

PCL11-A,B

PCL11 STND ALN VO2C
CZPLBC0

AH-E263C-MC
COPYRIGHT 78-79
FICHE 1 OF 1

SEP 1979
digital
MADE IN USA

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48

: IDENTIFICATION

:
:-----
: PROGRAM CODE AC-E262C-MC
: PPROGRAM NAME CZPLBCO PCL11 STAND ALONE TEST
: DATE CREATED 22-OCT-75
: UPDATED (TO VER 02) 13-MAR-78
: MODIFIED 06-JUN-79
: MAINTAINER SPECIAL SYSTEMS KANATA
: AUTHOR DAVID G. WIENS

:THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE
:AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT COR-
:PORATION. DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR
:ANY ERRORS THAT MAY APPEAR IN THIS DOCUMENT.

:DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR THE USE
:OR RELIABILITY OF ITS SOFTWARE ON EQUIPMENT THAT IS NOT SUPPLIED BY
:DIGITAL.

:COPYRIGHT (C) 1978, 1979 BY DIGITAL EQUIPMENT OF CANADA, LIMITED.

50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83

000000

.SBTTL HEADER AND INSTRUCTIONS
.REPT 0

1. GENERAL

THE PARALLEL COMMUNICATIONS LINK (PCL11) TEST WILL VIGOROUSLY TEST THE HARDWARE INVOLVED IN ANY ONE PDP-11 PROCESSOR CONTAINING PCL11 HARDWARE.

THERE ARE THREE SEPARATE SECTIONS IN THIS TEST. TO COMPLETELY CHECK BOTH TRANSMITTER AND RECEIVER PORTIONS OF THE PCL11, ALL THREE SECTIONS MUST BE RUN SUCCESSFULLY.

THE FIRST TEST IS THE BASIC TRANSMITTER TEST WHICH IS DESIGNED TO BE RUN AS A STAND ALONE DEVICE TEST ON THE TRANSMITTER. IT WILL RUN WITH NO MANUAL INTERVENTION (AFTER INITIAL SETUP) ASSUMING THAT THE TRANSMITTER ADDRESS SWITCHES IN THE MASTER SECTION ARE SET TO BE AT LEAST EQUAL TO THE TRANSMITTERS OWN ADDRESS SWITCHES. THIS ASSURES THAT TIMING SLICES WILL SELECT THE TRANSMITTER BEING TESTED.

THE SECOND TEST IS THE BASIC RECEIVER TEST WHICH IS DESIGNED TO RUN AS A STAND ALONE DEVICE TEST FOR THE RECEIVER MODULE. AFTER INITIAL SETUP, THIS TEST RUNS WITH NO MANUAL INTERVENTION.

THE THIRD TEST IS THE TRANSMITTER-RECEIVER LOOP TEST. THE OBJECTIVE OF THE THIRD TEST IS TO TEST ANY FUNCTIONS THAT WERE NEGLECTED IN THE FIRST AND SECOND TESTS DUE TO THE NEED FOR TRANSMITTER TO RECEIVER COMMUNICATIONS. IT WILL ALSO TEST THE T.D.M. BUS DRIVERS AND RECEIVERS BY SENDING DATA PATTERNS AND CHECKING THE DATA RECEIVED. FURTHER, IT WILL EXERCISE THE ABILITY TO REJECT OR TRUNCATE COMMUNICATIONS.

THE TESTS ARE SELECTED, IN THE START-UP PROCEDURE, SO THAT ANY ONE OF THE TESTS MAY BE LOOPED INDIVIDUALLY, OR ALL THREE MAY BE LOOPED AS AN OVERALL TEST.

85
86
87
88
89
90
91
92
93
94
95
96
97

- 2. REQUIREMENTS
- 2.1 GENERAL:
 - 2.11 PDP-11 PROCESSOR WITH 8K OF MEMORY
AND A CONSOLE DEVICE ON-LINE.
 - 2.12 PCL11 HARDWARE ON THE UNIBUS
 - 2.13 ALL PROCESSOR MAINDECS MUST HAVE BEEN RUN
SUCCESSFULLY PRIOR TO RUNNING PCL11 TEST.
 - 2.14 ONE PCL11 CONNECTED TO UNIBUS
(SEE PCL11 OPTION DESCRIPTION SEC 2.1)

99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127

3. RESTRICTIONS

3.1 THIS TEST CANNOT BE LOADED INTO A PDP-11 WITH
LESS THAN 8K OF MEMORY.

3.3 SINCE THERE ARE TIMING LOOPS IN THIS TEST,
IT MAY NOT RUN SUCCESSFULLY IN SOLID-STATE MEMORY
IF THE DELAY CONSTANT (CNTRL-D) IS LOWERED TO
BELOW 6.
*** THIS ALSO APPLIES TO USING FASTER PDP-11'S (45, 70, ETC.)***

4. TEST SET-UP

4.1 ENSURE PCL11 HAS BEEN INSTALLED CORRECTLY
AS PER THE INSTALLATION PROCEDURE IN SEC 2.1 OF
PCL11 OPTION DESCRIPTION (YC-A20TC-00)

4.2 ENSURE ALL CABLES CONNECTING THE PCL11 UNDER
TEST TO OTHER PCL11 UNITS OR DISPLAY PANELS
ARE DISCONNECTED (OR DISABLED).

4.3 DETERMINE OR SET UP PROPER TDM ADDRESSES FOR
THE RECEIVER AND TRANSMITTER. THE TRANSMITTER'S
ADDRESS IS IN S1 ON THE M7991 MODULE; THE
RECEIVER'S IS IN S1 ON THE M7997 MODULE.

4.4 ENSURE S1 ON THE M7994 MODULE IS SET TO A NUMBER
GREATER THAN OR EQUAL TO THE TRANSMITTER'S ADDRESS.

129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178

5. LOADING

THE PCL11 TEST IS ON PAPER TAPE IN PDP-11 .ABS
FORMAT. THE TAPE IS LOADED BY MEANS OF THE PDP-11
ABSOLUTE LOADER.

6. STARTING AND RESTARTING ADDRESSES

START ADDR

RESTART ADDR

200

204 (FOR DIFFERENT T.D.M. BUS ADDRESSES)
224 (FOR TEST SELECT)

7. SWITCH REGISTER OPTIONS

7.1 ALL TESTS

SW 15 = 0	HALT AFTER ERRORS
SW 15 = 1	DON'T HALT AFTER ERRORS
SW 14 = 0	ALLOW PRINTING
SW 14 = 1	INHIBIT PRINTING
SW 13 = 0	SEE SW 15
SW 13 = 1	AFTER ERROR, RE-TRY CURRENT ROUTINE
SW 12 = 0	CARRY ON TO NEXT SUBTEST
SW 12 = 1	DON'T EXIT THIS SUBTEST
SW 11 = 0	10 TIMES THRU ALL SUBTESTS PER PASS
SW 11 = 1	ONCE THRU ALL SUBTESTS PER PASS

7.2 TRANSMITTER TEST

SW 10 = 0	START AT 1ST SUBTEST AND RUN
SW 10 = 1	START AT SUBTEST # IN SW'S <3:0>
SW 09 = 0	STAY IN MASTER SECTION SCOPE LOOP
SW 09 = 1	EXIT MASTER SECTION SCOPE LOOP

7.3 RECEIVER TEST

SW 10 = 0	START AT 1ST SUBTEST AND RUN
SW 10 = 1	START AT SUBTEST # IN SW'S <2:0>

7.4 TRANSMITTER-RECEIVER LOOP

SW 10 = 0	START AT 1ST SUBTEST AND RUN
SW 10 = 1	START AT SUBTEST # IN SW'S <2:0>

180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235

7.5 SWITCH REGISTER OPTION USE ON NON-SWITCH-REGISTER PDP-11'S
AT START UP TIME
THE PROGRAM WILL DECIDE WHETHER A HARDWARE SWITCH REGISTER
EXISTS ON THE PDP-11. IF NONE EXISTS, A SOFTWARE
FLAG WILL BE SET INDICATING TO THE REST OF THE PROGRAM THAT
THE 'SWITCH MONITOR' IS TO BE USED TO ACHIEVE CHANGING OF
SWITCH OPTIONS.
THE MONITOR IS ENTERED AT THE START OF THE TEST PROGRAM
AUTOMATICALLY. IT IS ALSO ENTERED AUTOMATICALLY ON AN ERROR
HALT IF SW 15 = 0. AT OTHER TIMES IT MUST BE CALLED BY THE
OPERATOR BY TYPING CNTRL-S
WHEN THE MONITOR IS ENTERED THE FOLLOWING IS PRINTED:
SWR = XXXXXX :
SHOWING THE OPERATOR THE PRESENT CONTENTS OF THE SOFTWARE
SWITCH REGISTER LOCATION. HE MAY CHANGE THE LOCATION BY TYPING:
YYYYYY <CR>
IN RESPONSE; OR HE MAY LEAVE THE LOCATION UNCHANGED BY TYPING
ONLY <CR>.
REFERENCE PAGE 9 OF THIS LISTING FOR 'SWITCH' BIT POSITIONS.
UPON DETECTING A <CR> THE MONITOR WILL TYPE:
CNTRL-P TO CONTINUE
THE OPERATOR NOW HAS THE OPTION OF TYPING ^P TO CONTINUE
THE PROGRAM WHERE IT LEFT OFF, OR ^S TO RE-ENTER THE
SWITCH MONITOR.

8. TEST DESCRIPTION

8.1 TEST 1 - TRANSMITTER TEST:

SUBTEST 00	TEST INITIAL CONDITIONS AFTER RESET
SUBTEST 01	COMMAND REGISTER TEST
SUBTEST 02	BYTE COUNT REGISTER TEST
SUBTEST 03	BUS ADDRESS REGISTER TEST
SUBTEST 04	MASTER SECTION TEST
SUBTEST 05	DATA SILO TEST
SUBTEST 06	STATUS REGISTER AND ERRORS TEST
SUBTEST 07	INTERRUPT TEST
SUBTEST 10	C.R.C GENERATION TEST

8.2 TEST 2 - RECEIVER TEST:

SUBTEST 00	TEST INITIAL CONDITIONS AFTER RESET
SUBTEST 01	COMMAND REGISTER TEST
SUBTEST 02	BYTE COUNT REGISTER TEST
SUBTEST 03	BUS ADDRESS REGISTER TEST
SUBTEST 04	DATA SILO TEST
SUBTEST 05	STATUS REGISTER AND ERRORS TEST
SUBTEST 06	INTERRUPT TEST
SUBTEST 07	C.R.C GENERATION TEST

8.3 TEST 3 - XMTR-RCVR LOOP TEST:

SUBTEST 00	CHK NPR FROM RCVR SILO TO XMTR SILO
------------	-------------------------------------

236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273

SUBTEST 01 DATA LOOPS TEST
SUBTEST 02 TRANSMISSION ERRORS TEST
SUBTEST 03 REJECT AND TRUNCATE TEST

8.4 TEST 4 - COMBINATION RUN

RUN TEST 1 THEN
RUN TEST 2 THEN
RUN TEST 3 THEN
RUN TEST 1 ETC .

8.5 THE TESTS WILL IDENTIFY THEMSELVES UPON SELECTION, IN THE FOLLOWING WAY:

TEST 1 'PCL11 TRANSMITTER TEST'
TEST 2 'PCL11 RECEIVER TEST'
TEST 3 'TRANSMITTER - RECEIVER LOOP TESTS'
TEST 4 'PCL11 TESTS 1 - 3 SEQUENCE''

8.6 THE TESTS WILL SIGNIFY COMPLETION BY PRINTING THE FOLLOWING END PASS MESSAGES ALONG WITH THE PASS COUNT IN DECIMAL:

TEST 1 -- END PASS # N
TEST 2 -- END PASS # NA
TEST 3 -- END PASS # NB
TEST 4 -- END PASS # NC

275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330

9. STARTING AND OPERATING PROCEDURE
- LOAD THE PROGRAM TAPE USING THE PDP-11 ABSOLUTE LOADER
- 9.1 START UP:
- START PROGRAM AT 200
PROGRAM WILL ASK THE FOLLOWING (ONE AT A TIME)
- XMTR 1ST UNIBUS ADDR.. (DEFAULT = 164200)
RCVR 1ST UNIBUS ADDR... (DEFAULT = 164220)
XMTR VECTOR.. (DEFAULT = 170)
RCVR VECTOR.. (DEFAULT = 174)
XMTR PRIORITY (4-7).. (DEFAULT = 5)
RCVR PRIORITY (4-7).. (DEFAULT = 5)
XMTR TDM BUS ADDR (1-37).. (DEFAULT = 1)
RCVR TDM BUS ADDR (1-37).. (DEFAULT = 1)
- RESPOND TO EACH PROMPT WITH:
<CR> IF DEFAULT IS DESIRED
XXXXX <CR> IF XXXXX IS DESIRED FOR NEW ENTRY
- 9.11 SELECT TEST:
- THE PROGRAM THEN TYPES:
SELECT TEST (<CR> FOR HELP)..
- THE OPERATOR HAS THE FOLLOWING CHOICES:
- 1 = SELECT TEST 1 TO RUN ONLY (TRANSMITTER LOGIC TEST)
2 = SELECT TEST 2 TO RUN ONLY (RECEIVER LOGIC TEST)
3 = SELECT TEST 3 TO RUN ONLY (XMTR -TO- RCVR LOOP TEST)
4 = SEQUENCE TEST 1, TEST 2, TEST 3 REPETEDLY.
<CR> PRINT THIS HELP MESSAGE.
- 9.12 POSSIBLE INTERVENTION:
- 9.121 IF SW 12 IS UP AT START TIME, THE FIRST SUBTEST WILL RUN CONTINUOUSLY AND THE TEST WILL NEVER ACHIEVE A SUCCESSFUL PASS COMPLETE. SWITCH 12 MUST BE LEFT DOWN UNLESS AN INTERMITTENT ERROR OCCURS IN A SUBTEST AND IT IS DESIRED TO SCOPE THE MODULE WITH THE SAME SUBTEST RUNNING CONTINUOUSLY. AT ANY TIME, SW 12 MAY BE LOWERED AND THE TEST SEQUENCE WILL RESUME.
- 9.122 ANY PARTICULAR SUBTEST MAY BE STARTED BY STARTING WITH OPTION SWITCH 10 = 1 AND THE NUMBER OF THE DESIRED SUBTEST IN SW'S <3:0>. IF IT IS DESIRED, HOWEVER, TO CONTINUOUSLY RUN ONLY THE SELECTED SUBTEST, SW 12 MUST BE RAISED AS WELL AS SW 10 AT START UP TIME.
- 9.123 WHEN THE MASTER SECTION TEST HAS IT'S TURN TO RUN THE FOLLOWING MESSAGE WILL APPEAR ON THE CONSOLE

331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375

PRINTER

SCOPE SECTION FOR SLICE TIMING
RAISE SW 09 TO EXIT THIS LOOP

THIS IS A 'HANG-UP' PROVIDED FOR MAINTENANCE
PURPOSES OF CHECKING AND ADJUSTING SLICE
TIMING IN THE MASTER SECTION. NEITHER THE
PRINTOUT NOR THE 'HANG-UP' WILL OCCUR IF
SW 09 IS UP.

9.124

NORMALLY, 10 (OCTAL) PASSES ARE MADE OF THE
COMPLETE TEST BEFORE A PASS COMPLETE IS
ACHIEVED AND

END PASS XX

IS PRINTED ON THE CONSOLE PRINTER.
HOWEVER, RAISING SW 11 WILL CAUSE EVERY SINGLE
PASS TO BE CONSIDERED AS COMPLETE.

9.13

RESTARTING:

THE TEST MAY BE RE-STARTED AT LOC. 204
THIS WILL OMIT MOST OPENING DIALOGUE.
THE FOLLOWING WILL STILL BE REQUESTED, HOWEVER:

TRANSMITTER TDM BUS ADDRESS IS (1-37).. (DEFAULT = 1)
RECEIVER TDM BUS ADDRESS IS (1-37).. (DEFAULT = 1)

OR --THE TEST MAY BE RE-STARTED AT LOC. 224
THIS WILL OMIT ALL OF THE OPENING DIALOGUE
AND BEGIN RIGHT AT THE TEST SELECTOR.

9.14 (CONTROL CHARACTERS)

CNTRL-C RESTART TO SELECT NEW TDM BUS ADDRESSES
CNTRL-T RESTART AT TEST SELECTOR
CNTRL-D MODIFY DELAY CONSTANT
(NORMALLY SET FOR FASTEST PDP-11)
CNTRL-S MODIFY SWITCH OPTIONS ON NON-
SWITCH REGISTER PDP-11'S
CNTRL-P CONTINUE AFTER CONTROL FUNCTION
CNTRL-F MODIFY CONSOLE FILL COUNT

377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415

10 ERRORS

BASICALLY, THE ERRORS IN THIS TEST ARE IN THE FORM:

**ERROR X AT LOCATION YYYYYY

WHERE X IS THE ERROR NUMBER:

TRANSMITTER TEST ERROR #'S 1 TO 121 (TEST # 1)
RECEIVER TEST ERROR #'S 200-262 (TEST # 2)
LOOP TEST ERROR #'S 300-355 (TEST # 3)

AND YYYYYY IS THE ADDRESS IN THE LISTING WHERE THE
ERROR OCCURRED.

REFER TO THE LISTING ABOVE THE COMMENT:

***** ERROR X *****

TO DETERMINE THE CAUSE OF THE ERROR PRINTOUT.

DATA ERRORS WILL CAUSE A FURTHER PRINTOUT INDICATING
THE ERRONEOUS DATA:

SHOULD BE AAAAAA, WAS BBBBBB

OTHER ERRORS WILL CAUSE THE FOLLOWING FURTHER
PRINTOUTS:

TRANSMITTER STATUS REGISTER = CCCCCC

RECEIVER STATUS REGISTER = DDDDDD

NO. OF WORDS RECEIVED = EEEEE

SILO OUTPUT WORD WAS FFFFFF

SILO INPUT WORD WAS HHHHHH

417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471

177776
177570
032406

000000
000001
000002
000003
000004
000005
000006
000007

000340
000300
000240
000200
000140
000100
000040

100000
040000
020000
010000
004000
002000
001000
000400
000200
000100
000040
000020
000010
000004
000002
000001

002000

.ENDR
.TITLE CZPLBCO PCL11 STND ALN V02C
.SBTTL SYMBOLIC DEFINITIONS
.NLIST TTM
.LIST ME

;INTERNAL DEFINITIONS:

PS = 177776
HWSWR = 177570
SSWR = SWREG

;REGISTER DEFINITIONS

R0 = %0
R1 = %1
R2 = %2
R3 = %3
R4 = %4
R5 = %5
SP = %6
PC = %7

;BUS REQUEST DEFINITIONS:

P7 = 340
P6 = 300
P5 = 240
P4 = 200
P3 = 140
P2 = 100
P1 = 40

;BIT DEFINITIONS:

B15 = 100000
B14 = 40000
B13 = 20000
B12 = 10000
B11 = 4000
B10 = 2000
B09 = 1000
B08 = 400
B07 = 200
B06 = 100
B05 = 40
B04 = 20
B03 = 10
B02 = 4
B01 = 2
B00 = 1

;OTHER DEFINITIONS:

ISP = BEGIN

:*****THESE ADDED FOR SAFETY***
:*****

;INITIAL STACK POINTER

473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528

000001

```
.SBTTL MACRO DEFINITIONS

:BOARD INITIALIZE MACRO

    .MACRO BDINIT DEV
    .NLIST
    .IF IDN <DEV>,<XMTR>
        BIS #B01,@TCR
    .IFF
        .IF IDN <DEV>,<RCVR>
            BIS #B01,@RCR
        .IFF
        .ERROR ;BAD ARGUMENT FOR BDINIT
    .ENDC
    .ENDC

    .LIST
    .ENDM

N = 1 ;INITIAL ERROR NUMBER
:ERROR MACROS

    .MACRO ERROR P
    BIT #B14,@SR
    BNE .+14
    MOV #P,ERRNUM
    JSR PC,ERR
    N = N+1
    .ENDM
    ;***** ERROR P *****

    .MACRO DATERR P
    BIT #B14,@SR
    BNE .+14
    MOV #P,ERRNUM
    JSR PC,DERR
    N = N+1
    .ENDM
    ;***** ERROR P *****

    .MACRO HLT
    JSR PC,SWHLT
    .ENDM

:PRINT MACRO (MSG ADDR IN R0)

    .MACRO PNTM A
    MOV #A,R0 ;PRINT MESSAGE
    JSR PC,TYPOUT ;POINTED TO BY A
    .ENDM

:SCOPE LOOP MACRO

    .MACRO SCOPE X
    JSR R5,SCPRTN
    X
    .ENDM
```


529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549

```
;INTER-PDP-11 COMPATABLE MOVE TO PS  
;TO RUN ON LSI-11: CHANGE THIS MACRO TO:  
;      MOV      SRC,-(SP)  
;      MOV      #LLL,-(SP)  
;      RTI  
;LLL:
```

```
.MACRO MTPS SRC,?LLL  
MOV SRC,@#PS  
.ENDM
```

```
;REGISTER SAVE AND RESTORE MACRO'S
```

```
.MACRO REGSAV  
JSR R5,REGSAV  
.ENDM
```

```
.MACRO REGRES  
JSR R5,REGRES  
.ENDM
```

			.SBTTL TRAP CATCHERS		
			.ENABLE	ABS	
551					
552					
553		000000		=	0
554	000000	000002	.WORD	.+2	
555	000002	000000	.WORD	0	
556	000004	004476	.WORD	ERRTRP	:TRAP BAD DEVICE ADDRESSES
557	000006	000340	.WORD	340	
558		000176	.REPT	126.	
559			.WORD	.+2	
560			.WORD	0	
561			.ENDR		
(1)	000010	000012	.WORD	.+2	
(1)	000012	000000	.WORD	0	
(1)	000014	000016	.WORD	.+2	
(1)	000016	000000	.WORD	0	
(1)	000020	000022	.WORD	.+2	
(1)	000022	000000	.WORD	0	
(1)	000024	000026	.WORD	.+2	
(1)	000026	000000	.WORD	0	
(1)	000030	000032	.WORD	.+2	
(1)	000032	000000	.WORD	0	
(1)	000034	000036	.WORD	.+2	
(1)	000036	000000	.WORD	0	
(1)	000040	000042	.WORD	.+2	
(1)	000042	000000	.WORD	0	
(1)	000044	000046	.WORD	.+2	
(1)	000046	000000	.WORD	0	
(1)	000050	000052	.WORD	.+2	
(1)	000052	000000	.WORD	0	
(1)	000054	000056	.WORD	.+2	
(1)	000056	000000	.WORD	0	
(1)	000060	000062	.WORD	.+2	
(1)	000062	000000	.WORD	0	
(1)	000064	000066	.WORD	.+2	
(1)	000066	000000	.WORD	0	
(1)	000070	000072	.WORD	.+2	
(1)	000072	000000	.WORD	0	
(1)	000074	000076	.WORD	.+2	
(1)	000076	000000	.WORD	0	
(1)	000100	000102	.WORD	.+2	
(1)	000102	000000	.WORD	0	
(1)	000104	000106	.WORD	.+2	
(1)	000106	000000	.WORD	0	
(1)	000110	000112	.WORD	.+2	
(1)	000112	000000	.WORD	0	
(1)	000114	000116	.WORD	.+2	
(1)	000116	000000	.WORD	0	
(1)	000120	000122	.WORD	.+2	
(1)	000122	000000	.WORD	0	
(1)	000124	000126	.WORD	.+2	
(1)	000126	000000	.WORD	0	
(1)	000130	000132	.WORD	.+2	
(1)	000132	000000	.WORD	0	
(1)	000134	000136	.WORD	.+2	
(1)	000136	000000	.WORD	0	
(1)	000140	000142	.WORD	.+2	

(1)	000142	000000	.WORD	0
(1)	000144	000146	.WORD	.+2
(1)	000146	000000	.WORD	0
(1)	000150	000152	.WORD	.+2
(1)	000152	000000	.WORD	0
(1)	000154	000156	.WORD	.+2
(1)	000156	000000	.WORD	0
(1)	000160	000162	.WORD	.+2
(1)	000162	000000	.WORD	0
(1)	000164	000166	.WORD	.+2
(1)	000166	000000	.WORD	0
(1)	000170	000172	.WORD	.+2
(1)	000172	000000	.WORD	0
(1)	000174	000176	.WORD	.+2
(1)	000176	000000	.WORD	0
(1)	000200	000202	.WORD	.+2
(1)	000202	000000	.WORD	0
(1)	000204	000206	.WORD	.+2
(1)	000206	000000	.WORD	0
(1)	000210	000212	.WORD	.+2
(1)	000212	000000	.WORD	0
(1)	000214	000216	.WORD	.+2
(1)	000216	000000	.WORD	0
(1)	000220	000222	.WORD	.+2
(1)	000222	000000	.WORD	0
(1)	000224	000226	.WORD	.+2
(1)	000226	000000	.WORD	0
(1)	000230	000232	.WORD	.+2
(1)	000232	000000	.WORD	0
(1)	000234	000236	.WORD	.+2
(1)	000236	000000	.WORD	0
(1)	000240	000242	.WORD	.+2
(1)	000242	000000	.WORD	0
(1)	000244	000246	.WORD	.+2
(1)	000246	000000	.WORD	0
(1)	000250	000252	.WORD	.+2
(1)	000252	000000	.WORD	0
(1)	000254	000256	.WORD	.+2
(1)	000256	000000	.WORD	0
(1)	000260	000262	.WORD	.+2
(1)	000262	000000	.WORD	0
(1)	000264	000266	.WORD	.+2
(1)	000266	000000	.WORD	0
(1)	000270	000272	.WORD	.+2
(1)	000272	000000	.WORD	0
(1)	000274	000276	.WORD	.+2
(1)	000276	000000	.WORD	0
(1)	000300	000302	.WORD	.+2
(1)	000302	000000	.WORD	0
(1)	000304	000306	.WORD	.+2
(1)	000306	000000	.WORD	0
(1)	000310	000312	.WORD	.+2
(1)	000312	000000	.WORD	0
(1)	000314	000316	.WORD	.+2
(1)	000316	000000	.WORD	0
(1)	000320	000322	.WORD	.+2

(1)	000322	000000	.WORD	0
(1)	000324	000326	.WORD	.+2
(1)	000326	000000	.WORD	0
(1)	000330	000332	.WORD	.+2
(1)	000332	000000	.WORD	0
(1)	000334	000336	.WORD	.+2
(1)	000336	000000	.WORD	0
(1)	000340	000342	.WORD	.+2
(1)	000342	000000	.WORD	0
(1)	000344	000346	.WORD	.+2
(1)	000346	000000	.WORD	0
(1)	000350	000352	.WORD	.+2
(1)	000352	000000	.WORD	0
(1)	000354	000356	.WORD	.+2
(1)	000356	000000	.WORD	0
(1)	000360	000362	.WORD	.+2
(1)	000362	000000	.WORD	0
(1)	000364	000366	.WORD	.+2
(1)	000366	000000	.WORD	0
(1)	000370	000372	.WORD	.+2
(1)	000372	000000	.WORD	0
(1)	000374	000376	.WORD	.+2
(1)	000376	000000	.WORD	0
(1)	000400	000402	.WORD	.+2
(1)	000402	000000	.WORD	0
(1)	000404	000406	.WORD	.+2
(1)	000406	000000	.WORD	0
(1)	000410	000412	.WORD	.+2
(1)	000412	000000	.WORD	0
(1)	000414	000416	.WORD	.+2
(1)	000416	000000	.WORD	0
(1)	000420	000422	.WORD	.+2
(1)	000422	000000	.WORD	0
(1)	000424	000426	.WORD	.+2
(1)	000426	000000	.WORD	0
(1)	000430	000432	.WORD	.+2
(1)	000432	000000	.WORD	0
(1)	000434	000436	.WORD	.+2
(1)	000436	000000	.WORD	0
(1)	000440	000442	.WORD	.+2
(1)	000442	000000	.WORD	0
(1)	000444	000446	.WORD	.+2
(1)	000446	000000	.WORD	0
(1)	000450	000452	.WORD	.+2
(1)	000452	000000	.WORD	0
(1)	000454	000456	.WORD	.+2
(1)	000456	000000	.WORD	0
(1)	000460	000462	.WORD	.+2
(1)	000462	000000	.WORD	0
(1)	000464	000466	.WORD	.+2
(1)	000466	000000	.WORD	0
(1)	000470	000472	.WORD	.+2
(1)	000472	000000	.WORD	0
(1)	000474	000476	.WORD	.+2
(1)	000476	000000	.WORD	0
(1)	000500	000502	.WORD	.+2

(1)	000502	000000	.WORD	0
(1)	000504	000506	.WORD	.+2
(1)	000506	000000	.WORD	0
(1)	000510	000512	.WORD	.+2
(1)	000512	000000	.WORD	0
(1)	000514	000516	.WORD	.+2
(1)	000516	000000	.WORD	0
(1)	000520	000522	.WORD	.+2
(1)	000522	000000	.WORD	0
(1)	000524	000526	.WORD	.+2
(1)	000526	000000	.WORD	0
(1)	000530	000532	.WORD	.+2
(1)	000532	000000	.WORD	0
(1)	000534	000536	.WORD	.+2
(1)	000536	000000	.WORD	0
(1)	000540	000542	.WORD	.+2
(1)	000542	000000	.WORD	0
(1)	000544	000546	.WORD	.+2
(1)	000546	000000	.WORD	0
(1)	000550	000552	.WORD	.+2
(1)	000552	000000	.WORD	0
(1)	000554	000556	.WORD	.+2
(1)	000556	000000	.WORD	0
(1)	000560	000562	.WORD	.+2
(1)	000562	000000	.WORD	0
(1)	000564	000566	.WORD	.+2
(1)	000566	000000	.WORD	0
(1)	000570	000572	.WORD	.+2
(1)	000572	000000	.WORD	0
(1)	000574	000576	.WORD	.+2
(1)	000576	000000	.WORD	0
(1)	000600	000602	.WORD	.+2
(1)	000602	000000	.WORD	0
(1)	000604	000606	.WORD	.+2
(1)	000606	000000	.WORD	0
(1)	000610	000612	.WORD	.+2
(1)	000612	000000	.WORD	0
(1)	000614	000616	.WORD	.+2
(1)	000616	000000	.WORD	0
(1)	000620	000622	.WORD	.+2
(1)	000622	000000	.WORD	0
(1)	000624	000626	.WORD	.+2
(1)	000626	000000	.WORD	0
(1)	000630	000632	.WORD	.+2
(1)	000632	000000	.WORD	0
(1)	000634	000636	.WORD	.+2
(1)	000636	000000	.WORD	0
(1)	000640	000642	.WORD	.+2
(1)	000642	000000	.WORD	0
(1)	000644	000646	.WORD	.+2
(1)	000646	000000	.WORD	0
(1)	000650	000652	.WORD	.+2
(1)	000652	000000	.WORD	0
(1)	000654	000656	.WORD	.+2
(1)	000656	000000	.WORD	0
(1)	000660	000662	.WORD	.+2

