUILDS A DEVICE ADDRESS TABLE BASED ON THE INFORMATION
THE OPERATOR FURNISHED IN SR1. AFTER BUILDING THE
TABLE, IT GIVES IT TO THE LPA-11 FOR VERIFICATION.
4. IF DEDICATED CODE IS RUN, AND THERE ARE TWO A/D'S
ON THE SYSTEM, A/D SAMPLES ARE TAKEN AT A RATE
CONTROLLED BY THE VALUE IN SR2.
IF MULTI-USER MICRO-CODE IS RUN, ALL DEVICES ON THE
I/O BUS ARE EXERCISED.

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DEVcnt: N/A, SR1: 0, SR2: 0

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ON LARGER SYSTEMS, SR2 MAY BE CHANGED TO LOWER THE
A/D TRANSFER RATE.

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TABLE, IT GIVES IT TO THE LPA-11 FOR VERIFICATION.
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ON THE SYSTEM, A/D SAMPLES ARE TAKEN AT A RATE
CONTROLLED BY THE VALUE IN SR2.
IF MULTI-USER MICRO-CODE IS RUN, ALL DEVICES ON THE
I/O BUS ARE EXERCISED.

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8.0 OPERATIONS OPTIONS

SR1: INFORMS THIS DIAGNOSTIC AS TO WHAT DEVICES ARE ON THE I/O BUS AND THE MODE THE LPA-11 WILL BE RUNNING. YOU MUST CHANGE THIS LOCATION TO REFLECT THE ACTUAL SYSTEM CONFIGURATION.

WORD BIT=1	OCTAL	DEVICE
0	000001	1ST AD11K
1	000002	1ST KW11K
2	000004	1ST DR11K
3	000010	1ST AA11K
4	000020	2ND AD11K#2
5	000040	2ND DR11K
6	000100	DEDICATED USER MICRO-CODE SELECTED
7	000200	3RD DR11K
8	000400	4TH DR11K
9	001000	5TH DR11K
10	002000	AR11K
11	004000	LPS-11
12	010000	LPSAD (LPS A/D)
13	020000	LPSKW (LPS REAL TIME CLOCK)
14	040000	LPSVC (LPS D/A)
15	100000	LPSDR (LPS DIGITAL I/O)

NOTE: BEFORE RUNNING THIS MODULE, ALL DEVICES CONNECTED TO THE DR11K OUTPUTS SHOULD BE REMOVED. IF NOT, IT IS UNPREDICTABLE WHAT THAT DEVICE WILL DO. DURING THE COURSE OF THE TESTS, RANDOM DATA IS SENT TO THE DR11K'S.

SR2: INFORMS THE MODULE AS TO THE A/D DATA TRANSFER RATE

OCTAL VALUE	RATE (KILO-HERTZ)
0	150K
1	134K
2	118K
3	100K
4	80K
5	60.6K
6	40K
7	20K

9.0 NON-STANDARD PRINTOUTS

ALL PRINTOUTS HAVE THE STANDARD FORMATS DESCRIBED IN THE DEC/V11 DOCUMENT.

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174
175 000000
176 000000
177
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179
180
181 000000
182 000000 050114 041110 040
183 000005 000
184 000006 170460
185 000010 000300
186 000012 300
187 000013 000
188 000014 000001
189 000016 000000
190 000020 000000
191 000022 000000
192 000024 000000
193
194 000026 140000
195 000030 000530
196 000032 000224
197 000034 000000
198 000036 000001
199 000040 000000
200 000042 000000
201 000044 000000
202 000046 000000
203 000050 000000
204 000052 000000
205 000054 000000
206 000056
207 000060 000000
208 000062 000000
209 000064 000000
210 000066 000000
211 000070 000000
212 000072 000000
213 000074 000000
214 000076 000000
215 000100 000000
216 000102 000000
217 000104 000000
218 000106 000000
219 000108 000000
220 000110 000000
221 000112 000000
222 000114 000000
223 000116 000000
224 000120 000000
225 000122 000000
226 000124 000000

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%
IOMOD <LPHR> 170460,300,6,0,0,1,0
MODULE 140000,LPHB,170460,300,6,0,0,1,0
.TITLE LPHR DEC/X11 SYSTEM EXERCISER MODULE
DXCOM VERSION 6 23-MAY-78
.LIST BIN
*****
REGIN:
MODNAM: -ASCII /LPHB / ;MODULE NAME.
XFLAG: .BYTE OPEN ;USED TO KEEP TRACK OF WBUFF USAGE
ADDR: 170460+0 ;1ST DEVICE ADDR.
VECTOR: 300+0 ;1ST DEVICE VECTOR.
BR1: .BYTE PRTV6+0 ;1ST BR LEVEL.
BR2: .BYTE PRTV0+0 ;2ND BR LEVEL.
DVID1: 0+1 ;DEVICE INDICATOR 1.
SR1: OPEN ;SWITCH REGISTER 1
SR2: OPEN ;SWITCH REGISTER 2
SR3: OPEN ;SWITCH REGISTER 3
SR4: OPEN ;SWITCH REGISTER 4
*****
STAT: 140000 ;STATUS WORD.
INIT: START ;MODULE START ADDR.
SPOINT: MODSP ;MODULE STACK POINTER.
PASCNT: 0 ;PASS COUNTER.
ICONT: 1 ;# OF ITERATIONS PER PASS=1
ICOUNT: 0 ;LOC TO COUNT ITERATIONS
SOFCNT: 0 ;LOC TO SAVE TOTAL SOFT ERRORS
HRDCNT: 0 ;LOC TO SAVE TOTAL HARD ERRORS
SOFPAS: 0 ;LOC TO SAVE SOFT ERRORS PER PASS
HRDPAS: 0 ;LOC TO SAVE HARD ERRORS PER PASS
SVSCNT: 0 ;# OF SYS ERRORS ACCUMULATED
PANNUM: 0 ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
CONFIG: 0 ;RESERVED FOR MONITOR USE
RES1: 0 ;RESERVED FOR MONITOR USE
RES2: 0 ;RESERVED FOR MONITOR USE
SVR0: OPEN ;LOC TO SAVE P0.
SVR1: OPEN ;LOC TO SAVE P1.
SVR2: OPEN ;LOC TO SAVE R2.
SVR3: OPEN ;LOC TO SAVE R3.
SVR4: OPEN ;LOC TO SAVE P4.
SVR5: OPEN ;LOC TO SAVE R5.
SVR6: OPEN ;LOC TO SAVE R6.
CSRA: OPEN ;ADDR OF CURRENT CSR.
SRADR: ;ADDR OF GOOD DATA, OR
ACSR: OPEN ;CONTENTS OF CSR.
MSADR: ;ADDR OF BAD DATA, OR
ASTAT: OPEN ;STATUS REG CONTENTS.
ERRTYP: ;TYPE OF ERROR
ASB: OPEN ;EXPECTED DATA.
AWAS: OPEN ;ACTUAL DATA.
RSTR: RSTR ;RESTART ADDRESS AFTER END OF PASS
WDTR: OPEN ;WORDS TO MEMORY PER ITERATION
WDFR: OPEN ;WORDS FROM MEMORY PER ITERATION
INTR: OPEN ;# OF INTERRUPTS PER ITERATION
IDNUM: 0 ;MODULE IDENTIFICATION NUMBER=0
MODSP:

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232 000224 177763
233 000226
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242 000226
243 000226 170460
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245 000230
246 000230 170461
247 000232 170462
248 000232 170462
249 000234
250 000234 170463
251 000236
252 000236 170464
253 000240
254 000240 170465
255 000242
256 000242 170466
257 000244
258 000244 170467
259
260 00246 000004
261
262 00250 000000
263 00252 000020
264
265
266 000312 170400
267 000314 170404
268 000316 167770
269 000320 170416
270 000324 170430
271 000324 167760
272 000326 167750
273 000330 167740
274 000332 167730
275 000334 170400
276 000336 170400

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*****
SR2VAL: -13. ;CLOCK PRESET VALUE FOR SR2 RATE CODE
KMCSR:
;
; ADDRESS OF KMC-11 OF LPA-11 THE ADDR FOR KMAD0 MAY BE
; CHANGED BY THE USER TO REFLECT DIFFERENT KMC-11 ADDR THE
; REST OF THE ADDRESSES WILL BE CHANGED BY THE PROGRAM.
;
;
;
LPCI:
KMAD0: .WORD 170460 ;BASE KMC ADDR. MAY BE PATCHED BY USER.
LPMR:
KMAD1: .WORD 170460+1 ;>>DO NOT <<KMC-CSR ADDR
LPC0:
KMAD2: .WORD 170460+2 ;>>PATCH <<
LPS0:
KMAD3: .WORD 170460+3 ;>>THIS AREA <
LPADL:
KMAD4: .WORD 170460+4 ;
KMAD5: .WORD 170460+5 ;>>DO NOT <<
LPM5:
KMAD6: .WORD 170460+6 ;>>PATCH <<
LPM52:
KMAD7: .WORD 170460+7 ;>>THIS AREA <
VERSN: .WORD 4 ;CURRENT VERSION NUMBER OF MICROCODE.
.DVLS: .WORD 0 ;/DEVICE LIST OF I/O ADDR. DEFINED
.BLRW 16. ;/BY INIT.
AD11K: .WORD 170400 ;AD11K ADDRESS.
KW11K: .WORD 170404 ;KW11K ADDRESS.
DR11K1: .WORD 167770 ;DR11K #1 ADDR.
AA11K: .WORD 170416 ;AA11K ADDRESS.
AD11K2: .WORD 170430 ;AD11K #2 ADDRESS.
DR11K2: .WORD 167760 ;DR11K #2 ADDRESS.
DR11K3: .WORD 167750 ;DR11K #3 ADDRESS.
DR11K4: .WORD 167740 ;DR11K #4 ADDRESS.
DR11K5: .WORD 167730 ;DR11K #5 ADDRESS.
AR11K: .WORD 170400 ;AR11K ADDRESS.
LPS11: .WORD 170400 ;LPS11 BASE ADDRESS.