(1)	000662	000000	.WORD	0
(1)	000664	000666	.WORD	.+2
(1)	000666	000000	.WORD	0
(1)	000670	000672	.WORD	.+2
(1)	000672	000000	.WORD	0
(1)	000674	000676	.WORD	.+2
(1)	000676	000000	.WORD	0
(1)	000700	000702	.WORD	.+2
(1)	000702	000000	.WORD	0
(1)	000704	000706	.WORD	.+2
(1)	000706	000000	.WORD	0
(1)	000710	000712	.WORD	.+2
(1)	000712	000000	.WORD	0
(1)	000714	000716	.WORD	.+2
(1)	000716	000000	.WORD	0
(1)	000720	000722	.WORD	.+2
(1)	000722	000000	.WORD	0
(1)	000724	000726	.WORD	.+2
(1)	000726	000000	.WORD	0
(1)	000730	000732	.WORD	.+2
(1)	000732	000000	.WORD	0
(1)	000734	000736	.WORD	.+2
(1)	000736	000000	.WORD	0
(1)	000740	000742	.WORD	.+2
(1)	000742	000000	.WORD	0
(1)	000744	000746	.WORD	.+2
(1)	000746	000000	.WORD	0
(1)	000750	000752	.WORD	.+2
(1)	000752	000000	.WORD	0
(1)	000754	000756	.WORD	.+2
(1)	000756	000000	.WORD	0
(1)	000760	000762	.WORD	.+2
(1)	000762	000000	.WORD	0
(1)	000764	000766	.WORD	.+2
(1)	000766	000000	.WORD	0
(1)	000770	000772	.WORD	.+2
(1)	000772	000000	.WORD	0
(1)	000774	000776	.WORD	.+2
(1)	000776	000000	.WORD	0


```

563                                     .SBTTL TEST SUPERVISOR
564
565
566         000200                       =           200
567
568         000200 000167 001574          JMP         BEGIN           ;TEST STARTS AT 200
569         000204 012706 002000          MOV         #ISP,SP
570         000210          MTPS          #P7
(1)         000210 012737 000340 177776  MOV         #P7,@#PS
571         000216 000005          RESET
572         000220 000167 002646          JMP         RESTRT
573         000224 012706 002000          MOV         #ISP,SP
574         000230          MTPS          #P7
(1)         000230 012737 000340 177776  MOV         #P7,@#PS
575         000236 000167 003104          JMP         BCONT           ;GO TO TEST SELECT
576
577         002000                       =           2000
578
579         002000 000005          BEGIN:  RESET           ;CLEAR ALL
580         002002 012706 002000          MOV         #ISP,SP       ;SET UP STACK
581         002006          MTPS          #P7       ;DISABLE C.P. INTERRUPT
(1)         002006 012737 000340 177776  MOV         #P7,@#PS
582         002014 005067 034032          CLR         SWRFLG       ;CLEAR SWR FLAG
583         002020 012737 004210 000004  MOV         #SRTST,@#4   ;SET UP TO TRAP IF NO HSWR
584         002026 012737 000340 000006  MOV         #P7,@#6
585         002034 012767 177570 030346  MOV         #HWSWR,SR    ;SET SR TO HDWARE SW REG
586         002042 005777 030342          TST         @SR         ;SEE IF IT'S THERE
587         002046          PNTM          TSTHDR    ;PRINT TEST HEADER
(1)         002046 012700 035447  MOV         #TSTHDR,RO   ;PRINT MESSAGE
(1)         002052 004767 030572  JSR         PC,TYPOUT   ;POINTED TO BY TSTHDR
588         002056          PROMT:  PNTM          TMTR     ;PRINT 'TRANSMITTER'
(1)         002056 012700 035065  MOV         #TMTR,RO    ;PRINT MESSAGE
(1)         002062 004767 030562  JSR         PC,TYPOUT   ;POINTED TO BY TMTR
589         002066          PNTM          FRAD     ;PRINT '1ST BUS ADDR'
(1)         002066 012700 035103  MOV         #FRAD,RO    ;PRINT MESSAGE
(1)         002072 004767 030552  JSR         PC,TYPOUT   ;POINTED TO BY FRAD
590         002076 016700 034104  MOV         TXMADR,RO   ;PRINT DEFAULT ADDR
591         002102 004767 031060  JSR         PC,OCTPNT
592         002106          PNTM          TWOSP    ;PRINT MESSAGE
(1)         002106 012700 032401  MOV         #TWOSP,RO   ;POINTED TO BY TWOSP
(1)         002112 004767 030532  JSR         PC,TYPOUT   ;LOAD DEFAULT ADDR
593         002116 016767 034064 031040  MOV         TXMADR,KBBUF ;GET KBD INPUT
594         002124 004767 030562  JSR         PC,INPKB    ;REPLACE XMTR ADDR
595         002130 016767 031030 034050  MOV         KBBUF,TXMADR ;IS IT WITHIN LIMITS?
596         002136 026727 034044 164000  CMP         TXMADR,#164000 ;YES, CARRY ON
597         002144 103006          BHIS          PRMT1    ;NO ERROR, ASK AGAIN
598         002146          PNTM          TOOLOW  ;PRINT MESSAGE
(1)         002146 012700 035125  MOV         #TOOLOW,RO  ;POINTED TO BY TOOLOW
(1)         002152 004767 030472  JSR         PC,TYPOUT
599         002156 000167 177674          JMP         PROMT
600         002162 012737 004456 000004  PRMT1:  MOV         #DVATST,@#4
601         002170 005777 034012          TST         @TXMADR     ;IS IT A GOOD ADDRESS?
602         002174          PROMT2: PNTM          RECVR   ;PRINT 'RECEIVER'
(1)         002174 012700 035074  MOV         #RECVR,RO   ;PRINT MESSAGE
(1)         002200 004767 030444  JSR         PC,TYPOUT   ;POINTED TO BY RECVR
603         002204          PNTM          FRAD     ;PRINT 1ST UNIBUS ADDR

```

(1)	002204	012700	035103		MOV	#FRAD,RO		:PRINT MESSAGE
(1)	002210	004767	030434		JSR	PC,TYPOUT		:POINTED TO BY FRAD
604	002214	016700	033770		MOV	RCVADR,RO		:PRINT DEFAULT ADDRESS
605	002220	004767	030742		JSR	PC,OCTPNT		
606	002224				PNTM	TWOSP		
(1)	002224	012700	032401		MOV	#TWOSP,RO		:PRINT MESSAGE
(1)	002230	004767	030414		JSR	PC,TYPOUT		:POINTED TO BY TWOSP
607	002234	016767	033750	030722	MOV	RCVADR,KBBUF		:LOAD DEFAULT ADDRESS
608	002242	004767	030444		JSR	PC,INPKB		:GET KBD INPUT
609	002246	016767	030712	033734	MOV	KBBUF,RCVADR		:LOAD NEW ADDRESS
610	002254	026727	033730	164000	CMP	RCVADR,#164000		:IS IT WITHIN LIMITS?
611	002262	103006			BHIS	PRMT3		:YES, CARRY ON
612	002264				PNTM	TOLOW		
(1)	002264	012700	035125		MOV	#TOLOW,RO		:PRINT MESSAGE
(1)	002270	004767	030354		JSR	PC,TYPOUT		:POINTED TO BY TOLOW
613	002274	000167	177674		JMP	PRMT2		
614	002300	005777	033704		TST	@RCVADR		:IS IT A GOOD ADDRESS?
615	002304	012737	004476	000004	MOV	#ERRTRP,@#4		:SET UP FOR FURTHER TRAPS
616	002312				PNTM	TMTR		:PRINT 'TRANSMITTER'
(1)	002312	012700	035065		MOV	#TMTR,RO		:PRINT MESSAGE
(1)	002316	004767	030326		JSR	PC,TYPOUT		:POINTED TO BY TMTR
617	002322				PNTM	VCTR		:PRINT 'VECTOR IS'
(1)	002322	012700	035245		MOV	#VCTR,RO		:PRINT MESSAGE
(1)	002326	004767	030316		JSR	PC,TYPOUT		:POINTED TO BY VCTR
618	002332	016700	033644		MOV	TXMVEC,RO		:PRINT DEFAULT VECTOR
619	002336	004767	030624		JSR	PC,OCTPNT		
620	002342				PNTM	TWOSP		
(1)	002342	012700	032401		MOV	#TWOSP,RO		:PRINT MESSAGE
(1)	002346	004767	030276		JSR	PC,TYPOUT		:POINTED TO BY TWOSP
621	002352	016767	033624	030604	MOV	TXMVEC,KBBUF		:LOAD DEFAULT VECTOR
622	002360	004767	030326		JSR	PC,INPKB		:GET KBD INPUT
623	002364	016767	030574	033610	MOV	KBBUF,TXMVEC		:REPLACE XMTR VECTOR
624	002372	026727	030566	000776	CMP	KBBUF,#776		:IS IT WITHIN LIMITS?
625	002400	101406			BLOS	PRMT5		
626	002402				PNTM	AGAIN		:NO, TELL HIM
(1)	002402	012700	035211		MOV	#AGAIN,RO		:PRINT MESSAGE
(1)	002406	004767	030236		JSR	PC,TYPOUT		:POINTED TO BY AGAIN
627	002412	000167	177674		JMP	PRMT4		
628	002416				PNTM	RECVR		:PRINT 'RECEIVER'
(1)	002416	012700	035074		MOV	#RECVR,RO		:PRINT MESSAGE
(1)	002422	004767	030222		JSR	PC,TYPOUT		:POINTED TO BY RECVR
629	002426				PNTM	VCTR		:PRINT 'VECTOR IS'
(1)	002426	012700	035245		MOV	#VCTR,RO		:PRINT MESSAGE
(1)	002432	004767	030212		JSR	PC,TYPOUT		:POINTED TO BY VCTR
630	002436	016700	033542		MOV	RCVVEC,RO		:PRINT DEFAULT VECTOR
631	002442	004767	030520		JSR	PC,OCTPNT		
632	002446				PNTM	TWOSP		
(1)	002446	012700	032401		MOV	#TWOSP,RO		:PRINT MESSAGE
(1)	002452	004767	030172		JSR	PC,TYPOUT		:POINTED TO BY TWOSP
633	002456	016767	033522	030500	MOV	RCVVEC,KBBUF		:LOAD DEFAULT VECTOR
634	002464	004767	030222		JSR	PC,INPKB		:GET KEYBOARD INPUT
635	002470	016767	030470	033506	MOV	KBBUF,RCVVEC		:LOAD NEW VECTOR
636	002476	026727	030462	000776	CMP	KBBUF,#776		:IS IT WITHIN LIMITS?
637	002504	101406			BLOS	PRMT6		
638	002506				PNTM	AGAIN		
(1)	002506	012700	035211		MOV	#AGAIN,RO		:PRINT MESSAGE

(1)	002512	004767	030132		JSR	PC,TYPOUT		:POINTED TO BY AGAIN
639	002516	000167	177674		JMP	PRMT5		
640	002522			PRMT6:	PNTM	TMTR		:PRINT 'TRANSMITTER'
(1)	002522	012700	035065		MOV	#TMTR,R0		:PRINT MESSAGE
(1)	002526	004767	030116		JSR	PC,TYPOUT		:POINTED TO BY TMTR
641	002532				PNTM	PRIOTY		:PRINT 'PRIORITY LEVEL IS'
(1)	002532	012700	035256		MOV	#PRIOTY,R0		:PRINT MESSAGE
(1)	002536	004767	030106		JSR	PC,TYPOUT		:POINTED TO BY PRIOTY
642	002542	016700	033350		MOV	FKPRI0,R0		:PRINT DEFAULT PRIORITY
643	002546	004767	030414		JSR	PC,OCTPNT		
644	002552				PNTM	TWOSP		
(1)	002552	012700	032401		MOV	#TWOSP,R0		:PRINT MESSAGE
(1)	002556	004767	030066		JSR	PC,TYPOUT		:POINTED TO BY TWOSP
645	002562	016767	033330	030374	MOV	FKPRI0,KBBUF		:LOAD DEFAULT PRIORITY
646	002570	004767	030116		JSR	PC,INPKB		:GET KBD INPUT
647	002574	026727	030364	000007	CMP	KBBUF,#7		:IS IT WITHIN LIMITS?
648	002602	003406			BLE	PRMT7		:LOW ENOUGH, O.K.
649	002604				PNTM	AGAIN		
(1)	002604	012700	035211		MOV	#AGAIN,R0		:PRINT MESSAGE
(1)	002610	004767	030034		JSR	PC,TYPOUT		:POINTED TO BY AGAIN
650	002614	000167	177702		JMP	PRMT6		
651	002620	026727	030340	000004	PRMT7:	CMP	KBBUF,#4	:HIGH ENOUGH?
652	002626	002006			BGE	PRMT8		
653	002630				PNTM	AGAIN		
(1)	002630	012700	035211		MOV	#AGAIN,R0		:PRINT MESSAGE
(1)	002634	004767	030010		JSR	PC,TYPOUT		:POINTED TO BY AGAIN
654	002640	000167	177656		JMP	PRMT6		
655	002644	016767	030314	033244	PRMT8:	MOV	KBBUF,FKPRI0	
656	002652	006367	030306		ASL	KBBUF		
657	002656	006367	030302		ASL	KBBUF		
658	002662	006367	030276		ASL	KBBUF		
659	002666	006367	030272		ASL	KBBUF		
660	002672	006367	030266		ASL	KBBUF		:SHIFT INTO PLACE
661	002676	016767	030262	033222	PRMT9:	MOV	KBBUF,XPRI0	:LOAD NEW PRIORITY.
662	002704				PNTM	RECVR		:PRINT 'RECEIVER'
(1)	002704	012700	035074		MOV	#RECVR,R0		:PRINT MESSAGE
(1)	002710	004767	027734		JSR	PC,TYPOUT		:POINTED TO BY RECVR
663	002714				PNTM	PRIOTY		:PRINT 'PRIORITY LEVEL IS ''
(1)	002714	012700	035256		MOV	#PRIOTY,R0		:PRINT MESSAGE
(1)	002720	004767	027724		JSR	PC,TYPOUT		:POINTED TO BY PRIOTY
664	002724	016700	033170		MOV	FKPRI1,R0		:PRINT DEFAULT PRIORITY
665	002730	004767	030232		JSR	PC,OCTPNT		
666	002734				PNTM	TWOSP		
(1)	002734	012700	032401		MOV	#TWOSP,R0		:PRINT MESSAGE
(1)	002740	004767	027704		JSR	PC,TYPOUT		:POINTED TO BY TWOSP
667	002744	016767	033150	030212	MOV	FKPRI1,KBBUF		:LOAD DEFAULT PRIORITY
668	002752	004767	027734		JSR	PC,INPKB		:GET KBD INPUT
669	002756	026727	030202	000007	CMP	KBBUF,#7		:LOW ENOUGH, O.K.
670	002764	003406			BLE	3\$		
671	002766				PNTM	AGAIN		
(1)	002766	012700	035211		MOV	#AGAIN,R0		:PRINT MESSAGE
(1)	002772	004767	027652		JSR	PC,TYPOUT		:POINTED TO BY AGAIN
672	002776	000167	177702		JMP	PRMT9		
673	003002	026727	030156	000004	3\$:	CMP	KBBUF,#4	:HIGH ENOUGH?
674	003010	002006			BGE	4\$		
675	003012				PNTM	AGAIN		

(1)	003012	012700	035211		MOV	#AGAIN,RO		:PRINT MESSAGE
(1)	003016	004767	027626		JSR	PC,TYPOUT		:POINTED TO BY AGAIN
676	003022	000167	177656		JMP	PRMT9		
677	003026	016767	030132	033064	4\$:	MOV	KBBUF,FKPRI1	
678	003034	006367	030124		ASL	KBBUF		
679	003040	006367	030120		ASL	KBBUF		
680	003044	006367	030114		ASL	KBBUF		
681	003050	006367	030110		ASL	KBBUF		
682	003054	006367	030104		ASL	KBBUF		:SHIFT INTO PLACE
683	003060	016767	030100	033042	MOV	KBBUF,RPRIO		:LOAD NEW PRIORITY
684	003066	004767	001172		JSR	PC,DEVGEN		:GENERATE PCL-11 ADDRESSES
685	003072				RESTRT: PNTM	TMTR		:PRINT 'TRANSMITTER'
(1)	003072	012700	035065		MOV	#TMTR,RO		:PRINT MESSAGE
(1)	003076	004767	027546		JSR	PC,TYPOUT		:POINTED TO BY TMTR
686	003102				PNTM	TDMA		:PRINT 'TDM BUS ADDRESS'
(1)	003102	012700	035300		MOV	#TDMAD,RO		:PRINT MESSAGE
(1)	003106	004767	027536		JSR	PC,TYPOUT		:POINTED TO BY TDMAD
687	003112	012700	000001		MOV	#1,RO		:PRINT '1' AS DEFAULT
688	003116	004767	030044		JSR	PC,OCTPNT		
689	003122				PNTM	TWOSP		
(1)	003122	012700	032401		MOV	#TWOSP,RO		:PRINT MESSAGE
(1)	003126	004767	027516		JSR	PC,TYPOUT		:POINTED TO BY TWOSP
690	003132	012767	000001	030024	MOV	#1,KBBUF		:LOAD DEFAULT OF '1'
691	003140	004767	027546		JSR	PC,INPKB		:GET KBD INPUT.
692	003144	005767	030014		TST	KBBUF		:DON'T ALLOW 0
693	003150	001006			BNE	ADOK		
694	003152				PNTM	AGAIN		
(1)	003152	012700	035211		MOV	#AGAIN,RO		:PRINT MESSAGE
(1)	003156	004767	027466		JSR	PC,TYPOUT		:POINTED TO BY AGAIN
695	003162	000167	177704		JMP	RESTRT		
696	003166	026727	027772	000040	ADOK:	CMP	KBBUF,#40	:CAN'T BE 40 OR HIGHER
697	003174	103406			BLO	ADGD		
698	003176				PNTM	AGAIN		
(1)	003176	012700	035211		MOV	#AGAIN,RO		:PRINT MESSAGE
(1)	003202	004767	027442		JSR	PC,TYPOUT		:POINTED TO BY AGAIN
699	003206	000167	177660		JMP	RESTRT		
700	003212	116767	027746	032667	ADGD:	MOV#	KBBUF,TRAD+1	:SAVE ADDR IN UPPER BYTE
701	003220				PRMT10: PNTM	RECVR		:PRINT 'RECIEVER'
(1)	003220	012700	035074		MOV	#RECVR,RO		:PRINT MESSAGE
(1)	003224	004767	027420		JSR	PC,TYPOUT		:POINTED TO BY RECVR
702	003230				PNTM	TDMA		:PRINT 'TDM BUS ADDRESS'
(1)	003230	012700	035300		MOV	#TDMAD,RO		:PRINT MESSAGE
(1)	003234	004767	027410		JSR	PC,TYPOUT		:POINTED TO BY TDMAD
703	003240	012700	000001		MOV	#1,RO		:PRINT '1' AS DEFAULT
704	003244	004767	027716		JSR	PC,OCTPNT		
705	003250				PNTM	TWOSP		
(1)	003250	012700	032401		MOV	#TWOSP,RO		:PRINT MESSAGE
(1)	003254	004767	027370		JSR	PC,TYPOUT		:POINTED TO BY TWOSP
706	003260	012767	000001	027676	MOV	#1,KBBUF		:LOAD DEFAULT OF 1
707	003266	004767	027420		JSR	PC,INPKB		:GET KBD INPUT
708	003272	005767	027666		TST	KBBUF		:DON'T ALLOW 0
709	003276	001006			BNE	ADROK		
710	003300				PNTM	AGAIN		
(1)	003300	012700	035211		MOV	#AGAIN,RO		:PRINT MESSAGE
(1)	003304	004767	027340		JSR	PC,TYPOUT		:POINTED TO BY AGAIN
711	003310	000167	177704		JMP	PRMT10		

712	003314	026727	027644	000040	ADROK:	CMP	KBBUF,#40		:CAN'T BE 40 OR HIGHER
713	003322	103406				BLO	ADRGD		
714	003324					PNTM	AGAIN		
(1)	003324	012700	035211			MOV	#AGAIN,R0		:PRINT MESSAGE
(1)	003330	004767	027314			JSR	PC,TYPOUT		:POINTED TO BY AGAIN
715	003334	000167	177660			JMP	PRMT10		
716	003340	116767	027620	032537	ADRGD:	MOVB	KBBUF,RCAD+1		:SAVE ADDR IN UPPER BYTE
717	003346				BCONT:	PNTM	TSTSEL		:PRINT 'SELECT TEST <CR> = HELP''
(1)	003346	012700	035533			MOV	#TSTSEL,R0		:PRINT MESSAGE
(1)	003352	004767	027272			JSR	PC,TYPOUT		:POINTED TO BY TSTSEL
718	003356	012767	000077	027600		MOV	#77,KBBUF		:DEFAULT TO HELP
719	003364	004767	027322			JSR	PC,INPKB		:GET KEYBOARD INPUT
720	003370	026727	027570	000005		CMP	KBBUF,#5		:DID HE TYPE 5 OR HIGHER?
721	003376	103005				BHIS	BHLPMG		:YES, GIVE ASSISTANCE.
722	003400	005767	027560			TST	KBBUF		:HOPE IT WASN'T '0'
723	003404	001402				BEQ	BHLPMG		: 'CAUSE THAT'S NO GOOD EITHER
724	003406	000167	000014			JMP	TESTGO		:EVERYTHING OK. GO TO TESTS
725	003412				BHLPMG:	PNTM	HLPMSG		:NO GOOD, PRINT HELP MESSAGE.
(1)	003412	012700	035570			MOV	#HLPMSG,R0		:PRINT MESSAGE
(1)	003416	004767	027226			JSR	PC,TYPOUT		:POINTED TO BY HLPMSG
726	003422	000167	177720			JMP	BCONT		
727									
728	003426	016767	027532	032444	TESTGO:	MOV	KBBUF,TESTNO		:SAVE TEST NUMBER
729	003434	005767	032412			TST	SWRFLG		:GOT ANY SWITCHES?
730	003440	001402				BEQ	1\$:YES, YOU'RE ON YOUR OWN
731	003442	004767	026256			JSR	PC,SWDMP		:OTHERWISE, SHOW SW OPTIONS.
732	003446	005067	032414		1\$:	CLR	PSNO1		:CLEAR END PASS COUNTER
733	003452	005067	032412			CLR	PSNO2		:CLEAR END PASS A COUNTER
734	003456	005067	032410			CLR	PSNO3		:CLEAR END PASS B COUNTER
735	003462	005067	032406			CLR	PSNO4		:CLEAR END PASS C COUNTER
736	003466	026727	032406	000001		CMP	TESTNO,#1		:SELECT TEST 1?
737	003474	001012				BNE	2\$:NO.
738	003476	005067	032400			CLR	\$4FLAG		:CLEAR END PASS INHIBIT FLAG
739	003502					PNTM	TXHDR		:PRINT XMTR TEST HEADER
(1)	003502	012700	034671			MOV	#TXHDR,R0		:PRINT MESSAGE
(1)	003506	004767	027136			JSR	PC,TYPOUT		:POINTED TO BY TXHDR
740	003512	004767	000220		11\$:	JSR	PC,TEST1		:YES, GO DO IT (LOOP)
741	003516	000167	177770			JMP	11\$		
742	003522	026727	032352	000002	2\$:	CMP	TESTNO,#2		:SELECT TEST 2?
743	003530	001012				BNE	3\$:NO.
744	003532	005067	032344			CLR	\$4FLAG		:CLEAR END PASS INHIBIT FLAG
745	003536					PNTM	RCHDR		:PRINT RCVR TEST HEADER
(1)	003536	012700	034725			MOV	#RCHDR,R0		:PRINT MESSAGE
(1)	003542	004767	027102			JSR	PC,TYPOUT		:POINTED TO BY RCHDR
746	003546	004767	011362		21\$:	JSR	PC,TEST2		:YES, GO DO IT (LOOP)
747	003552	000167	177770			JMP	21\$		
748	003556	026727	032316	000003	3\$:	CMP	TESTNO,#3		:SELECT TEST 3?
749	003564	001012				BNE	4\$:NO.
750	003566	005067	032310			CLR	\$4FLAG		:CLEAR END PASS INHIBIT FLAG
751	003572					PNTM	XRHDR		:PRINT LOOP TEST HEADER
(1)	003572	012700	034756			MOV	#XRHDR,R0		:PRINT MESSAGE
(1)	003576	004767	027046			JSR	PC,TYPOUT		:POINTED TO BY XRHDR
752	003602	004767	017246		31\$:	JSR	PC,TEST3		:YES, GO DO IT.
753	003606	000167	177770			JMP	31\$		
754	003612	026727	032262	000004	4\$:	CMP	TESTNO,#4		:SELECT TEST 4?
755	003620	001044				BNE	5\$:NO?????

756	003622	012767	177777	032252	MOV	#-1,\$4FLAG	:SET FLAG TO INHIBIT END PASS
757	003630				PNTM	AL:HDR	:PRINT TRIPLE TEST HEADER
(1)	003630	012700	035025		MOV	#AL:HDR,R0	:PRINT MESSAGE
(1)	003634	004767	027010		JSR	PC,TYPOUT	:POINTED TO BY AL:HDR
758	003640	004767	000072	41\$:	JSR	PC,TEST1	
759	003644	004767	011264		JSR	PC,TEST2	
760	003650	004767	017200		JSR	PC,TEST3	:DO ALL TESTS (LOOP)
761	003654	005267	032214		INC	PSNO4	:UPDATE PASS COUNTER
762	003660				PNTM	PEND	:PRINT END PASS #
(1)	003660	012700	034443		MOV	#PEND,R0	:PRINT MESSAGE
(1)	003664	004767	026760		JSR	PC,TYPOUT	:POINTED TO BY PEND
763	003670	016700	032200		MOV	PSNO4,R0	:GET PASS # TO R0
764	003674	004767	027372		JSR	PC,DECPNT	:PRINT IT IN DECIMAL
765	003700	012700	000040		MOV	#40,R0	:ALSO, PRINT 'C'
766	003704	004767	027562		JSR	PC,TTO	
767	003710	012700	000103		MOV	#'C',R0	:TO IDENTIFY END PASS OF
768	003714	004767	027552		JSR	PC,TTO	:TEST 4
769	003720	005000			CLR	R0	
770	003722	004767	027544		JSR	PC,TTO	
771	003726	004767	027540		JSR	PC,TTO	:NULLS TO ALLOW PASS #
772	003732	000167	177702	5\$:	JMP	41\$	

774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
(1)
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
(1)
(1)
819
820
821
822
823
824
825
826

.SBTTL TRANSMITTER TESTS

;TEST 1: TRANSMITTER LOGIC TESTS
: (00) RESET TEST
: (01) TCR REG. TEST
: (02) TSBC REG TEST
: (03) TSBA REG TEST
: (04) MASTER SECT. TEST
: (05) DATA SILO TEST
: (06) TSR REG. & ERRORS TEST
: (07) INTERRUPT TEST
: (10) C.R.C. TEST

TEST1: MTPS #P7
MOV #P7,@MPS
MOV #10,ITER
JSR PC,MONIT
BIT #B10,@SR
BEQ LOOP
MOV @SR,SWI
BIC #-20,SWI
CMP SWI,#10
BGT LOOP
CLC
ROL SWI
ROL SWI
ADD #LOOP,SWI
JMP @SWI
LOOP: JSR PC,XINIT ;DO INITIAL CLR TEST
JSR PC,TCRST ;DO TCR REG TEST
JSR PC,BCTST ;DO BYTE COUNT REG TST
JSR PC,BATST ;DO BYTE ADDR REG TEST
JSR PC,MSRST ;DO MASTER SECTION TEST
JSR PC,SILTST ;DO DATA SILO TEST
JSR PC,TSRST ;DO TSR REG & ERRORS TEST
JSR PC,INTST ;DO INTERRUPT TEST
JSR PC,CRCTST ;DO CRC GENERATION TEST
BIT #B11,@SR ;CHECK SWITCH 11
BNE XEND ;PRINT END IF SET
DEC ITER ;OTHERWISE, REITERATE
XEND: TST \$4FLAG ;SHOULD WE PRINT END PASS?
BNE REPEAT ;NO, LEAVE
INC PSNO1 ;UPDATE PASS NUMBER
PNTM PEND ;PRINT 'END PASS # ''
MOV #PEND,R0 ;PRINT MESSAGE
JSR PC,TYPOUT ;POINTED TO BY PEND
MOV PSNO1,R0 ;PRINT PASSNO.
JSR PC,DECPNT ;PRINT NULLS TO ALLOW TIME
CLR R0 ;FOR PASS # TO BE PRINTED
JSR PC,TTO ;RETURN TO SUPERVISOR
REPEAT: RTS PC

;INITIAL ITERATION OF 10 PER PASS
;CHECK FOR KBD INPUT
;CHECK SW 10
;IF 0, RUN SEQUENTIALLY
;IF SET, GET TEST # FROM SWR
;MASK LOW DIGIT
;DON'T ALLOW SW = >10
;IF GREATER, START 1'ST TEST
;CLEAR 'C' BIT BEFORE ROTATE
;MULTIPLY BY 4
;GENERATE OFFSET
;GO TO SELECTED TEST
;DO INITIAL CLR TEST
;DO TCR REG TEST
;DO BYTE COUNT REG TST
;DO BYTE ADDR REG TEST
;DO MASTER SECTION TEST
;DO DATA SILO TEST
;DO TSR REG & ERRORS TEST
;DO INTERRUPT TEST
;DO CRC GENERATION TEST
;CHECK SWITCH 11
;PRINT END IF SET
;OTHERWISE, REITERATE
;SHOULD WE PRINT END PASS?
;NO, LEAVE
;UPDATE PASS NUMBER
;PRINT 'END PASS # ''
;PRINT MESSAGE
;POINTED TO BY PEND
;PRINT PASSNO.
;PRINT NULLS TO ALLOW TIME
;FOR PASS # TO BE PRINTED
;RETURN TO SUPERVISOR

```

827                                     ;NON-SWR PROCESSOR HALT SUBROUTINE
828
829 004170 005767 031656          SWHLT: TST      SWRFLG      ;ANY HARDWARE SWR?
830 004174 001403                BEQ      1$          ;IF YES GO HALT
831 004176 004767 025522          JSR      PC,SWDMP    ;IF NOT GO GET SW LOC
832 004202 000207                RTS      PC
833 004204 000000          1$: HALT
834 004206 000207                RTS      PC          ;RETURN IF CONT KEY HIT
835
836 004210 012767 032406 026172  SRTST: MOV      #SSWR,SR      ;NO HDWARE SWR, USE MEM LOC
837 004216 012767 177777 031626  MOV      #-1,SWRFLG  ;SET SOFT SWR FLAG
838 004224 000002                RTI
839
840                                     ;THIS ROUTINE ENTERED FOR SCOPE ROUTINES
841
842 004226 004767 025440          SCPRTN: JSR      PC,MONIT    ;SEE IF ^S WAS TYPED
843 004232 005777 026152          TST      @SR        ;BIT 15 SET?
844 004236 100402                BMI      SBAK        ;YES, DON'T HALT
845 004240                HLT
(1) 004240 004767 177724          JSR      PC,SWHLT    ;COMMON ERROR HALT. EXAMINE
846
847 004244 012500                SBAK:  MOV      (R5)+,R0    ;R5 FOR PC OF ERROR
848 004246 032777 020000 026134  BIT      #B13,@SR    ;GET DIRECTION FOR SCOPE LOOP
849 004254 001402                BEQ      SCONT        ;SW 13 SET?
850 004256 012605                MOV      (SP)+,R5    ;NO, DON'T LOOP
851 004260 000110                JMP      (R0)        ;YES, RESTORE R5
852 004262 000205          ... SCONT: RTS      R5    ;AND LOOP
                                     ;JUST RETURN

```


854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
(1)
(1)
896
897
898
899
900
901
902
903
904
905
(1)
(1)

004264 016700 031716
 004270 010067 031636
 004274 062700 000002
 004300 010067 031630
 004304 062700 000002
 004310 010067 031622
 004314 062700 000002
 004320 010067 031614
 004324 062700 000002
 004330 010067 031606
 004334 062700 000002
 004340 010067 031600
 004344 005200
 004346 010067 031574
 004352 005200
 004354 010067 031570
 004360 016767 031616
 004366 016700 031616
 004372 010067 031554
 004376 062700 000002
 004402 010067 031546
 004406 062700 000002
 004412 010067 031540
 004416 062700 000002
 004422 010067 031532
 004426 062700 000002
 004432 010067 031524
 004436 062700 000004
 004442 010067 031516
 004446 016767 031532
 004454 000207

 004456 012706 002000
 004462
 004462 012700 035326
 004466 004767 026156
 004472 000167 175360

 004476 011667 031374
 004502 012737 000340
 004510 012706 002000
 004514
 004514 012700 035401
 004520 004767 026124

031534

031450

177776

.SBTTL UTILITY ROUTINES

:DEVICE ADDRESS GENERATION

```

DEVGEN: MOV     TXMADR,RO      :GET BASIC XMTR ADDRESS
         MOV     RO,TCR        :GENERATE TCR
         ADD     #2,RO
         MOV     RO,TSR        :GENERATE TSR
         ADD     #2,RO
         MOV     RO,TSDB       :GENERATE TSDB
         ADD     #2,RO
         MOV     RO,TSBC       :GENERATE TSBC
         ADD     #2,RO
         MOV     RO,TSBA       :GENERATE TSBA
         ADD     #2,RO
         MOV     RO,TMMR       :GENERATE TMMR
         INC     RO
         MOV     RO,TMMRH      :GEN. TMMR HIGH BYTE
         INC     RO
         MOV     RO,TSCRC      :GENERATE TSCRC
         MOV     TXMVEC,IXVEC  :GENERATE TXVEC
         MOV     RCVADR,RO     :GET BASIC RCVR ADDRESS
         MOV     RO,RCR        :GENERATE RCR
         ADD     #2,RO
         MOV     RO,RSR        :GENERATE RSR
         ADD     #2,RO
         MOV     RO,RDDB       :GENERATE RDDB
         ADD     #2,RO
         MOV     RO,RDBC       :GENERATE RDBC
         ADD     #2,RO
         MOV     RO,RDBA       :GENERATE RDBA
         ADD     #4,RO
         MOV     RO,RDCRC      :GENERATE RDCRC
         MOV     RCVVEC,RCVEC  :GENERATE RCVEC
         RTS     PC            :RETURN.
  