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278	000340	000115	UCODE:	.ASCIZ	/M/
279	000342	015764	UCODES:	MMAST	
280	000344	000000	SDDAT:	.WORD	0
281	000346	000000	SGDAT:	.WORD	0
282					
283	000350	007754	GETADR:	.WORD	BUFFER
284	000352	000000	GETPAB:	.WORD	0
285	000354	000000	GETEAB:	.WORD	0
286	000356	000000	GETRS:	.WORD	0
287	000360	007754	MBUFF0:	.WORD	BUFF0
288	000362	000000	EBUFF0:	.WORD	0
289	000364	000000	MBUFF1:	.WORD	BUFF1
290	000366	010756	EBUFF1:	.WORD	0
291	000370	000000	MBUFF2:	.WORD	BUFF2
292	000372	000000	EBUFF2:	.WORD	0
293	000374	011760	MBUFF3:	.WORD	BUFF3
294	000376	000000	EBUFF3:	.WORD	0
295	000400	000000	GBUFF3:	.WORD	0
296	000402	012762	MBUFF4:	.WORD	BUFF4
297	000404	000000	EBUFF4:	.WORD	0
298	000406	000000	GBUFF4:	.WORD	0
299	000410	000000	MJOB0:	.WORD	0
300	000412	000000	GJOB0:	.WORD	0
301	000414	000000	EJOB0:	.WORD	0
302	000416	005504	MJOB1:	.WORD	0
303	000420	000000	GJOB1:	.WORD	0
304	000422	000000	EJOB1:	.WORD	0
305	000424	005000	MJOB2:	.WORD	0
306	000426	000000	GJOB2:	.WORD	0
307	000430	000000	EJOB2:	.WORD	0
308	000432	005774	MJOB3:	.WORD	0
309	000434	000000	GJOB3:	.WORD	0
310	000436	000000	EJOB3:	.WORD	0
311	000440	006130	MJOB4:	.WORD	0
312	000442	000000	GJOB4:	.WORD	0
313	000444	000000	EJOB4:	.WORD	0
314	000446	006264	MJOB5:	.WORD	0
315	000450	000000	GJOB5:	.WORD	0
316	000452	000000	EJOB5:	.WORD	0
317	000454	006420	MJOB6:	.WORD	0
318	000456	000000	GJOB6:	.WORD	0
319	000460	000000	EJOB6:	.WORD	0
320	000462	006554	MJOB7:	.WORD	0
321	000464	000000	GJOB7:	.WORD	0
322	000466	000000	EJOB7:	.WORD	0
323	000470	005444	MJOB00:	.WORD	0
324	000472	000000	GJOB00:	.WORD	0
325	000474	000000	EJOB00:	.WORD	0
326	000476	005504	MJOB10:	.WORD	0
327	000500	000000	GJOB10:	.WORD	0
328	000502	000000	EJOB10:	.WORD	0
329	000504	005736	MJOB20:	.WORD	0
330	000506	000000	GJOB20:	.WORD	0
331	000510	000000	EJOB20:	.WORD	0
332	000512	006972	MJOB30:	.WORD	0

333	000514	000000	GJOB30:	.WORD	0
334	000516	000000	EJOB30:	.WORD	0
335	000520	006226	MJOB40:	.WORD	0
336	000522	000000	GJOB40:	.WORD	0
337	000524	000000	EJOB40:	.WORD	0
338	000526	006362	MJOB50:	.WORD	0
339	000530	000000	GJOB50:	.WORD	0
340	000532	000000	EJOB50:	.WORD	0
341	000534	006516	MJOB60:	.WORD	0
342	000536	000000	GJOB60:	.WORD	0
343	000540	000000	EJOB60:	.WORD	0
344	000542	000000	MJOB70:	.WORD	0
345	000544	000000	GJOB70:	.WORD	0
346	000546	000000	EJOB70:	.WORD	0
347					
348					
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351	000550		START:		
352	000550		RESTR:		
353	000550	016767 177232 177450	MOV	ADDR,KMAD0	;SET UP BASE ADDR.
354					
355					
356					
357					
358	000556	010046	MOV	R0,-(SP)	
359	000560	010146	MOV	R1,-(SP)	
360	000562	016700 177440	MOV	KMAD0,R0	;GET KMC-11 ADDRESS.
361	000566	012701 000230	MOV	#KMAD1,R1	;GET ADDR. OF ADDR. LIST.
362					
363	000572	005200	64\$:	INC	R0
364	000574	010021	MOV	R0,(R1)+	;UPDATE ADDR.
365	000576	020127 000246	CMP	R1,#KMAD7+2	;WRITE ADDR.
366	000602	001373	BNE	64\$;DONE ALL ADDRESSES?
367	000604	015067 177440	CLR	#DVL5	;NO - DO NEXT ADDR.
368	000610	012601	MOV	(SP)+,R1	;CLR ADDR. LIST.
369	000612	012600	MOV	(SP)+,R0	
370			ENCODE	SR2	VALUE INTO THE CLOCK PRESET VALUES
371	000614	016700 177200	MOV	SR2,R0	;GET CURRENT CODE
372	000620	042700 177770	BIC	#177770,R0	;MASK OFF OTHER BITS
373	000624	006300	ASL	R0	;CONVERT INTO WORD OFFSET
374	000626	016067 000636 177370	MOV	10\$(R0),SR2VAL	;INDEX INTO TABLE OF PRESET VALUES
375	000634	000410	BR	15	;BR OVER TABLE OF VALUES
376	000636	177763	.WORD	-13	;150K RATE
377	000640	177761	.WORD	-15	;134K
378	000642	177757	.WORD	-17	;118K
379	000644	177754	.WORD	-20	;100K
380	000646	177747	.WORD	-25	;80K
381	000650	177737	.WORD	-33	;60.6K
382	000652	177736	.WORD	-50	;44K
383	000654	177635	.WORD	-99	;20K
384					
385	000656	005767 177134	1\$:	1\$:	;CHECK TO BE SURE SR1 HAS BEEN INITIALIZED BY THE OPERATOR
386	000662	001005	BNE	SR1	;HAS SR1 BEEN MODIFIED?
387	000664	104403 000000 006710	BNE	SR1	;YES-BRANCH TO START OF TESTS
388			MENSGS,BEGIN,WARNMSG		;ASCII MESSAGE CALL WITH COMMON HEADER


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389 000672 104410 000000 ENDS,BEGIN
390
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398 000676 032757 000100 177112 TST1: BIT #BIT6,SRI ;TEST MICRO-CODE TYPE INDICATOR
399 000704 012704 015764 BNE 75 ;BR IF DEDICATED USER
400 000712 010967 177424 MOV #MAST,RO ;GET ADDRESS OF MULTI-USER
401 000716 012767 000115 177414 MOV #M,UCODE ;SAVE STATING ADDRESS OF U CODE
402 000724 006407 BR 10S ;LOAD TYPE OF UCODE
403 000726 012700 021770 75: MOV #DMAST,RO ;BR OVER SETUP
404 000732 010967 177404 MOV RO,UCODE ;GET ADDRESS OF DEDICATED USER
405 000736 012767 000104 177374 MOV #D,UCODE ;SAVE STATING ADDRESS
;LOAD TYPE OF UCODE
406
407 000744 005077 177256 10S: CLR @KMA0 ;CLEAR CSR
408 000750 005077 177262 CLR @KMA4 ;CLEAR SCRAM ADDRESS
409 000754 052777 022000 177244 1S: BIS #2000,@KMA0 ;SELECT SCRAM
410 000762 012077 177254 MOV (0)+@KMA6 ;WRITE DATA
411 000766 052777 022000 177232 BIS #2000,@KMA0 ;SET SCRAM WRITE
412 000774 005077 177236 CLR @KMA0 ;DISABLE SCRAM
413 001000 005277 177232 INC @KMA4 ;UPDATE SCRAM ADDRESS
414 001004 021027 177777 CMP (0),#-1 ;ALL DONE
415 001010 001361 BNE 1S ;NO-LOAD
416 001016 005977 177220 CLR @KMA4 ;CLEAR SCRAM ADDRESS
417 001016 016700 177320 MOV UC0DES,RO ;GET MICRO-CODE ADDRESS
418
419 001022 052777 002000 177176 2S: BIS #2000,@KMA0 ;SELECT SCRAM
420 001030 022077 177206 CMP (0)+@KMA6 ;DATA-OK?
421 001034 001010 BNE 3S ;NO-REPORT ERROR
422 001036 021027 177777 CMP (0),#-1 ;NO-REPORT ERROR
423 001042 001426 REQ TST2 ;ALL DONE
424 001044 005077 177156 CLR @KMA0 ;EXIT
425 001050 005277 177162 INC @KMA4 ;NO DESELECT SCRAM
426 001054 000762 BR 2S ;UPDATE SCRAM ADDRESS
427
428 ;SETUP CODE FOR ERROR REPORTING
429
430 001056 016767 177160 177016 3S: MOV @KMA6,ACSR ;STORE ADDRESS OF KMC-11
431 001064 017767 177146 177012 MOV @KMA4,WASADR ;ADDRESS LOCATION OF FAILING
; MICRO-CODE
432
433 001072 017767 177144 177010 MOV @KMA6,AWAS ;ACTUAL MICRO-CODE LOADED INTO
; THE KMC
434
435 001100 014067 177002 MOV -(0),ASR ;EXPECTED MICRO-CODE
436 001104 010967 176772 RO,SBADR ;ADDRESS OF EXPECTED MICRO-CODE
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438
439 001110 104404 000000
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455 001114 104410 000000
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501 001300 104410 000000 ENDS,REGIN ;
502
503 001304 3S: ;TEST #3
504 ;INIT TEST IN THIS TEST WE MAKE SURE THE KMC MICRO-
505 ;CODE CAN FIND ALL ADDRESSES OF DEVICES TO BE TESTED.
506 ;
507
508
509
510 001304 012700 000012 TST3: MOV #10, R0
511 001310 012701 007078 MOV #DEVLIST,R1 ;CLEAR DEVICE LIST AREA
512 001314 005021 CLR (1)+
513 001316 005003 BR 53
514 001320 012721 000001 1S: MOV #1,(1)+ ;PUT A 1 INTO ALL POSITIONS OF
515 ;DEVICE LIST SO THAT LPA WON'T RETURN
516 ;ADDR ERROR UNLESS RAD ADDR.
517 ;OTHERWISE IT WOULD RETURN ADDR. ERROR
518 ;CODE ON ADDR. ZERO.
519
520 001324 005300 DEC R0
521 001326 001374 BNE 1S
522 001330 012701 007100 MOV #DEVLIST+2,R1
523 001334 032767 000002 176454 BIT #RIT1,SR1 ;KW11K CLOCK??
524 001342 001403 BEQ 1C5 ;NO
525 001344 016721 176744 MOV #W11K,(1)+ ;YES FIX ADDR.
526 001350 004427 BR 2C5
527 001352 032767 002000 176436 10S: BIT #RIT10,SR1 ;AR11 CLOCK??
528 001360 001405 BEQ 11S ;NO
529 001362 016711 176746 MOV #AR11K,(1) ;YES FIX AR11 CLOCK ADDR.
530 001366 062721 000004 ADD #4,(1)+
531 001372 004418 BR 20S
532 001374 032767 020000 176414 11S: BIT #RIT13,SR1 ;LPS CLOCK?
533 001402 001405 BEQ 12S ;NO-ERROR!!!
534 001404 016711 176726 MOV #LPS11,(1) ;YES FIX LPS11 CLOCK ADDR.
535 001410 062721 000004 ADD #4,(1)+
536 001414 000405 BR 20S
537 001416 12S:
538 ;*****
539 ;RDERS,BEGIN,NULL ;NO CLOCK SELECTED FOR TEST...
540 ;*****
541 ;CAN NOT DO ANY MORE TESTS WITHOUT
542 ;CLOCK PRESENT!
543 ;YOU MUST SELECT A CLOCK.
544 ;
545 ENDS,REGIN
546
547 001424 104410 000000 000000
548
549 001430 012721 000001 176354 20S: MOV #1,(1)+
550 001434 032767 000001 BIT #RIT0,SR1 ;AD11K FOR TEST??
551 001442 016721 176642 BEQ 21S ;YES FIX AD11K ADDR.
552 001444 016721 176642 MOV #AD11K,(1)+
553 001450 000420 BR 30S
554 001452 032767 002000 176336 21S: BIT #RIT10,SR1 ;AR11 A/D?
555 001460 001403 BEQ 22S
556 001462 016721 176646 MOV #AP11K,(1)+
557 001466 004418 BR 30S
558 001470 032767 010000 176320 22S: BIT #RIT12,SR1 ;LPS A/D?
559 001476 001403 BEQ 23S
560 001500 016721 176632 MOV #LPS11,(1)+
  
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557 001504 000402 000001 23S: BP 30S
558 001506 012721 000001 MOV #1,(1)+
559
560 001512 032767 000020 176276 30S: BIT #RIT4,SR1 ;2ND AD11K?
561 001520 001403 BEQ 31S
562 001522 016721 176574 MOV #AD11K2,(1)+
563 001530 000402 BR 32S
564 001530 012721 000001 31S: MOV #1,(1)+
565
566 001534 032767 000010 176254 32S: BIT #RIT3,SR1 ;AA11K?
567 001542 001403 BEQ 33S
568 001544 016721 176550 MOV #AA11K,(1)+
569 001550 000424 BR 40S
570 001552 032767 002000 176236 33S: BIT #RIT10,SR1 ;AR11?
571 001560 001405 BEQ 34S
572 001562 016711 176546 MOV #AR11K,(1)
573 001566 062721 000016 ADD #16,(1)+
574 001572 000413 BR 40S
575 001574 032767 040000 176214 34S: BIT #RIT14,SR1 ;LPS D/A?
576 001580 016721 176526 BEQ 35S
577 001604 016711 176526 MOV #LPS11,(1)
578 001610 062721 000016 ADD #16,(1)+
579 001614 000402 BR 40S
580 001616 012721 000001 35S: MOV #1,(1)+
581
582 001622 032767 000004 176166 40S: BIT #RIT2,SR1 ;DR11K?
583 001630 001403 BEQ 41S
584 001632 016721 176460 MOV #DR11K1,(1)+
585 001636 000413 BR 50S
586 001640 032767 100000 176150 41S: BIT #RIT15,SR1 ;LPS I/O?
587 001646 016711 176462 BEQ 42S
588 001648 016711 176462 MOV #LPS11,(1)
589 001654 062721 000010 ADD #10,(1)+ ;FIX LPS11 I/O ADDR.
590 001660 000402 BR 50S
591 001662 012721 000001 42S: MOV #1,(1)+
592
593 001666 032767 000040 176122 50S: BIT #RIT5,SR1 ;DR11K #2 ?
594 001674 001403 BEQ 51S
595 001676 016721 176422 MOV #DR11K2,(1)+
596 001702 000402 BR 52S
597 001704 012721 000001 51S: MOV #1,(1)+
598 001710 032767 000200 176100 52S: BIT #RIT7,SR1 ;DR11K #3 ?
599 001716 001403 BEQ 53S
600 001720 016721 176402 MOV #DR11K3,(1)+
601 001724 000402 BR 54S
602 001726 012721 000001 53S: MOV #1,(1)+
603 001732 032767 000400 176056 54S: BIT #RIT8,SR1 ;DR11K #4 ?
604 001740 001403 BEQ 55S
605 001742 016721 176362 MOV #DR11K4,(1)+
606 001746 000402 BR 56S
607 001750 012721 000001 55S: MOV #1,(1)+
608 001754 032767 001000 176034 56S: BIT #RIT9,SR1 ;DR11K #5 ?
609 001762 001403 BEQ 57S
610 001764 016721 176342 MOV #DR11K5,(1)+
611 001770 000402 BR 50S
612 001772 012711 000001 57S: MOV #1,(1)
  
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613 001776* 60S:
614
615 001776* 116767 176244 005073 MOV# VERSN,DFVLT+1
616
617 002004* 012701 007076* 4S: MOV #DEVLT,R1 ;SET TO GET PA
618 002010* 010167 176334 MOV R1,GETADR ;MOV ADRS SO WE CAN GET THE PA
619 002014* 104415 000000* 000350* GETPAS,BEGIN,GETADR ;GET PHYSICAL ADDRESS FROM 16-BIT GETADR
620 002022* 016701 176324 MOV GETPAR,R1 ;RETURN PHYSICAL ADRS.
621 002026* 010177 176324 MOV R1,@LPADL ;SET INIT POINTER
622 002032* 006267 176316 ASR GETEAR ;SHIFT EA BITS INTO BITS 2 AND 3
623 002042* 052777 176306 ASR GETEAR ;
624 002050* 052777 000001 176156 BISB #BIT0,@LPCI ;SET EA BITS
625 002056* 005000 CLP #R0 ;SET GO!
626
627
628 002060* 5S: BREAKS,BEGIN ;TEMPORARY RETURN TO MONITOR.
629 002064* 104407 000000* BPEAKS,BEGIN ;THEN CONTINUE AT NEXT INSTRUCTION.
630 002070* 132777 000200 176130 BITB #RIT7,@LPCI ;DONE?
631 002076* 001020 BNE R0 ;YES!
632 002100* 104200 INCB R0 ;NO-WAIT
633 002102* 001366 BNE R0 ;BUT NOT
634 002104* 016767 176122 175766 MOV LPCO,CSRA ;ADDR. OF CONTROL OUT REG.
635 ;NOTE STATUS OUT IN HIGH BYTE.
636 ;CONTENTS OF CSR REG.
637 002112* 017767 176114 175762 MOV @LPCO,ACSR ;CONTENTS OF CONTROL IN REG.
638 002120* 017767 176102 175756 MOV @LPCI,ASTAT ;
639
640
641 002126* 104405 000000* 000000 ;*****
642 ;*****
643 ;*****
644 ;*****
645 ;*****
646 ;*****
647 002146* 016767 176060 175724 MOV LPCO,CSRA ;ADDR. OF CONTROL OUT REG.
648 ;NOTE STATUS OUT IN HIGH BYTE.
649 002154* 017767 176052 175720 MOV @LPCO,ACSR ;CONTENTS OF CSR REG.
650 002192* 132777 176040 175714 MOV @LPCI,ASTAT ;CONTENTS OF CONTROL IN REG.
651 002176* 001405 BEQ #7 ;DEVICE ADDR ERROR?
652 ;*****
653 ;*****
654 ;*****
655 ;*****
656 ;*****
657 002200* 104405 000000* 000000 ;*****
658 ;*****
659 ;*****
660 ;*****
661 ;*****
662 002206* 104410 000000* 7S: ENDS,BEGIN ;RAD DEVICE ADDRESS
663 ;*****
664 ;*****
665 ;*****
666 ;*****
667 002212* 104405 000000* 000000 ;*****
668 ;*****
669 ;*****
670 ;*****
671 ;*****
672 002220* 104410 000000* TST4: ENDS,BEGIN ;
673 ;*****
674 ;*****
675 002224* 012767 007754* 176116 MOV #BUFFER,GETADR ;SET UP TO GET ALL PA'S
676 002232* 104415 000000* 000350* GETPAS,BEGIN,GETADR ;GET PHYSICAL ADDRESS FROM 16-BIT GETADR
677 002240* 104415 000000* 000360* GETPAS,BEGIN,MBUFF0 ;GET PHYSICAL ADDRESS FROM 16-BIT MBUFF0
678 002246* 104415 000000* 000366* GETPAS,BEGIN,MBUFF1 ;GET PHYSICAL ADDRESS FROM 16-BIT MBUFF1