```

:DEVICE TEST TRAP HANDLER

```

DVATST: MOV     #ISP,SP
         PNTM    INVLAD
         MOV     #INVLAD,RO    :PRINT NON-EXST ADDR MSG
         JSR     PC,TYPOUT     :PRINT MESSAGE
         JMP     PROMT        :POINTED TO BY INVLAD
         :RETURN TO ASK ALL AGAIN
  
```

:ROUTINE TO CATCH TRAPS TO 4

```

ERRTRP: MOV     (SP),TEMP     :SAVE STACK FOR ADDRESS OF TRAP
         MOV     #P7,@#PS     :RAISE PRIORITY
         MOV     #ISP,SP      :FIX THE STACK
         PNTM    TRAP4        :PRINT "TRAPPED TO 4" MSG
         MOV     #TRAP4,RO    :PRINT MESSAGE
         JSR     PC,TYPOUT     :POINTED TO BY TRAP4
  
```

```

906 004524 162767 000002 031344      SUB    #2,TEMP
907 004532 016700 031340      MOV    TEMP,R0
908 004536 004767 026424      JSR   PC,OCTPNT
909 004542 000167 176600      JMP   BCONT
910
911
912
913      ;STANDARD DELAY SUBROUTINE
914      ;MODIFY LOCATION 'DLCON' TO CHANGE
915      ;DELAY PERIOD.
916 004546 012567 031274      DELAY: MOV    (R5)+,DILLY      ;GET DELAY PARAMETER
917 004552 005767 025634      TST   DLCON                ;IS DLCON = 0?
918 004556 001003      BNE   DLWT                  ;IF NOT, CARRY ON
919 004560 012767 000001 025624      MOV    #1,DLCON            ;IF SO, MAKE IT = 1
920 004566 016767 025620 031254      DLWT:  MOV    DLCON,DLY      ;GET DELAY CONSTANT
921 004574 005367 031250      DLWT1: DEC   DLY
922 004600 001375      BNE   DLWT1
923 004602 005367 031240      DEC   DILLY
924 004606 001367      BNE   DLWT
925 004610 000205      RTS    R5
926
927      ;REGISTER SAVE & RESTORE ROUTINES
928
929 004612 010446      REGSAV: MOV   R4,-(SP)
930 004614 010346      MOV   R3,-(SP)
931 004616 010246      MOV   R2,-(SP)
932 004620 010146      MOV   R1,-(SP)
933 004622 010046      MOV   R0,-(SP)
934 004624 000115      JMP   @R5
935
936 004626 030026      REGRES: BIT   R0,(SP)+
937 004630 012600      MOV   (SP)+,R0
938 004632 012601      MOV   (SP)+,R1
939 004634 012602      MOV   (SP)+,R2
940 004636 012603      MOV   (SP)+,R3
941 004640 012604      MOV   (SP)+,R4
942 004642 000205      RTS    R5
  
```

:PRINT WHERE FROM.

:GET DELAY PARAMETER
 :IS DLCON = 0?
 :IF NOT, CARRY ON
 :IF SO, MAKE IT = 1
 :GET DELAY CONSTANT


```
          .SBTTL INITIALIZE TEST
          ;CHECK INITIAL CONDITIONS AFTER A RESET
944
945
946
947
948 004644 000005 XINIT: RESET ;CLEAR ALL
949 004646 017767 031266 025770 MOV @TSBC,BAD ;GET BYTE COUNT REGISTER
950 004654 005067 025766 CLR GOOD
951 004660 005767 025760 TST BAD ;WAS TSBC = 0?
952 004664 001414 BEQ XA1
953 004666 DATERR \N ;ERROR:TSBC NOT CLEARED BY RESET
(1) ;***** ERROR 1 *****
(1) 004666 032777 040000 025514 BIT #B14,@SR
(1) 004674 001005 BNE .+14
(1) 004676 012767 000001 025736 MOV #1,ERRNUM
(1) 004704 004767 025570 JSR PC,DERR
(1) 000002 = N+1
954 004710 N SCOPE XINIT
(1) 004710 004567 177312 JSR R5,SCPRTN
(1) 004714 004644 XINIT
955 004716 017767 031220 025720 XA1: MOV @TSBA,BAD ;GET BYTE ADDRESS REGISTER
956 004724 005067 025716 CLR GOOD
957 004730 005767 025710 TST BAD ;WAS TSBA = 0?
958 004734 001414 BEQ XA2
959 004736 DATERR \N ;ERROR:TSBA NOT CLEARED BY RESET
(1) ;***** ERROR 2 *****
(1) 004736 032777 040000 025444 BIT #B14,@SR
(1) 004744 001005 BNE .+14
(1) 004746 012767 000002 025666 MOV #2,ERRNUM
(1) 004754 004767 025520 JSR PC,DERR
(1) 000003 = N+1
960 004760 N SCOPE XINIT
(1) 004760 004567 177242 JSR R5,SCPRTN
(1) 004764 004644 XINIT
961 004766 017767 031152 025650 XA2: MOV @TMMR,BAD ;GET TMMR REGISTER
962 004774 042767 000377 025642 BIC #377,BAD ;MASK OFF ANY ADDR SILO DATA
963 005002 012767 050000 025636 MOV #50000,GOOD ;SET UP GOOD FOR COMPARE
964 005010 026767 025632 025626 CMP GOOD,BAD ;IGNORE BIT 8 WHEN DETERMINING
965 005016 001420 BEQ XA3 ;ERROR
966 005020 022767 050400 025616 CMP #50400,BAD
967 005026 001414 BEQ XA3
968 005030 DATERR \N ;ERROR:TMMR NOT INITIATED BY RESET
(1) ;***** ERROR 3 *****
(1) 005030 032777 040000 025352 BIT #B14,@SR
(1) 005036 001005 BNE .+14
(1) 005040 012767 000003 025574 MOV #3,ERRNUM
(1) 005046 004767 025426 JSR PC,DERR
(1) 000004 = N+1
969 005052 N SCOPE XINIT
(1) 005052 004567 177150 JSR R5,SCPRTN
(1) 005056 004644 XINIT
970 005060 017767 031050 025556 XA3: MOV @TSR,BAD ;GET TSR REGISTER
971 005066 012767 000400 025552 MOV #400,GOOD ;SET UP GOOD FOR COMPARE
972 005074 026767 025546 025542 XA4: CMP GOOD,BAD
973 005102 001414 BEQ XA5
974 005104 DATERR \N ;ERROR:TSR NOT INITIALIZED BY RESET
(1) ;***** ERROR 4 *****
```

(1)	005104	032777	040000	025276		BIT	#B14,@SR		
(1)	005112	001005				BNE	+.14		
(1)	005114	012767	000004	025520		MOV	#4,ERRNUM		
(1)	005122	004767	025352			JSR	PC,DERR		
(1)		000005			N	=	N+1		
975	005126					SCOPE	XINIT		
(1)	005126	004567	177074			JSR	R5,SCPRTN		
(1)	005132	004644				XINIT			
976	005134	017767	030772	025502	XA5:	MOV	@TCR,BAD		;GET TCR REGISTER
977	005142	005067	025500			CLR	GOOD		
978	005146	005767	025472			TST	BAD		;WAS TCR = 0?
979	005152	001414				BEQ	XA6		
980	005154					DATERR	\N		;ERROR:TCR NOT CLR'D BY RESET
(1)									;***** ERROR 5 *****
(1)	005154	032777	040000	025226		BIT	#B14,@SR		
(1)	005162	001005				BNE	+.14		
(1)	005164	012767	000005	025450		MOV	#5,ERRNUM		
(1)	005172	004767	025302			JSR	PC,DERR		
(1)		000006			N	=	N+1		
981	005176					SCOPE	XINIT		
(1)	005176	004567	177024			JSR	R5,SCPRTN		
(1)	005202	004644				XINIT			
982	005204	017767	030740	025432	XA6:	MOV	@TSCRC,BAD		
983	005212	005067	025430			CLR	GOOD		;CHECK CRC REGISTER
984	005216	005767	025422			TST	BAD		;WAS IT 0?
985	005222	001414				BEQ	XA7		;YES,CONTINUE
986	005224					DATERR	\N		;ERROR:TSCRC NOT CLEARED BY RESET
(1)									;***** ERROR 6 *****
(1)	005224	032777	040000	025156		BIT	#B14,@SR		
(1)	005232	001005				BNE	+.14		
(1)	005234	012767	000006	025400		MOV	#6,ERRNUM		
(1)	005242	004767	025232			JSR	PC,DERR		
(1)		000007			N	=	N+1		
987	005246					SCOPE	XINIT		
(1)	005246	004567	176754			JSR	R5,SCPRTN		
(1)	005252	004644				XINIT			
988	005254	004767	024412		XA7:	JSR	PC,MONIT		
989	005260	032777	010000	025122		BIT	#B12,@SR		;CHECK EXIT SW (SW 12)
990	005266	001402				BEQ	XART		
991	005270	000167	177350			JMP	XINIT		;IF SET, STAY IN THIS TEST
992	005274	000207			XART:	RTS	PC		


```

    994                                     .SBTTL  TCR TEST
    995
    996                                     ;TRANSMITTER COMMAND REGISTER TEST
    997
    998 005276 005077 030630  TCRTST: CLR      @TCR      ;CLEAR TCR REG
    999 005302 012767 017400 025336  XD1:  MOV      #17400,GOOD ;SET ALL DEST. CODE BITS
    1000 005310 016777 025332 030614      MOV      GOOD,@TCR
    1001 005316 017767 030610 025320      MOV      @TCR,BAD      ;AND READ THEM BACK
    1002 005324 026767 025316 025312      CMP      GOOD,BAD      ;ALL DEST CODE BITS SET?
    1003 005332 001414      BEQ      XD2
    1004 005334      DATERR  \N      ;ERROR:CANNOT SET SOME DEST. CODE BITS
    (1)                                     ;***** ERROR 7 *****
    (1) 005334 032777 040000 025046      BIT      #B14,@SR
    (1) 005342 001005      BNE      .+14
    (1) 005344 012767 000007 025270      MOV      #7,ERRNUM
    (1) 005352 004767 025122      JSR      PC,DERR
    (1)      000010      =      N+1
    1005 005356      N      SCOPE  XD1
    (1) 005356 004567 176644      JSR      R5,SCPRTN
    (1) 005362 005302      XD1
    1006 005364 005067 025256      XD2:  CLR      GOOD      ;NOW CLR DEST. CODE BITS AFTER
    1007 005370 005077 030536      CLR      @TCR      ;SETTING THEM
    1008 005374 017767 030532 025242      MOV      @TCR,BAD      ;READ THEM BACK
    1009 005402 042767 160377 025234      BIC      #160377,BAD      ;IGNORE ALL BUT DEST. CODE BITS
    1010 005410 026767 025232 025226      CMP      GOOD,BAD      ;ALL CLEAR?
    1011 005416 001414      BEQ      XD3
    1012 005420      DATERR  \N      ;ERROR:CANNOT CLR SOME DEST.CODE BITS
    (1)                                     ;***** ERROR 10 *****
    (1) 005420 032777 040000 024762      BIT      #B14,@SR
    (1) 005426 001005      BNE      .+14
    (1) 005430 012767 000010 025204      MOV      #10,ERRNUM
    (1) 005436 004767 025036      JSR      PC,DERR
    (1)      000011      =      N+1
    1013 005442      N      SCOPE  XD2
    (1) 005442 004567 176560      JSR      R5,SCPRTN
    (1) 005446 005364      XD2
    1014 005450 005077 030456      XD3:  CLR      @TCR
    1015 005454 005077 030454      CLR      @TSR      ;CLEAR POSSIBLE TIMEOUT
    1016 005460 012767 120365 025160      MOV      #120365,GOOD ;SET ST TXM,INH ADR INC,EA 16&17,
    1017 005466 016777 025154 030436      MOV      GOOD,@TCR      ;IE,RD SILO,SND WD,&RIB
    1018 005474 017767 030432 025142      MOV      @TCR,BAD      ;SEE IF THEY ALL SET
    1019 005502 026767 025140 025134      CMP      GOOD,BAD
    1020 005510 001414      BEQ      XD4
    1021 005512      DATERR  \N      ;ERROR:BAD BITS IN TCR
    (1)                                     ;***** ERROR 11 *****
    (1) 005512 032777 040000 024670      BIT      #B14,@SR
    (1) 005520 001005      BNE      .+14
    (1) 005522 012767 000011 025112      MOV      #11,ERRNUM
    (1) 005530 004767 024744      JSR      PC,DERR
    (1)      000012      =      N+1
    1022 005534      N      SCOPE  XD3
    (1) 005534 004567 176466      JSR      R5,SCPRTN
    (1) 005540 005450      XD3
    1023 005542 012777 137765 030362  XD4:  MOV      #137765,@TCR      ;SET ALL SETTABLE BITS IN TCR
    1024 005550 012777 177777 030362      MOV      #-1,@TSBC      ;AND IN TSBC
    1025 005556 012777 177777 030356      MOV      #-1,@TSBA      ;AND IN TSBA
  
```

1026	005564	012777	037240	030342		MOV	#37240,@TSR		:AND IN TSR
1027	005572	052777	000002	030332		BIS	#2,@TCR		:BOARD INIT
1028	005600	017767	030326	025036		MOV	@TCR,BAD		:CHK TCR
1029	005606	005067	025034			CLR	GOOD		
1030	005612	026767	025030	025024		CMP	GOOD,BAD		:TCR = 0?
1031	005620	001414				BEQ	XD5		
1032	005622					DATERR	\N		:ERROR:TCR NOT CLR'D BY BOARD INIT
(1)									:***** ERROR 12 *****
(1)	005622	032777	040000	024560		BIT	#B14,@SR		
(1)	005630	001005				BNE	+.14		
(1)	005632	012767	000012	025002		MOV	#12,ERRNUM		
(1)	005640	004767	024634			JSR	PC,DERR		
(1)		000013			N	=	N+1		
1033	005644					SCOPE	XD4		
(1)	005644	004567	176356			JSR	R5,SCPRTN		
(1)	005650	005542				XD4			
1034	005652	017767	030262	024764	XD5:	MOV	@TSBC,BAD		:CHECK TSBC
1035	005660	026767	024762	024756		CMP	GOOD,BAD		:TSBC = 0?
1036	005666	001414				BEQ	XD6		
1037	005670					DATERR	\N		:ERROR:TSBC NOT CLR'D BY BD INIT
(1)									:***** ERROR 13 *****
(1)	005670	032777	040000	024512		BIT	#B14,@SR		
(1)	005676	001005				BNE	+.14		
(1)	005700	012767	000013	024734		MOV	#13,ERRNUM		
(1)	005706	004767	024566			JSR	PC,DERR		
(1)		000014			N	=	N+1		
1038	005712					SCOPE	XD4		
(1)	005712	004567	176310			JSR	R5,SCPRTN		
(1)	005716	005542				XD4			
1039	005720	017767	030216	024716	XD6:	MOV	@TSBA,BAD		:TSBA = 0?
1040	005726	026767	024714	024710		CMP	GOOD,BAD		
1041	005734	001414				BEQ	XD7		
1042	005736					DATERR	\N		:ERROR:TSBA NOT CLR'D BY BD INIT
(1)									:***** ERROR 14 *****
(1)	005736	032777	040000	024444		BIT	#B14,@SR		
(1)	005744	001005				BNE	+.14		
(1)	005746	012767	000014	024666		MOV	#14,ERRNUM		
(1)	005754	004767	024520			JSR	PC,DERR		
(1)		000015			N	=	N+1		
1043	005760					SCOPE	XD4		
(1)	005760	004567	176242			JSR	R5,SCPRTN		
(1)	005764	005542				XD4			
1044	005766	017767	030142	024650	XD7:	MOV	@TSR,BAD		:TSR OK?
1045	005774	012767	000400	024644		MOV	#400,GOOD		
1046	006002	026767	024640	024634	XD8:	CMP	GOOD,BAD		
1047	006010	001414				BEQ	XD9		
1048	006012					DATERR	\N		:ERROR:TSR BAD AFTER BD INIT
(1)									:***** ERROR 15 *****
(1)	006012	032777	040000	024370		BIT	#B14,@SR		
(1)	006020	001005				BNE	+.14		
(1)	006022	012767	000015	024612		MOV	#15,ERRNUM		
(1)	006030	004767	024444			JSR	PC,DERR		
(1)		000016			N	=	N+1		
1049	006034					SCOPE	XD4		
(1)	006034	004567	176166			JSR	R5,SCPRTN		
(1)	006040	005542				XD4			

1050	006042	004767	023624		XD9:	JSR	PC, MONIT
1051	006046	032777	010000	024334		BIT	#B12, @SR
1052	006054	001402		..:		BEG	XDRT
1053	006056	000167	177214			JMP	TCRTST
1054	006062	000207			XDRT:	RTS	PC

:LEAVE IF SW 12 = 0
:OTHERWISE, MUST STAY

```
1056 .SBTTL TSBC TEST
1057
1058 ;BYTE COUNT REG. DATA TEST
1059
1060 006064 BCTST: BDINIT XMTR ;INIT XMTR MODULE
1061 006072 012767 177777 027762 MOV #-1,PAT ;SET PATTERN
1062 006100 012767 000001 027756 MOV #B00,MASK ;SET BIT MASK
1063 006106 016767 027750 024532 XB1: MOV PAT,GOOD ;LOAD 'GOOD' WITH PATTERN
1064 006114 016777 024526 030016 MOV GOOD,@TSBC ;LOAD PATTERN INTO TSBC
1065 006122 017767 030012 024514 MOV @TSBC,BAD ;READ TSBC
1066 006130 026767 024512 024506 CMP GOOD,BAD
1067 006136 001414 BEQ XB2
1068 006140 DATERR \N ;ERROR:BAD DATA IN TSBC
(1) ;***** ERROR 16 *****
(1) 006140 032777 040000 024242 BIT #B14,@SR
(1) 006146 001005 BNE .+14
(1) 006150 012767 000016 024464 MOV #16,ERRNUM
(1) 006156 004767 024316 JSR PC,DERR
(1) 000017 = N+1
1069 006162 N SCOPE XB1
(1) 006162 004567 176040 JSR R5,SCRPTN
(1) 006166 006106 XB1
1070 006170 032767 100000 027664 XB2: BIT #B15,PAT ;DONE WHOLE REGISTER?
1071 006176 001412 BEQ XB3 ;IF YES, DONE
1072 006200 012767 177777 027654 MOV #-1,PAT
1073 006206 046767 027652 027646 BIC MASK,PAT ;NO, PREPARE FOR NEXT BIT
1074 006214 006367 027644 ASL MASK ;ROTATE MASK
1075 006220 000167 177662 JMP XB1 ;AND CONTINUE
1076 006224 004767 023442 XB3: JSR PC,MONIT
1077 006230 032777 010000 024152 BIT #B12,@SR ;IF SO, CONSIDER LEAVING
1078 006236 001402 BEQ XBRT ;EXIT IF SW 12 = 0
1079 006240 000167 177620 JMP BCTST ;STAY HERE IF SW 12 = 1
1080 006244 000207 XBRT: RTS PC
```



```

1082          .SBTTL TSBA TEST
1083
1084          ;BYTE ADDRESS REGISTER TEST
1085
1086 006246          BATST: BDINIT XMTR          ;INIT XMTR MODULE
1087 006254 012767 177777 027600          MOV #-1,PAT          ;SET PATTERN
1088 006262 012767 000001 027574          MOV #B00,MASK          ;SET BIT MASK
1089 006270 016767 027566 024350 XC1: MOV PAT,GOOD          ;LOAD 'GOOD' WITH PATTERN
1090 006276 016777 024344 027636          MOV GOOD,@TSBA          ;LOAD PATTERN INTO TSBA
1091 006304 017767 027632 024332          MOV @TSBA,BAD          ;READ IT BACK
1092 006312 026767 024330 024324          CMP GOOD,BAD
1093 006320 001414          BEQ XC2
1094 006322          DATERR \N          ;ERROR:BAD DATA IN TSBA
(1)
(1) 006322 032777 040000 024060          BIT #B14,@SR          ;***** ERROR 17 *****
(1) 006330 001005          BNE .+14
(1) 006332 012767 000017 024302          MOV #17,ERRNUM
(1) 006340 004767 024134          JSR PC,DERR
(1)          000020          = N+1
1095 006344          N          SCOPE XC1
(1) 006344 004567 175656          JSR R5,SCRPTN
(1) 006350 006270          XC1
1096 006352 032767 100000 027502 XC2: BIT #B15,PAT          ;DONE WHOLE REGISTER?
1097 006360 001412          BEQ XC3          ;IF YES, DONE
1098 006362 012767 177777 027472          MOV #-1,PAT
1099 006370 046767 027470 027464          BIC MASK,PAT          ;NO,PREPARE FOR NEXT BIT
1100 006376 006367 027462          ASL MASK          ;ROTATE MASK
1101 006402 000167 177662          JMP XC1          ;AND CONTINUE
1102 006406 004767 023260          XC3: JSR PC,MONIT
1103 006412 032777 010000 023770          BIT #B12,@SR          ;IF SO, CONSIDER LEAVING
1104 006420 001402          BEQ XCRT          ;EXIT IF SW 12 = 0
1105 006422 000167 177620          JMP BATST          ;STAY HERE IF SW 12 = 1
1106 006426 000207          XCRT: RTS          PC
  
```

```

1108          .SBTTL MASTER SECTION TEST
1109
1110          ;TEST MASTER CONTROL AND ADDRESS SILO
1111
1112 006430      MSRTST: BDINIT  XMTR          ;INIT BOADR
1113 006436 112777 000001 027502      MOVB  #1,@TMMRH      ;SET MASTER FLOP
1114 006444 132777 000001 027474      BITB  #1,@TMMRH      ;IS MASTER SET?
1115 006452 001014      BNE  XE1
1116 006454      ERROR  \N          ;ERROR:COULD NOT SET MASTER FLOP
(1)          ;***** ERROR 20 *****
(1) 006454 032777 040000 023726      BIT  #B14,@SR
(1) 006462 001005      BNE  .+14
(1) 006464 012767 000020 024150      MOV  #20,ERRNUM
(1) 006472 004767 023716      JSR  PC,ERR
(1)          =  N+1
1117 006476      N          SCOPE  MSRTST
(1) 006476 004567 175524      JSR  R5,SCPRTN
(1) 006502 006430      MSRTST
1118 006504 004767 023162      XE1: JSR  PC,MONIT
1119 006510 032777 001000 023672      BIT  #B09,@SR          ;CHECK SW 09
1120 006516 001024      BNE  XE3          ;IF ON, SKIP SCOPE LOOP
1121 006520 012767 177777 027326      MOV  #-1,PNTFLG      ;SET PRINT ALLOW FLAG
1122 006526      PNTM  SCSEC          ;OTHERWISE PRINT "SCOPE SECTION..ETC"
(1) 006526 012700 034457      MOV  #SCSEC,R0      ;PRINT MESSAGE
(1) 006532 004767 024112      JSR  PC,TYPOUT      ;POINTED TO BY SCSEC
1123 006536 005067 027312      CLR  PNTFLG          ;CLEAR PRINT ALLOW FLAG
1124 006542 005767 027304      TST  SWRFLG          ;REAL SW REG?
1125 006546 001402      BEQ  XE2          ;YES, SKIP
1126 006550 004767 023150      JSR  PC,SWDMP
1127 006554 004767 023112      XE2: JSR  PC,MONIT
1128 006560 032777 001000 023622      BIT  #B09,@SR          ;KEEP AN EYE ON SW 09
1129 006566 001772      BEQ  XE2          ;STAY HERE 'TILL IT GETS SET
1130 006570 142777 000001 027350      XE3: BICB  #1,@TMMRH      ;CLR MASTER FLOP
1131 006576 132777 000001 027342      BITB  #1,@TMMRH      ;IS MASTER CLEAR?
1132 006604 001414      BEQ  XE3A
1133 006606      ERROR  \N          ;ERROR:COULD NOT CLR MASTER FLOP
(1)          ;***** ERROR 21 *****
(1) 006606 032777 040000 023574      BIT  #B14,@SR
(1) 006614 001005      BNE  .+14
(1) 006616 012767 000021 024016      MOV  #21,ERRNUM
(1) 006624 004767 023564      JSR  PC,ERR
(1)          =  N+1
1134 006630      N          SCOPE  XE3
(1) 006630 004567 175372      JSR  R5,SCPRTN
(1) 006634 006570      XE3
1135 006636 152777 000004 027302      XE3A: BISB  #4,@TMMRH      ;SET 'NOW MASTER' FLOP
1136 006644 132777 000004 027274      BITB  #4,@TMMRH      ;IS IT SET?
1137 006652 001014      BNE  XE3B          ;YES, GO TO CLEAR IT
1138 006654      ERROR  \N          ;ERROR:COULD NOT SET 'NOW MASTER FLOP
(1)          ;***** ERROR 22 *****
(1) 006654 032777 040000 023526      BIT  #B14,@SR
(1) 006662 001005      BNE  .+14
(1) 006664 012767 000022 023750      MOV  #22,ERRNUM
(1) 006672 004767 023516      JSR  PC,ERR
(1)          =  N+1
1139 006676      N          SCOPE  XE3A

```


(1)	006676	004567	175324			JSR	R5,SCPRTN		
(1)	006702	006636				XE3A			
1140	006704	142777	000004	027234	XE3B:	BICB	#4,@TMMRH		:OKAY, NOW CLEAR 'NOW MASTER'
1141	006712	132777	000004	027226		BITB	#4,@TMMRH		:IS IT CLEAR?
1142	006720	001414				BEQ	XE5A		:YES, OKAY.
1143	006722					ERROR	\N		:ERROR:COULD NOT CLEAR 'NOW MASTER'
(1)									:***** ERROR 23 *****
(1)	006722	032777	040000	023460		BIT	#B14,@SR		
(1)	006730	001005				BNE	.+14		
(1)	006732	012767	000023	023702		MOV	#23,ERRNUM		
(1)	006740	004767	023450			JSR	PC,ERR		
(1)		000024			N	=	N+1		
1144	006744					SCOPE	XE3B		
(1)	006744	004567	175256			JSR	R5,SCPRTN		
(1)	006750	006704				XE3B			
1145	006752	112777	000002	027166	XE5A:	MOVB	#2,@TMMRH		:SET SECONDARY FLOP
1146	006760	132777	000001	027160		BITB	#1,@TMMRH		:IS MASTER SET?
1147	006766	001017				BNE	XE6		
1148	006770	142777	000002	027150		BICB	#2,@TMMRH		:CLR SEC FOR RE-TRY
1149	006776					ERROR	\N		:ERROR:SETTING SEC DID NOT SET MASTER
(1)									:***** ERROR 24 *****
(1)	006776	032777	040000	023404		BIT	#B14,@SR		
(1)	007004	001005				BNE	.+14		
(1)	007006	012767	000024	023626		MOV	#24,ERRNUM		
(1)	007014	004767	023374			JSR	PC,ERR		
(1)		000025			N	=	N+1		
1150	007020					SCOPE	XE5A		
(1)	007020	004567	175202			JSR	R5,SCPRTN		
(1)	007024	006752				XE5A			
1151	007026	132777	000002	027112	XE6:	BITB	#2,@TMMRH		:IS SEC CLR?
1152	007034	001417				BEQ	XE6A		
1153	007036	142777	000002	027102		BICB	#2,@TMMRH		:CLR SEC FOR RETRY
1154	007044					ERROR	\N		:ERROR:SEC NOT CLR'D BY THE SETTING OF MASTER
(1)									:***** ERROR 25 *****
(1)	007044	032777	040000	023336		BIT	#B14,@SR		
(1)	007052	001005				BNE	.+14		
(1)	007054	012767	000025	023560		MOV	#25,ERRNUM		
(1)	007062	004767	023326			JSR	PC,ERR		
(1)		000026			N	=	N+1		
1155	007066					SCOPE	XE5A		
(1)	007066	004567	175134			JSR	R5,SCPRTN		
(1)	007072	006752				XE5A			
1156	007074	132777	000004	027044	XE6A:	BITB	#4,@TMMRH		:IS 'NOW MASTER ' SET?
1157	007102	001017				BNE	XE7		:YES, OKAY
1158	007104	142777	000002	027034		BICB	#2,@TMMRH		:CLR SEC FOR RETRY.
1159	007112					ERROR	\N		:ERROR:'NOW MASTER' NOT SET VIA SECONDARY
(1)									:***** ERROR 26 *****
(1)	007112	032777	040000	023270		BIT	#B14,@SR		
(1)	007120	001005				BNE	.+14		
(1)	007122	012767	000026	023512		MOV	#26,ERRNUM		
(1)	007130	004767	023260			JSR	PC,ERR		
(1)		000027			N	=	N+1		
1160	007134					SCOPE	XE5A		
(1)	007134	004567	175066			JSR	R5,SCPRTN		
(1)	007140	006752				XE5A			

```

;ADDRESS SILO TEST
1162
1163
1164 007142 152777 000060 026776 XE7:  BISB  #60,@TMMRH      ;SET AUT ADR TO LD SILO &CLR SILO
1165 007150 132777 000020 026770      BITB  #20,@TMMRH      ;IS AUT ADR SET?
1166 007156 001014      BNE   XE7A
1167 007160      ERROR  \N      ;ERROR:COULD NOT SET TMMR BIT 12
(1)      ;***** ERROR 27 *****
(1) 007160 032777 040000 023222      BIT   #B14,@SR
(1) 007166 001005      BNE   .+14
(1) 007170 012767 000027 023444      MOV   #27,ERRNUM
(1) 007176 004767 023212      JSR   PC,ERR
(1)      =      N+1
1168 007202      N      SCOPE  XE7
(1) 007202 004567 175020      JSR   R5,SCPRTN
(1) 007206 007142      XE7
1169 007210 132777 000200 026730 XE7A: BITB  #200,@TMMRH      ;CHECK FOR OUTPUT RDY
1170 007216 001414      BEQ   XE8
1171 007220      ERROR  \N      ;ERROR:TMMR BIT 13 DOES NOT CLR ADDR SILO
(1)      ;***** ERROR 30 *****
(1) 007220 032777 040000 023162      BIT   #B14,@SR
(1) 007226 001005      BNE   .+14
(1) 007230 012767 000030 023404      MOV   #30,ERRNUM
(1) 007236 004767 023152      JSR   PC,ERR
(1)      =      N+1
1172 007242      N      SCOPE  XE7
(1) 007242 004567 174760      JSR   R5,SCPRTN
(1) 007246 007142      XE7
1173 007250 012704 177700      XE8:  MOV   #-64.,R4      ;R4 IS COUNTER
1174 007254 005003      CLR   R3      ;R3 IS DATA
1175 007256 132777 000100 026662      BITB  #100,@TMMRH      ;ADR SILO INPUT RDY?
1176 007264 001014      BNE   XE9
1177 007266      ERROR  \N      ;ERROR:ADR SILO INPUT NOT RDY
(1)      ;***** ERROR 31 *****
(1) 007266 032777 040000 023114      BIT   #B14,@SR
(1) 007274 001005      BNE   .+14
(1) 007276 012767 000031 023336      MOV   #31,ERRNUM
(1) 007304 004767 023104      JSR   PC,ERR
(1)      =      N+1
1178 007310      N      SCOPE  XE8
(1) 007310 004567 174712      JSR   R5,SCPRTN
(1) 007314 007250      XE8
1179 007316 110377 026622      XE9:  MOVB  R3,@TMMR      ;LOAD ADDR SILO
1180 007322 005203      INC   R3
1181 007324 005204      INC   R4
1182 007326 001420      BEQ   XE11
1183 007330 132777 000100 026610 XE10: BITB  #100,@TMMRH      ;INPUT READY?
1184 007336 001367      BNE   XE9
1185 007340      ERROR  \N      ;ERROR:INPUT NOT RDY-PREMATURLY FULL?
(1)      ;***** ERROR 32 *****
(1) 007340 032777 040000 023042      BIT   #B14,@SR
(1) 007346 001005      BNE   .+14
(1) 007350 012767 000032 023264      MOV   #32,ERRNUM
(1) 007356 004767 023032      JSR   PC,ERR
(1)      =      N+1
1186 007362      N      SCOPE  XE7
(1) 007362 004567 174640      JSR   R5,SCPRTN
  
```


(1)		000037			N	=	N+1		
1213	007634					SCOPE	XE7		
(1)	007634	004567	174366			JSR	R5,SCPRTN		
(1)	007640	007142				XE7			
1214	007642	132777	000200	026276	XE18:	BITB	#200,@TMMRH		:SILO OUT RDY AFTER 64 READS?
1215	007650	001414				BEQ	XE19		
1216	007652					ERROR	\N		:ERROR:EMPTY SILO READY FOR OUTPUT
(1)									:***** ERROR 37 *****
(1)	007652	032777	040000	022530		BIT	#B14,@SR		
(1)	007660	001005				BNE	.+14		
(1)	007662	012767	000037	022752		MOV	#37,ERRNUM		
(1)	007670	004767	022520			JSR	PC,ERR		
(1)		000040			N	=	N+1		
1217	007674					SCOPE	XE7		
(1)	007674	004567	174326			JSR	R5,SCPRTN		
(1)	007700	007142				XE7			
1218	007702	005077	026224		XE19:	CLR	@TCR		:CLR RD SILO
1219	007706	112777	000000	026230		MOVB	#0,@TMMR		:LOAD A WORD INTO SILO
1220	007714	004567	174626			JSR	R5,DELAY		:WAIT FOR MIGRATION
1221	007720	000010				.WORD	10		
1222	007722	132777	000200	026216		BITB	#200,@TMMRH		:CHECK OUT RDY AFTER DELAY
1223	007730	001022				BNE	XE20		
1224	007732					ERROR	\N		:ERROR:SILO SETTling TIME TOO LONG
(1)									:***** ERROR 40 *****
(1)	007732	032777	040000	022450		BIT	#B14,@SR		
(1)	007740	001005				BNE	.+14		
(1)	007742	012767	000040	022672		MOV	#40,ERRNUM		
(1)	007750	004767	022440			JSR	PC,ERR		
(1)		000041			N	=	N+1		
1225	007754	052777	000200	026150		BIS	#B07,@TCR		:SET RD SILO BIT
1226	007762	117767	026156	022654		MOVB	@TMMR,BAD		:GET RID OF THE WORD IN SILO
1227	007770					SCOPE	XE19		
(1)	007770	004567	174232			JSR	R5,SCPRTN		
(1)	007774	007702				XE19			
1228	007776	152777	000041	026142	XE20:	BISB	#41,@TMMRH		:SET 'CLR SILO' BIT & SET MASTER
1229	010004	132777	000200	026134		BITB	#200,@TMMRH		:SILO RDY?
1230	010012	001414				BEQ	XE21		
1231	010014					ERROR	\N		:ERROR:BIT 13 OF TMMR DID NOT CLR ADR SILO
(1)									:***** ERROR 41 *****
(1)	010014	032777	040000	022366		BIT	#B14,@SR		
(1)	010022	001005				BNE	.+14		
(1)	010024	012767	000041	022610		MOV	#41,ERRNUM		
(1)	010032	004767	022356			JSR	PC,ERR		
(1)		000042			N	=	N+1		
1232	010036					SCOPE	XE20		
(1)	010036	004567	174164			JSR	R5,SCPRTN		
(1)	010042	007776				XE20			
1233	010044	112777	000037	026072	XE21:	MOVB	#37,@TMMR		:LOAD SILO WITH TEST WORD
1234	010052	132777	000200	026066	XE22:	BITB	#200,@TMMRH		:SILO OUT RDY?
1235	010060	001774				BEQ	XE22		:WAIT FOR IT
1236	010062	142777	000020	026056	XE22A:	BICB	#20,@TMMRH		:CLR AUT ADR
1237	010070	016704	022316			MOV	DLCON,R4		
1238	010074	012703	177000		XE22B:	MOV	#177000,R3		:SET UP FOR ABOUT 5MS DELAY
1239	010100	132777	000200	026040	XE23:	BITB	#200,@TMMRH		:OUTPUT RDY?
1240	010106	001420				BEQ	XE24		:IF NO - CARRY ON
1241	010110	005203				INC	R3		:WAITED 5MS?