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689 002254* 104415 000000* 000374* GETPAS,BEGIN,MBUFF2 ;GET PHYSICAL ADDRESS FROM 16-BIT MBUFF2
690 002262* 104415 000000* 000402* GETPAS,BEGIN,MBUFF3 ;GET PHYSICAL ADDRESS FROM 16-BIT MBUFF3
691 002270* 104415 000000* 000410* GETPAS,BEGIN,MJOB0 ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB0
692 002276* 104415 000000* 000416* GETPAS,BEGIN,MJOB1 ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB1
693 002282* 104415 000000* 000424* GETPAS,BEGIN,MJOB2 ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB2
694 002288* 104415 000000* 000432* GETPAS,BEGIN,MJOB3 ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB3
695 002294* 104415 000000* 000440* GETPAS,BEGIN,MJOB4 ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB4
696 002300* 104415 000000* 000446* GETPAS,BEGIN,MJOB5 ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB5
697 002306* 104415 000000* 000454* GETPAS,BEGIN,MJOB6 ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB6
698 002312* 104415 000000* 000462* GETPAS,BEGIN,MJOB7 ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB7
699 002318* 104415 000000* 000470* GETPAS,BEGIN,MJOB0U ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB0U
700 002324* 104415 000000* 000476* GETPAS,BEGIN,MJOB1U ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB1U
701 002330* 104415 000000* 000504* GETPAS,BEGIN,MJOB2U ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB2U
702 002336* 104415 000000* 000512* GETPAS,BEGIN,MJOB3U ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB3U
703 002342* 104415 000000* 000520* GETPAS,BEGIN,MJOB4U ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB4U
704 002348* 104415 000000* 000526* GETPAS,BEGIN,MJOB5U ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB5U
705 002354* 104415 000000* 000534* GETPAS,BEGIN,MJOB6U ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB6U
706 002360* 104415 000000* 000542* GETPAS,BEGIN,MJOB7U ;GET PHYSICAL ADDRESS FROM 16-BIT MJOB7U
707 ;WHAT WE HAD TO DO IS GET EXTION
708 ;NOW WE HAVE TO FIX EA BITS
709 ;FOR CSR BITS 2 AND 3.
710 ;PUT FOR CSR
711 002430* 006267 175720 ASR GETEAR
712 002440* 012767 175710 MOV GETEAR,CETRS
713 002446* 006267 175702 ASR GETEAR
714 002452* 006267 175676 ASR GETEAR ;RIGHT JUSTIFIED FOR BUFFER USE.
715 ;BITS IF ANY WERE NEEDED.
716
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725 002612- 012760 000010 000054      MOV      #10,54(0)      ;SET DELAY BEFORE START.
726 002620- 012760 000016 000060      MOV      #16,60(0)      ;SAMPLE 14 CHANNELS
727 002626- 012760 000200 000062      MOV      #200,62(0)     ;SET SAMPLE RATE.
728                                     ;NOW WE MUST SET ALL EXTION BITS.
729
730 002634- 116760 175514 000006      MOVR     GETEAR,6(0)
731 002642- 116760 175506 000012      MOVR     GETEAR,12(0)
732 002650- 116760 175500 000018      MOVR     GETEAR,18(0)
733 002658- 116760 175500 000018      MOVR     GETEAR,18(0)
734 002664- 016760 175464 000026      MOV      GETEAR,22(0)
735 002672- 005267 175450      INC      $GDAT
736 002676- 012760 000400 000056      MOV      #400,56(0)     ;START CH0, INC=1
737 002704- 126727 175430      CMPB    UCODE,#D
738 002712- 001045      BNE     45
739
740 002714- 042710 000010      BIC      #BIT3,(0)      ;CLEAR MULTIUSER BIT.
741 002720- 032767 000020      BIT      #BIT4,SRI
742 002726- 001402      BEQ     75
743 002730- 012710 004442      MOV      #4442,(0)
744 002734- 012760 002760 000002      MOV      #1526,7(0)     ;SECOND A/D?
745 002738- 012760 175414 000014      MOV      GRUFF0,14(0)   ;NO CONTINUE.
746 002750- 016760 175400 000016      MOV      GETEAR,16(0)   ;YES=MAKE OPERATE IN DUAL A/D MODE.
747 002756- 016760 175400 000020      MOV      GRUFF0,20(0)   ;LARGER BUFFER.
748 002764- 016760 175364 000024      MOV      GETEAR,22(0)   ;MORE BUFFERS.
749 002772- 016760 175364 000024      MOV      GRUFF0,24(0)
750 003000- 016760 175350 000026      MOV      GRUFF3,26(0)
751 003006- 012760 000203 000007      MOVR     GETEAR,7(0)
752 003014- 016767 175204 002324      MOVR     SP2VAL,KWT+4
753                                     ;SET VALID BUFFER MASK.
754 003022- 000167 001430      MOV      #503,7(0)     ;SET A HICHER CLOCK RATE.
755                                     ;WE WILL TAKE SAMPLES AT 150KILOHERTZ.
756
757 003026-      45:
758
759                                     ;/-SDRM-
760
761 003026- 032767 100004 174762      BIT      #BIT2#BIT15,SRI ;/THIS DR11K #1 OR LPS I/O SEL?
762 003034- 001466      BEQ     64$
763 003036- 060300      ADD     R3,R0
764 003040- 012710 000432      MOV      #432,(0)
765 003044- 012760 000256 000002      MOV      #256,2(0)
766                                     ;/WORD COUNT
767
768 003052- 005067 002524      CLR      JOB1U ;CLEAR USW
769 003056- 016760 175416 000004      MOV      GJOB1U,4(0)    ;LOAD PA OF USW INTO RDA
770 003064- 012760 000000 000006      MOV      #0,6(0)
771 003072- 112760 000202 000007      MOVR     #BIT7#BIT1,7(0) ;3 BUFFERS.
772 003100- 016760 175272 000010      MOV      GRUFF2,10(0)   ;SET BUFFER ADDR.
773 003108- 016760 175252 000012      MOV      GRUFF3,14(0)
774 003116- 016760 175252 000012      MOV      GRUFF3,14(0)
775 003122- 005060 000012      CLR      12(0)
776 003126- 005267 175214      INC      $GDAT
777 003130- 012760 000100 000054      MOV      #100,54(0)    ;RECORD THIS JOB
778 003134- 012760 000001 000060      MOV      #1,60(0)      ;DELAY BEFORE START.
779 003142- 012760 000000 000060      MOV      #1,60(0)      ;SAMPLING ONLY ONE CHAN.
780 003154- 012760 000200 000062      MOV      #200,62(0)    ;SELECT CHAN #.
  
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781 003162- 116760 175166 000006      MOVR     GETEAR,6(0)
782 003170- 016760 175160 000012      MOV      GETEAR,12(0)
783 003178- 016760 175152 000018      MOV      GETEAR,18(0)
784 003186- 016760 175144 000022      MOV      GETEAR,22(0)
785                                     64$:
786
787 003212- 032767 042010 174576      BIT      #BIT3#BIT10#BIT14,SRI ;D/A OUTPUT SELECTED?
788 003220- 001461      BEQ     55
789 003222- 005267 175120      INC      $GDAT
790                                     ;ALTHOUGH WE'RE GONNA WORK
791                                     ;WITH D/A, NO OUTPUT
792                                     ;WILL RESULT. D/A THROWN IN
793                                     ;JUST TO TRY AND CONFUSE LPA.
794 003226- 060300      ADD     R3,R0
795 003234- 012760 001212      MOV      #1212,(0)
796 003238- 012760 000256 000002      MOV      #256,2(0)
797                                     ;UPDATE JOB STORAGE ARE POINTER
798                                     ;BIT9,(0) ;START# D/A, SEQ. CHAN.
799                                     ;SET XFER COUNT
800
801 003242- 005067 002470      CLP      JOB2U ;CLEAR USW
802 003246- 016760 175234 000004      MOV      GJOB2U,4(0)    ;LOAD THE USW PA INTO THE RDA
803 003254- 012760 000000 000006      MOV      #0,6(0)
804 003262- 016760 175110 000010      MOVR     #BIT7#BIT1,7(0) ;3 BUFFERS.
805 003270- 016760 175102 000014      MOV      GRUFF3,14(0)   ;BUFFER ADDR.
806 003278- 016760 175074 000020      MOV      GRUFF3,14(0)
807 003286- 012760 000100 000054      MOV      #100,54(0)    ;DELAY BEFORE START.
808 003294- 012760 000001 000060      MOV      #1,60(0)
809 003302- 012760 000200 000062      MOV      #200,62(0)
810
811 003334- 016760 175014 000012      MOV      GETEAR,12(0)   ;SET EA BITS
812 003342- 116760 175006 000006      MOVR     GETEAR,6(0)
813 003350- 116760 175000 000018      MOVR     GETEAR,18(0)
814 003358- 016760 174772 000022      MOVR     GETEAR,22(0)
815                                     55:
816 003372- 001461      BIT      #BIT4,SRI
817 003376- 060300      ADD     R3,R0
818 003402- 012760 000012 000002      MOV      #12,(0)
819                                     ;UPDATE JOB STORAGE ARE POINTER.
820                                     ;MODE WORD-START A/D.
821                                     ;TAKE 512 SAMPLES
822
823 003410- 005067 002456      CLR      JOR3U ;CLEAR USW
824 003414- 016760 175074 000004      MOV      GJOR3U,4(0)    ;LOAD THE USW PA
825 003422- 152760 000202 000007      BTRB    #BIT7#BIT1,7(0) ;BUFFER OVERRUN NOT FATAL, ONE BUFFER.
826 003430- 016760 174726 000010      MOV      GRUFF0,10(0)   ;SET BUFFER ADDR.
827 003438- 016760 174720 000014      MOV      GRUFF0,14(0)
828 003446- 016760 174712 000018      MOV      GRUFF0,20(0)
829 003452- 012760 000010 000054      MOV      #10,54(0)
830 003460- 012760 000400 000056      MOV      #400,56(0)
831 003466- 012760 000016 000060      MOV      #16,60(0)
832 003474- 012760 000010 000062      MOV      #10,62(0)
833 003502- 005267 174840      INC      $GDAT
834
835 003506- 116760 174642 000006      MOVR     GETEAR,6(0)
836 003514- 016760 174634 000012      MOV      GETEAR,12(0)
837 003522- 016760 174626 000018      MOV      GETEAR,18(0)
838 003530- 016760 174620 000022      MOV      GETEAR,22(0)
  
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837                                     ;/--SDRM-
838
839 003536 032767 000040 174252      RIT  #BIT5,SRI ;/THIS DR11K #2 SELECTED?
840 003544 001466                    REQ  68S
841 003546 060300                    ADD  R3,RO ;/UPDAT JOB STORAGE AREA POINTER.
842 003550 012710                    MOV  #432,(0) ;/SET I/O START, MULTI-USER, INPUT SINGLE CHAN.
843 003554 012760 000256 000002    MOV  #256,2(0) ;/WORD COUNT
844
845 003562 005067 002440                    CLR  JOB4U ;CLEAR USW
846 003566 016760 174730                    MOV  GJOB4U,4(0) ;LOAD PA OF USW INTO RDA
847 003574 012760 000000 000006    MOV  #0,6(0)
848 003578 012760 000252 000007    MOV  #BIT7,BIT1,7(0) ;3 BUFFERS.
849 003616 016760 174562 000010    MOV  GRUFF2,10(0) ;/SET BUFFER ADDR.
850 003616 016760 174554 000014    MOV  GRUFF2,14(0)
851 003624 016760 174546 000020    MOV  GRUFF2,20(0)
852 003632 005060 000012                    CLR  12(0)
853 003636 005267 174304                    INC  $DDAT
854 003644 012760 000000 000054    MOV  #100,54(0) ;RECORD THIS JOB
855 003650 012760 000001 000060    MOV  #1,60(0) ;DELAY BEFORE START.
856 003656 012760 000001 000056    MOV  #-1,56(0) ;SAMPLING ONLY ONE CHAN.
857 003664 012760 000200 000062    MOV  #200,62(0) ;/SELECT CHAN #.
858
859 003672 016760 174456 000006    MOVR GETEAB,6(0)
860 003700 016760 174450 000012    MOV  GETEAB,12(0)
861 003706 016760 174442 000016    MOV  GETEAB,16(0)
862 003714 016760 174434 000022    MOV  GETEAB,22(0)
863
864                                     ;/--SDRM-
865
866
867 003722 032767 000200 174066      RIT  #BIT7,SRI ;/THIS DR11K #3 SELECTED?
868 003730 001466                    REQ  68S
869 003732 060300                    ADD  R3,RO ;/UPDAT JOB STORAGE AREA POINTER.
870 003736 012710                    MOV  #432,(0) ;/SET I/O START, MULTI-USER, INPUT SINGLE CHAN.
871 003740 012760 000256 000002    MOV  #256,2(0) ;/WORD COUNT
872
873 003746 005067 002410                    CLP  JOB5U ;CLEAR USW
874 003752 016760 174552 000004    MOV  GJOB5U,4(0) ;LOAD PA OF USW INTO RDA
875 003760 012760 000000 000006    MOV  #0,6(0)
876 003766 012760 000252 000007    MOV  #BIT7,BIT1,7(0) ;3 BUFFERS.
877 003766 012760 174376 000010    MOV  GRUFF2,10(0) ;/SET BUFFER ADDR.
878 004002 016760 174370 000014    MOV  GRUFF2,14(0)
879 004010 016760 174362 000020    MOV  GRUFF2,20(0)
880 004016 005060 000012                    CLR  12(0)
881 004022 005267 174304                    INC  $DDAT
882 004026 012760 000000 000054    MOV  #100,54(0) ;RECORD THIS JOB
883 004034 012760 000001 000060    MOV  #1,60(0) ;DELAY BEFORE START.
884 004042 012760 000001 000056    MOV  #-1,56(0) ;SAMPLING ONLY ONE CHAN.
885 004050 012760 000200 000062    MOV  #200,62(0) ;/SELECT CHAN #.
886
887 004056 016760 174272 000006    MOVR GETEAB,6(0)
888 004094 016760 174264 000012    MOV  GETEAB,12(0)
889 004094 016760 174256 000016    MOV  GETEAB,16(0)
890 004100 016760 174250 000022    MOV  GETEAB,22(0)
891
892
  
```

```

893                                     ;/--SDRM-
894
895 004106 032767 000400 173702      RIT  #BIT8,SRI ;/THIS DR11K #4 SELECTED?
896 004114 001466                    REQ  68S
897 004116 060300                    ADD  R3,RO ;/UPDAT JOB STORAGE AREA POINTER.
898 004120 012710                    MOV  #432,(0) ;/SET I/O START, MULTI-USER, INPUT SINGLE CHAN.
899 004124 012760 000256 000002    MOV  #256,2(0) ;/WORD COUNT
900
901 004132 005067 002360                    CLR  JOB6U ;CLEAR USW
902 004136 016760 174374 000004    MOV  GJOB6U,4(0) ;LOAD PA OF USW INTO RDA
903 004144 012760 000000 000006    MOV  #0,6(0)
904 004150 012760 000252 000007    MOV  #BIT7,BIT1,7(0) ;3 BUFFERS.
905 004166 016760 174276 000010    MOV  GRUFF2,10(0) ;/SET BUFFER ADDR.
906 004166 016760 174204 000014    MOV  GRUFF2,14(0)
907 004174 016760 174176 000020    MOV  GRUFF2,20(0)
908 004202 005060 000012                    CLR  12(0)
909 004206 005267 174304                    INC  $DDAT
910 004212 012760 000000 000054    MOV  #100,54(0) ;RECORD THIS JOB
911 004220 012760 000001 000060    MOV  #1,60(0) ;DELAY BEFORE START.
912 004226 012760 000003 000056    MOV  #-1,56(0) ;SAMPLING ONLY ONE CHAN.
913 004234 012760 000200 000062    MOV  #200,62(0) ;/SELECT CHAN #.
914
915 004242 016760 174106 000006    MOVR GETEAB,6(0)
916 004250 016760 174098 000012    MOV  GETEAB,12(0)
917 004256 016760 174072 000016    MOV  GETEAB,16(0)
918 004264 016760 174064 000022    MOV  GETEAB,22(0)
919
920                                     ;/--SDRM-
921
922
923 004272 032767 001000 173516      RIT  #BIT9,SRI ;/THIS DR11K #5 SELECTED?
924 004300 001466                    REQ  68S
925 004302 060300                    ADD  R3,RO ;/UPDAT JOB STORAGE AREA POINTER.
926 004304 012710                    MOV  #432,(0) ;/SET I/O START, MULTI-USER, INPUT SINGLE CHAN.
927 004310 012760 000256 000002    MOV  #256,2(0) ;/WORD COUNT
928
929 004316 005067 002330                    CLR  JOB7U ;CLEAR USW
930 004322 016760 174216 000004    MOV  GJOB7U,4(0) ;LOAD PA OF USW INTO RDA
931 004330 012760 000000 000006    MOV  #0,6(0)
932 004336 012760 000252 000007    MOVR #BIT7,BIT1,7(0) ;3 BUFFERS.
933 004344 016760 174026 000010    MOV  GRUFF2,10(0) ;/SET BUFFER ADDR.
934 004352 016760 174020 000014    MOV  GRUFF2,14(0)
935 004360 016760 174012 000020    MOV  GRUFF2,20(0)
936 004366 005060 000012                    CLR  12(0)
937 004372 005267 174304                    INC  $DDAT
938 004376 012760 000000 000054    MOV  #100,54(0) ;RECORD THIS JOB
939 004414 012760 000001 000060    MOV  #1,60(0) ;DELAY BEFORE START.
940 004420 012760 000001 000056    MOV  #-1,56(0) ;SAMPLING ONLY ONE CHAN.
941 004426 012760 000200 000062    MOV  #200,62(0) ;/SELECT CHAN #.
942
943 004426 016760 173722 000006    MOVR GETEAB,6(0)
944 004434 016760 173714 000012    MOV  GETEAB,12(0)
945 004442 016760 173706 000016    MOV  GETEAB,16(0)
946 004450 016760 173700 000022    MOV  GETEAB,22(0)
947
948
  
```

```

949 004456 012767 000011 000656 BLOOP: MOV #11,KWT ;SET UP CLOCK
950 004464 012767 000503 000652 MOV #503,KWT+2 ;PARAMETERS
951 ;*
952 ;* JOB0-JOB7 PRE SET UP
953 ;* SGGDAT= NO. OF JOBS TO EXERCISE
954 ;*
955
956 004472" FLASH:
957
958 004472" 2S:
959
960 004472 012701 005342" MOV #KWT,R1 ;SET UP TO GET PA
961 004476 010167 073646" MOV R1,GETADR ;MOV ADRS SO WE CAN GET THE PA
962 004502 104415 000000 000350" GETPAS,REGIN,GETADR ;GET PHYSICAL ADDRESS FROM 16-BIT GETADR
963 004510 016701 173636" MOV GETPAR,R1 ;RETURN PHYSICAL ADRS.
964 004514 010177 173516" MOV #R1,0LPA0L ;START CLOCK
965
966 004520 056777 173632 173500 BITS GETPS,0LPCI ;SET EXTION BITS.
967 004526 052777 000001 173472 FLASH2: BIS #R10,0LPCI
968 004534 012700 007466" MOV #TOD00,R0
969
970 004540 005020 007752" 3S: CLP (0)+ ;CLEAR QUE AREA.
971 004542 020027 CMP R0,#DONEC
972 004546 008774 BNE 3S
973 004550 018700 173572" MOV SGGDAT,R0 ;GET NO. OF JOBS
974 004554 012701 007466" MOV #TOD00,R1 ;GET QUES AREA
975 004560 012702 005350" MOV #JOB0,R2 ;PICK UP 1ST JOB ADDRESS
976 004564 032703 005350" MOV #JOB1,R3 ;CALCULATE ADDR DIF.
977 004574 162703 005350" SUB #JOB0,R3
978 004574 010067 003006" MOV R0,TOD0C ;REMEMBER HOW MANY JOBS ARE QUEUED
979 004600 012700 000010" MOV #8,R0
980 004604 005712 4S: TST (2) ;ANYTHING IN THIS JOB??
981 004606 001401 REG 65
982 004610 010221 MOV R2,(1)+ ;STORE FIRST JOB
983
984 004612 060302 6S: ADD R3,R2 ;POINT TO NEXT JOB
985 004614 005300 DEC R0 ;DONE ALL JOBS?
986 004616 001372 RNE 4S ;NO-LOOP.
987 004620 005067 173520 CLR SGGDAT
988 004624 015700 MOV VECTOR,R0
989 004630 015720 005004" MOV #OUPSRV,(0)+
990 004634 012720 000340" MOV #340,(0)+
991 004640 012720 004670" MOV #INPSRV,(0)+
992 004644 012720 000340" MOV #340,(0)+
993 004650 052777 000100 BITS #R10,0LPCI
994 004654 052777 000100 173350 BIS #R10,0LPCI
995 004664 104400 000000 173346 INPSRV: EXITS,REGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
996 004670 005767 002712 TST TOD0C ;ANYTHING TO DO?
997 004674 001442 BEQ IEX
998
999 004676 000004 000000 004704" PIPQS,REGIN,IS ;-----
1000 ;-----
1001 004704 012700 007466" 1S: MOV #TOD00,R0
1002 004710 005726 2S: TST (0)+
1003 004712 001776 BEQ 2S
1004

```