1242	010112	001372				BNE	XE23		:NOT YET
1243	010114	005304				DEC	R4		
1244	010116	001366				BNE	XE22B		
1245	010120					ERROR	\N		:ERROR:ADDRESS SILO IS NOT CYCLING
(1)									:***** ERROR 42 *****
(1)	010120	032777	040000	022262		BIT	#B14,@SR		
(1)	010126	001005				BNE	+.14		
(1)	010130	012767	000042	022504		MOV	#42,ERRNUM		
(1)	010136	004767	022252			JSR	PC,ERR		
(1)		000043			N	=	N+1		
1246	010142					SCOPE	XE22A		
(1)	010142	004567	174060			JSR	R5,SCPRTN		
(1)	010146	010062				XE22A			
1247	010150	142777	000001	025770	XE24:	BICB	#1,@TMMRH		:CLEAR MASTER FOR SYNC.
1248	010156	004567	174364			JSR	R5,DELAY		
1249	010162	000010				.WORD	10		
1250	010164	132777	000200	025754		BITB	#200,@TMMRH		:OUTPUT READY
1251	010172	001014				BNE	XE25		
1252	010174					ERROR	\N		:ERROR:CYCLED WORD WAS LOST-OUT NOT RDY
(1)									:***** ERROR 43 *****
(1)	010174	032777	040000	022206		BIT	#B14,@SR		
(1)	010202	001005				BNE	+.14		
(1)	010204	012767	000043	022430		MOV	#43,ERRNUM		
(1)	010212	004767	022176			JSR	PC,ERR		
(1)		000044			N	=	N+1		
1253	010216					SCOPE	XE20		
(1)	010216	004567	174004			JSR	R5,SCPRTN		
(1)	010222	007776				XE20			
1254	010224	004567	174316		XE25:	JSR	R5,DELAY		
1255	010230	000010				.WORD	10		
1256	010232	152777	000021	025706		BISB	#21,@TMMRH		:SET AUTO ADDR & MASTER
1257	010240	052777	000200	025664		BIS	#B07,@TCR		:SET RD SILO
1258	010246	117767	025672	022370		MOVB	@TMMR,BAD		:CHECK VALIDITY OF OUTPUT
1259	010254	042767	177400	022362		BIC	#177400,BAD		:ONLY INTERESTED IN LOW BYTE
1260	010262	012767	000037	022356		MOV	#37,GOOD		
1261	010270	026767	022352	022346		CMP	GOOD,BAD		:OUTPUT SHOULD BE 37
1262	010276	001417				BEQ	XE26		
1263	010300					DATERR	\N		:ERROR:CYCLED WORD IS BAD DATA
(1)									:***** ERROR 44 *****
(1)	010300	032777	040000	022102		BIT	#B14,@SR		
(1)	010306	001005				BNE	+.14		
(1)	010310	012767	000044	022324		MOV	#44,ERRNUM		
(1)	010316	004767	022156			JSR	PC,DERR		
(1)		000045			N	=	N+1		
1264	010322	042777	000200	025602		BIC	#B07,@TCR		:CLR RD SILO BIT FOR SCOPE
1265	010330					SCOPE	XE20		
(1)	010330	004567	173672			JSR	R5,SCPRTN		
(1)	010334	007776				XE20			
1266	010336	004567	174204		XE26:	JSR	R5,DELAY		:WAIT ANOTHER SETTLING TIME
1267	010342	000010				.WORD	10		
1268	010344	132777	000200	025574		BITB	#200,@TMMRH		:IS SILO OUT RDY (SHOULDN'T BE)?
1269	010352	001417				BEQ	XE27		:NO, LEAVE
1270	010354					ERROR	\N		:ERROR:EXTRA WORD FOUND IN SILO
(1)									:***** ERROR 45 *****
(1)	010354	032777	040000	022026		BIT	#B14,@SR		
(1)	010362	001005				BNE	+.14		

(1)	010364	012767	000045	022250		MOV	#45,ERRNUM	
(1)	010372	004767	022016			JSR	PC,ERR	
(1)		000046			N	=	N+1	
1271	010376	042777	000200	025526		BIC	#B07,@TCR	:CLR RD SILO
1272	010404					SCOPE	XE20	
(1)	010404	004567	173616			JSR	R5,SCRPTN	
(1)	010410	007776				XE20		
1273	010412	152777	000060	025526	XE27:	BISB	#60,@TMMRH	:SET AUTO ADDRESS & CLR ADDR SILO
1274	010420	005077	025506			CLR	@TCR	:CLEAR RD SILO
1275	010424	004767	021242			JSR	PC,MONIT	
1276	010430	032777	010000	021752		BIT	#B12,@SR	:OK TO EXIT IF SW 12 = 0
1277	010436	001402				BEQ	XERT	
1278	010440	000167	175764			JMP	MSRTST	:OTHERWISE, STAY HERE
1279	010444	000207			XERT:	RTS	PC	


```
1281 .SBTTL DATA SILO TEST
1282 ;TRANSMITTER DATA SILO TEST
1283
1284
1285 010446 SILTST: BDINIT XMTR ;CLEAR BOARD
1286 010454 004567 174066 JSR R5,DELAY
1287 010460 000010 .WORD 10
1288 010462 032777 000010 025442 BIT #B03,@TCR ;SILO OUTPUT READY?
1289 010470 001414 BEQ XF1
1290 010472 ERROR \N ;ERROR:BD INIT DID NOT CLEAR DATA SILO
(1) ;***** ERROR 46 *****
(1) 010472 032777 040000 021710 BIT #B14,@SR
(1) 010500 001005 BNE .+14
(1) 010502 012767 000046 022132 MOV #46,ERRNUM
(1) 010510 004767 021700 JSR PC,ERR
(1) 000047 = N+1
1291 010514 N SCOPE SILTST
(1) 010514 004567 173506 JSR R5,SCPRTN
(1) 010520 010446 SILTST
1292 010522 032777 000400 025404 XF1: BIT #B08,@TSR ;SILO INPUT READY?
1293 010530 001014 BNE XF2
1294 010532 ERROR \N ;ERROR:BD INIT DID NOT SET INPUT READY
(1) ;***** ERROR 47 *****
(1) 010532 032777 040000 021650 BIT #B14,@SR
(1) 010540 001005 BNE .+14
(1) 010542 012767 000047 022072 MOV #47,ERRNUM
(1) 010550 004767 021640 JSR PC,ERR
(1) 000050 = N+1
1295 010554 N SCOPE SILTST
(1) 010554 004567 173446 JSR R5,SCPRTN
(1) 010560 010446 SILTST
1296 010562 012777 177777 025346 XF2: MOV #-1,@TSDB ;LOAD 177777 INTO DATA SILO
1297 010570 004567 173752 JSR R5,DELAY
1298 010574 000010 .WORD 10
1299 010576 032777 000010 025326 BIT #B03,@TCR ;SILO OUTPUT READY?
1300 010604 001017 BNE XF3
1301 010606 ERROR \N ;ERROR:NO SILO OUTPUT 37 US. AFTER LOAD
(1) ;***** ERROR 50 *****
(1) 010606 032777 040000 021574 BIT #B14,@SR
(1) 010614 001005 BNE .+14
(1) 010616 012767 000050 022016 MOV #50,ERRNUM
(1) 010624 004767 021564 JSR PC,ERR
(1) 000051 = N+1
1302 010630 N BDINIT XMTR ;CLEAR SILO
1303 010636 SCOPE XF2
(1) 010636 004567 173364 JSR R5,SCPRTN
(1) 010642 010562 XF2
1304 010644 017767 025266 021772 XF3: MOV @TSDB,BAD ;READ WORD FROM SILO
1305 010652 012767 177777 021766 MOV #-1,GOOD
1306 010660 026767 021762 021756 CMP GOOD,BAD ;SILO OUTPUT = 177777
1307 010666 001417 BEQ XF3A
1308 010670 DATEPR \N ;ERROR:DROPPED BITS IN DATA SILO
(1) ;***** ERROR 51 *****
(1) 010670 032777 040000 021512 BIT #B14,@SR
(1) 010676 001005 BNE .+14
(1) 010700 012767 000051 021734 MOV #51,ERRNUM
```

(1)	010706	004767	021566			JSR	PC,DERR	
(1)		000052			N	=	N+1	
1309	010712					BDINIT	XMTR	:CLEAR SILO
1310	010720					SCOPE	XF2	
(1)	010720	004567	173302			JSR	R5,SCPRTN	
(1)	010724	010562				XF2		
1311	010726	052777	000200	025176	XF3A:	BIS	#B07,@TCR	:SET RD SILO BIT IN TCR
1312	010734	017703	025176			MOV	@TSDB,R3	:POP WORD FROM SILO
1313	010740	032777	000010	025164		BIT	#B03,@TCR	:SILO OUTPUT READY?
1314	010746	001414				BEQ	XF5	
1315	010750					ERROR	\N	:ERROR:WORD DID NOT GET POPPED FROM SILO
(1)								:***** ERROR 52 *****
(1)	010750	032777	040000	021432		BIT	#B14,@SR	
(1)	010756	001005				BNE	.+14	
(1)	010760	012767	000052	021654		MOV	#52,ERRNUM	
(1)	010766	004767	021422			JSR	PC,ERR	
(1)		000053			N	=	N+1	
1316	010772					SCOPE	XF3	
(1)	010772	004567	173230			JSR	R5,SCPRTN	
(1)	010776	010644				XF3		
1317	011000	032777	000400	025126	XF5:	BIT	#B08,@TSR	:IS INPUT READY?
1318	011006	001014				BNE	XF6	
1319	011010					ERROR	\N	:ERROR:DATA SILO INPUT NOT READY
(1)								:***** ERROR 53 *****
(1)	011010	032777	040000	021372		BIT	#B14,@SR	
(1)	011016	001005				BNE	.+14	
(1)	011020	012767	000053	021614		MOV	#53,ERRNUM	
(1)	011026	004767	021362			JSR	PC,ERR	
(1)		000054			N	=	N+1	
1320	011032					SCOPE	XF5	
(1)	011032	004567	173170			JSR	R5,SCPRTN	
(1)	011036	011000				XF5		
1321	011040	042777	000200	025064	XF6:	BIC	#B07,@TCR	:CLEAR RD SILO BIT
1322	011046	005077	025064			CLR	@TSDB	:LOAD 0'S INTO SILO
1323	011052	032777	000010	025052	XF6A:	BIT	#B03,@TCR	:OUTPUT RDY?
1324	011060	001774				BEQ	XF6A	:WAIT FOR IT
1325	011062	017767	025050	021554		MOV	@TSDB,BAD	:READ OUTPUT OF SILO
1326	011070	005067	021552			CLR	GOOD	
1327	011074	026767	021546	021542		CMP	GOOD,BAD	:OUTPUT = 0?
1328	011102	001417				BEQ	XF7	
1329	011104					DATERR	\N	:ERROR:BITS PICKED UP IN DATA SILO
(1)								:***** ERROR 54 *****
(1)	011104	032777	040000	021276		BIT	#B14,@SR	
(1)	011112	001005				BNE	.+14	
(1)	011114	012767	000054	021520		MOV	#54,ERRNUM	
(1)	011122	004767	021352			JSR	PC,DERR	
(1)		000055			N	=	N+1	
1330	011126					BDINIT	XMTR	:CLR SILO
1331	011134					SCOPE	XF6	
(1)	011134	004567	173066			JSR	R5,SCPRTN	
(1)	011140	011040				XF6		
1332	011142				XF7:	BDINIT	XMTR	:CLR XMITTER BOARD
1333	011150	012777	177600	024762		MOV	#-128,@TSBC	:SET BYTE COUNT TO -128
1334	011156	012777	033564	024756		MOV	#SILDAT,@TSBA	:POINT DEVICE AT CORE BUFFER
1335	011164	052777	040000	024740		BIS	#B14,@TCR	:SET TX NPR
1336	011172	032777	040000	024732		BIT	#B14,@TCR	:IS TX NPR SET?

1337	011200	001014				BNE	XF8		
1338	011202					ERROR	\N		;ERROR:CANNOT SET TX NPR
(1)									;***** ERROR 55 *****
(1)	011202	032777	040000	021200		BIT	#B14,@SR		
(1)	011210	001005				BNE	+.14		
(1)	011212	012767	000055	021422		MOV	#55,ERRNUM		
(1)	011220	004767	021170			JSR	PC,ERR		
(1)		000056			N	=	N+1		
1339	011224					SCOPE	XF7		
(1)	011224	004567	172776			JSR	R5,SCPRTN		
(1)	011230	011142				XF7			
1340	011232	016704	021154		XF8:	MOV	DLCON,R4		
1341	011236	012703	177500		XF8A:	MOV	#177500,R3		;SET UP 2 MS DELAY
1342	011242	005777	024672		XF9:	TST	@TSBC		;IS BYTE COUNT 0?
1343	011246	001420				BEQ	XF10		
1344	011250	005203				INC	R3		;WAITED 2 MS?
1345	011252	001373				BNE	XF9		;NO, KEEP LOOKING
1346	011254	005304				DEC	R4		
1347	011256	001367				BNE	XF8A		
1348	011260					ERROR	\N		;ERROR: NPR NOT COMPLETE AFTER 2 MS
(1)									;***** ERROR 56 *****
(1)	011260	032777	040000	021122		BIT	#B14,@SR		
(1)	011266	001005				BNE	+.14		
(1)	011270	012767	000056	021344		MOV	#56,ERRNUM		
(1)	011276	004767	021112			JSR	PC,ERR		
(1)		000057			N	=	N+1		
1349	011302					SCOPE	XF7		
(1)	011302	004567	172720			JSR	R5,SCPRTN		
(1)	011306	011142				XF7			
1350	011310	032777	000400	024616	XF10:	BIT	#B08,@TSR		;INPUT READY?
1351	011316	001414				BEQ	XF11		
1352	011320					ERROR	\N		;ERROR:SILO FULL BUT INPUT RDY SET
(1)									;***** ERROR 57 *****
(1)	011320	032777	040000	021062		BIT	#B14,@SR		
(1)	011326	001005				BNE	+.14		
(1)	011330	012767	000057	021304		MOV	#57,ERRNUM		
(1)	011336	004767	021052			JSR	PC,ERR		
(1)		000060			N	=	N+1		
1353	011342					SCOPE	XF10		
(1)	011342	004567	172660			JSR	R5,SCPRTN		
(1)	011346	011310				XF10			
1354	011350	032777	000010	024554	XF11:	BIT	#B03,@TCR		;OUTPUT READY?
1355	011356	001014				BNE	XF12		
1356	011360					ERROR	\N		;ERROR:FULL SILO NOT RDY FOR OUTPUT
(1)									;***** ERROR 60 *****
(1)	011360	032777	040000	021022		BIT	#B14,@SR		
(1)	011366	001005				BNE	+.14		
(1)	011370	012767	000060	021244		MOV	#60,ERRNUM		
(1)	011376	004767	021012			JSR	PC,ERR		
(1)		000061			N	=	N+1		
1357	011402					SCOPE	XF11		
(1)	011402	004567	172620			JSR	R5,SCPRTN		
(1)	011406	011350				XF11			
1358	011410	052777	000200	024514	XF12:	BIS	#B07,@TCR		;SET RD SILO BIT
1359	011416	012704	033564			MOV	#SILDAT,R4		;R4 IS DATA POINTER
1360	011422	012703	177700			MOV	#-64.,R3		;R3 IS COUNTER

1361	011426	017767	024504	021210	XF13:	MOV	@TSDB,BAD		:POP WORD FROM SILO TO 'BAD'
1362	011434	012467	021206			MOV	(R4)+,GOOD		:AND POP A WORD FROM BUFFER
1363	011440	026767	021202	021176		CMP	GOOD,BAD		:DATA OK?
1364	011446	001422				BEQ	XF14		
1365	011450					DATERR	\N		:ERROR:DATA FROM SILO IS WRONG
(1)									:***** ERROR 61 *****
(1)	011450	032777	040000	020732		BIT	#B14,@SR		
(1)	011456	001005				BNE	.+14		
(1)	011460	012767	000061	021154		MOV	#61,ERRNUM		
(1)	011466	004767	021006			JSR	PC,DERR		
(1)		000062			N	=	N+1		
1366	011472	042777	000200	024432		BIC	#B07,@TCR		:CLR RD SILO BIT
1367	011500					SCOPE	XF7		:GO TO RE-FILL SILO FOR RE-TRY
(1)	011500	004567	172522			JSR	R5,SCRPTN		
(1)	011504	011142				XF7			
1368	011506	052777	000200	024416		BIS	#B07,@TCR		:RE-SET RD SILO BIT
1369	011514	005203			XF14:	INC	R3		:ALL DONE?
1370	011516	001343				BNE	XF13		:IF NOT, POP ANOTHER WORD
1371	011520				XF17:	BDINIT	XMTR		:CLEAR THE BOARD
1372	011526	012777	177774	024404		MOV	#-4,@TSBC		:SET BYTE COUNT TO -4
1373	011534	012777	033564	024400		MOV	#SILDAT,@TSBA		:POINT NPR TO DATA BUFFER
1374	011542	012767	033564	021076		MOV	#SILDAT,GOOD		
1375	011550	052777	040004	024354		BIS	#40004,@TCR		:SET TX NPR AND INH ADR INC
1376	011556	005777	024356		XF18:	TST	@TSBC		:WAIT FOR NPR TO FINISH
1377	011562	001375				BNE	XF18		
1378	011564	017767	024352	021052		MOV	@TSBA,BAD		:READ BYTE ADDRESS
1379	011572	026767	021050	021044		CMP	GOOD,BAD		:HAS IT CHANGED?
1380	011600	001417				BEQ	XF19		
1381	011602					DATERR	\N		:ERROR:TSBA SHD NOT CHANGE WITH INH ADR INC SET
(1)									:***** ERROR 62 *****
(1)	011602	032777	040000	020600		BIT	#B14,@SR		
(1)	011610	001005				BNE	.+14		
(1)	011612	012767	000062	021022		MOV	#62,ERRNUM		
(1)	011620	004767	020654			JSR	PC,DERR		
(1)		000063			N	=	N+1		
1382	011624					BDINIT	XMTR		
1383	011632					SCOPE	XF17		
(1)	011632	004567	172370			JSR	R5,SCRPTN		
(1)	011636	011520				XF17			

.SBTTL DATA SILO BLOCK COUNTER TEST

;THIS TESTS THAT, AFTER PULLING 200 (OCTAL) WORDS THRU THE SILO
;THE BLOCK COUNTER COUNTS THE 200 WORDS AND HOLDS SILO OUTPUT READY
;IN A FALSE STATE.

```
1385
1386
1387
1388
1389
1390
1391 011640
1392 011646 142777 000001 024272
1393 011654 004767 000136
1394 011660 012702 000100
1395 011664 004767 000176
1396 011670 004767 000122
1397 011674 012702 000020
1398 011700 004767 000162
1399 011704 004767 000106
1400 011710 012702 000060
1401 011714 004767 000146
1402
1403
1404 011720 032777 000010 024204
1405 011726 001414
1406 011730
(1)
(1) 011730 032777 040000 020452
(1) 011736 001005
(1) 011740 012767 000063 020674
(1) 011746 004767 020442
(1) 000064
1407 011752
(1) 011752 004567 172250
(1) 011756 011640
1408 011760
1409 011766 152777 000020 024152
1410 011774 004767 017672
1411 012000 032777 010000 020402
1412 012006 001402
1413 012010 000167 176432
1414 012014 000207
1415
1416
1417
1418 012016 012777 177600 024114
1419 012024 012777 033564 024110
1420 012032 052777 040000 024072
1421 012040 016704 020346
1422 012044 012703 175000
1423 012050 005203
1424 012052 001376
1425 012054 005304
1426 012056 001372
1427 012060 005077 024046
1428 012064 000207
1429
1430
1431
1432 012066 052777 000200 024036
```

```
XF19:  BDINIT  XMTR          ;CLEAR THE BOARD
        BICB   #B00,@TMMRH   ;CLEAR MASTER FOR THIS TEST
        JSR   PC,XFSR        ;FILL THE DATA SILO
        MOV   #64,R2
        JSR   PC,XFEMT       ;POP ALL 64 WORDS OUT
        JSR   PC,XFSR        ;FILL SILO AGAIN
        MOV   #20,R2
        JSR   PC,XFEMT       ;POP 20 (OCTAL) WORDS OUT
        JSR   PC,XFSR        ;FILL SILO AGAIN
        MOV   #60,R2
        JSR   PC,XFEMT       ;POP 60 (OCTAL) WORDS OUT
                                ; LEAVING 20 (OCTAL) IN SILO
                                ; AND HAVING PULLED OUT 200 TOTAL (OCTAL)
                                ; NOW CHECK OUTPUT READY
                                ; IF IT'S CLEAR, OKAY
                                ;ERROR:OUTPUT RDY AFTER 200 WORD BLOCK
                                ;***** ERROR 63 *****
        BIT   #B03,@TCR
        BEQ   XF19A
        ERROR  \N
        BIT   #B14,@SR
        BNE   .+14
        MOV   #63,ERRNUM
        JSR   PC,ERR
        =     N+1
        SCOPF XF19
        JSR   R5,SCPRTN
        XF19A: BDINIT  XMTR          ;CLEAN UP.
        XF20:  BISB   #20,@TMMRH   ;SET AUT ADR
        JSR   PC,MONIT
        BIT   #B12,@SR          ;CAN WE EXIT NOW?
        BEQ   XFRT              ;OK IF SW 12 = 0
        JMP   SILTST           ;NO IF SW 12 = 1
        XFRT:  RTS    PC
;ROUTINE TO FILL DATA SILO VIA NPR
        XFSR:  MOV   #-128,@TSBC   ;SET BYTE COUNT FOR FILL-UP
        MOV   #SILDAT,@TSBA      ;POINT DEVICE AT CORE BUFFER
        BIS   #B14,@TCR         ;START NPR
        MOV   DLCON,R4
        XFSR1: MOV   #175000,R3    ;SET UP TO WAIT FOR CMPL
        XFSRW: INC   R3
        BNE   XFSRW            ;WAIT FOR NPR COMPLETION
        DEC   R4
        BNE   XFSR1
        CLR   @TCR             ;CLEAR TXNPR
        RTS    PC              ;RETURN WITH SILO FULL
;ROUTINE TO POP (R2) NUMBER OF WORDS FROM DATA SILO
        XFEMT: BIS   #B07,@TCR    ;SET RD SILO
```

CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 ^{J 4} PAGE 22-1
DATA SILO BLOCK COUNTER TEST

SEQ 0048

1433	012074	010203				MOV	R2,R3	
1434	012076	017767	024034	020540	XFMTW:	MOV	@TSDB,BAD	:POP A WORD OUT
1435	012104	005303				DEC	R3	:KEEP TRACK OF # OF WORDS
1436	012106	001373				BNE	XFMTW	
1437	012110	042777	000200	024014		BIC	#B07,@TCR	:LEAVE WITH RD SILO CLEAR
1438	012116	000207				RTS	PC	


```

1440          .SBTTL TSRTST
1441
1442          ;STATUS REGISTER AND ERRORS TEST
1443
1444 012120    TSRTST: BDINIT  XMTR          ;CLR BOARD
1445 012126    052777 000200 024000    BIS      #B07,@TSR      ;SET SUCC XFER
1446 012134    032777 000200 023772    BIT      #B07,@TSR      ;IS IT SET?
1447 012142    001014                                BNE     XH1
1448 012144                                ERROR   \N          ;ERROR:CANNOT SET TSR BIT 07
(1)                                     ;***** ERROR 64 *****
(1) 012144    032777 040000 020236    BIT      #B14,@SR
(1) 012152    001005                                BNE     .+14
(1) 012154    012767 000064 020460    MOV     #64,ERRNUM
(1) 012162    004767 020226                                JSR     PC,ERR
(1) 012162    000065                                =      N+1
1449 012166    N          SCOPE     TSRTST
(1) 012166    004567 172034                                JSR     R5,SCPRTN
(1) 012172    012120                                TSRTST
1450 012174    042777 000200 023732    XH1:    BIC      #B07,@TSR      ;CLR SUCC XFER
1451 012202    032777 000200 023724    BIT      #B07,@TSR      ;IS IT CLR?
1452 012210    001414                                BEQ     XH2
1453 012212    ERROR   \N          ;ERROR:CANNOT CLR SUCC XFR
(1)                                     ;***** ERROR 65 *****
(1) 012212    032777 040000 020170    BIT      #B14,@SR
(1) 012220    001005                                BNE     .+14
(1) 012222    012767 000065 020412    MOV     #65,ERRNUM
(1) 012230    004767 020160                                JSR     PC,ERR
(1) 012230    000066                                =      N+1
1454 012234    N          SCOPE     XH1
(1) 012234    004567 171766                                JSR     R5,SCPRTN
(1) 012240    012174                                XH1
1455 012242    XH2:    BDINIT  XMTR          ;CLEAR BOARD
1456 012250    012777 177777 023660    MOV     #-1,@TSDB      ;LOAD WORD INTO SILO
1457 012256    032777 000010 023646    BIT      #B03,@TCR      ;OUTPUT READY?
1458 012264    001774                                BEQ     .-6            ;WAIT FOR WORD TO HIT BOTTOM
1459 012266    152777 000001 023652    BISB   #1,@TMMRH
1460 012274    012777 120000 023630    MOV     #120000,@TCR
1461 012302    016704 020104                                MOV     DLCON,R4
1462 012306    012703 177763    XH2B:  MOV     #177763,R3      ;SET UP FOR 100 U.S. ALARM
1463 012312    032777 000020 023614    XH2A:  BIT      #B04,@TSR      ;TDM BUS BSY SET?
1464 012320    001020                                BNE     XH3
1465 012322    005203                                INC     R3            ;WAIT 100 US.
1466 012324    001372                                BNE     XH2A
1467 012326    005304                                DEC     R4
1468 012330    001366                                BNE     XH2B
1469 012332    ERROR   \N          ;ERROR:TDM BUS BSY NOT SET
(1)                                     ;***** ERROR 66 *****
(1) 012332    032777 040000 020050    BIT      #B14,@SR
(1) 012340    001005                                BNE     .+14
(1) 012342    012767 000066 020272    MOV     #66,ERRNUM
(1) 012350    004767 020040                                JSR     PC,ERR
(1) 012350    000067                                =      N+1
1470 012354    N          SCOPE     XH2
(1) 012354    004567 171646                                JSR     R5,SCPRTN
(1) 012360    012242                                XH2
1471 012362    032777 000100 023544    XH3:    BIT      #B06,@TSR      ;IS BUSY SET?
    
```


(1)	012622	032777	040000	017560		BIT	#B14,@SR	
(1)	012630	001005				BNE	+.14	
(1)	012632	012767	000073	020002		MOV	#73,ERRNUM	
(1)	012640	004767	017550			JSR	PC,ERR	
(1)		000074			N	=	N+1	
1495	012644					SCOPE	XH6	
(1)	012644	004567	171356			JSR	R5,SCPRTN	
(1)	012650	012532				XH6		
1496	012652	032777	020000	023252	XH8:	BIT	#B13,@TCR	:IS SND WD CLR?
1497	012660	001414				BEQ	XH8A	
1498	012662					ERROR	\N	;ERROR:TSR BIT 15 DID NOT CAUSE INTR REQ ;***** ERROR 74 *****
(1)								
(1)	012662	032777	040000	017520		BIT	#B14,@SR	
(1)	012670	001005				BNE	+.14	
(1)	012672	012767	000074	017742		MOV	#74,ERRNUM	
(1)	012700	004767	017510			JSR	PC,ERR	
(1)		000075			N	=	N+1	
1499	012704					SCOPE	XH6	
(1)	012704	004567	171316			JSR	R5,SCPRTN	
(1)	012710	012532				XH6		
1500	012712				XH8A:	BDINIT	XMTR	:CLEAR ALL IN XMTR
1501	012720	012777	000000	023210		MOV	#0,@TSDB	:LOAD A WORD INTO SILO
1502	012726	032777	001000	023200		BIT	#B09,@TSR	:IS OVERRUN SET??
1503	012734	001414				BEQ	XH9	
1504	012736					ERROR	\N	;ERROR:LOADING EMPTY SILO GIVES OVERRUN ERROR! ;***** ERROR 75 *****
(1)								
(1)	012736	032777	040000	017444		BIT	#B14,@SR	
(1)	012744	001005				BNE	+.14	
(1)	012746	012767	000075	017666		MOV	#75,ERRNUM	
(1)	012754	004767	017434			JSR	PC,ERR	
(1)		000076			N	=	N+1	
1505	012760					SCOPE	XH8A	
(1)	012760	004567	171242			JSR	R5,SCPRTN	
(1)	012764	012712				XH8A		
1506	012766	005077	023142		XH9:	CLR	@TSR	
1507	012772	052777	002000	023134		BIS	#B10,@TSR	:SET TIMEOUT BIT IN TSR
1508	013000	032777	002000	023126		BIT	#B10,@TSR	:IS IT SET?
1509	013006	001014				BNE	XH10	
1510	013010					ERROR	\N	;ERROR:CANNOT SET TSR BIT 10 ;***** ERROR 76 *****
(1)								
(1)	013010	032777	040000	017372		BIT	#B14,@SR	
(1)	013016	001005				BNE	+.14	
(1)	013020	012767	000076	017614		MOV	#76,ERRNUM	
(1)	013026	004767	017362			JSR	PC,ERR	
(1)		000077			N	=	N+1	
1511	013032					SCOPE	XH9	
(1)	013032	004567	171170			JSR	R5,SCPRTN	
(1)	013036	012766				XH9		
1512	013040	032777	100000	023066	XH10:	BIT	#B15,@TSR	:IS ERROR BIT SET?
1513	013046	001014				BNE	XH11	
1514	013050					ERROR	\N	;ERROR:TIMEOUT DID NOT SET TSR BIT 15 ;***** ERROR 77 *****
(1)								
(1)	013050	032777	040000	017332		BIT	#B14,@SR	
(1)	013056	001005				BNE	+.14	
(1)	013060	012767	000077	017554		MOV	#77,ERRNUM	
(1)	013066	004767	017322			JSR	PC,ERR	