```

1005 004714 014067 173430 MOV -(0),GETADR ;SET TO GET PA
1006 004720 104415 000000 000350" GETPAS,REGIN,GETADR ;GET PHYSICAL ADDRESS FROM 16-BIT GETADR
1007 004726 016777 173302 173302" MOV GETPAR,0LPA0L ;LOAD RDA IN LPA REG
1008 004734 006267 173414 ASL GETPAR
1009 004740 006267 173410 ASR GETPAR
1010 004744 056777 173404 173254 BITS GETPAR,0LPCI ;SET EXTION BITS
1011 004750 047000 000000 CLP TOD0C ;ZERO THIS JOB
1012 004754 005367 002626 DEC TOD0C
1013 004760 001003 BNE 5S
1014 004762 042777 000100 173236 BIT #R10,0LPCI ;DON'T ALLOW ANOTHER INTERRUPT.
1015 004770 052777 000001 173230 5S: RIS #R10,0LPCI ;SET GO!
1016 004776 104400 000000 EXITS,REGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
1017 005002 000002 IEX: RTI
1018
1019 005004" OUPSRV:
1020 ;-----
1021 005004 000004 000000 005012" PIRQS,BEGIN,IS ;-----
1022 ;-----
1023
1024 005012" 1S:
1025 005016 017700 173214 MOV 0LPC0,R0 ;NOW LETS GET USER NUMBER.
1026 005016 042700 177770 RIC #C<<75,R0 ;RID OF REST OF JUNK.
1027 005022 010003 MOV R0,R3
1028 005024 006300 ASL R0
1029 005026 017701 173204 MOV 0LPA0L,R1
1030 005032 105777 173176 TSTR 0LPS0
1031 005036 100031 PPL NER ;SEE IF BIT15 SET SHOWING ERROR
1032 005040 122777 000250 173166 CMPR #250,0LPS0 ;IF NO ERROR,PROCEED.
1033 005046 001007 RNE ;JOB DONE ERROR?
1034 005050 005267 173270 INC SGGDAT ;NO-BR AND REPORT ERROR
1035 005054 026767 173266 173262 CMP SGGDAT,SRRDAT
1036 005062 001475 REG OFND
1037 005064 000467 RR OUTCON
1038
1039 005066 016767 173140 173004 2S: MOV LPC0,CSRA ;ADDR. OF CONTROL OUT REG.
1040 ;NOTE STATUS OUT IN HIGH BYTE.
1041 005074 017767 173132 173000 MOV 0LPC0,ASCP ;CONTENTS OF CSR REG.
1042 005102 017767 173120 172774 MOV 0LPC1,ASTAT ;CONTENTS OF CONTROL IN REG.
1043 *****
1044 HRDEFS,BEGIN,NULL ;LPA-11 MICRO CODE REPORTED AN ERROR
1045 *****
1046 ENDS,BEGIN ;
1047
1048 005122" NER:
1049 005122 001014 RNF 13S ;COME HERE ON NO ERROR.
1050 005124 017702 173106 000412" MOV 0LPA0L,R2 ;IF STATUS IS 1 OR 2 BR. IF =0 THEN
1051 005130 032703 000412" MOV #JOB0,R3 ;GET THE PA OF THE RDA FROM THE LPA
1052 005134 032703 000412" CMP R2,(R3) ;AND GO THRU THE TABLES TO FIND THE VA
1053 005136 001403 11S: REG 12S ;DOES THE PA MATCH ?
1054 005140 062703 000006" ADD #6,R3 ;VSS GET THE VA FROM THE TABLE
1055 005144 000773 177776 007610" RR 11S ;NO-UPDATE POINTER AND TRY AGAIN
1056 005146 016360 12S: MOV -2(R3),TABLE(0) ;STORE THE VA OF THE RDA IN A TABLE
1057 ;INDEXING OFF THE UID CODE RETURNED
1058 ;BY THE LPA MICRO-CODE
1059 005154 016001 007610" 13S: MOV TABLE(0),R1 ;PREFETCH RDA ADRES
1060

```



```
1385 006153 000 .BYTE 0 //UNUSED
1386 006154 000000 .WORD 0 //BUFFER ADDRESS #/STR
1388 006156 000 .BYTE 0 //EXTENDED ADDRESS BITS
1389 006157 000 .BYTE 0 //UNUSED
1390 006160 000000 .WORD 0 //BUFFER ADDRESS #/STR
1391 006162 000 .BYTE 0 //EXTENDED ADDRESS BITS
1393 006164 000 .BYTE 0 //UNUSED
1394 006165 000000 .WORD 0 //BUFFER ADDRESS #/STR
1395 006167 000 .BYTE 0 //EXTENDED ADDRESS BITS
1396 006170 000000 .WORD 0 //BUFFER ADDRESS #/STR
1397 006173 000 .BYTE 0 //EXTENDED ADDRESS BITS
1398 006174 000 .BYTE 0 //UNUSED
1399 006174 000000 .WORD 0 //BUFFER ADDRESS #/STR
1400 006176 000 .BYTE 0 //EXTENDED ADDRESS BITS
1401 006177 000 .BYTE 0 //UNUSED
1402 006200 006230 .WORD JOR4R //RCLP (ADDR OF LIST OF RANDOM CHAN)
1403 006201 000 .BYTE 0 //RCL EXTENDED ADR. BITS
1405 006203 000 .BYTE 0 //UNUSED.
1406
1407 006204 000 JOB4S: .BYTE 0 //CHANNEL START ADDRESS
1408 006205 000 .BYTE 0 //NUMBER OF CHANNELS
1409 006206 000 .BYTE 0 //CHANNEL INCREMENT
1410 006207 000 .BYTE 0 //FATAL ERROR MASK
1411
1412 006210 000000 .WORD 0 //DELAY
1413 006212 000000 .WORD 0 //SAMPLE RATE
1414
1415 006214 000 .BYTE 0 //STWD
1416 006215 000 .BYTE 0 //EMWD EVENT MARK DIGITAL INT WD#
1417
1418 006216 000000 .WORD 0 //ST MSK
1419 006220 000000 .WORD 0 //EM MSK EVENT MARK DIGITAL INPUT MASK.
1420
1421 ;END REG. TABLE
1422 006222 000003 .WORD 03 //CONTAINS STOP CODE FOR THIS JOB.
1423 006224 000000 .WORD 0 //CONTAINS LOOP COUNT FOR JOB.(NO OF TIMES THRU BUFFER.)
1424
1425 006226 000000 JOB4U: .WORD 0 //USW USER STATUS WORD
1426
1427 006230 000016 JOB4R: .BLKW 16
1428
1429 ;**
1430 ;** REQUEST DESCRIPTOR ARRAY FOR JOR #5
1431 ;**
1432 ;** THIS TABLE WILL BE ALTERED BY THIS PROGRAM
1433 ;** AND BY THE LPA-11 OPTION.
1434 ;**
1435
1436 006264 000000 JOB5: .WORD 0 //MODE INFORMATION.
1437 006266 000000 .WORD 0 //WORD COUNT
1438 006270 006362 .WORD 0+JOB5U //USW (USER STATUS WORD)
1439 006272 000000 .WORD 0 //USW (EXTENDED ADDR. BITS)
1440 006273 000000 .BYTE 0 //VRM (VALID BUFFER MASK)
1441 006274 000000 .WORD 0 //BUFFER ADDRESS #/STP
```

```
1442 006276 000 .BYTE 0 //EXTENDED ADDRESS BITS
1443 006277 000 .BYTE 0 //UNUSED
1444 006300 000000 .WORD 0 //BUFFER ADDRESS #/STR
1445 006302 000 .BYTE 0 //EXTENDED ADDRESS BITS
1446 006303 000 .BYTE 0 //UNUSED
1447 006304 000000 .WORD 0 //BUFFER ADDRESS #/STR
1448 006306 000 .BYTE 0 //EXTENDED ADDRESS BITS
1449 006307 000 .BYTE 0 //UNUSED
1450 006310 000000 .WORD 0 //BUFFER ADDRESS #/STR
1451 006312 000 .BYTE 0 //EXTENDED ADDRESS BITS
1452 006313 000 .BYTE 0 //UNUSED
1453 006314 000000 .WORD 0 //BUFFER ADDRESS #/STR
1454 006316 000 .BYTE 0 //EXTENDED ADDRESS BITS
1455 006317 000 .BYTE 0 //UNUSED
1456 006320 000000 .WORD 0 //BUFFER ADDRESS #/STP
1457 006322 000 .BYTE 0 //EXTENDED ADDRESS BITS
1458 006323 000 .BYTE 0 //UNUSED
1459 006324 000000 .WORD 0 //BUFFER ADDRESS #/STR
1460 006325 000 .BYTE 0 //EXTENDED ADDRESS BITS
1461 006327 000 .BYTE 0 //UNUSED
1462 006330 000000 .WORD 0 //BUFFER ADDRESS #/STP
1463 006332 000 .BYTE 0 //EXTENDED ADDRESS BITS
1464 006333 000 .BYTE 0 //UNUSED
1465
1466 006334 006364 .WORD JOB5R //RCLP (ADDR OF LIST OF RANDOM CHAN)
1467 006336 000 .BYTE 0 //RCL EXTENDED ADR. BITS
1468 006337 000 .BYTE 0 //UNUSED.
1469
1470 006340 000 JOB5S: .BYTE 0 //CHANNEL START ADDRESS
1471 006341 000 .BYTE 0 //NUMBER OF CHANNELS
1472 006342 000 .BYTE 0 //CHANNEL INCREMENT
1473 006343 000 .BYTE 0 //FATAL ERROR MASK
1474
1475 006344 000000 .WORD 0 //DELAY
1476 006346 000000 .WORD 0 //SAMPLE RATE
1477
1478 006350 000 .BYTE 0 //STWD
1479 006351 000 .BYTE 0 //EMWD EVENT MARK DIGITAL INT WD#
1480
1481 006352 000000 .WORD 0 //ST MSK
1482 006354 000000 .WORD 0 //EM MSK EVENT MARK DIGITAL INPUT MASK.
1483
1484 ;END REG. TABLE
1485 006360 000003 .WORD 03 //CONTAINS STOP CODE FOR THIS JOB.
1486 006360 000000 .WORD 0 //CONTAINS LOOP COUNT FOR JOB.(NO OF TIMES THRU BUFFER)
1487
1488 006362 000000 JOB5U: .WORD 0 //USW USER STATUS WORD
1489
1490 006364 000016 JOB5R: .BLKW 16
1491
1492 ;**
1493 ;** REQUEST DESCRIPTOR ARRAY FOR JOB #6
1494 ;**
1495 ;** THIS TABLE WILL BE ALTERED BY THIS PROGRAM
1496 ;** AND BY THE LPA-11 OPTION.
```


1786
1787 007466 000050
1788 007608 000000
1789
1790
1791
1792
1793
1794
1795
1796 007610 000000
1797 007612 000000
1798 007614 000000
1799 007616 000000
1800 007620 000000
1801 007622 000000
1802 007624 000000
1803 007626 000000
1804 007630 000000
1805
1806
1807 007632 000050
1808 007752 000000
1809
1810
1811 007754
1812 007754 000401
1813 010756 000401
1814 011760 000401
1815 012762 000401
1816 013764 000200
1817 014364 000200
1818 014764 000200
1819 015364 000200
1820
1821 015764
1822

TODDQ: -BLKW 40-
TODOC: -WORD 0

THE FOLLOWING TABLE IS USED BY FLASH TO INDEX THE JOB BASED
ON THE INFO THE LBA RETURNS AS ASSIGNED JOB NUMBERS.
FLASH INDEXES THIS TABLE WITH THE JOB NUMBER TO STORE THE RDA
ADDR. WHEN CODE=0, ANY OTHER TIME TABLE IS INDEXED TO GET
THE RDA ADDR. OF A PARTICULAR JOB.

TABLE: -WORD 0
-WORD 0
-WORD 0
-WORD 0
-WORD 0
-WORD 0
-WORD 0
-WORD 0
-WORD 0
-WORD 0

NOTE THIS AREA FROM TODDQ: TO DONEC: IS
CLEARED EACH TIME FLASH IS ENTERED.

DONEQ: -BLKW 40-
DONEC: -WORD 0

FRECOR:
BUFFER: -BLKW 257.
BUFF0: -BLKW 257.
BUFF1: -BLKW 3224
BUFF2: -BLKW 247.
BUFF3: -BLKW 128.
BUFF4: -BLKW 128.
BUFF5: -BLKW 128.
BUFF6: -BLKW 128.
BUFF7: -BLKW 128.
ENDL:
EVEN

1823 015764 000400
1825 015764 000400
1826 015766 071220
1827 015770 065222
1828 015772 063224
1829 015774 063224
1830 015776 063224
1831 016000 063223
1832 016002 063230
1833 016004 063231
1834 016006 000407
1835 016010 063220
1836 016012 015777
1837 016014 063160
1838 016016 101013
1839 016020 000600
1840 016022 063222
1841 016024 020640
1842 016026 061620
1843 016030 103024
1844 016032 100431
1845 016034 063170
1846 016036 101020
1847 016040 063171
1848 016042 101020
1849 016044 104664
1850 016046 023220
1851 016050 000404
1852 016052 060360
1853 016054 101436
1854 016056 104665
1855 016060 000452
1856 016062 023240
1857 016064 060360
1858 016066 115653
1859 016070 104606
1860 016072 070605
1861 016074 063224
1862 016076 024360
1863 016100 053221
1864 016102 101454
1865 016104 063201
1866 016106 043637
1867 016110 106000
1868 016112 113465
1869 016114 063165
1870 016116 105366
1871 016120 000407
1872 016122 063225
1873 016124 023250
1874 016126 063530
1875 016130 107610
1876 016132 103065
1877 016134 104611
1878 016136 060530

MMAST: -SRTTL LISTING OF MULTI-USER MICROCODE

-WORD 400
-WORD 71220
-WORD 65222
-WORD 63224
-WORD 63224
-WORD 63223
-WORD 63230
-WORD 63231
-WORD 407
-WORD 63220
-WORD 16777
-WORD 63160
-WORD 101013
-WORD 600
-WORD 63222
-WORD 20640
-WORD 61620
-WORD 103024
-WORD 100431
-WORD 63170
-WORD 101020
-WORD 63171
-WORD 101020
-WORD 104664
-WORD 23220
-WORD 464
-WORD 60360
-WORD 101436
-WORD 104665
-WORD 452
-WORD 73240
-WORD 60360
-WORD 115653
-WORD 104606
-WORD 70605
-WORD 63224
-WORD 24360
-WORD 53221
-WORD 101454
-WORD 64201
-WORD 43637
-WORD 106000
-WORD 113465
-WORD 63165
-WORD 105366
-WORD 407
-WORD 63225
-WORD 23250
-WORD 63530
-WORD 107610
-WORD 103065
-WORD 104611
-WORD 60530

1879	016140	107207	.WORD	107207
1880	016142	060603	.WORD	60603
1881	016144	101472	.WORD	101472
1882	016146	104564	.WORD	104564
1883	016152	120400	.WORD	120400
1884	016152	102159	.WORD	102159
1885	016154	123451	.WORD	123451
1886	016156	107766	.WORD	107766
1887	016160	120620	.WORD	120620
1888	016162	107766	.WORD	107766
1889	016164	060572	.WORD	60572
1890	016166	103544	.WORD	103544
1891	016170	123013	.WORD	123013
1892	016172	060602	.WORD	60602
1893	016174	103534	.WORD	103534
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1896	016202	103527	.WORD	103527
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2266	017540	061230	.WORD	61230
2267	017542	061210	.WORD	61210
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2375	020072	118940	.WORD	118940
2376	020074	118940	.WORD	118940
2377	020076	000447	.WORD	447
2378	020100	100626	.WORD	100626
2379	020102	114440	.WORD	114440
2380	020104	000407	.WORD	407
2381	020106	000407	.WORD	407
2382	020110	062713	.WORD	62713

2383	020112	104766	.WORD	104766
2384	020114	060612	.WORD	60612
2385	020116	107366	.WORD	107366
2386	020120	020640	.WORD	20640
2387	020122	112456	.WORD	112456
2388	020124	020600	.WORD	20600
2389	020126	020640	.WORD	20640
2390	020130	112461	.WORD	112461
2391	020132	020600	.WORD	20600
2392	020134	104766	.WORD	104766
2393	020136	000467	.WORD	467
2394	020140	104702	.WORD	104702
2395	020142	043230	.WORD	43230
2396	020144	020600	.WORD	20600
2397	020146	112070	.WORD	112070
2398	020150	120620	.WORD	120620
2399	020152	106064	.WORD	106064
2400	020154	170610	.WORD	170610
2401	020156	000517	.WORD	517
2402	020160	100454	.WORD	100454
2403	020162	064201	.WORD	64201
2404	020164	060610	.WORD	60610
2405	020166	113513	.WORD	113513
2406	020170	060611	.WORD	60611
2407	020172	112113	.WORD	112113
2408	020174	112113	.WORD	112113
2409	020176	000406	.WORD	406
2410	020200	063236	.WORD	63236
2411	020202	000511	.WORD	511
2412	020204	063237	.WORD	63237
2413	020206	063176	.WORD	63176
2414	020210	101227	.WORD	101227
2415	020212	000411	.WORD	411
2416	020214	070401	.WORD	70401
2417	020216	000532	.WORD	532
2418	020220	114473	.WORD	114473
2419	020222	050602	.WORD	60602
2420	020224	103124	.WORD	103124
2421	020226	016534	.WORD	16534
2422	020230	002406	.WORD	2406
2423	020232	110535	.WORD	110535
2424	020234	16577	.WORD	16577
2425	020236	000413	.WORD	413
2426	020240	060401	.WORD	60401
2427	020242	063236	.WORD	63236
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2438	020270	112141	.WORD	112141

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2463	020352	100454	.WORD	100454
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2468	020364	070001	.WORD	70001
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2478	020410	00407	.WORD	407
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2505	020476	112244	.WORD	112244
2506	020500	046230	.WORD	46230
2507	020502	020640	.WORD	20640
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2513	020520	016614	.WORD	16614
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2516	020530	023013	.WORD	23013
2517	020532	063133	.WORD	63133
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2519	020536	000673	.WORD	673
2520	020542	000451	.WORD	451
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2522	020546	060372	.WORD	60372
2523	020550	111700	.WORD	111700
2524	020552	000416	.WORD	416
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2526	020556	060372	.WORD	60372
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2528	020562	100454	.WORD	100454
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2533	020574	000677	.WORD	677
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2583	020733	057233	.WORD	57233
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2585	020736	060573	.WORD	60573
2586	020740	111370	.WORD	111370
2587	020742	063160	.WORD	63160
2588	020743	061630	.WORD	61630
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2599	020772	050820	.WORD	50820
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2616	021034	052277	.WORD	52277
2617	021036	108764	.WORD	108764
2618	021040	064201	.WORD	64201
2619	021042	060600	.WORD	60600
2620	021044	061620	.WORD	61620
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2629	021066	000404	.WORD	404
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2631	021072	042226	.WORD	42226
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2634	021100	076470	.WORD	76470
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2636	021104	056227	.WORD	56227
2637	021106	057230	.WORD	57230
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2639	021112	123231	.WORD	123231
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2646	021130	000421	.WORD	421
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2657	021156	057232	.WORD	57232
2658	021160	057232	.WORD	57232
2659	021162	057233	.WORD	57233
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2663	021172	106100	.WORD	106100
2664	021174	042224	.WORD	42224
2665	021176	056226	.WORD	56226
2666	021200	042225	.WORD	42225
2667	021200	043454	.WORD	3454
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2671	021211	000500	.WORD	500
2672	021211	060674	.WORD	60674
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2674	021220	061231	.WORD	61231
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2676	021224	116117	.WORD	116117
2677	021226	120620	.WORD	120620
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2680	021234	023036	.WORD	23036
2681	021236	060716	.WORD	60716
2682	021240	062223	.WORD	62223
2683	021244	060536	.WORD	60536
2684	021244	117532	.WORD	117532
2685	021246	115210	.WORD	115210
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2687	021252	070401	.WORD	70401
2688	021254	002401	.WORD	2401
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2690	021258	062222	.WORD	62222
2691	021262	000421	.WORD	421
2692	021264	061230	.WORD	61230
2693	021266	060536	.WORD	60536
2694	021270	117623	.WORD	117623
2695	021272	000476	.WORD	476
2696	021274	063676	.WORD	63676
2697	021276	060751	.WORD	60751
2698	021300	107476	.WORD	107476
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2701	021306	060416	.WORD	60416
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2703	021312	070416	.WORD	70416
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2705	021316	057231	.WORD	57231
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2707	021324	000404	.WORD	404
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2709	021326	076610	.WORD	76610
2710	021330	076611	.WORD	76611
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2717	021346	164617	.WORD	164617
2718	021350	042227	.WORD	42227

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2720	021354	076470	.WORD	76470
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2722	021360	114451	.WORD	114451
2723	021362	043230	.WORD	43230
2724	021364	000474	.WORD	474
2725	021366	076410	.WORD	76410
2726	021370	114452	.WORD	114452
2727	021372	120600	.WORD	120600
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2739	021422	062223	.WORD	62223
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2744	021434	070401	.WORD	70401
2745	021436	040620	.WORD	40620
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2749	021446	070401	.WORD	70401
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2769	021516	023260	.WORD	23260
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2773	021526	020640	.WORD	20640