(1)		000100			N	=	N+1		
1515	013072					SCOPE	XH9		
(1)	013072	004567	171130			JSR	R5,SCPRTN		
(1)	013076	012766				XH9			
1516	013100	005077	023030		XH11:	CLR	@TSR		;CLR TSR
1517	013104	052777	004000	023022		BIS	#B11,@TSR		;SET MST DWN
1518	013112	032777	004000	023014		BIT	#B11,@TSR		;IS IT SET?
1519	013120	001014				BNE	XH12		
1520	013122					ERROR	\N		;ERROR:CANNOT SET TSR BIT 11
(1)									;***** ERROR 100 *****
(1)	013122	032777	040000	017260		BIT	#B14,@SR		
(1)	013130	001005				BNE	+.14		
(1)	013132	012767	000100	017502		MOV	#100,ERRNUM		
(1)	013140	004767	017250			JSR	PC,ERR		
(1)		000101			N	=	N+1		
1521	013144					SCOPE	XH11		
(1)	013144	004567	171056			JSR	R5,SCPRTN		
(1)	013150	013100				XH11			
1522	013152	032777	100000	022754	XH12:	BIT	#B15,@TSR		;IS ERROR BIT SET?
1523	013160	001014				BNE	XH13		
1524	013162					ERROR	\N		;ERROR:MST DWN DIDN'T SET TSR BIT 15
(1)									;***** ERROR 101 *****
(1)	013162	032777	040000	017220		BIT	#B14,@SR		
(1)	013170	001005				BNE	+.14		
(1)	013172	012767	000101	017442		MOV	#101,ERRNUM		
(1)	013200	004767	017210			JSR	PC,ERR		
(1)		000102			N	=	N+1		
1525	013204					SCOPE	XH11		
(1)	013204	004567	171016			JSR	R5,SCPRTN		
(1)	013210	013100				XH11			
1526	013212	005077	022716		XH13:	CLR	@TSR		
1527	013216	052777	010000	022710		BIS	#B12,@TSR		;SET TXM ERR
1528	013224	032777	010000	022702		BIT	#B12,@TSR		;IS IT SET?
1529	013232	001014				BNE	XH14		
1530	013234					ERROR	\N		;ERROR:CANNOT SET TSR BIT 12
(1)									;***** ERROR 102 *****
(1)	013234	032777	040000	017146		BIT	#B14,@SR		
(1)	013242	001005				BNE	+.14		
(1)	013244	012767	000102	017370		MOV	#102,ERRNUM		
(1)	013252	004767	017136			JSR	PC,ERR		
(1)		000103			N	=	N+1		
1531	013256					SCOPE	XH13		
(1)	013256	004567	170744			JSR	R5,SCPRTN		
(1)	013262	013212				XH13			
1532	013264	032777	100000	022642	XH14:	BIT	#B15,@TSR		;IS ERROR BIT SET?
1533	013272	001014				BNE	XH15		
1534	013274					ERROR	\N		;ERROR:TXM ERR DIDN'T SET TSR BIT 15
(1)									;***** ERROR 103 *****
(1)	013274	032777	040000	017106		BIT	#B14,@SR		
(1)	013302	001005				BNE	+.14		
(1)	013304	012767	000103	017330		MOV	#103,ERRNUM		
(1)	013312	004767	017076			JSR	PC,ERR		
(1)		000104			N	=	N+1		
1535	013316					SCOPE	XH13		
(1)	013316	004567	170704			JSR	R5,SCPRTN		
(1)	013322	013212				XH13			

1536	013324	005077	022604		XH15:	CLR	@TSR	
1537	013330	052777	020000	022576		BIS	#B13,@TSR	:SET MEM OFL
1538	013336	032777	020000	022570		BIT	#B13,@TSR	:IS IT SET?
1539	013344	001014				BNE	XH16	
1540	013346					ERROR	\N	:ERROR:CANNOT SET TSR BIT 13
(1)								:***** ERROR 104 *****
(1)	013346	032777	040000	017034		BIT	#B14,@SR	
(1)	013354	001005				BNE	.+14	
(1)	013356	012767	000104	017256		MOV	#104,ERRNUM	
(1)	013364	004767	017024			JSR	PC,ERR	
(1)		000105			N	=	N+1	
1541	013370					SCOPE	XH15	
(1)	013370	004567	170632			JSR	R5,SCPRTN	
(1)	013374	013324				XH15		
1542	013376	032777	100000	022530	XH16:	BIT	#B15,@TSR	:IS ERROR BIT SET?
1543	013404	001014				BNE	XH17	
1544	013406					ERROR	\N	:ERROR:MEM OFL DIDN'T SET TSR BIT 15
(1)								:***** ERROR 105 *****
(1)	013406	032777	040000	016774		BIT	#B14,@SR	
(1)	013414	001005				BNE	.+14	
(1)	013416	012767	000105	017216		MOV	#105,ERRNUM	
(1)	013424	004767	016764			JSR	PC,ERR	
(1)		000106			N	=	N+1	
1545	013430					SCOPE	XH15	
(1)	013430	004567	170572			JSR	R5,SCPRTN	
(1)	013434	013324				XH15		

```
1547 ;ERROR GENERATION TESTS
1548
1549 013436 XH17: BDINIT XMTR ;CLEAR BOARD
1550 013444 012777 177774 022466 MOV #-4,@TSBC ;SET UP TO GENERATE NXM ERR
1551 013452 012777 160000 022462 MOV #160000,@TSBA ;LOAD NON-EXST ADDR INTO TSBA
1552 013460 052777 040060 022444 BIS #40060,@TCR ;START NPR AND SET EXT ADD BITS
1553 013466 000240 NOP
1554 013470 000240 NOP
1555 013472 005777 022442 TST @TSBC ;DID BYTE COUNT GO TO 0 ?
1556 013476 001014 BNE XH18
1557 013500 ERROR \N ;ERROR:TXM NPR COMPL TO NEX ADDRESS
(1) ;***** ERROR 106 *****
(1) 013500 032777 040000 016702 BIT #B14,@SR
(1) 013506 001005 BNE .+14
(1) 013510 012767 000106 017124 MOV #106,ERRNUM
(1) 013516 004767 016672 JSR PC,ERR
(1) 000107 = N+1
1558 013522 N SCOPE XH17
(1) 013522 004567 170500 JSR R5,SCPRTN
(1) 013526 013436 XH17
1559 013530 032777 040000 022376 XH18: BIT #B14,@TSR ;NOW CHECK NXL ERR BIT
1560 013536 001014 BNE XH19
1561 013540 ERROR \N ;ERROR:NPR TO NON-EXST ADDR DIDN'T SET NXL ERR
(1) ;***** ERROR 107 *****
(1) 013540 032777 040000 016642 BIT #B14,@SR
(1) 013546 001005 BNE .+14
(1) 013550 012767 000107 017064 MOV #107,ERRNUM
(1) 013556 004767 016632 JSR PC,ERR
(1) 000110 = N+1
1562 013562 N SCOPE XH17
(1) 013562 004567 170440 JSR R5,SCPRTN
(1) 013566 013436 XH17
1563 013570 032777 100000 022336 XH19: BIT #B15,@TSR ;IS ERROR BIT (15) SET?
1564 013576 001014 BNE XH20
1565 013600 ERROR \N ;ERROR:NXL ERR DIDN'T SET TSR BIT 15
(1) ;***** ERROR 110 *****
(1) 013600 032777 040000 016602 BIT #B14,@SR
(1) 013606 001005 BNE .+14
(1) 013610 012767 000110 017024 MOV #110,ERRNUM
(1) 013616 004767 016572 JSR PC,ERR
(1) 000111 = N+1
1566 013622 N SCOPE XH17
(1) 013622 004567 170400 JSR R5,SCPRTN
(1) 013626 013436 XH17
1567 013630 XH20: BDINIT XMTR ;CLEAR BOARD
1568 013636 016777 177774 022272 XH20L: MOV XH20L,@TSDB ;FILL THE SILO WITH GARBAGE
1569 013644 000240 NOP
1570 013646 000240 NOP
1571 013650 032777 000400 022256 BIT #B08,@TSR ;SILO INPUT READY?
1572 013656 001367 BNE XH20L ;IF YES, KEEP LOADING
1573 013660 016777 177752 022250 MOV XH20L,@TSDB ;NO,SILO FULL;LOAD 1 MORE WORD
1574 013666 032777 001000 022240 BIT #B09,@TSR ;IS TSR BIT 9 SET?
1575 013674 001014 BNE XH21
1576 013676 ERROR \N ;ERROR:LOADING FULL SILO DIDN'T SET TSR-09
(1) ;***** ERROR 111 *****
(1) 013676 032777 040000 016504 BIT #B14,@SR
```


(1)	013704	001005			BNE	.+14		
(1)	013706	012767	000111	016726	MOV	#111,ERRNUM		
(1)	013714	004767	016474		JSR	PC,ERR		
(1)		000112			=	N+1		
1577	013720				SCOPE	XH20L		
(1)	013720	004567	170302		JSR	R5,SCPRTN		
(1)	013724	013636			XH20L			
1578	013726				XH21:	BDINIT	XMTR	:CLEAR BOARD
1579	013734	052777	120000	022170	BIS	#120000,@TCR		:SET SND WD & RIB
1580	013742	016702	016444		MOV	DLCON,R2		
1581	013746	005003			XH21A:	CLR	R3	:R3 AND R4 ARE COUNTERS
1582	013750	012704	177773		MOV	#-5,R4		
1583	013754	032777	002000	022152	XH22:	BIT	#B10,@TSR	:IS TIMEOUT SET?
1584	013762	001022			BNE	XH22A		
1585	013764	005203			INC	R3		:WATCH IT FOR A SEC
1586	013766	001372			BNE	XH22		
1587	013770	005204			INC	R4		
1588	013772	001370			BNE	XH22		
1589	013774	005302			DEC	R2		
1590	013776	001363			BNE	XH21A		
1591	014000				ERROR	\N		:ERROR:NO TIMEOUT IN A SECOND
(1)								:***** ERROR 112 *****
(1)	014000	032777	040000	016402	BIT	#B14,@SR		
(1)	014006	001005			BNE	.+14		
(1)	014010	012767	000112	016624	MOV	#112,ERRNUM		
(1)	014016	004767	016372		JSR	PC,ERR		
(1)		000113			=	N+1		
1592	014022				SCOPE	XH21		
(1)	014022	004567	170200		JSR	R5,SCPRTN		
(1)	014026	013726			XH21			
1593	014030				XH22A:	BDINIT	XMTR	:CLR XMTR
1594	014036	105077	022104		CLRB	@TMMRH		:CLEAR MASTER
1595	014042	012777	177777	022066	MOV	#-1,@TSDB		:LOAD A WORD INTO XMTR DATA SILO
1596	014050	004567	170472		JSR	R5,DELAY		:WAIT FOR MIGRATION
1597	014054	000010			.WORD	10		
1598	014056	052777	120000	022046	BIS	#120000,@TCR		:SET RIB AND SND WORD
1599	014064	004567	170456		JSR	R5,DELAY		
1600	014070	000010			.WORD	10		
1601	014072	032777	004000	022034	BIT	#B11,@TSR		:CHECK FOR MASTER DOWN
1602	014100	001014			BNE	XH23		:ERROR:ATTEMPT TO SEND WORD WITH MASTER CLEAR
1603	014102				ERROR	\N		:DID NOT SET MASTER DOWN
(1)								:***** ERROR 113 *****
(1)	014102	032777	040000	016300	BIT	#B14,@SR		
(1)	014110	001005			BNE	.+14		
(1)	014112	012767	000113	016522	MOV	#113,ERRNUM		
(1)	014120	004767	016270		JSR	PC,ERR		
(1)		000114			=	N+1		
1604	014124				SCOPE	XH22A		
(1)	014124	004567	170076		JSR	R5,SCPRTN		
(1)	014130	014030			XH22A			
1605	014132				XH23:	BDINIT	XMTR	
1606	014140	004767	015526		JSR	PC,MONIT		
1607	014144	032777	010000	016236	BIT	#B12,@SR		:IS SW 12 = 1?
1608	014152	001402			BEQ	XHRT		
1609	014154	000167	175740		JMP	TSRTST		:IF SO, TRY THIS TEST OVER
1610	014160	000207			XHRT:	RTS	PC	

```
1612          .SBTTL  INTERRUPT TEST
1613
1614          ;TRANSMITTER INTERRUPT TEST
1615
1616 014162      INTST:  MTPS      #P7          ;DIS-ALLOW INTERRUPT
(1) 014162 012737 000340 177776      MOV      #P7,@#PS
1617 014170      BDINIT   XMTR          ;CLR THE BOARD
1618 014176 016700 021720      MOV      TXVEC,R0
1619 014202 012760 000340 000002      MOV      #340,2(R0)      ;SET NEW PS = P7
1620 014210 012777 014240 021704      MOV      #ERRINT,@TXVEC ;SET-UP FOR ERROR INTERRUPT
1621 014216 052777 000100 021706      BIS      #B06,@TCR      ;SET INTERRUPT ENABLE
1622 014224      MTPS      #0          ;ALLOW INTERRUPT
(1) 014224 012737 000000 177776      MOV      #0,@#PS
1623 014232 000240      NOP
1624 014234 000167 000046      JMP      XJ0          ;SKIP ERROR IF NO INTERRUPT
1625 014240      ERRINT:  MTPS      #P7          ;INTERRUPT OFF
(1) 014240 012737 000340 177776      MOV      #P7,@#PS
1626 014246 022626      CMP      (SP)+,(SP)+      ;CORRECT STACK
1627 014250 042777 000100 021654      BIC      #B06,@TCR      ;CLR INTERRUPT ENABLE
1628 014256      ERROR    \N          ;ERROR:ERRONEOUS INTERRUPT;NO FLAGS SET
(1)          ;***** ERROR 114 *****
(1) 014256 032777 040000 016124      BIT      #B14,@SR
(1) 014264 001005      BNE      .+14
(1) 014266 012767 000114 016346      MOV      #114,ERRNUM
(1) 014274 004767 016114      JSR      PC,ERR
(1)          =          N+1
1629 014300      N          SCOPE    INTST
(1) 014300 004567 167722      JSR      R5,SCPRTN
(1) 014304 014162      INTST
1630 014306 005067 021602      XJ0:    CLR      TMPRIO          ;START WITH C.P. AT PRIORITY 0
1631 014312 012777 014566 021602      MOV      #INTA,@TXVEC      ;SET VECTOR FOR GOOD INTERRUPT
1632 014320      XJ1:    MTPS      #P7          ;INTERRUPT OFF
(1) 014320 012737 000340 177776      MOV      #P7,@#PS
1633 014326 052777 000100 021576      BIS      #B06,@TCR      ;ENABLE XMTR INTERRUPT
1634 014334 052777 000200 021572      BIS      #B07,@TSR      ;FORCE INTR WITH SUCC XFER
1635 014342      MTPS      TMPRIO          ;ALLOW INTERRUPT
(1) 014342 016737 021546 177776      MOV      TMPRIO,@#PS
1636 014350 000240      NOP
1637 014352 000240      NOP          ;WAIT FOR IT
1638 014354 005767 021534      TST      TMPRIO          ;IS PSW = 0?
1639 014360 001014      BNE      XJ2
1640 014362      ERROR    \N          ;ERROR:NO INTERRUPT FROM TRANSMITTER
(1)          ;***** ERROR 115 *****
(1) 014362 032777 040000 016020      BIT      #B14,@SR
(1) 014370 001005      BNE      .+14
(1) 014372 012767 000115 016242      MOV      #115,ERRNUM
(1) 014400 004767 016010      JSR      PC,ERR
(1)          =          N+1
1641 014404      N          SCOPE    INTST
(1) 014404 004567 167616      JSR      R5,SCPRTN
(1) 014410 014162      INTST
1642 014412 026767 021510 021474      XJ2:    CMP      XPRIO,TMPRIO      ;HAVE WE REACHED EXPECTED PRIORITY?
1643 014420 001414      BEQ      XJ3
1644 014422      ERROR    \N          ;ERROR:DEVICE NOT JUMPERED TO EXPECTED PRIORITY
(1)          ;***** ERROR 116 *****
(1) 014422 032777 040000 015760      BIT      #B14,@SR
```


(1)	014430	001005				BNE	+.14		
(1)	014432	012767	000116	016202		MOV	#116,ERRNUM		
(1)	014440	004767	015750			JSR	PC,ERR		
(1)		000117			N	=	N+1		
1645	014444					SCOPE	INTST		
(1)	014444	004567	167556			JSR	R5,SCPRTN		
(1)	014450	014162				INTST			
1646	014452	022767	000340	021434	XJ3:	CMP	#340,TMPRIO		:IS PSW = 7?
1647	014460	001426				BEQ	XJ4		
1648	014462					BDINIT	XMTR		
1649	014470	062767	000040	021416		ADD	#40,TMPRIO		
1650	014476	012777	014610	021416	XJ3S:	MOV	#INTB,@TXVEC		:SET VECTOR FOR ERROR INTR.
1651	014504	052777	000100	021420		BIS	#B06,@TCR		:ENABLE XMTR INTERRUPT
1652	014512	052777	000200	021414		BIS	#B07,@TSR		:FORCE INTERRUPT REQUEST
1653	014520					MTPS	TMPRIO		:SET CP TO NEXT PRIORITY
(1)	014520	016737	021370	177776		MOV	TMPRIO,@#PS		
1654	014526	000240				NOP			
1655	014530	000240				NOP			:WAIT FOR POSSIBLE INTERRUPT
1656	014532	000167	177714			JMP	XJ3		
1657	014536				XJ4:	BDINIT	XMTR		:CLEAR BOARD
1658	014544	004767	015122			JSR	PC,MONIT		
1659	014550	032777	010000	015632		BIT	#B12,@SR		:SW 12 = 1?
1660	014556	001402				BEQ	XJRT		
1661	014560	000167	177376			JMP	INTST		:YES, DO TEST OVER
1662	014564	000207			XJRT:	RTS	PC		:NO, LEAVE THIS TEST
1663									
1664	014566				INTA:	BDINIT	XMTR		:CLR INTERRUPT ETC
1665	014574	062767	000040	021312		ADD	#40,TMPRIO		:INCR TEMP PRIORITY
1666	014602	022626				CMP	(SP)+,(SP)+		:CORRECT STACK POINTER
1667	014604	000167	177510			JMP	XJ1		:TRY AGAIN
1668									
1669	014610	022626			INTB:	CMP	(SP)+,(SP)+		:CORRECT STACK
1670	014612					ERROR	\N		:ERROR:GOT INTR WHEN C.P. AT HIGHER PRIORITY
(1)									:***** ERROR 117 *****
(1)	014612	032777	040000	015570		BIT	#B14,@SR		
(1)	014620	001005				BNE	+.14		
(1)	014622	012767	000117	016012		MOV	#117,ERRNUM		
(1)	014630	004767	015560			JSR	PC,ERR		
(1)		000120			N	=	N+1		
1671	014634					SCOPE	XJ3S		
(1)	014634	004567	167366			JSR	R5,SCPRTN		
(1)	014640	014476				XJ3S			
1672	014642	000167	177604			JMP	XJ3		

```
1674 .SBTTL C.R.C. CHECK
1675 ;CYCLIC REDUNDANCY CHECK CHARACTER TEST
1676
1677
1678 014646 CRCTST: BDINIT XMTR ;CLEAR BOARD
1679 014654 012777 177600 021256 MOV #-128,@TSBC ;SET UP BYTE COUNT TO FILL SILO
1680 014662 012777 033564 021252 MOV #SILDAT,@TSBA
1681 014670 052777 040000 021234 BIS #B14,@TCR ;START NPR
1682 014676 005777 021236 XK1: TST @TSBC ;IS BYTE COUNT 0?
1683 014702 001375 BNE XK1 ;WAIT FOR NPR TO FINISH
1684 014704 032777 040000 021220 BIT #B14,@TCR ;NOW CHECK TX NPR BIT
1685 014712 001414 BEQ XK2
1686 014714 ERROR \N ;ERROR:TX NPR NOT CLR'D BY TSBC OFL
(1) ;***** ERROR 120 *****
(1) 014714 032777 040000 015466 BIT #B14,@SR
(1) 014722 001005 BNE .+14
(1) 014724 012767 000120 015710 MOV #120,ERRNUM
(1) 014732 004767 015456 JSR PC,ERR
(1) 000121 N = N+1
1687 014736 SCOPE CRCTST
(1) 014736 004567 167264 JSR R5,SCPRTN
(1) 014742 014646 CRCTST
1688 014744 052777 000200 021160 XK2: BIS #B07,@TCR ;SET RD SILO BIT
1689 014752 012767 177700 021130 MOV #-64,COUNT ;COUNT READS
1690 014760 012704 033764 MOV #SILCRC,R4 ;R4 POINTS TO GOOD CRC'S
1691 014764 000240 XK3: NOP
1692 014766 017767 021156 015650 MOV @TSCRC,BAD ;GET CRC CHAR FOR LAST SILO WORD
1693 014774 017703 021136 MOV @TSDB,R3 ;R3 HOLDS SILO DATA WORD
1694 015000 011467 015642 MOV (R4),GOOD ;GET GOOD CRC FROM BUFFER
1695 015004 026767 015636 015632 CMP GOOD,BAD ;IS CRC OK?
1696 015012 001427 BEQ XK4
1697 015014 032777 040000 015366 BIT #B14,@SR ;PRINT ALLOWED?
1698 015022 001020 BNE XK3S ;IF NOT, SKIP IT
1699 015024 PNTM SLOWD ;PRINT "SILO OUTPUT WORD WAS "
(1) 015024 012700 034364 MOV #SLOWD,R0 ;PRINT MESSAGE
(1) 015030 004767 015614 JSR PC,TYPUNT ;POINTED TO BY SLOWD
1700 015034 010300 MOV R3,R0
1701 015036 004767 016124 JSR PC,OCTPNT ;PRINT SILO DATA WORD
1702 015042 DATERR \N ;ERROR:BAD CRC FOR ABOVE WORD
(1) ;***** ERROR 121 *****
(1) 015042 032777 040000 015340 BIT #B14,@SR
(1) 015050 001005 BNE .+14
(1) 015052 012767 000121 015562 MOV #121,ERRNUM
(1) 015060 004767 015414 JSR PC,DERR
(1) 000121 N = N+1
1703 015064 XK3S: SCOPE CRCTST
(1) 015064 004567 167136 JSR R5,SCPRTN
(1) 015070 014646 CRCTST
1704 015072 062704 000002 XK4: ADD #2,R4 ;UPDATE CRC POINTER
1705 015076 005267 021006 INC COUNT ;HAVE WE CHECKED 64 WORDS?
1706 015102 001330 BNE YK3 ;NO, CONTINUE
1707 015104 004767 014562 JSR PC,MONIT
1708 015110 032777 010000 015272 BIT #B12,@SR ;CHECK SW 12
1709 015116 001402 BEQ XKRT ;IF CLR, EXIT
1710 015120 000167 177522 JMP CRCTST ;IF SET STAY
1711 015124 XKRT: BDINIT XMTR
```


CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 H 5
C.R.C. CHECK PAGE 26-1

SEQ 0059

1712 015132 000207
1713

RTS PC


```
1715 .SBTTL RECEIVER TESTS
1716
1717 ;TEST 2: RECEIVER TESTS
1718 ; (00) RESET TEST
1719 ; (01) RCR REG TEST
1720 ; (02) RDBC REG TEST
1721 ; (03) RDBA REG TEST
1722 ; (04) DATA SILO TESTS
1723 ; (05) RSR & ERRORS TESTS
1724 ; (06) INTERRUPT TEST
1725 ; (07) C.R.C. TEST
1726
1727
1728 000200 N = 200 ;RECEIVER ERRORS START AT 200
1729
1730 TEST2: MTPS #P7
1731 (1) 015134 012737 000340 177776 MOV #P7,@#PS
1732 015142 012767 000010 020706 MOV #10,ITER ;INITIAL ITERATION OF 10 PER PASS
1733 015150 004767 014516 JSR PC,MONIT
1734 015154 032777 002000 015226 BIT #B10,@SR ;CHECK SW 10
1735 015162 001420 BEQ LOOPR ;IF 0, RUN SEQUENTIALLY
1736 015172 042767 177770 020666 MOV @SR,SWI ;IF SET, GET TEST # FROM SWR
1737 015200 000241 CLC ;MASK LOW DIGIT
1738 015202 006167 020652 ROL SWI ;CLR C BIT BEFORE ROTATE
1739 015206 006167 020646 ROL SWI ;MULTIPLY BY 4
1740 015212 062767 015224 020640 ADD #LOOPR,SWI ;GENERATE OFFSET
1741 015220 000177 020634 JMP @SWI ;GO TO SELECTED TEST
1742 015224 004767 000142 LOOPR: JSR PC,RINIT ;DO INITIAL CLEAR TEST
1743 015230 004767 000476 JSR PC,RCRTST ;DO RCR REG TEST
1744 015234 004767 001176 JSR PC,RBCTST ;DO BYTE COUNT REG TEST
1745 015240 004767 001354 JSR PC,RBATST ;DO BYTE ADDR REG TEST
1746 015244 004767 001532 JSR PC,SLOTST ;DO RECVR DATA SILO TEST
1747 015250 004767 003056 JSR PC,RSRTST ;DO RSR REG & ERRORS TEST
1748 015254 004767 004646 JSR PC,RINTST ;DO INTERRUPT TEST
1749 015260 004767 005360 JSR PC,RCRCTS ;DO RCVR CRC GENERATION TEST
1750 015264 032777 004000 015116 BIT #B11,@SR ;CHECK SW 11
1751 015272 001003 BNE REHD ;PRINT END IF SET
1752 015274 005367 020556 DEC ITER ;OTHERWISE, REITERATE
1753 015300 001351 BNE LOOPR
1754 015302 005767 020574 REHD: TST $4FLAG ;CAN WE PRINT END PASS?
1755 015306 001030 BNE REPEAT ;NO, LEAVE
1756 015310 005267 020554 INC PSNO2 ;UPDATE PASS NO.
1757 015314 PNTM PEND ;PRINT 'END PASS # '
1758 (1) 015314 012700 034443 MOV #PEND,R0 ;PRINT MESSAGE
1759 (1) 015320 004767 015324 JSR PC,TYP0UT ;POINTED TO BY PEND
1760 015324 016700 020540 MOV PSNO2,R0 ;PRINT PASS NO.
1761 015330 004767 015736 JSR PC,DECPNT ;PRINT A SPACE
1762 015334 012700 000040 MOV #40,R0 ;PRINT 'A' (TO INDICATE RCVR TST)
1763 015340 004767 016126 JSR PC,TTO
1764 015344 012700 000101 MOV #101,R0
1765 015350 004767 016116 JSR PC,TTO
1766 015354 005000 CLR R0 ;NULLS IN CASE RESET FOLLOWS
1767 015356 004767 016110 JSR PC,TTO
1768 015362 005000 CLR R0
1769 015364 004767 016102 JSR PC,TTO
```


CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 ^{J 5} PAGE 27-1
RECEIVER TESTS

SEQ 0061

1768 015370 000207

REPEET: RTS PC

;RETURN

```

1770 .SBTTL INITIALIZE TEST
1771
1772 ;CHECK INITIAL CONDITIONS AFTER RESET
1773
1774 015372 000005 RINIT: RESET ;CLEAR THE WORLD
1775 015374 017767 020560 015242 MOV @RDBC,BAD ;GET BYTE COUNT REG
1776 015402 005067 015240 CLR GOOD
1777 015406 005767 015232 TST BAD ;WAS RDBC 0?
1778 015412 001414 BEQ RA1
1779 015414 DATERR \N ;ERROR:RDBC NOT CLR'D BY RESET
(1) ;***** ERROR 200 *****
(1) 015414 032777 040000 014766 BIT #B14,@SR
(1) 015422 001005 BNE .+14
(1) 015424 012767 000200 015210 MOV #200,ERRNUM
(1) 015432 004767 015042 JSR PC,DERR
(1) 000201 = N+1
1780 015436 SCOPE RINIT
(1) 015436 004567 166564 JSR R5,SCPRTN
(1) 015442 015372 RINIT
1781 015444 017767 020512 015172 RA1: MOV @RDBA,BAD ;GET BYTE ADDRESS REG
1782 015452 005067 015170 CLR GOOD
1783 015456 005767 015162 TST BAD ;WAS RDBA 0?
1784 015462 001414 BEQ RA2
1785 015464 DATERR \N ;ERROR:RDBA NOT CLR'D BY RESET
(1) ;***** ERROR 201 *****
(1) 015464 032777 040000 014716 BIT #B14,@SR
(1) 015472 001005 BNE .+14
(1) 015474 012767 000201 015140 MOV #201,ERRNUM
(1) 015502 004767 014772 JSR PC,DERR
(1) 000202 = N+1
1786 015506 SCOPE RINIT
(1) 015506 004567 166514 JSR R5,SCPRTN
(1) 015512 015372 RINIT
1787 015514 017767 020432 015122 RA2: MOV @RCR,BAD ;GET RCR REGISTER
1788 015522 012767 000010 015116 MOV #10,GOOD ;SET UP GOOD FOR COMPARE
1789 015530 026767 015112 015106 CMP GOOD,BAD
1790 015536 001414 BEQ RA3
1791 015540 DATERR \N ;ERROR:RCR NOT INITIALIZED BY RESET
(1) ;***** ERROR 202 *****
(1) 015540 032777 040000 014642 BIT #B14,@SR
(1) 015546 001005 BNE .+14
(1) 015550 012767 000202 015064 MOV #202,ERRNUM
(1) 015556 004767 014716 JSR PC,DERR
(1) 000203 = N+1
1792 015562 SCOPE RINIT
(1) 015562 004567 166440 JSR R5,SCPRTN
(1) 015566 015372 RINIT
1793 015570 017767 020370 015046 RA3: MOV @RDCRC,BAD ;GET CRC REG
1794 015576 005067 015044 CLR GOOD
1795 015602 005767 015036 TST BAD ;IS CRC REG 0?
1796 015606 001414 BEQ RA4
1797 015610 DATERR \N ;ERROR:RCVR CRC NOT CLR'D BY RESET
(1) ;***** ERROR 203 *****
(1) 015610 032777 040000 014572 BIT #B14,@SR
(1) 015616 001005 BNE .+14
(1) 015620 012767 000203 015014 MOV #203,ERRNUM
  
```


(1)	015626	004767	014646		JSR	PC,DERR		
(1)		000204			=	N+1		
1798	015632				SCOPE	RINIT		
(1)	015632	004567	166370		JSR	R5,SCPRTN		
(1)	015636	015372			RINIT			
1799	015640	017767	020310	014776	RA4:	MOV	@RSR,BAD	:GET RSR REG
1800	015646	005067	014774		CLR	GOOD		
1801	015652	005767	014766		TST	BAD		:IS RSR REG 0?
1802	015656	001414			BEQ	RA5		
1803	015660				DATERR	\N		:ERROR:RSR REG NOT CLR'D BY RESET
(1)								:***** ERROR 204 *****
(1)	015660	032777	040000	014522	BIT	#B14,@SR		
(1)	015666	001005			BNE	+.14		
(1)	015670	012767	000204	014744	MOV	#204,ERRNUM		
(1)	015676	004767	014576		JSR	PC,DERR		
(1)		000205			=	N+1		
1804	015702				SCOPE	RINIT		
(1)	015702	004567	166320		JSR	R5,SCPRTN		
(1)	015706	015372			RINIT			
1805	015710	004767	013756		RA5:	JSR	PC,MONIT	
1806	015714	032777	010000	014466	BIT	#B12,@SR		:CHK SW 12 FOR EXIT VISA
1807	015722	001402			BEQ	RART		
1808	015724	000167	177442		JMP	RINIT		:IF SET,STAY IN THIS TEST
1809	015730	000207			RART:	RTS	PC	:OTHERWISE, EXIT

```

1811          .SBTTL RCR TEST
1812
1813          ;RECEIVER COMMAND REGISTER TEST
1814
1815 015732 005077 020214          RCRTST: CLR @RCR          ;CLEAR RCR REGISTER
1816 015736 012767 160375 014702 RD1:  MOV #160375,GOOD ;SET ALL SETTABLE BITS IN RCR
1817 015744 016777 014676 020200      MOV GOOD,@RCR
1818 015752 017767 020174 014664      MOV @RCR,BAD          ;AND READ THEM BACK
1819 015760 026767 014662 014656      CMP GOOD,BAD          ;ALL BITS SET?
1820 015766 001414
1821 015770          DATERR \N          ;ERROR:CANNOT SET ALL SETTABLE RCR BITS
(1)                                     ;***** ERROR 205 *****
(1) 015770 032777 040000 014412      BIT #B14,@SR
(1) 015776 001005          BNE .+14
(1) 016000 012767 000205 014634      MOV #205,ERRNUM
(1) 016006 004767 014466          JSR PC,DERR
(1)                                     = N+1
1822 016012          N          SCOPE RD1
(1) 016012 004567 166210          JSR R5,SCPRTN
(1) 016016 015736          RD1
1823 016020 005067 014622          RD2: CLR GOOD          ;NOW CLR BITS AFTER SETTING THEM
1824 016024 005077 020122          CLR @RCR
1825 016030 017767 020116 014606      MOV @RCR,BAD          ;READ THEM BACK
1826 016036 042767 017412 014600      BIC #17412,BAD        ;IGNORE R/O BITS
1827 016044 026767 014576 014572      CMP GOOD,BAD          ;ALL CLR?
1828 016052 001414          BEQ RD3
1829 016054          DATERR \N          ;ERROR:CANNOT CLR ALL RCR BITS
(1)                                     ;***** ERROR 206 *****
(1) 016054 032777 040000 014326      BIT #B14,@SR
(1) 016062 001005          BNE .+14
(1) 016064 012767 000206 014550      MOV #206,ERRNUM
(1) 016072 004767 014402          JSR PC,DERR
(1)                                     = N+1
1830 016076          N          SCOPE RD2
(1) 016076 004567 166124          JSR R5,SCPRTN
(1) 016102 016020          RD2
1831 016104 012777 160375 020040      RD3: MOV #160375,@RCR    ;SET ALL SETTABLE BITS IN RCR
1832 016112 012777 177777 020040      MOV #-1,@RDBC         ;AND IN RDBC
1833 016120 012777 177777 020034      MOV #-1,@RDBA         ;AND IN RDBA
1834 016126 012777 037200 020020      MOV #37200,@RSR       ;AND IN RSR
1835 016134 052777 000002 020010      BIS #B01,@RCR         ;BOARD INIT
1836 016142 017767 020004 014474      MOV @RCR,BAD          ;CHECK RCR
1837 016150 012767 000010 014470      MOV #10,GOOD          ;SEE IF RCR = 10
1838 016156 026767 014464 014460      CMP GOOD,BAD
1839 016164 001414          BEQ RD4
1840 016166          DATERR \N          ;ERROR:RCR NOT INIT'D BY BD INIT
(1)                                     ;***** ERROR 207 *****
(1) 016166 032777 040000 014214      BIT #B14,@SR
(1) 016174 001005          BNE .+14
(1) 016176 012767 000207 014436      MOV #207,ERRNUM
(1) 016204 004767 014270          JSR PC,DERR
(1)                                     = N+1
1841 016210          N          SCOPE RD3
(1) 016210 004567 166012          JSR R5,SCPRTN
(1) 016214 016104          RD3
1842 016216 017767 017732 014420      RD4: MOV @RSR,BAD          ;CHECK RSR

```


1843	016224	005067	014416		CLR	GOOD	
1844	016230	026767	014412	014406	CMP	GOOD,BAD	:RSR = 0?
1845	016236	001414			BEQ	RD5	
1846	016240				DATERR	\N	:ERROR:RSR NOT CLR'D BY BD INIT
(1)							:***** ERROR 210 *****
(1)	016240	032777	040000	014142	BIT	#B14,@SR	
(1)	016246	001005			BNE	+.14	
(1)	016250	012767	000210	014364	MOV	#210,ERRNUM	
(1)	016256	004767	014216		JSR	PC,DERR	
(1)		000211		N	=	N+1	
1847	016262				SCOPE	RD3	
(1)	016262	004567	165740		JSR	R5,SCPRTN	
(1)	016266	016104			RD3		
1848	016270	017767	017664	014346	RD5:	MOV @RDBC,BAD	:CHECK RDBC
1849	016276	005067	014344		CLR	GOOD	
1850	016302	026767	014340	014334	CMP	GOOD,BAD	:RDBC = 0?
1851	016310	001414			BEQ	RD6	
1852	016312				DATERR	\N	:ERROR:RDBC NOT CLR'D BY BD INIT
(1)							:***** ERROR 211 *****
(1)	016312	032777	040000	014070	BIT	#B14,@SR	
(1)	016320	001005			BNE	+.14	
(1)	016322	012767	000211	014312	MOV	#211,ERRNUM	
(1)	016330	004767	014144		JSR	PC,DERR	
(1)		000212		N	=	N+1	
1853	016334				SCOPE	RD3	
(1)	016334	004567	165666		JSR	R5,SCPRTN	
(1)	016340	016104			RD3		
1854	016342	017767	017614	014274	RD6:	MOV @RDBA,BAD	:CHECK RDBA
1855	016350	005067	014272		CLR	GOOD	
1856	016354	026767	014266	014262	CMP	GOOD,BAD	:RDBA = 0?
1857	016362	001414			BEQ	RD7	
1858	016364				DATERR	\N	:ERROR:RDBA NOT CLR'D BY BD INIT
(1)							:***** ERROR 212 *****
(1)	016364	032777	040000	014016	BIT	#B14,@SR	
(1)	016372	001005			BNE	+.14	
(1)	016374	012767	000212	014240	MOV	#212,ERRNUM	
(1)	016402	004767	014072		JSR	PC,DERR	
(1)		000213		N	=	N+1	
1859	016406				SCOPE	RD3	
(1)	016406	004567	165614		JSR	R5,SCPRTN	
(1)	016412	016104			RD3		
1860	016414	004767	013252		RD7:	JSR PC,MONIT	
1861	016420	032777	010000	013762	BIT	#B12,@SR	:CHECK SW 12
1862	016426	001402			BEQ	RDRT	
1863	016430	000167	177276		JMP	RCRTST	:STAY IN THIS LOOP IF SW 12 = 1
1864	016434	000207			RDRT:	RTS PC	

```
1866 .SBTTL RDBC TEST
1867
1868 ;BYTE COUNT REG DATA TEST
1869
1870 016436 RBCST: BDINIT RCVR ;INIT RCVR MODULE
1871 016444 012767 177777 017410 MOV #-1,PAT ;SET PATTERN
1872 016452 012767 000001 017404 MOV #B00,MASK ;SET BIT MASK
1873 016460 016767 017376 014160 RB1: MOV PAT,GOOD ;LOAD 'GOOD' WITH PATTERN
1874 016466 016777 014154 017464 MOV GOOD,@RDBC ;LOAD PATTERN INTO RDBC
1875 016474 017767 017460 014142 MOV @RDBC,BAD ;READ RDBC
1876 016502 026767 014140 014134 CMP GOOD,BAD ;DATA OK?
1877 016510 001414 BEQ RB2
1878 016512 DATERR \N ;ERROR:BAD DATA IN RDBC
(1) ;***** ERROR 213 *****
(1) 016512 032777 040000 013670 BIT #B14,@SR
(1) 016520 001005 BNE .+14
(1) 016522 012767 000213 014112 MOV #213,ERRNUM
(1) 016530 004767 013744 JSR PC,DERR
(1) 000214 = N+1
1879 016534 SCOPE RB1
(1) 016534 004567 165466 JSR R5,SCRPTN
(1) 016540 016460 RB1
1880 016542 032767 100000 017312 RB2: BIT #B15,PAT ;DONE WHOLE REGISTER?
1881 016550 001412 BEQ RB3 ;IF YES, DONE
1882 016552 012767 177777 017302 MOV #-1,PAT
1883 016560 046767 017300 017274 BIC MASK,PAT ;NO, PREPARE FOR NEXT BIT
1884 016566 006367 017272 ASL MASK ;ROTATE MASK
1885 016572 000167 177662 JMP RB1 ;AND CONTINUE
1886 016576 004767 013070 RB3: JSR PC,MONIT
1887 016602 032777 010000 013600 BIT #B12,@SR ;IF SO, CONSIDER LEAVING
1888 016610 001402 BEQ RBRT ;EXIT IF SW 12 = 0
1889 016612 000167 177620 JMP RBCSTST ;STAY HERE IF SW 12 = 1
1890 016616 000207 RBRT: RTS PC
```



```
1892                                     .SBTTL  RDBA TEST
1893
1894                                     ;BYTE ADDRESS REG DATA TEST
1895
1896 016620                                RBATST: BDINIT  RCVR
1897 016626 012767 177777 017226          MOV    #-1,PAT
1898 016634 012767 000001 017222          MOV    #B00,MASK
1899 016642 016767 017214 013776          RC1:   MOV    PAT,GOOD
1900 016650 016777 013772 017304          MOV    GOOD,@RDBA
1901 016656 017767 017300 013760          MOV    @RDBA,BAD
1902 016664 026767 013756 013752          CMP    GOOD,BAD
1903 016672 001414                                BEQ    RC2
1904 016674                                DATERR  \N
(1)
(1) 016674 032777 040000 013506          BIT    #B14,@SR
(1) 016702 001005                                BNE    .+14
(1) 016704 012767 000214 013730          MOV    #214,ERRNUM
(1) 016712 004767 013562                                JSR    PC,DERR
(1)                                =
1905 016716                                N
(1) 016716 004567 165304                                SCOPE
(1) 016722 016642                                JSR    RC1
1906 016724 032767 100000 017130          RC2:   BIT    #B15,PAT
1907 016732 001412                                BEQ    RC3
1908 016734 012767 177777 017120          MOV    #-1,PAT
1909 016742 046767 017116 017112          BIC    MASK,PAT
1910 016750 006367 017110          ASL    MASK
1911 016754 000167 177662                                JMP    RC1
1912 016760 004767 012706          RC3:   JSR    PC,MONIT
1913 016764 032777 010000 013416          BIT    #B12,@SR
1914 016772 001402                                BEQ    RCRT
1915 016774 000167 177620                                JMP    RBATST
1916 017000 000207                                RCRT:  RTS    PC

;INIT RECEIVER MODULE
;SET PATTERN
;SET BIT MASK
;LOAD 'GOOD' WITH PATTERN
;LOAD PATTERN INTO RDBA
;READ RDBA

;ERROR:BAD DATA IN RDBA REG
;***** ERROR 214 *****

;DONE WHOLE REGISTER?
;IF YES, DONE

;NO, PREPARE FOR NEXT BIT
;ROTATE MASK
;AND CONTINUE

;EXIT IF SW 12 = 0
;STAY HERE IF SW 12 = 1
```

```
1918 .SBTTL DATA SILO TEST
1919
1920 ;RECEIVER DATA SILO TEST
1921
1922 017002 SLOTST: BDINIT RCVR ;CLEAR RCVR MODULE
1923 017010 004567 165532 JSR R5,DELAY
1924 017014 000010 .WORD 10
1925 017016 032777 000400 017130 BIT #B08,@RSR ;SILO OUTPUT READY?
1926 017024 001414 BEQ RE1
1927 017026 ERROR \N ;ERROR:BD INIT DID NOT CLR SILO
(1) ;***** ERROR 215 *****
(1) 017026 032777 040000 013354 BIT #B14,@SR
(1) 017034 001005 BNE .+14
(1) 017036 012767 000215 013576 MOV #215,ERRNUM
(1) 017044 004767 013344 JSR PC,ERR
(1) 000216 = N+1
1928 017050 N SCOPE SLOTST
(1) 017050 004567 165152 JSR R5,SCPRTN
(1) 017054 017002 SLOTST
1929 017056 032777 000010 017066 RE1: BIT #B03,@RCR ;SILO INPUT RDY?
1930 017064 001014 BNE RE2
1931 017066 ERROR \N ;ERROR:BD INIT DID NOT SET SILO INPUT RDY
(1) ;***** ERROR 216 *****
(1) 017066 032777 040000 013314 BIT #B14,@SR
(1) 017074 001005 BNE .+14
(1) 017076 012767 000216 013536 MOV #216,ERRNUM
(1) 017104 004767 013304 JSR PC,ERR
(1) 000217 = N+1
1932 017110 N SCOPE SLOTST
(1) 017110 004567 165112 JSR R5,SCPRTN
(1) 017114 017002 SLOTST
1933 017116 052777 000200 017026 RE2: BIS #B07,@RCR ;SET LD SILO BIT
1934 017124 012777 177777 017024 MOV #-1,@RDDB ;LOAD 177777 INTO DATA SILO
1935 017132 042777 000200 017012 BIC #B07,@RCR ;CLR LD SILO BIT
1936 017140 004567 165402 JSR R5,DELAY
1937 017144 000010 .WORD 10
1938 017146 032777 000400 017000 BIT #B08,@RSR ;SILO OUTPUT RDY NOW?
1939 017154 001017 BNE RE3
1940 017156 ERROR \N ;ERROR:NO SILO OUTPUT AFTER LOAD
(1) ;***** ERROR 217 *****
(1) 017156 032777 040000 013224 BIT #B14,@SR
(1) 017164 001005 BNE .+14
(1) 017166 012767 000217 013446 MOV #217,ERRNUM
(1) 017174 004767 013214 JSR PC,ERR
(1) 000220 = N+1
1941 017200 N BDINIT RCVR ;CLR SILO
1942 017206 SCOPE RE2
(1) 017206 004567 165014 JSR R5,SCPRTN
(1) 017212 017116 RE2
1943 017214 017767 016736 013422 RE3: MOV @RDDB,BAD ;POP WORD FROM SILO
1944 017222 012767 177777 013416 MOV #-1,GOOD
1945 017230 026767 013412 013406 CMP GOOD,BAD ;SILO OUTPUT = 177777
1946 017236 001417 BEQ RE4
1947 017240 DATERR \N ;ERROR:DROPPED BITS IN DATA SILO
(1) ;***** ERROR 220 *****
(1) 017240 032777 040000 013142 BIT #B14,@SR
```


(1)	017246	001005			BNE	+.14	
(1)	017250	012767	000220	013364	MOV	#220,ERRNUM	
(1)	017256	004767	013216		JSR	PC,DERR	
(1)		000221			=	N+1	
1948	017262				BDINIT	RCVR	
1949	017270				SCOPE	RE2	
(1)	017270	004567	164732		JSR	R5,SCPRTN	
(1)	017274	017116			RE2		
1950	017276	032777	000400	016650	RE4:	BIT	#B08,@RSR
1951	017304	001414			BEQ	RE5	:SILO OUTPUT RDY?
1952	017306				ERROR	\N	:ERROR:WORD DID NOT GET POPPED FROM SILO
(1)							:***** ERROR 221 *****
(1)	017306	032777	040000	013074	BIT	#B14,@SR	
(1)	017314	001005			BNE	+.14	
(1)	017316	012767	000221	013316	MOV	#221,ERRNUM	
(1)	017324	004767	013064		JSR	PC,ERR	
(1)		000222			=	N+1	
1953	017330				SCOPE	RE3	
(1)	017330	004567	164672		JSR	R5,SCPRTN	
(1)	017334	017214			RE3		
1954	017336	032777	000010	016606	RE5:	BIT	#B03,@RCR
1955	017344	001014			BNE	RE6	:SILO INPUT RDY?
1956	017346				ERROR	\N	:ERROR:SILO INPUT NOT READY
(1)							:***** ERROR 222 *****
(1)	017346	032777	040000	013034	BIT	#B14,@SR	
(1)	017354	001005			BNE	+.14	
(1)	017356	012767	000222	013256	MOV	#222,ERRNUM	
(1)	017364	004767	013024		JSR	PC,ERR	
(1)		000223			=	N+1	
1957	017370				SCOPE	RE5	
(1)	017370	004567	164632		JSR	R5,SCPRTN	
(1)	017374	017336			RE5		
1958	017376	052777	000200	016546	RE6:	BIS	#B07,@RCR
1959	017404	005077	016546		CLR	@RDDB	:SET LD SILO BIT
1960	017410	042777	000200	016534	RE7:	BIC	#B07,@RCR
1961	017416	032777	000400	016530	BIT	#B08,@RSR	:LOAD 0'S INTO SILO
1962	017424	001774			BEQ	RE7	:CLR LD SILO BIT
1963	017426	017767	016524	013210	MOV	@RDDB,BAD	:SILO OUTPUT RDY?
1964	017434	005067	013206		CLR	GOOD	:WAIT FOR IT
1965	017440	026767	013202	013176	CMP	GOOD,BAD	:READ SILO OUTPUT
1966	017446	001417			BEQ	RE7A	:SILO OUTPUT = 0?
1967	017450				DATERR	\N	:ERROR:PICKED UP BITS IN DATA SILO
(1)							:***** ERROR 223 *****
(1)	017450	032777	040000	012732	BIT	#B14,@SR	
(1)	017456	001005			BNE	+.14	
(1)	017460	012767	000223	013154	MOV	#223,ERRNUM	
(1)	017466	004767	013006		JSR	PC,DERR	
(1)		000224			=	N+1	
1968	017472				BDINIT	RCVR	:CLR SILO
1969	017500				SCOPE	RE6	
(1)	017500	004567	164522		JSR	R5,SCPRTN	
(1)	017504	017376			RE6		
1970	017506	004767	000476		RE7A:	JSR	PC,CLRCBF
1971	017512				RE8:	BDINIT	RCVR
1972	017520	052777	000200	016424	BIS	#B07,@RCR	:MAKE SURE BUFF IS CLR
1973	017526	012704	033564		MOV	#SILDAT,R4	:CLR RCVR BOARD
							:SET LD SILO BIT
							:R4 POINTS TO DATA FOR SILO

1974	017532	012703	177700			MOV	#-64.,R3		:R3 COUNTS WORDS
1975	017536	012477	016414		RE9:	MOV	(R4)+,@RDDB		:LOAD DATA INTO SILO
1976	017542	005203				INC	R3		
1977	017544	001374				BNE	RE9		:KEEP LOADING FOR 64 WORDS
1978	017546	032777	000010	016376		BIT	#B03,@RCR		:FULL...IS SILO INPUT RDY?
1979	017554	001414				BEQ	RE10		
1980	017556					ERROR	\N		:ERROR:FULL SILO STILL RDY FOR INPUT
(1)									:***** ERROR 224 *****
(1)	017556	032777	040000	012624		BIT	#B14,@SR		
(1)	017564	001005				BNE	.+14		
(1)	017566	012767	000224	013046		MOV	#224,ERRNUM		
(1)	017574	004767	012614			JSR	PC,ERR		
(1)		000225			N	=	N+1		
1981	017600					SCOPE	RE8		
(1)	017600	004567	164422			JSR	R5,SCPRTN		
(1)	017604	017512				RE8			
1982	017606	042777	000200	016336	RE10:	BIC	#B07,@RCR		:CLR LD SILO BIT
1983	017614	012777	177600	016336		MOV	#-128,@RDBC		:SET UP BYTE COUNT FOR 64 WORDS
1984	017622	012777	034164	016332		MOV	#CMPBUF,@RDBA		:POINT INTERF AT 64 WD BUFFER
1985	017630	052777	040000	016314		BIS	#B14,@RCR		:SET RC NPR
1986	017636	016704	012550			MOV	DLCON,R4		
1987	017642	012703	177500		RE10A:	MOV	#177500,R3		:SET UP FOR 2 MS DELAY
1988	017646	005777	016306		RE11:	TST	@RDBC		:IS BYTE COUNT 0?
1989	017652	001420				BEQ	RE12		
1990	017654	005203				INC	R3		:WAITED 2 MS ?
1991	017656	001373				BNE	RE11		:NO, KEEP LOOKING
1992	017660	005304				DEC	R4		
1993	017662	001367				BNE	RE10A		
1994	017664					ERROR	\N		:ERROR:NPR NOT COMPLETE AFTER 2 MS
(1)									:***** ERROR 225 *****
(1)	017664	032777	040000	012516		BIT	#B14,@SR		
(1)	017672	001005				BNE	.+14		
(1)	017674	012767	000225	012740		MOV	#225,ERRNUM		
(1)	017702	004767	012506			JSR	PC,ERR		
(1)		000226			N	=	N+1		
1995	017706					SCOPE	RE8		
(1)	017706	004567	164314			JSR	R5,SCPRTN		
(1)	017712	017512				RE8			
1996	017714	042777	040000	016230	RE12:	BIC	#B14,@RCR		:CLEAR RC NPR
1997	017722	012702	033564			MOV	#SILDAT,R2		:SET UP TO CHECK SILO OUTPUT
1998	017726	012703	034164			MOV	#CMPBUF,R3		:R2 & R3 ARE DATA POINTERS
1999	017732	012704	177700			MOV	#-64.,R4		:R4 IS COUNTER
2000	017736	012267	012704		RE13:	MOV	(R2)+,GOOD		:GET GOOD DATA
2001	017742	012367	012676			MOV	(R3)+,BAD		:GET SILO DATA
2002	017746	026767	012674	012670		CMP	GOOD,BAD		:COMPARE MEM BUFFERS
2003	017754	001414				BEQ	RE14		
2004	017756					DATERR	\N		:ERRGR:DATA FROM SILO IS WRONG
(1)									:***** ERROR 226 *****
(1)	017756	032777	040000	012424		BIT	#B14,@SR		
(1)	017764	001005				BNE	.+14		
(1)	017766	012767	000226	012646		MOV	#226,ERRNUM		
(1)	017774	004767	012500			JSR	PC,DERR		
(1)		000227			N	=	N+1		
2005	020000					SCOPE	RE8		
(1)	020000	004567	164222			JSR	R5,SCPRTN		
(1)	020004	017512				RE8			

2006	020006	005204			RE14:	INC	R4		:DONE COMPARE?
2007	020010	001352				BNE	RE13		
2008	020012	032777	000400	016134		BIT	#B08,@RSR		:YES,SEE IF SILO WAS EMPTIED
2009	020020	001414				BEQ	RE15		
2010	020022					ERROR	\N		:ERROR:SILO OUT RDY, BUT SILO SHD BE EMPTY
(1)									:***** ERROR 227 *****
(1)	020022	032777	040000	012360		BIT	#B14,@SR		
(1)	020030	001005				BNE	.+14		
(1)	020032	012767	000227	012602		MOV	#227,ERRNUM		
(1)	020040	004767	012350			JSR	PC,ERR		
(1)		000230			N	=	N+1		
2011	020044					SCOPE	RE8		
(1)	020044	004567	164156			JSR	R5,SCPRTN		
(1)	020050	017512				RE8			

```
2013 .SBTTL DATA SILO BLOCK COUNTER TEST
2014
2015 ;THIS TESTS THAT, AFTER PUTTING 200 (OCTAL) WORDS INTO THE DATA SILO
2016 ;THE BLOCK COUNTER COUNTS THE 200 WORDS AND HOLDS SILO INPUT READY
2017 ;IN THE FALSE STATE.
2018
2019 RE15: BDINIT RCVR ;CLEAR THE BOARD
2020 MOV #64,R2
2021 JSR PC,RESR ;PUT 100 (OCTAL) WORDS INTO SILO
2022 JSR PC,REEMT ;EMPTY IT VIA NPR
2023 MOV #20,R2
2024 JSR PC,RESR ;PUT 20 (OCTAL) WORDS INTO SILO
2025 JSR PC,REEMT ;EMPTY IT AGAIN
2026 MOV #60,R2
2027 JSR PC,RESR ;PUT 60 (OCTAL) WORDS INTO SILO
2028 ; MAKING A TOTAL OF 200 IN WHILE
2029 ; THERE IS ROOM FOR 20 MORE.
2030 020120 032777 000010 016024 BIT #B03,@RCR ;IS SILO INPUT READY?
2031 020126 001414 BEQ RE16 ;IF NOT, OKAY
2032 020130 ERROR \N ;ERROR: INPUT READY AFTER A 200 WORD BLOCK
(1) ;***** ERROR 230 *****
(1) 020130 032777 040000 012252 BIT #B14,@SR
(1) 020136 001005 BNE .+14
(1) 020140 012767 000230 012474 MOV #230,ERRNUM
(1) 020146 004767 012242 JSR PC,ERR
(1) 000231 = N+1
2033 020152 N SCOPE RE15
(1) 020152 004567 164050 JSR R5,SCPRTN
(1) 020156 020052 RE15
2034 020160 RE16: BDINIT RCVR
2035 020166 004767 011500 JSR PC,MONIT
2036 020172 032777 010000 012210 BIT #B12,@SR ;CHECK SW 12
2037 020200 001402 BEQ RERT
2038 020202 000167 176574 JMP RERT ;STAY IN THIS TEST IF SW 12 = 1
2039 020206 000207 RERT: RTS PC
2040 020210 012703 177700 CLRCBF: MOV #-64,R3 ;ROUTINE TO CLR BUFFER AREA
2041 020214 012704 034164 MOV #CMPBUF,R4
2042 020220 005024 RECB: CLR (R4)+
2043 020222 005203 INC R3
2044 020224 001375 BNE RECB
2045 020226 000207 RTS PC
2046
2047 ;ROUTINE TO FILL DATA SILO WITH (R2) NUMBER OF WORDS
2048
2049 020230 052777 000200 015714 RESR: BIS #B07,@RCR ;SET LOAD SILO
2050 020236 010203 MOV R2,R3
2051 020240 012777 012345 015710 RESRW: MOV #12345,@RDDB ;LOAD A WORD
2052 020246 005303 DEC R3 ;KEEP TRACK OF # OF WORDS
2053 020250 001373 BNE RESRW
2054 020252 042777 000200 015672 BIC #B07,@RCR ;LEAVE WITH LD SILO CLR
2055 020260 000207 RTS PC
2056
2057 ;ROUTINE TO EMPTY DATA SILO VIA RC NPR
2058
2059 020262 012777 177600 015670 REEMT: MOV #-128,@RDBC ;SET BYTE COUNT TO EMPTY SILO
2060 020270 012777 034164 015664 MOV #CMPBUF,@RDBA ;POINT SILO AT DAT BUFFER
```


CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 PAGE 33-1
DATA SILO BLOCK COUNTER TEST

SEQ 0073

2061	020276	052777	040000	015646	BIS	#B14,@RCR	:START NPR
2062	020304	016704	012102		MOV	DLCON,R4	
2063	020310	012703	175000		REEMT1: MOV	#175000,R3	:SET UP TO WAIT FOR COMPL
2064	020314	005203			REMTW: INC	R3	
2065	020316	001376			BNE	REMTW	:WAIT FOR NPR COMPLETION
2066	020320	005077	015626		CLR	@RCR	:CLEAR RC NPR
2067	020324	005304			DEC	R4	
2068	020326	001370			BNE	REEMT1	
2069	020330	000207			RTS	PC	:RETURN WITH SILO EMPTY

```
2071 .SBTTL RSR TEST
2072
2073 ;RCVR STATUS REG & ERRORS TEST
2074
2075 020332 RSRTST: BDINIT RCVR ;CLEAR THE BOARD
2076 020340 052777 020000 015604 BIS #B13,@RCR ;SET RCV WD
2077 020346 032777 000100 015600 BIT #B06,@RSR ;IS BUSY SET?
2078 020354 001014 BNE RF1
2079 020356 ERROR \N ;ERROR:RCV WD DID NOT SET BUSY
(1) ;***** ERROR 231 *****
(1) 020356 032777 040000 012024 BIT #B14,@SR
(1) 020364 001005 BNE .+14
(1) 020366 012767 000231 012246 MOV #231,ERRNUM
(1) 020374 004767 012014 JSR PC,ERR
(1) 000232 = N+1
2080 020400 N SCOPE RSRTST
(1) 020400 004567 163622 JSR R5,SCPRTN
(1) 020404 020332 RSR1ST
2081 020406 RF1: BIS #B07,@RSR ;SET SUC XFR
2082 020414 032777 000200 015540 BIT #B07,@RSR ;IS SUC XFR SET?
2083 020422 001014 BNE RF2
2084 020424 ERROR \N ;ERROR:CANNOT SET RSR BIT 07
(1) ;***** ERROR 232 *****
(1) 020424 032777 040000 011756 BIT #B14,@SR
(1) 020432 001005 BNE .+14
(1) 020434 012767 000232 012200 MOV #232,ERRNUM
(1) 020442 004767 011746 JSR PC,ERR
(1) 000233 = N+1
2085 020446 N SCOPE RF1
(1) 020446 004567 163554 JSR R5,SCPRTN
(1) 020452 020406 RF1
2086 020454 RF2: BIT #B13,@RCR ;IS RCV WD CLR?
2087 020462 001414 BEQ RF3
2088 020464 ERROR \N ;ERROR:SUC XFR DID NOT CLR RCV WD
(1) ;***** ERROR 233 *****
(1) 020464 032777 040000 011716 BIT #B14,@SR
(1) 020472 001005 BNE .+14
(1) 020474 012767 000233 012140 MOV #233,ERRNUM
(1) 020502 004767 011706 JSR PC,ERR
(1) 000234 = N+1
2089 020506 N SCOPE RSRTST
(1) 020506 004567 163514 JSR R5,SCPRTN
(1) 020512 020332 RSR1ST
2090 020514 RF3: BIC #B07,@RSR ;CLR SUC XFR
2091 020522 032777 000200 015432 BIT #B07,@RSR ;SEE IF IT CLR'D
2092 020530 001414 BEQ RF4
2093 020532 ERROR \N ;ERROR:CANNOT CLR SUC XFR
(1) ;***** ERROR 234 *****
(1) 020532 032777 040000 011650 BIT #B14,@SR
(1) 020540 001005 BNE .+14
(1) 020542 012767 000234 012072 MOV #234,ERRNUM
(1) 020550 004767 011640 JSR PC,ERR
(1) 000235 = N+1
2094 020554 N SCOPE RF3
(1) 020554 004567 163446 JSR R5,SCPRTN
(1) 020560 020514 RF3
```



```

2095 020562 RF4: BDINIT RCVR ;CLEAR THE BOARD
2096 020570 052777 020200 015354 BIS #20200,@RCR ;SET LD SILO & RCV WD
2097 020576 012703 177774 MOV #-4,R3
2098 020602 012777 177777 015346 RF5: MOV #-1,@Rddb ;MOVE 4 -1'S INTO SILO
2099 020610 000240 NOP
2100 020612 000240 NOP
2101 020614 005203 INC R3
2102 020616 001371 BNE RF5
2103 020620 012777 177776 015332 RF6: MOV #-2,@RDBC ;SET BYTE COUNT FOR 1 WORD
2104 020626 052777 000004 015316 BIS #B02,@RCR ;SET INH ADDR INC
2105 020634 012777 034164 015320 MOV #CMPBUF,@RDBA ;POINT NPR TO MEM BUFF.
2106 020642 052777 040000 015302 BIS #B14,@RCR ;START NPR
2107 020650 005777 015304 RF7: TST @RDBC ;BYTE COUNT = 0?
2108 020654 001375 BNE RF7
2109 020656 032777 000400 015270 BIT #B08,@RSR ;SILO OUTPUT RDY?
2110 020664 001014 BNE RF8
2111 020666 ERROR \N ;ERROR:SILO SHOULD NOT BE EMPTY
(1) ;***** ERROR 235 *****
(1) 020666 032777 040000 011514 BIT #B14,@SR
(1) 020674 001005 BNE .+14
(1) 020676 012767 000235 011736 MOV #235,ERRNUM
(1) 020704 004767 011504 JSR PC,ERR
(1) = N+1
2112 020710 N SCOPE RF4
(1) 020710 004567 163312 JSR R5,SCPRTN
(1) 020714 020562 RF4
2113 020716 012767 034164 011722 RF8: MOV #CMPBUF,GOOD ;BYTE ADDRESS SHD NOT INCREMENT
2114 020724 017767 015232 011712 MOV @RDBA,BAD ;READ BYTE ADDRESS
2115 020732 026767 011710 011704 CMP GOOD,BAD ;SAME AS BEFORE?
2116 020740 001414 BEQ RF9
2117 020742 DATERR \N ;ERROR:RCR BIT 2 DID NOT INH ADR INCREMENT
(1) ;***** ERROR 236 *****
(1) 020742 032777 040000 011440 BIT #B14,@SR
(1) 020750 001005 BNE .+14
(1) 020752 012767 000236 011662 MOV #236,ERRNUM
(1) 020760 004767 011514 JSR PC,DERR
(1) = N+1
2118 020764 N SCOPE RF4
(1) 020764 004567 163236 JSR R5,SCPRTN
(1) 020770 020562 RF4
2119 020772 032777 001000 015154 RF9: BIT #B09,@RSR ;IS BYTE COUNT OFL SET?
2120 021000 001014 BNE RF9A
2121 021002 ERROR \N ;ERROR:RDBC =0, SILO NOT EMPTY, BUT BC OFL = 0
(1) ;***** ERROR 237 *****
(1) 021002 032777 040000 011400 BIT #B14,@SR
(1) 021010 001005 BNE .+14
(1) 021012 012767 000237 011622 MOV #237,ERRNUM
(1) 021020 004767 011370 JSR PC,ERR
(1) = N+1
2122 021024 N SCOPE RF4
(1) 021024 004567 163176 JSR R5,SCPRTN
(1) 021030 020562 RF4
2123 021032 032777 100000 015114 RF9A: BIT #B15,@RSR ;IS RSR BIT 15 SET?
2124 021040 001014 BNE RF10 ;IF YES, CHECK FOR INTR REQ
2125 021042 ERROR \N ;ERROR:BYTE COUNT OFL DID NOT SET RSR BIT 15
(1) ;***** ERROR 240 *****
  