2774	021530	061620	.WORD	61620

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2856	021770-	071220	.WORD 71220
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3349	023722	033270	.WORD	33270
3350	023722	033270	.WORD	123210
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3352	023726	076670	.WORD	76670
3353	023730	002523	.WORD	2523
3354	023733	010060	.WORD	10060
3355	023736	106661	.WORD	106661
3356	023736	104771	.WORD	104771
3357	023740	123230	.WORD	123230

3358	023742	000256	.WORD	556
3359	023746	061231	.WORD	61231
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3361	023750	023366	.WORD	23366
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3363	023754	106775	.WORD	106775
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3380	024016	060614	.WORD	60614
3381	024020	112021	.WORD	112021
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3384	024026	100621	.WORD	100621
3385	024030	010006	.WORD	10006
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3387	024036	120600	.WORD	120600
3388	024036	120600	.WORD	120600
3389	024040	112023	.WORD	112023
3390	024042	022202	.WORD	22202
3391	024044	063075	.WORD	63075
3392	024046	042226	.WORD	42226
3393	024050	020640	.WORD	20640
3394	024052	07210	.WORD	7210
3395	024054	022203	.WORD	22203
3396	024056	061210	.WORD	61210
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403	024074	043230	.WORD	43230
404	024076	120600	.WORD	120600
405	024100	112043	.WORD	112043
406	024102	114577	.WORD	114577
407	024104	106063	.WORD	106063
408	024106	062570	.WORD	62570
409	024110	101043	.WORD	101043
410	024114	114577	.WORD	114577
411	024116	120600	.WORD	120600
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413	024120	112053	.WORD	112053

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3424	024146	062610	.WORD	62610
3425	024150	123231	.WORD	123231
3426	024152	063176	.WORD	63176
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3428	024156	060710	.WORD	60710
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3463	024266	003402	.WORD	003402
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3525	024460	100453	.WORD	100453

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3599	024704	010013	.WORD	10013
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3605	024720	043231	.WORD	43231
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3610	024733	100453	.WORD	100453
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3620	024760	111775	.WORD	111775
3621	024762	100453	.WORD	100453
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3624	024766	010004	.WORD	10004
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3627	024776	020640	.WORD	20640
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3634	025011	060376	.WORD	60376
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3637	025020	063233	.WORD	63233

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3645	025042	063013	.WORD	63013
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3662	025112	004437	.WORD	4437
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3665	025120	070640	.WORD	70640
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3678	025160	062230	.WORD	62230
3679	025164	070640	.WORD	70640
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3681	025168	062210	.WORD	62210
3682	025170	063577	.WORD	63577
3683	025172	115506	.WORD	115506
3684	025174	116104	.WORD	116104
3685	025176	114467	.WORD	114467
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3695	025204	000405	.WORD	405
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3697	025210	20640	.WORD	20640
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3700	025216	063174	.WORD	63174
3701	025220	115110	.WORD	115110
3702	025224	060477	.WORD	60477
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3704	025230	110525	.WORD	110525
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3707	025236	061620	.WORD	61620
3708	025238	103043	.WORD	103043
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3718	025264	060600	.WORD	60600
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3723	025274	063226	.WORD	63226
3724	025276	004007	.WORD	4007
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3726	025282	104467	.WORD	104467
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3734	025322	000407	.WORD	407
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3736	025326	063170	.WORD	63170
3737	025330	115565	.WORD	115565
3738	025332	073651	.WORD	73651
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3757	025400*	057225	.WORD	57225
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3764	025416*	056226	.WORD	56226
3765	025420*	042225	.WORD	42225
3766	025424*	056227	.WORD	56227
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3782	025464*	060704	.WORD	60704
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3836	025636*	062715	.WORD	62715
3837	025640*	104467	.WORD	104467
3838	025644*	000600	.WORD	600
3839	025644*	060531	.WORD	60531
3840	025646*	023260	.WORD	23260
3841	025650*	020640	.WORD	20640
3842	025652*	117330	.WORD	117330
3843	025652*	062211	.WORD	62211
3844	025652*	020640	.WORD	20640
3845	025660*	061620	.WORD	61620
3846	025662*	117333	.WORD	117333
3847	025664*	020620	.WORD	20620
3848	025666*	060360	.WORD	60360
3849	025674*	115747	.WORD	115747
3850	025674*	104607	.WORD	104607
3851	025674*	063160	.WORD	63160
3852	025676*	115330	.WORD	115330
3853	025700*	020640	.WORD	20640
3854	027702*	116344	.WORD	116344
3855	025704*	020640	.WORD	20640
3856	025706*	020640	.WORD	20640
3857	025710*	116747	.WORD	116747
3858	025714*	020600	.WORD	20600
3859	025716*	060360	.WORD	60360
3860	025718*	115755	.WORD	115755
3861	025720*	104610	.WORD	104610

JOB3U	006072R	332	819*	1312	1362#														
JOB4	006136R	311	1373#																
JOB4R	006240R	140	1427#																
JOB4S	006204R	1407#																	
JOB4U	006226R	335	845*	1375	1425#														
JOB5	006264R	314	1436#																
JOB5R	006364R	1466	1490#																
JOB5S	006340R	1470#																	
JOB5U	006340R	338	873*	1438	1488#														
JOB6	006426R	328	1499#																
JOB6R	006520R	1529	1553#																
JOB6S	006474R	1533#																	
JOB6U	006516R	341	901*	1501	1551#														
JOB7	006544R	320	1562#																
JOB7R	006544R	708	1592	1616#															
JOB7S	006630R	1596#																	
JOB7U	006652R	344	929*	1564	1614#														
KMAD0	000226R	243#	353*	360	407*	409*	411*	412*	419*	424*	466*	473*	1096*	1103*					
KMAD1	000230R	1104#																	
KMAD2	000232R	246#	361																
KMAD3	000234R	248#																	
KMAD4	000236R	250#																	
KMAD5	000238R	252#	408*	413*	416*	425*	431												
KMAD6	000240R	254#																	
KMAD7	000242R	256#	410*	420	430	433													
KMCSR	000226R	233#	365																
KWT	005342R	703*	752*	949*	950*	960	1110#												
KW11K	000314R	267#	524																
LPC	000246R	694#																	
LPC	000246R	278#																	
LPADH	000240R	253#																	
LPADL	000236R	251#	621*	964*	1007*	1029	1050												
LPCI	000226R	1014#	477	486	497	624*	625*	631	638	650	966*	967*	993*	1010*					
LPC	000232R	247#	1016*	1042	1083*	494	496	635	637	644	647	649	994*	1025					
LPC	000232R	1032	483	485	492														
LPC	000232R	1041	1078*	1084*															
LPMR	000230R	255#																	
LPMR	000242R	257#																	
LPMR	000244R	259#																	
LPMR	000246R	261#																	
LPMR	000248R	263#																	
LPMR	000250R	265#																	
LPMR	000252R	267#																	
LPMR	000254R	269#																	
LPMR	000256R	271#																	
LPMR	000258R	273#																	
LPMR	000260R	275#																	
LPMR	000262R	277#																	
LPMR	000264R	279#																	
LPMR	000266R	281#																	
LPMR	000268R	283#																	
LPMR	000270R	285#																	
LPMR	000272R	287#																	
LPMR	000274R	289#																	
LPMR	000276R	291#																	
LPMR	000278R	293#																	
LPMR	000280R	295#																	
LPMR	000282R	297#																	
LPMR	000284R	299#																	
LPMR	000286R	301#																	
LPMR	000288R	303#																	
LPMR	000290R	305#																	
LPMR	000292R	307#																	
LPMR	000294R	309#																	
LPMR	000296R	311#																	
LPMR	000298R	313#																	
LPMR	000300R	315#																	
LPMR	000302R	317#																	
LPMR	000304R	319#																	
LPMR	000306R	321#																	
LPMR	000308R	323#																	
LPMR	000310R	325#																	
LPMR	000312R	327#																	
LPMR	000314R	329#																	
LPMR	000316R	331#																	
LPMR	000318R	333#																	
LPMR	000320R	335#																	

JOB4U	000520R	335#	683																
JOB5	000446R	344#	676																
JOB5U	000520R	346#	684																
JOB6	000454R	317#	677																
NJOB6U	000534R	341#	685																
NJOB7	000462R	320#	678																
NJOB7U	000542R	344#	686																
NMAST	005764R	779	399	1824#															
NMDM4	000576R	779	399																
NMODSP	000224R	106	229#																
NMSG\$	004403	231#	387																
NMSG\$	004402	231#																	
NMSG\$	004401	1631#	1048#																
NNULL	000000P	1031#	488	499	538	641	654	660	1044										
NQEND	005256R	1036#	1083#																
NOPEN	000000	103	199	190	191	192	209	210	211	212	213	214	215	216					
NOPEN																			

SEX = 000120	1680#	1695	1700	1719	1722	1727	1730	1756	1764										
SOPCNT = 000042R	207#																		
SOPERS = 000048R	402#																		
SPOINT = 000032R	196#																		
SPSIZ = 000040	1#	229																	
SR1SET = 0005276R	1096#																		
SR1 = 000016R	182#																		
SR2 = 000020R	100#																		
SR2VAL = 000224R	232#																		
SR3 = 000022R	191#																		
SR4 = 000024R	192#																		
START = 000550R	195#																		
STAT = 000026R	104#	351#																	
STPCOD = 000071	232#																		
SVR0 = 000062R	209#																		
SVR1 = 000064R	210#																		
SVR2 = 000066R	211#																		
SVR3 = 000070R	212#																		
SVR4 = 000072R	213#																		
SVR5 = 000074R	214#																		
SVR6 = 000076R	215#																		
SYSCNT = 000052R	204#																		
TABLE = 007610R	1656#	1059	1796#																
TODDC = 007606R	978#	996	1012*	1788#															
TODDQ = 007466R	968	974	1001	1787#															
TRPDFD = 000022	231#																		
TS1 = 000676R	386																		
TS2 = 001120R	383																		
TS3 = 001104R	510#																		
TS4 = 002224R	645	664#																	
UCODE = 000340R	278#																		
UCODES = 000342R	279#																		
USMH = 000067	434#																		
VH = 000067	1071																		
VECTOR = 000010R	185#	988																	
VERSN = 000246R	260#	615																	
WARNMS = 006710R	387	1619#																	
WASADR = 000104R	219#	431*																	
WDFR = 000116R	226#																		
WDT0 = 000148R	225#																		
WRNMSC = 006714R	1619	1621#																	
XFLAG = 000005R	183#																		
SBDAT = 000344R	290#	987*	1034*	1035	789*	829*	853*	881*	909*	937*	973	1035							
SGDDAT = 000346R	291#	712*	735*	776*	1138#	1141#	1144#	1147#	1150#	1189#	1192#	1195#	1198#						
STR = 000001	1261#	1126#	1132#	1138#	1210#	1213#	1252#	1255#	1258#	1264#	1266#	1270#	1273#						
	1261#	1204#	1207#	1210#	1321#	1324#	1327#	1330#	1333#	1336#	1339#	1378#	1381#	1384#					
	1376#	1315#	1318#	1321#	1396#	1399#	1402#	1441#	1444#	1447#	1450#	1453#	1456#	1459#					
	1387#	1390#	1303#	1396#	1399#	1402#	1441#	1444#	1447#	1450#	1453#	1456#	1459#	1528#	1567#	1570#			
	1462#	1465#	1504#	1507#	1510#	1513#	1516#	1519#	1522#	1525#	1528#	1567#	1570#						
	1573#	1576#	1579#	1582#	1585#	1588#	1591#	1594#	1597#	1600#	1603#	1606#	1609#	1612#	1615#				
	1717#	1720#	1723#	1726#	1729#	1732#	1735#	1738#	1741#	1744#	1747#	1750#	1753#	1756#	1759#				
	1815#	1818#	1821#	1824#	1827#	1830#	1833#	1836#	1839#	1842#	1845#	1848#	1851#	1854#	1857#				

.DVL 000250R 262# 367*
 .ABS. 000600 000
 025774 001

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0
 XLPH80, XLPH80/SOL/CRF:SYM=DDXCOM, XLPH80
 RUN-TIME: 9 12.6 SECONDS
 RUN-TIME RATIO: 90/21=4.1
 CORE USED: 22K (43 PAGES)