```

(1)	021042	032777	040000	011340		BIT	#B14,@SR	
(1)	021050	001005				BNE	+.14	
(1)	021052	012767	000240	011562		MOV	#240,ERRNUM	
(1)	021060	004767	011330			JSR	PC,ERR	
(1)		000241			N	=	N+1	
2126	021064					SCOPE	RF4	
(1)	021064	004567	163136			JSR	R5,SCPRTN	
(1)	021070	020562				RF4		
2127	021072	032777	020000	015052	RF10:	BIT	#B13,@RCR	:IS RCV WD = 0?
2128	021100	001414				BEQ	RF11	
2129	021102					ERROR	\N	:ERROR:BC OFL DID NOT REQUEST INTERRUPT :***** ERROR 241 *****
(1)								
(1)	021102	032777	040000	011300		BIT	#B14,@SR	
(1)	021110	001005				BNE	+.14	
(1)	021112	012767	000241	011522		MOV	#241,ERRNUM	
(1)	021120	004767	011270			JSR	PC,ERR	
(1)		000242			N	=	N+1	
2130	021124					SCOPE	RF4	
(1)	021124	004567	163076			JSR	R5,SCPRTN	
(1)	021130	020562				RF4		
2131	021132				RF11:	BDINIT	RCVR	
2132	021140	052777	020000	015004		BIS	#B13,@RCR	:SET RCV WD
2133	021146	052777	002000	015000		BIS	#B10,@RSR	:SET TIMEOUT
2134	021154	032777	002000	014772		BIT	#B10,@RSR	:IS TIMEOUT SET?
2135	021162	001014				BNE	RF12	
2136	021164					ERRCR	\N	:ERROR:CANNOT SET RSR BIT 10 :***** ERROR 242 *****
(1)								
(1)	021164	032777	040000	011216		BIT	#B14,@SR	
(1)	021172	001005				BNE	+.14	
(1)	021174	012767	000242	011440		MOV	#242,ERRNUM	
(1)	021202	004767	011206			JSR	PC,ERR	
(1)		000243			N	=	N+1	
2137	021206					SCOPE	RF11	
(1)	021206	004567	163014			JSR	R5,SCPRTN	
(1)	021212	021132				RF11		
2138	021214	032777	100000	014732	RF12:	BIT	#B15,@RSR	:IS ERROR BIT SET?
2139	021222	001014				BNE	RF13	
2140	021224					ERROR	\N	:ERROR:TIMEOUT DIDN'T SET RSR BIT 15 :***** ERROR 243 *****
(1)								
(1)	021224	032777	040000	011156		BIT	#B14,@SR	
(1)	021232	001005				BNE	+.14	
(1)	021234	012767	000243	011400		MOV	#243,ERRNUM	
(1)	021242	004767	011146			JSR	PC,ERR	
(1)		000244			N	=	N+1	
2141	021246					SCOPE	RF11	
(1)	021246	004567	162754			JSR	R5,SCPRTN	
(1)	021252	021132				RF11		
2142	021254	032777	020000	014670	RF13:	BIT	#B13,@RCR	:IS RCV WD CLR?
2143	021262	001414				BEQ	RF14	
2144	021264					ERROR	\N	:ERROR:RSR BIT 15 DIDN'T REQUEST INTERRUPT :***** ERROR 244 *****
(1)								
(1)	021264	032777	040000	011116		BIT	#B14,@SR	
(1)	021272	001005				BNE	+.14	
(1)	021274	012767	000244	011340		MOV	#244,ERRNUM	
(1)	021302	004767	011106			JSR	PC,ERR	
(1)		000245			N	=	N+1	

2145	021306					SCOPE	RF11	
(1)	021306	004567	162714			JSR	R5,SCPRTN	
(1)	021312	021132				RF11		
2146	021314	005077	014634		RF14:	CLR	@RSR	:CLEAR RSR
2147	021320	052777	004000	014626		BIS	#B11,@RSR	:SET PAR (PARITY ERROR) BIT
2148	021326	032777	004000	014620		BIT	#B11,@RSR	:IS IT SET?
2149	021334	001014				BNE	RF15	
2150	021336					ERROR	\N	:ERROR:CANNOT SET RSR BIT 11
(1)								:***** ERROR 245 *****
(1)	021336	032777	040000	011044		BIT	#B14,@SR	
(1)	021344	001005				BNE	+.14	
(1)	021346	012767	000245	011266		MOV	#245,ERRNUM	
(1)	021354	004767	011034			JSR	PC,ERR	
(1)		000246			N	=	N+1	
2151	021360					SCOPE	RF14	
(1)	021360	004567	162642			JSR	R5,SCPRTN	
(1)	021364	021314				RF14		
2152	021366	032777	100000	014560	RF15:	BIT	#B15,@RSR	:IS ERROR BIT SET?
2153	021374	001014				BNE	RF16	
2154	021376					ERROR	\N	:ERROR:PAR ERR DIDN'T SET RSR BIT 15
(1)								:***** ERROR 246 *****
(1)	021376	032777	040000	011004		BIT	#B14,@SR	
(1)	021404	001005				BNE	+.14	
(1)	021406	012767	000246	011226		MOV	#246,ERRNUM	
(1)	021414	004767	010774			JSR	PC,ERR	
(1)		000247			N	=	N+1	
2155	021420					SCOPE	RF14	
(1)	021420	004567	162602			JSR	R5,SCPRTN	
(1)	021424	021314				RF14		
2156	021426	005077	014522		RF16:	CLR	@RSR	:CLEAR RSR
2157	021432	052777	010000	014514		BIS	#B12,@RSR	:SET TXM ERR
2158	021440	032777	010000	014506		BIT	#B12,@RSR	:IS IT SET?
2159	021446	001014				BNE	RF17	
2160	021450					ERROR	\N	:ERROR:CANNOT SET RSR BIT 12
(1)								:***** ERROR 247 *****
(1)	021450	032777	040000	010732		BIT	#B14,@SR	
(1)	021456	001005				BNE	+.14	
(1)	021460	012767	000247	011154		MOV	#247,ERRNUM	
(1)	021466	004767	010722			JSR	PC,ERR	
(1)		000250			N	=	N+1	
2161	021472					SCOPE	RF16	
(1)	021472	004567	162530			JSR	R5,SCPRTN	
(1)	021476	021426				RF16		
2162	021500	032777	100000	014446	RF17:	BIT	#B15,@RSR	:IS ERROR BIT SET?
2163	021506	001014				BNE	RF18	
2164	021510					ERROR	\N	:ERROR:TXM ERR DIDN'T SET RSR BIT 15
(1)								:***** ERROR 250 *****
(1)	021510	032777	040000	010672		BIT	#B14,@SR	
(1)	021516	001005				BNE	+.14	
(1)	021520	012767	000250	011114		MOV	#250,ERRNUM	
(1)	021526	004767	010662			JSR	PC,ERR	
(1)		000251			N	=	N+1	
2165	021532					SCOPE	RF16	
(1)	021532	004567	162470			JSR	R5,SCPRTN	
(1)	021536	021426				RF16		
2166	021540	005077	014410		RF18:	CLR	@RSR	:CLEAR RSR

2167	021544	052777	020000	014402		BIS	#B13,@RSR		:SET MEM OFL
2168	021552	032777	020000	014374		BIT	#B13,@RSR		:IS IT SET?
2169	021560	001014				BNE	RF19		
2170	021562					ERROR	\N		:ERROR:CANNOT SET RSR BIT 13
(1)									:***** ERROR 251 *****
(1)	021562	032777	040000	010620		BIT	#B14,@SR		
(1)	021570	001005				BNE	+.14		
(1)	021572	012767	000251	011042		MOV	#251,ERRNUM		
(1)	021600	004767	010610			JSR	PC,ERR		
(1)		000252			N	=	N+1		
2171	021604					SCOPE	RF18		
(1)	021604	004567	162416			JSR	R5,SCPRTN		
(1)	021610	021540				RF18			
2172	021612	032777	100000	014334	RF19:	BIT	#B15,@RSR		:IS ERROR BIT SET?
2173	021620	001014				BNE	RF20		
2174	021622					ERROR	\N		:ERRGR:MEM OFL DIDN'T SET RSR BIT 15
(1)									:***** ERROR 252 *****
(1)	021622	032777	040000	010560		BIT	#B14,@SR		
(1)	021630	001005				BNE	+.14		
(1)	021632	012767	000252	011002		MOV	#252,ERRNUM		
(1)	021640	004767	010550			JSR	PC,ERR		
(1)		000253			N	=	N+1		
2175	021644					SCOPE	RF18		
(1)	021644	004567	162356			JSR	R5,SCPRTN		
(1)	021650	021540				RF18			


```

2177                                     ;ERROR GENERATION TESTS
2178
2179 021652                               RF20:  BDINIT  RCVR           ;CLEAR THE BOARD
2180 021660 052777 000200 014264        BIS      #B07,@RCR       ;SET LD SILO BIT
2181 021666 012777 177777 014262        MOV      #-1,@Rddb       ;LOAD A WORD INTO SILO
2182 021674 032777 000400 014252        RF21:  BIT      #B08,@RSR       ;SILO OUTPUT RDY?
2183 021702 001774                               BEQ      RF21             ;WAIT FOR IT
2184 021704 042777 000200 014240        BIC      #B07,@RCR       ;CLEAR LD SILO BIT
2185 021712 012777 177774 014240        MOV      #-4,@RDBC       ;SET BYTE COUNT FOR 1 WD XFER
2186 021720 012777 160000 014234        MOV      #160000,@RDBA   ;PUT NON-EXST LOC IN RDBA
2187 021726 052777 040060 014216        BIS      #40060,@RCR     ;START NPR AND SET EXT ADD BITS
2188 021734 000240                               NOP
2189 021736 000240                               NOP
2190 021740 005777 014214                TST      @RDBC           ;IS BYTE COUNT 0?
2191 021744 001014                               BNE      RF22
2192 021746                               ERROR      \N           ;ERROR:RCV NPR COMPL TO NEX ADDRESS
(1)                                     ;***** ERROR 253 *****
(1) 021746 032777 040000 010434        BIT      #B14,@SR
(1) 021754 001005                               BNE      .+14
(1) 021756 012767 000253 010656        MOV      #253,ERRNUM
(1) 021764 004767 010424                JSR      PC,ERR
(1)                                     =      N+1
2193 021770                               N      SCOPE      RF20
(1) 021770 004567 162232                JSR      R5,SCPRTN
(1) 021774 021652                               RF20
2194 021776 032777 040000 014150        RF22:  BIT      #B14,@RSR       ;IS NON EXST LOC SET?
2195 022004 001014                               BNE      RF23
2196 022006                               ERROR      \N           ;ERROR:NPR TO NXM DIDN'T SET NON-EXST LOC
(1)                                     ;***** ERROR 254 *****
(1) 022006 032777 040000 010374        BIT      #B14,@SR
(1) 022014 001005                               BNE      .+14
(1) 022016 012767 000254 010616        MOV      #254,ERRNUM
(1) 022024 004767 010364                JSR      PC,ERR
(1)                                     =      N+1
2197 022030                               N      SCOPE      RF20
(1) 022030 004567 162172                JSR      R5,SCPRTN
(1) 022034 021652                               RF20
2198 022036 032777 100000 014110        RF23:  BIT      #B15,@RSR       ;IS ERROR BIT SET?
2199 022044 001014                               BNE      RF24
2200 022046                               ERROR      \N           ;ERROR:NON-EXST LOC DIDN'T SET RSR BIT 15
(1)                                     ;***** ERROR 255 *****
(1) 022046 032777 040000 010334        BIT      #B14,@SR
(1) 022054 001005                               BNE      .+14
(1) 022056 012767 000255 010556        MOV      #255,ERRNUM
(1) 022064 004767 010324                JSR      PC,ERR
(1)                                     =      N+1
2201 022070                               N      SCOPE      RF20
(1) 022070 004567 162132                JSR      R5,SCPRTN
(1) 022074 021652                               RF20
2202 022076                               RF24:  BDINIT  RCVR           ;CLR BOARD BEFORE LEAVING
2203 022104 004767 007562                JSR      PC,MONIT
2204 022110 032777 010000 010272        BIT      #B12,@SR       ;IS SW 12 SET?
2205 022116 001402                               BEQ      RFRT
2206 022120 000167 176206                JMP      RSRTST
2207 022124 000207                               RFRT:  RTS      PC       ;YES,REPEAT THIS TEST

```

```
2209 .SBTTL INTERRUPT TEST
2210
2211 ;RECEIVER INTERRUPT TEST
2212
2213 022126 RINTST: MTPS #P7 ;DIS-ALLOW INTERRUPT
(1) 022126 012737 000340 177776 MOV #P7,@#PS
2214 022134 BDINIT RCVR ;CLEAR THE BOARD
2215 022142 016700 013756 MOV RCVEC,R0
2216 022146 012760 000340 000002 MOV #340,2(R0) ;SET NEW PS = P7
2217 022154 012777 022204 013742 MOV #EROINT,@RCVEC ;SET-UP FOR ERROR INTERRUPT
2218 022162 052777 000100 013762 BIS #B06,@RCR ;SET INTERRUPT ENABLE
2219 022170 MTPS #0 ;ALLOW INTERRUPT
(1) 022170 012737 000000 177776 MOV #0,@#PS
2220 022176 000240 NOP
2221 022200 000167 000046 JMP RHO ;SKIP ERROR IF NO INTERRUPT
2222 022204 EROINT: MTPS #P7 ;INTERRUPT OFF
(1) 022204 012737 000340 177776 MOV #P7,@#PS
2223 022212 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
2224 022214 042777 000100 013730 BIC #B06,@RCR ;CLR INTERRUPT ENABLE
2225 022222 ERROR \N ;ERROR:ERRONEOUS INTERRUPT:NO FLAGS SET
(1) ;***** ERROR 256 *****
(1) 022222 032777 040000 010160 BIT #B14,@SR
(1) 022230 001005 BNE .+14
(1) 022232 012767 000256 010402 MOV #256,ERRNUM
(1) 022240 004767 010150 JSR PC,ERR
(1) 000257 = N+1
2226 022244 N SCOPE RINTST
(1) 022244 004567 161756 JSR R5,SCPRTN
(1) 022250 022126 RINTST
2227 022252 005067 013636 RHO: CLR TMPRIO ;START WITH CP AT PRIORITY 0
2228 022256 012777 022556 013640 MOV #INTRA,@RCVEC ;SET VECTOR FOR GOOD INTERRUPT
2229 022264 RH1: MTPS #P7 ;INTERRUPT OFF
(1) 022264 012737 000340 177776 MOV #P7,@#PS
2230 022272 052777 000100 013652 BIS #B06,@RCR ;ENABLE RCVR INTERRUPT
2231 022300 052777 000200 013644 BIS #B07,@RCR ;SET LD SILO BIT
2232 022306 012777 177777 013642 MOV #-1,@Rddb ;PUT A WORD INTO RCVR SILO
2233 022314 042777 000200 013630 BIC #B07,@RCR ;CLR LD SILO BIT
2234 022322 032777 000400 013624 RH1A: BIT #B08,@RSR ;SILO OUTPUT READY?
2235 022330 001774 BEQ RH1A ;WAIT FOR IT
2236 022332 MTPS TMPRIO ;ALLOW INTERRUPT
(1) 022332 016737 013556 177776 MOV TMPRIO,@#PS
2237 022340 000240 NOP
2238 022342 000240 NOP
2239 022344 005767 013544 TST TMPRIO ;NO INTERRUPT;IS PSW = 0?
2240 022350 001014 BNE RH2
2241 022352 ERROR \N ;ERROR:NO INTERRUPT FROM RECEIVER
(1) ;***** ERROR 257 *****
(1) 022352 032777 040000 010030 BIT #B14,@SR
(1) 022360 001005 BNE .+14
(1) 022362 012767 000257 010252 MOV #257,ERRNUM
(1) 022370 004767 010020 JSR PC,ERR
(1) 000260 = N+1
2242 022374 N SCOPE RINTST
(1) 022374 004567 161626 JSR R5,SCPRTN
(1) 022400 022126 RINTST
2243 022402 026767 013522 013504 RH2: CMP RPRIO,TMPRIO ;HAVE WE REACHED EXPECTED PRIORITY?
```


2244	022410	001414			BEQ	RH3	
2245	022412				ERROR	\N	:ERROR:DEVICE NOT JUMPERED TO EXPECTED PRIORITY
(1)							:***** ERROR 260 *****
(1)	022412	032777	040000	007770	BIT	#B14,@SR	
(1)	022420	001005			BNE	.+14	
(1)	022422	012767	000260	010212	MOV	#260,ERRNUM	
(1)	022430	004767	007760		JSR	PC,ERR	
(1)		000261			=	N+1	
2246	022434				N		
(1)	022434	004567	161566		SCOPE	RINTST	
(1)	022440	022126			JSR	R5,SCPRTN	
2247	022442	022767	000340	013444	RH3:	RINTST	
2248	022450	001426			CMP	#340,TMPRIO	:IS PSW = 7?
2249	022452				BEQ	RH4	
2250	022460	062767	000040	013426	BDINIT	RCVR	
2251	022466	012777	022600	013430	ADD	#40,TMPRIO	
2252	022474	052777	000100	013450	RH3S:	MOV	#INTRB,@RCVEC
2253	022502	052777	000200	013444	BIS	#B06,@RCR	:SET VECTOR FOR ERROR INTERRUPT
2254	022510				BIS	#B07,@RSR	:ENABLE RCVR INTERRUPT
(1)	022510	016737	013400	177776	MTPS	TMPRIO	:FORCE INTERRUPT REQUEST
2255	022516	000240			MOV	TMPRIO,@#PS	:SET CP TO NEXT PRIORITY
2256	022520	000240			NOP		
2257	022522	000167	177714		NOP		
2258	022526				RH4:	JMP	RH3
2259	022534	004767	007132		BDINIT	RCVR	:CLEAR THE BOARD
2260	022540	032777	010000	007642	JSR	PC,MONIT	
2261	022546	001402			BIT	#B12,@SR	:SW 12 = 1?
2262	022550	000167	177352		BEQ	RHRT	
2263	022554	000207			RHRT:	JMP	RINTST
2264					RTS	PC	:YES,DO THIS TEST OVER
2265	022556						:NO,EXIT
2266	022564	062767	000040	013322	INTRA:	BDINIT	RCVR
2267	022572	022626			ADD	#40,TMPRIO	:CLR INTERRUPT ETC.
2268	022574	000167	177464		CMP	(SP)+,(SP)+	:INCR TEMP PRIORITY
2269					JMP	RH1	:CORRECT STACK POINTER
2270	022600	022626					:TRY AGAIN
2271	022602				INTRB:	CMP	(SP)+,(SP)+
2272	022610				BDINIT	RCVR	:POP THE STACK
(1)					ERROR	\N	:CLR EVRYTHING
(1)	022610	032777	040000	007572			:ERROR:GOT INTR WHITH CP AT HIGHER PRIORITY
(1)	022616	001005			BIT	#B14,@SR	:***** ERROR 261 *****
(1)	022620	012767	000261	010014	BNE	.+14	
(1)	022626	004767	007562		MOV	#261,ERRNUM	
(1)		000262			JSR	PC,ERR	
2273	022632				=	N+1	
(1)	022632	004567	161370		N		
(1)	022636	022466			SCOPE	RH3S	
2274	022640	000167	177576		JSR	R5,SCPRTN	
					RH3S		
					JMP	RH3	

```
2276 .SBTTL C.R.C. CHECK
2277
2278 ;CYCLIC REDUNDANCY CHECK CHARACTER TEST
2279
2280 022644 RCRCTS: BDINIT RCVR ;CLR THE BOARD
2281 022652 052777 000200 013272 BIS #B07,@RCR ;SET LD SILO BIT
2282 022660 012702 033764 MOV #SILCRC,R2 ;R2 POINTS TO GOOD CRC'S
2283 022664 012703 033564 MOV #SILDAT,R3 ;R3 POINTS TO MEM DATA
2284 022670 012704 177700 MOV #-64.,R4 ;R4 IS WORD COUNTER
2285 022674 011367 013212 RJ1: MOV (R3),DATWD ;SAVE INPUT WORD
2286 022700 016777 013206 013250 MOV DATWD,@RDDB ;LOAD SILO
2287 022706 011267 007734 MOV (R2),GOOD ;GET GOOD CRC FOR COMPARISON
2288 022712 017767 013246 007724 MOV @RDCRC,BAD ;GET GENERATED CRC
2289 022720 026767 007722 007716 CMP GOOD,BAD ;IS CRC OK?
2290 022726 001430 BEQ RJ2
2291 022730 032777 040000 007452 BIT #B14,@SR ;PRINT ALLOWED?
2292 022736 001021 BNE RJ1S ;IF NOT, SKIP IT
2293 022740 PNTM SLIWD ;PRINT 'SILO INPUT WORD WAS '
(1) 022740 012700 034414 MOV #SLIWD,R0 ;PRINT MESSAGE
(1) 022744 004767 007700 JSR PC,TYPOUT ;POINTED TO BY SLIWD
2294 022750 016700 013136 MOV DATWD,R0
2295 022754 004767 010206 JSR PC,OCTPNT ;PRINT SILO INPUT WORD
2296 022760 DATERR \N ;ERROR:BAD CRC FOR ABOVE WORD
(1) BIT #B14,@SR ;***** ERROR 262 *****
(1) 022760 032777 040000 007422 BNE .+14
(1) 022766 001005 MOV #262,ERRNUM
(1) 022770 012767 000262 007644 JSR PC,DERR
(1) 022776 004767 007476 = N+1
(1) 000263 N
2297 023002 RJ1S: SCOPE RCRCTS
(1) 023002 004567 161220 JSR R5,SCPRTN
(1) 023006 022644 RCRCTS
2298 023010 062702 000002 RJ2: ADD #2,R2 ;UPDATE CRC POINTER
2299 023014 062703 000002 ADD #2,R3 ;UPDATE DATA POINTER
2300 023020 005204 INC R4 ;HAVE WE CHECKED 64 WDS?
2301 023022 001324 BNE RJ1
2302 023024 004767 006642 JSR PC,MONIT
2303 023030 032777 010000 007352 BIT #B12,@SR ;CHECK SW 12
2304 023036 001402 BEQ RJRT ;IF 0, EXIT
2305 023040 000167 177600 JMP RCRCTS ;IF 1, STAY
2306 023044 RJRT: BDINIT RCVR ;CLR BOARD BEFORE EXIT
2307 023052 000207 RTS PC
```



```
2309 .SBTTL XMTR-RCVR LOOP TESTS
2310
2311 ;TEST 3 - XMTR - RCVR LOOP TESTS
2312 ; (00) NPR TESTS SILO TO SILO
2313 ; (01) DATA LOOPS TESTS
2314 ; (02) TXM ERRORS TESTS
2315 ; (03) REJECT & TRUNCATE TESTS
2316
2317 000300 N = 300 ;LOOP TEST ERRORS START AT 300
2318
2319 023054 TEST3: MTPS #P7
(1) 023054 012737 000340 177776 MOV #P7,@MPS
2320 023062 012767 000010 012766 MOV #10,ITER ;INITIAL ITERATION OF 10 PER PASS
2321 023070 004767 006576 JSR PC,MONIT
2322 023074 032777 002000 007306 BIT #B10,@SR ;CHECK SW 10
2323 023102 001424 BEQ LOOPL ;IF CLR, RUN ALL TESTS
2324 023104 017767 007300 012746 MOV @SR,SWI ;IF SET, START AT TEST # IN SW'S <1:0>
2325 023112 042767 177770 012740 BIC #-10,SWI
2326 023120 026727 012734 000003 CMP SWI,#3 ;DON'T ALLOW SWI > 3
2327 023126 003012 BGT LOOPL
2328 023130 000241 CLC ;CLR C-BIT BEFORE ROTATE
2329 023132 006167 012722 ROL SWI
2330 023136 006167 012716 ROL SWI
2331 023142 062767 023154 012710 ADD #LOOPL,SWI ;GENERATE CORRECT OFFSET
2332 023150 000177 012704 JMP @SWI ;GO TO SELECTED TEST
2333 023154 004767 000120 LOOPL: JSR PC,NPRTST ;CHECK NPR ..SILO TO SILO
2334 023160 004767 000710 JSR PC,DATLPS ;DO DATA LOOPS TEST
2335 023164 004767 003236 JSR PC,TXMERS ;CHECK TXM ERRORS
2336 023170 004767 005520 JSR PC,XRC20 ;DO REJECT AND TRUNCATE TEST
2337 023174 032777 004000 007206 BIT #B11,@SR ;CHECK SW 11
2338 023202 001003 BNE TREND ;PRINT END IF SET
2339 023204 005367 012646 DEC ITER ;OTHERWISE, RE-ITERATE
2340 023210 001361 BNE LOOPL
2341 023212 005767 012664 TREND: TST $4FLAG ;TEST END PASS INHIBIT FLAG
2342 023216 001027 BNE REPETL ;CAN'T PRINT, EXIT.
2343 023220 005267 012646 INC PSN03 ;UPDATE PASS NO.
2344 023224 PNTM PEND ;PRINT 'END PASS # ''
(1) 023224 012700 034443 MOV #PEND,R0 ;PRINT MESSAGE
(1) 023230 004767 007414 JSR PC,TYPOUT ;POINTED TO BY PEND
2345 023234 016700 012632 MOV PSN03,R0 ;PRINT PASS NO.
2346 023240 004767 010026 JSR PC,DECPNT
2347 023244 012700 000040 MOV #40,R0 ;PRINT A SPACE
2348 023250 004767 010216 JSR PC,TTO
2349 023254 012700 000102 MOV #'B,R0 ;PRINT 'B' (TO INDICATE 'LOOP TEST)
2350 023260 004767 010206 JSR PC,TTO
2351 023264 005000 CLR R0
2352 023266 004767 010200 JSR PC,TTO ;PRINT NULLS TO ALLOW PRINT
2353 023272 004767 010174 JSR PC,TTO ;OF PASS NO. IN CASE RESET FOLLOWS
2354 023276 000207 REPETL: RTS PC ;RETURN
```

```
2356 .SBTTL NPR TESTS
2357
2358 023300 NPRTST: BDINIT RCVR ;CLEAR RECEIVER
2359 023306 BDINIT XMTR ;CLEAR XMTR
2360 023314 012777 010400 012622 MOV #10400,@TMMR ;SET MASTER AND AUTO ADDR
2361 023322 004767 000424 JSR PC,FILRCV ;FILL RCVR SILO
2362 023326 012777 177600 012624 MOV #-128,@RDBC ;SET UP RCVR TO INITIATE
2363 023334 016777 012576 012620 MOV TSDB,@RDBA ;NPR TO XMTR SILO
2364 023342 012777 040064 012602 MOV #40064,@RCR ;START NPR, INHIB ADDR INCR
2365 023350 016702 007036 MOV DLCON,R2
2366 023354 005003 NPTST1: CLR R3
2367 023356 012704 177777 MOV #-1,R4 ;SET UP FOR DELAY
2368 023362 022777 000200 012550 XRA1: CMP #128,@TSBC ;TRANSFERRED 64 WORDS?
2369 023370 001422 BEQ XRA2 ;NO, KEEP LOOKING FOR A SECOND
2370 023372 005203 INC R3
2371 023374 001372 BNE XRA1
2372 023376 005204 INC R4
2373 023400 001370 BNE XRA1
2374 023402 005302 DEC R2
2375 023404 001363 BNE NPTST1
2376 023406 ERROR \N ;ERROR:RCVR NPR NOT COMPLETE IN TIME
(1) ;***** ERROR 300 *****
(1) 023406 032777 040000 006774 BIT #B14,@SR
(1) 023414 001005 BNE .+14
(1) 023416 012767 000300 007216 MOV #300,ERRNUM
(1) 023424 004767 006764 JSR PC,ERR
(1) 000301 = N+1
2377 023430 N SCOPE NPRTST
(1) 023430 004567 160572 JSR R5,SCPRTN
(1) 023434 023300 NPRTST
2378 023436 004767 000352 XRA2: JSR PC,CHXDAT ;CHECK DATA IN XMTR SILO
2379 023442 000414 BR XRA2A ;DATA O.K., CONTINUE
2380 023444 DATERR \N ;ERROR:BAD DATA NPR'D TO XMTR SILO
(1) ;***** ERROR 301 *****
(1) 023444 032777 040000 006736 BIT #B14,@SR
(1) 023452 001005 BNE .+14
(1) 023454 012767 000301 007160 MOV #301,ERRNUM
(1) 023462 004767 007012 JSR PC,DERR
(1) 000302 = N+1
2381 023466 N SCOPE NPRTST
(1) 023466 004567 160534 JSR R5,SCPRTN
(1) 023472 023300 NPRTST
2382 023474 005777 012460 XRA2A: TST @RDBC ;CHECK THAT RDBC = 0
2383 023500 BEQ XRA3
2384 023502 005067 007140 CLR GOOD
2385 023506 017767 012446 007130 MOV @RDBC,BAD
2386 023514 DATERR \N ;ERROR:RCV BYTE COUNT SHD BE 0 AT END OF NPR
(1) ;***** ERROR 302 *****
(1) 023514 032777 040000 006666 BIT #B14,@SR
(1) 023522 001005 BNE .+14
(1) 023524 012767 000302 007110 MOV #302,ERRNUM
(1) 023532 004767 006742 JSR PC,DERR
(1) 000303 = N+1
2387 023536 N SCOPE NPRTST
(1) 023536 004567 160464 JSR R5,SCPRTN
(1) 023542 023300 NPRTST
```


2388	023544				XRA3:	BDINIT	XMTR	:CLR XMTR
2389	023552					BDINIT	RCVR	:CLR RCVR
2390	023560	004767	000166			JSR	PC,FILRCV	:FILL RECEIVER SILO
2391	023564	012777	177600	012346		MOV	#-128,@TSBC	:SET UP FOR XMTR TO INITIATE
2392	023572	016777	012360	012342		MOV	RDDDB,@TSBA	:NPR FROM RCVR SILO
2393	023600	012777	040064	012324		MOV	#40064,@TCR	:SET TX NPR, INHIB ADR INC
2394	023606	016702	006600			MOV	DLCON,R2	
2395	023612	005003			XRA3A:	CLR	R3	
2396	023614	012704	177777			MOV	#-1,R4	:SET UP FOR 1 SEC DELAY
2397	023620	005777	012314		XRA4:	TST	@TSBC	:TRANSFERRED 64 WORDS?
2398	023624	001422				BEQ	XRA5	
2399	023626	005203				INC	R3	:IF NOT, WATCH FOR A SECOND
2400	023630	001373				BNE	XRA4	
2401	023632	005204				INC	R4	
2402	023634	001371				BNE	XRA4	
2403	023636	005302				DEC	R2	
2404	023640	001364				BNE	XRA3A	
2405	023642					ERROR	\N	:ERROR:XMTR NPR NOT COMPLETE IN 1 SEC
(1)								:***** ERROR 303 *****
(1)	023642	032777	040000	006540		BIT	#B14,@SR	
(1)	023650	001005				BNE	.+14	
(1)	023652	012767	000303	006762		MOV	#303,ERRNUM	
(1)	023660	004767	006530			JSR	PC,ERR	
(1)		000304			N	=	N+1	
2406	023664					SCOPE	XRA3	
(1)	023664	004567	160336			JSR	R5,SCPRTN	
(1)	023670	023544				XRA3		
2407	023672	004767	000116		XRA5:	JSR	PC,CHXDAT	:CHK DATA IN XMTR SILO
2408	023676	000414				BR	XRA6	
2409	023700					DATERR	\N	:ERROR:BAD DATA NPR'D TO XMTR SILO
(1)								:***** ERROR 304 *****
(1)	023700	032777	040000	006502		BIT	#B14,@SR	
(1)	023706	001005				BNE	.+14	
(1)	023710	012767	000304	006724		MOV	#304,ERRNUM	
(1)	023716	004767	006556			JSR	PC,DERR	
(1)		000305			N	=	N+1	
2410	023722					SCOPE	XRA3	
(1)	023722	004567	160300			JSR	R5,SCPRTN	
(1)	023726	023544				XRA3		
2411	023730	004767	005736		XRA6:	JSR	PC,MONIT	
2412	023734	032777	010000	006446		BIT	#B12,@SR	:SW 12 = 1?
2413	023742	001402				BEQ	XRART	:NO, EXIT
2414	023744	000167	177330			JMP	NPRTST	:YES, STAY HERE
2415	023750	000207			XRART:	RTS	PC	
2416	023752	012700	033564		FILRCV:	MOV	#SILDAT,R0	:R0 IS DATA POINTER
2417	023756	012777	000200	012166		MOV	#B07,@RCR	:SET RCVR 'LD SILO'
2418	023764	012701	000100			MOV	#64.,R1	:R1 IS WORD COUNTER
2419	023770	012077	012162		LDLP:	MOV	(R0)+,@Rddb	:MOVE WORDS INTO SILO
2420	023774	004567	160546			JSR	R5,DELAY	:WAIT FOR INPUT RDY
2421	024000	000005				.WORD	5	
2422	024002	005301				DEC	R1	:LOADED ALL 64 WORDS?
2423	024004	001371				BNE	LDLP	:IF NOT, CONTINUE LOADING
2424	024006	005077	012140			CLR	@RCR	:CLR RCR AND EXIT
2425	024012	000207				RTS	PC	
2426								
2427	024014	012702	000100		CHXDAT:	MOV	#64.,R2	:R2 IS WORD COUNTER

CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 I 7
NPR TESTS PAGE 39-2

SEQ 0086

2428	024020	012701	033564			MOV	#SILDAT,R1	:R1 POINTS TO GOOD DATA
2429	024024	052777	000200	012100		BIS	#B07,@TCR	:SET 'RD SILO' IN XMTR
2430	024032	017767	012100	006604	XRCNT:	MOV	@TSDB,BAD	:POP SILO WORD INTO BAD
2431	024040	012167	006602			MOV	(R1)+,GOOD	:POP LIST WORD INTO GOOD
2432	024044	026767	006576	006572		CMP	GOOD,BAD	
2433	024052	001005				BNE	XRERXT	:IF DATA BAD, ERROR EXIT
2434	024054	005302				DEC	R2	:DONE CHECKING SILO?
2435	024056	001365				BNE	XRCNT	:NO, CONTINUE
2436	024060	005077	012046		XRLV:	CLR	@TCR	:CLR COMMAND REG
2437	024064	000207				RTS	PC	:EXIT
2438	024066	062716	000002		XRERXT:	ADD	#2,(SP)	:FIX PC FOR ERROR RETURN
2439	024072	000772				BR	XRLV	


```
2441          .SBTTL DATA LOOPS TESTS
2442
2443 024074      DATLPS: BDINIT XMTR          :CLR XMTR
2444 024102      BDINIT RCVR          :CLR RCVR
2445 024110 012777 177777 012020      MOV #-1,@TSDB :LOAD A WORD INTO TXM SILO
2446 024116 012777 010400 012020      MOV #10400,@TMMR :SET MASTER FLOP & SET AUTO ADDR
2447 024124 012777 177776 012026      MOV #-2,@RDBC  :SET BYTE COUNT FOR 1 WORD
2448 024132 016777 011746 011772      MOV RCAD,@TCR  :LOAD DESTINATION CODE
2449 024140 052777 020000 012004      BIS #B13,@RCR  :SET RCV WD
2450 024146 012777 177776 011764      MOV #-2,@TSBC  :SET XMTR BYTE CNT FOR 1 WORD
2451 024154 052777 020000 011750      BIS #B13,@TCR  :SET SEND WORD
2452 024162 016704 006224              MOV DLCON,R4
2453 024166 012703 177500              DTLPS1: MOV #177500,R3 :SET UP 2 MS DELAY
2454 024172 005777 011756              XRB1:  TST @RSR   :ANY ERRORS?
2455 024176 100427                    BMI 2$          :YES
2456 024200 032777 000400 011746      BIT #B08,@RSR  :IS DAT OUTP RDY SET IN RCVR?
2457 024206 001020                    BNE 1$
2458 024210 005203                    INC R3          :WAIT A COUPLE OF MS FOR IT
2459 024212 001367                    BNE XRB1
2460 024214 005304                    DEC R4
2461 024216 001363                    BNE DTLPS1
2462 024220      ERROR \N              :ERROR:DAT OUTP RDY IN RCVR NOT SET IN 2 MS.
(1)                                     :***** ERROR 305 *****
(1) 024220 032777 040000 006162      BIT #B14,@SR
(1) 024226 001005                    BNE .+14
(1) 024230 012767 000305 006404      MOV #305,ERRNUM
(1) 024236 004767 006152              JSR PC,ERR
(1)                                     = N+1
2463 024242      N SCOPE DATLPS
(1) 024242 004567 157760              JSR R5,SCPRTN
(1) 024246 024074                    DATLPS
2464 024250 005777 011700              1$: TST @RSR   :ANY HARD ERRORS?
2465 024254 100030                    BPL XRB2
2466 024256      2$: ERROR \N          :ERROR: HARD ERROR ON 1 WD XFER
(1)                                     :***** ERROR 306 *****
(1) 024256 032777 040000 006124      BIT #B14,@SR
(1) 024264 001005                    BNE .+14
(1) 024266 012767 000306 006346      MOV #306,ERRNUM
(1) 024274 004767 006114              JSR PC,ERR
(1)                                     = N+1
2467 024300 032777 040000 006102      N BIT #B14,@SR :CHECK FOR PRINT INHIBIT
2468 024306 001010                    BNE XRB1S      :SKIP EXT PRINTOUT IF SW 14=1
2469 024310      PNTM RCSTAT          :ELSE PRINT 'RECEIVER STATUS = '
(1) 024310 012700 034607              MOV #RCSTAT,R0 :PRINT MESSAGE
(1) 024314 004767 006330              JSR PC,TYPQUT  :POINTED TO BY RCSTAT
2470 024320 017700 011630              MOV @RSR,R0
2471 024324 004767 006636              JSR PC,OCTPNT :PRINT CONTENTS OF RSR
2472 024330      XRB1S: SCOPE DATLPS
(1) 024330 004567 157672              JSR R5,SCPRTN
(1) 024334 024074                    DATLPS
2473 024336 105777 011572              XRB2: TSTB @TSR :IS SUC TXF SET IN XMTR?
2474 024342 100433                    BMI XRB3
2475 024344      ERROR \N              :ERROR:SUC TXF IN XMTR NOT SET IN 2 MS.
(1)                                     :***** ERROR 307 *****
(1) 024344 032777 040000 006036      BIT #B14,@SR
(1) 024352 001005                    BNE .+14
```

(1)	024354	012767	000307	006260		MOV	#307,ERRNUM	
(1)	024362	004767	006026			JSR	PC,ERR	
(1)		000310			N	=	N+1	
2476	024366	005777	011542			TST	@TSR	:ANY HARD ERRORS?
2477	024372	100014				BPL	XRBS2	
2478	024374	032777	040000	006006		BIT	#B14,@SR	:CHECK IF PRINT ALLOWED
2479	024402	001010				BNE	XRBS2	:IF NOT, SKIP IT.
2480	024404					PNTM	TXSTAT	:IF SO, PRINT 'TRANSMITTER STATUS = ''
(1)	024404	012700	034554			MOV	#TXSTAT,R0	:PRINT MESSAGE
(1)	024410	004767	006234			JSR	PC,TYPOUT	:POINTED TO BY TXSTAT
2481	024414	017700	011514			MOV	@TSR,R0	
2482	024420	004767	006542			JSR	PC,OCTPNT	:PRINT CONTENTS OF TSR
2483	024424				XRBS2:	SCOPE	DATLPS	
(1)	024424	004567	157576			JSR	R5,SCPRTN	
(1)	024430	024074				DATLPS		
2484	024432	012767	177777	006206	XRBS3:	MOV	#-1,GOOD	
2485	024440	017767	011512	006176		MOV	@RDDDB,BAD	:CHECK DATA RECEIVED
2486	024446	026767	006174	006170		CMP	GOOD,BAD	:IS IT O.K. ?
2487	024454	001414				BEQ	XRBS4	
2488	024456					DATERR	\N	:ERROR:DATA RECEIVED IS WRONG (DROPPED BITS)
(1)								:***** ERROR 310 *****
(1)	024456	032777	040000	005724		BIT	#B14,@SR	
(1)	024464	001005				BNE	.+14	
(1)	024466	012767	000310	006146		MOV	#310,ERRNUM	
(1)	024474	004767	006000			JSR	PC,DERR	
(1)		000311			N	=	N+1	
2489	024500					SCOPE	DATLPS	
(1)	024500	004567	157522			JSR	R5,SCPRTN	
(1)	024504	024074				DATLPS		
2490	024506	016767	011374	006132	XRBS4:	MOV	TRAD,GOOD	:GET TRANSMITTER IDB BUS ADDRESS
2491	024514	017767	011432	006122		MOV	@RCR,BAD	:READ IDENT BITS IN RCR
2492	024522	042767	160377	006114		BIC	#160377,BAD	:IGNORE ALL OTHER BITS
2493	024530	026767	006112	006106		CMP	GOOD,BAD	:D.C. RECEIVED OK?
2494	024536	001414				BEQ	XRBS4C	
2495	024540					DATERR	\N	:ERROR:XMTR IDENT BITS NOT REC'D BY RCVR
(1)								:***** ERROR 311 *****
(1)	024540	032777	040000	005642		BIT	#B14,@SR	
(1)	024546	001005				BNE	.+14	
(1)	024550	012767	000311	006064		MOV	#311,ERRNUM	
(1)	024556	004767	005716			JSR	PC,DERR	
(1)		000312			N	=	N+1	
2496	024562					SCOPE	DATLPS	
(1)	024562	004567	157440			JSR	R5,SCPRTN	
(1)	024566	024074				DATLPS		
2497	024570				XRBS4C:	BDINIT	XMTR	:CLR XMTR
2498	024576					BDINIT	RCVR	:CLR RCVR
2499	024604	012777	000000	011324		MOV	#0,@TSDB	:LOAD A WORD OF 0'S INTO SILO
2500	024612	012777	177776	011320		MOV	#-2,@TSBC	:SET BYTE CNT FOR 1 WORD
2501	024620	012777	177776	011332		MOV	#-2,@RDBC	
2502	024626	016777	011252	011276		MOV	RCAD,@TCR	:POINT XMTR AT RCVR
2503	024634	052777	020000	011310		BIS	#B13,@RCR	:SET RCV WD
2504	024642	052777	020000	011262		BIS	#B13,@TCR	:SET SND WD
2505	024650	016704	005536			MOV	DLCON,R4	
2506	024654	012703	177570		XRBS4D:	MOV	#177570,R3	:SET UP 2 MS DELAY
2507	024660	005777	011270		XRBS5:	TST	@RSR	:ANY ERRORS?
2508	024664	100427				BMI	2\$:YES, ERROR

2509	024666	032777	000400	011260		BIT	#B08,@RSR		:DATA OUTPUT READY YET?
2510	024674	001020				BNE	1\$		
2511	024676	005203				INC	R3		:WAIT A COUPLE OF MS FOR IT
2512	024700	001367				BNE	XR85		
2513	024702	005304				DEC	R4		
2514	024704	001363				BNE	XR84D		
2515	024706					ERROR	\N		:ERROR:DAT OUTP RDY IN RCVR NOT SET IN 2 MS. :***** ERROR 312 *****
(1)									
(1)	024706	032777	040000	005474		BIT	#B14,@SR		
(1)	024714	001005				BNE	+.14		
(1)	024716	012767	000312	005716		MOV	#312,ERRNUM		
(1)	024724	004767	005464			JSR	PC,ERR		
(1)		000313			N	=	N+1		
2516	024730					SCOPE	XR84C		
(1)	024730	004567	157272			JSR	R5,SCPRTN		
(1)	024734	024570				XR84C			
2517	024736	005777	011212		1\$:	TST	@RSR		:ANY HARD ERRORS IN RCVR?
2518	024742	100030				BPL	XR86		
2519	024744				2\$:	ERROR	\N		:ERROR:HARD ERROR ON 1 WD XFER :***** ERROR 313 *****
(1)									
(1)	024744	032777	040000	005436		BIT	#B14,@SR		
(1)	024752	001005				BNE	+.14		
(1)	024754	012767	000313	005660		MOV	#313,ERRNUM		
(1)	024762	004767	005426			JSR	PC,ERR		
(1)		000314			N	=	N+1		
2520	024766	032777	040000	005414		BIT	#B14,@SR		:CHECK IF PRINT ALLOWED
2521	024774	001013				BNE	XR86		:IF NOT, SKIP IT.
2522	024776					PNTM	RCSTAT		:IF SO, PRINT 'RECEIVER STATUS = ''
(1)	024776	012700	034607			MOV	#RCSTAT,R0		:PRINT MESSAGE
(1)	025002	004767	005642			JSR	PC,TYPOUT		:POINTED TO BY RCSTAT
2523	025006	017700	011142			MOV	@RSR,R0		
2524	025012	004767	006150			JSR	PC,OCTPNT		:PRINT CONTENTS OF RSR
2525	025016					SCOPE	XR84C		
(1)	025016	004567	157204			JSR	R5,SCPRTN		
(1)	025022	024570				XR84C			
2526	025024	105777	011104		XR86:	TSTB	@TSR		:IS SUC TXF SET IN XMTR?
2527	025030	100433				BMI	XR87		
2528	025032					ERROR	\N		:ERROR:SUC TXF IN XMTR NOT SET IN 2 MS. :***** ERROR 314 *****
(1)									
(1)	025032	032777	040000	005350		BIT	#B14,@SR		
(1)	025040	001005				BNE	+.14		
(1)	025042	012767	000314	005572		MOV	#314,ERRNUM		
(1)	025050	004767	005340			JSR	PC,ERR		
(1)		000315			N	=	N+1		
2529	025054	005777	011054			TST	@TSR		:ANY HARD ERRORS IN XMTR?
2530	025060	100014				BPL	XR86S		
2531	025062	032777	040000	005320		BIT	#B14,@SR		:CHECK IF PRINT ALLOWED
2532	025070	001010				BNE	XR86S		:IF NOT, SKIP IT
2533	025072					PNTM	TXSTAT		:IF SO, PRINT 'TRANSMITTER STATUS = ''
(1)	025072	012700	034554			MOV	#TXSTAT,R0		:PRINT MESSAGE
(1)	025076	004767	005546			JSR	PC,TYPOUT		:POINTED TO BY TXSTAT
2534	025102	017700	011026			MOV	@TSR,R0		
2535	025106	004767	006054			JSR	PC,OCTPNT		:PRINT CONTENTS OF TSR
2536	025112				XR86S:	SCOPE	XR84C		
(1)	025112	004567	157110			JSR	R5,SCPRTN		
(1)	025116	024570				XR84C			

```

2537 025120 005067 005522 XRB7: CLR GOOD
2538 025124 017767 011026 005512 MOV @Rddb,BAD ;CHECK DATA RECEIVED
2539 025132 026767 005510 005504 CMP GOOD,BAD ;IS IT O.K.?
2540 025140 001414 BEQ XRB8
2541 025142 DATERR \N ;ERROR:DATA RECEIVED IS WRONG (PICKED UP BITS)
(1) ;***** ERROR 315 *****
(1) 025142 032777 040000 005240 BIT #B14,@SR
(1) 025150 001005 BNE .+14
(1) 025152 012767 000315 005462 MOV #315,ERRNUM
(1) 025160 004767 005314 JSR PC,DERR
(1) 000316 = N+1
2542 025164 SCOPE XRB4C
(1) 025164 004567 157036 JSR R5,SCPRTN
(1) 025170 024570 XRB4C
2543 025172 004767 173012 XRB8: JSR PC,CLRCBF ;MAKE SURE CMPBUF IS CLEAR
2544 025176 BDINIT XMTR ;CLR XMTR
2545 025204 BDINIT RCVR ;CLR RCVR
2546 025212 012777 033564 010722 MOV #SILDAT,@TSBA ;GET XMTR DATA FROM SILDAT
2547 025220 012777 034164 010734 MOV #CMPBUF,@RDBA ;PUT RCV'D DATA IN CMPBUF
2548 025226 012777 177600 010704 MOV #-128,@TSBC ;SET UP TO SEND 64 WORDS
2549 025234 012777 177600 010716 MOV #-128,@RDBC ;SET UP TO RECEIVE 64 WORDS
2550 025242 016777 010636 010662 MOV RCAD,@TCR ;POINT XMTR AT RCVR
2551 025250 052777 060001 010674 BIS #60001,@RCR ;SET RC NPR, RCV WD, & ST TXF IN RCVR
2552 025256 052777 060001 010646 BIS #60001,@TCR ;AND IN XMTR
2553 025264 016702 005122 MOV DLCON,R2
2554 025270 005003 XRB8A: CLR R3
2555 025272 012704 177777 MOV #-1,R4 ;SET UP 1 SEC DELAY
2556 025276 105777 010632 XRB9: TSTB @TSR ;IS SUC TXF SET IN XMTR?
2557 025302 100447 BMI XRB10 ;YES, GO CHECK RECEIVER
2558 025304 005777 010624 TST @TSR ;ERROR BIT SET?
2559 025310 100411 BMI $2$ ;RCVR ERROR BIT SET?
2560 025312 005777 010636 TST @RSR ;NO, WATCH FOR A SECOND
2561 025316 100444 BMI $3$
2562 025320 005203 INC R3
2563 025322 001365 BNE XRB9
2564 025324 005204 INC R4
2565 025326 001363 BNE XRB9
2566 025330 005302 DEC R2
2567 025332 001356 BNE XRB8A
2568 025334 $2$: ERROR \N ;ERROR:NO SUC TXF IN XMTR IN 1 SEC
(1) ;***** ERROR 316 *****
(1) 025334 032777 040000 005046 BIT #B14,@SR
(1) 025342 001005 BNE .+14
(1) 025344 012767 000316 005270 MOV #316,ERRNUM
(1) 025352 004767 005036 JSR PC,ERR
(1) 000317 = N+1
2569 025356 005777 010552 TST @TSR ;ANY HARD ERRORS IN XMTR?
2570 025362 100014 BPL XRB9S
2571 025364 032777 040000 005016 BIT #B14,@SR ;CHECK IF PRINT ALLOWED
2572 025372 001010 BNE XRB9S ;IF NOT, SKIP IT
2573 025374 PNTM TXSTAT ;IF SO, PRINT 'TRANSMITTER STATUS = '
(1) 025374 012700 034554 MOV #TXSTAT,R0 ;PRINT MESSAGE
(1) 025400 004767 005244 JSR PC,TYPOUT ;POINTED TO BY TXSTAT
2574 025404 017700 010524 MOV @TSR,R0
2575 025410 004767 005552 JSR PC,OCTPNT ;PRINT CONTENTS OF TSR
2576 025414 XRB9S: SCOPE XRB8
  
```


(1)	025414	004567	156606		JSR	R5,SCRPTN	
(1)	025420	025172			XRB8		
2577	025422	105777	010526		XRB10: TSTB	@RSR	: IS SUC TXF SET IN RCVR?
2578	025426	100433			BMI	XRB11	: YES, GO CHECK DATA
2579	025430				\$3\$: ERROR	\N	: ERROR:NO SUC TXF IN RCVR IN 1 SEC
(1)							:***** ERROR 317 *****
(1)	025430	032777	040000	004752	BIT	#B14,@SR	
(1)	025436	001005			BNE	.+14	
(1)	025440	012767	000317	005174	MOV	#317,ERRNUM	
(1)	025446	004767	004742		JSR	PC,ERR	
(1)		000320			=	N+1	
2580	025452	005777	010476		TST	@RSR	: ANY HARD ERRORS IN RCVR?
2581	025456	100014			BPL	XRB10S	
2582	025460	032777	040000	004722	BIT	#B14,@SR	: CHECK IF PRINT ALLOWED
2583	025466	001010			BNE	XRB10S	: IF NOT, SKIP IT
2584	025470				PNTM	RCSTAT	: IF SO, PRINT 'RECEIVER STATUS = ''
(1)	025470	012700	034607		MOV	#RCSTAT,R0	: PRINT MESSAGE
(1)	025474	004767	005150		JSR	PC,TYPOUT	: POINTED TO BY RCSTAT
2585	025500	017700	010450		MOV	@RSR,R0	
2586	025504	004767	005456		JSR	PC,OCTPNT	: PRINT CONTENTS OF RSR
2587	025510				XRB10S: SCOPE	XRB8	
(1)	025510	004567	156512		JSR	R5,SCRPTN	
(1)	025514	025172			XRB8		
2588	025516	012703	000100		XRB11: MOV	#64.,R3	: R3 IS WORD COUNTER
2589	025522	012701	033564		MOV	#SILDAT,R1	: R1 IS GOOD DATA POINTER
2590	025526	012702	034164		MOV	#CMPBUF,R2	: R2 IS 'BAD' DATA POINTER
2591	025532	012167	005110		XRB11L: MOV	(R1)+,GOOD	
2592	025536	012267	005102		MOV	(R2)+,BAD	
2593	025542	026767	005100	005074	CMP	GOOD,BAD	: DATA WORD OK?
2594	025550	001420			BEQ	XRB11C	: IF SO, CONTINUE
2595	025552				DATERR	\N	: ERROR:BAD DATA RECEIVED FROM XMTR
(1)							:***** ERROR 320 *****
(1)	025552	032777	040000	004630	BIT	#B14,@SR	
(1)	025560	001005			BNE	.+14	
(1)	025562	012767	000320	005052	MOV	#320,ERRNUM	
(1)	025570	004767	004704		JSR	PC,DERR	
(1)		000321			=	N+1	
2596	025574	005303			DEC	R3	: CHECKED ALL WORDS?
2597	025576	001355			BNE	XRB11L	
2598	025600				SCOPE	XRB8	: RE-TRY BECAUSE OF ERROR
(1)	025600	004567	156422		JSR	R5,SCRPTN	
(1)	025604	025172			XRB8		
2599	025606	000167	000004		JMP	XRB12	
2600	025612	005303			XRB11C: DEC	R3	: CHECKED ALL WORDS?
2601	025614	001346			BNE	XRB11L	
2602	025616				XRB12: BDINIT	XMTR	: CLR XMTR
2603	025624				BDINIT	RCVR	: CLR RCVR
2604	025632	012777	036200	010302	MOV	#TSTWRD,@TSBA	: POINT XMTR AT LOC WITH TEST WORD
2605	025640	012777	177200	010272	MOV	#-600,@TSBC	: SET UP FOR 300 WORD XFR
2606	025646	016777	010232	010256	MOV	RCAD,@TCR	: POINT XMTR AT RCVR
2607	025654	012777	020001	010270	MOV	#20001,@RCR	: SET RCV WD, RCV DAT, IN RCVR
2608	025662	052777	060005	010242	BIS	#60005,@TCR	: SET TX NPR, INH ADR INC, ST TXM,&SND WD
2609	025670	012701	000300		MOV	#300,R1	: R1 COUNTS WORDS RECEIVED
2610	025674	016704	004512		XRB12L: MOV	DLCON,R4	
2611	025700	012703	177700		XRB12K: MOV	#-100,R3	: SET UP 10 MS COUNTER
2612	025704	032777	000400	010242	XRB12M: BIT	#B08,@RSR	: RCVR SILO RDY FOR OUTPUT?

2613	025712	001063			BNE	XRB13		:YES, LOOK AT WORD
2614	025714	005203			INC	R3		
2615	025716	001372			BNE	XRB12M		:IF NOT, WAIT 10 MS.
2616	025720	005304			DEC	R4		
2617	025722	001366			BNE	XRB12K		
2618	025724				ERROR	\N		:ERROR:NO DATA WORD IN RCVR SILO IN 10 MS. :***** ERROR 321 *****
(1)								
(1)	025724	032777	040000	004456	BIT	#B14,@SR		
(1)	025732	001005			BNE	.+14		
(1)	025734	012767	000321	004700	MOV	#321,ERRNUM		
(1)	025742	004767	004446		JSR	PC,ERR		
(1)		000322			=	N+1		
2619	025746	005777	010162		TST	@TSR		:ANY HARD ERRORS IN XMTR?
2620	025752	100014			BPL	XRB12R		
2621	025754	032777	040000	004426	BIT	#B14,@SR		:CHECK IF PRINT ALLOWED
2622	025762	001034			BNE	XRB12S		:IF NOT, SKIP IT
2623	025764				PNTM	TXSTAT		:IF SO, PRINT 'TRANSMITTER STATUS = ''
(1)	025764	012700	034554		MOV	#TXSTAT,R0		:PRINT MESSAGE
(1)	025770	004767	004654		JSR	PC,TYP0UT		:POINTED TO BY TXSTAT
2624	025774	017700	010134		MOV	@TSR,R0		
2625	026000	004767	005162		JSR	PC,OCTPNT		:PRINT CONTENTS OF TSR
2626	026004	005777	010144		XRB12R: TST	@RSR		:ANY HARD ERRORS IN RCVR?
2627	026010	100010			BPL	XRB12T		
2628	026012				PNTM	RCSTAT		:IF SO, PRINT 'RECEIVER STATUS = ''
(1)	026012	012700	034607		MOV	#RCSTAT,R0		:PRINT MESSAGE
(1)	026016	004767	004626		JSR	PC,TYP0UT		:POINTED TO BY RCSTAT
2629	026022	017700	010126		MOV	@RSR,R0		
2630	026026	004767	005134		JSR	PC,OCTPNT		:PRINT CONTENTS OF RSR
2631	026032				XRB12T: PNTM	RCBTCN		:PRINT 'NO. OF WORDS RECEIVED = ''
(1)	026032	012700	034637		MOV	#RCBTCN,R0		:PRINT MESSAGE
(1)	026036	004767	004606		JSR	PC,TYP0UT		:POINTED TO BY RCBTCN
2632	026042	012700	000300		MOV	#300,R0		
2633	026046	160100			SUB	R1,R0		:CALCULATE WORDS RECV'D
2634	026050	004767	005112		JSR	PC,OCTPNT		:PRINT RESULT
2635	026054				XRB12S: SCOPE	XRB12		:START ALL OVER
(1)	026054	004567	156146		JSR	R5,SCPRTN		
(1)	026060	025616			XRB12			
2636	026062	016767	010112	004556	XRB13: MOV	TSTWRD,GOOD		
2637	026070	017767	010062	004546	MOV	@Rddb,BAD		:GET WORD FROM SILO
2638	026076	026767	004544	004540	CMP	GOOD,BAD		:WAS IT = TEST WORD?
2639	026104	001431			BEQ	XRB13C		
2640	026106				DATERR	\N		:ERROR:DATA WORD IN RCVR SILO WRONG :***** ERROR 322 *****
(1)								
(1)	026106	032777	040000	004274	BIT	#B14,@SR		
(1)	026114	001005			BNE	.+14		
(1)	026116	012767	000322	004516	MOV	#322,ERRNUM		
(1)	026124	004767	004350		JSR	PC,DERR		
(1)		000323			=	N+1		
2641	026130	032777	040000	004252	BIT	#B14,@SR		:CHECK IF PRINT ALLOWED
2642	026136	001011			BNE	XRB13L		:IF NOT, SKIP IT.
2643	026140				PNTM	RCBTCN		:PRINT 'NO. OF WORDS RECEIVED = ''
(1)	026140	012700	034637		MOV	#RCBTCN,R0		:PRINT MESSAGE
(1)	026144	004767	004500		JSR	PC,TYP0UT		:POINTED TO BY RCBTCN
2644	026150	012700	000301		MOV	#301,R0		
2645	026154	160100			SUB	R1,R0		:CALCULATE WORDS RECV'D
2646	026156	004767	005004		JSR	PC,OCTPNT		:PRINT RESULT

2647	026162				XRB13L: SCOPE	XRB12	:START ALL OVER
(1)	026162	004567	156040		JSR	R5,SCPRTN	
(1)	026166	025616			XRB12		
2648	026170	005301			XRB13C: DEC	R1	:UPDATE RCVR WORD COUNT
2649	026172	001240			BNE	XRB12L	:GET ANOTHER WORD
2650	026174	016704	004212		MOV	DLCON,R4	
2651	026200	012703	177000		XRB13E: MOV	#177000,R3	:SET UP TO WAIT FOR TXFR
2652	026204	005203			XRB13D: INC	R3	
2653	026206	001376			BNE	XRB13D	:WAIT FOR LATEST POSSIBLE TIMSL
2654	026210	105777	007720		TSTB	@TSR	:XMTR SUC TXF SET?
2655	026214	100435			BMI	XRB14	:YES,GO CHECK RCVR
2656	026216	005304			DEC	R4	
2657	026220	001367			BNE	XRB13E	
2658	026222				ERROR	\N	:ERROR:XMTR SUC TXF NOT SET
(1)							:***** ERROR 323 *****
(1)	026222	032777	040000	004160	BIT	#B14,@SR	
(1)	026230	001005			BNE	.+14	
(1)	026232	012767	000323	004402	MOV	#323,ERRNUM	
(1)	026240	004767	004150		JSR	PC,ERR	
(1)		000324			=	N+1	
2659	026244	005777	007664		TST	@TSR	:ANY HARD ERRORS IN XMTR?
2660	026250	100014			BPL	XRB13S	
2661	026252	032777	040000	004130	BIT	#B14,@SR	:CHECK IF PRINT ALLOWED
2662	026260	001010			BNE	XRB13S	:IF NOT, SKIP IT.
2663	026262				PNTM	TXSTAT	:IF SO, PRINT 'TRANSMITTER STATUS = ''
(1)	026262	012700	034554		MOV	#TXSTAT,R0	:PRINT MESSAGE
(1)	026266	004767	004356		JSR	PC,TYPOUT	:POINTED TO BY TXSTAT
2664	026272	017700	007636		MOV	@TSR,R0	
2665	026276	004767	004664		JSR	PC,OCTPNT	:PRINT CONTENTS OF TSR
2666	026302				XRB13S: SCOPE	XRB12	:START OVER
(1)	026302	004567	155720		JSR	R5,SCPRTN	
(1)	026306	025616			XRB12		
2667	026310	105777	007640		XRB14: TSTB	@RSR	:RCVR SUC TXF SET?
2668	026314	100433			BMI	XRB15	:YES, ALL DONE
2669	026316				ERROR	\N	:ERROR:RCVR SUC TXF NOT SET
(1)							:***** ERROR 324 *****
(1)	026316	032777	040000	004064	BIT	#B14,@SR	
(1)	026324	001005			BNE	.+14	
(1)	026326	012767	000324	004306	MOV	#324,ERRNUM	
(1)	026334	004767	004054		JSR	PC,ERR	
(1)		000325			=	N+1	
2670	026340	005777	007610		TST	@RSR	:ANY HARD ERRORS IN RCVR?
2671	026344	100014			BPL	XRB14S	
2672	026346	032777	040000	004034	BIT	#B14,@SR	:CHECK IF PRINT ALLOWED
2673	026354	001010			BNE	XRB14S	:IF NOT, SKIP IT.
2674	026356				PNTM	RCSTAT	:IF SO, PRINT 'RECEIVER STATUS = ''
(1)	026356	012700	034607		MOV	#RCSTAT,R0	:PRINT MESSAGE
(1)	026362	004767	004262		JSR	PC,TYPOUT	:POINTED TO BY RCSTAT
2675	026366	017700	007562		MOV	@RSR,R0	
2676	026372	004767	004570		JSR	PC,OCTPNT	:PRINT CONTENTS OF RSR
2677	026376				XRB14S: SCOPE	XRB12	:START OVER
(1)	026376	004567	155624		JSR	R5,SCPRTN	
(1)	026402	025616			XRB12		
2678	026404	004767	003262		XRB15: JSR	PC,MONIT	
2679	026410	032777	010000	003772	BIT	#B12,@SR	:SW 12 = 1?
2680	026416	001402			BEQ	XRBRT	:NO, EXIT

CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 ^{D 8} PAGE 40-7
DATA LOOPS TESTS

SEQ 0094

2681 026420 000167 175450
2682 026424 000207

XRBRT: JMP DATLPS
RTS PC

:YES, DON'T EXIT

.SBTTL TRANSMISSION ERRORS TESTS

2684
2685
2686
2687
2688
2689
2690
2691
2692
2693
2694
2695
2696
2697
2698
2699
2700
2701
2702
2703
2704
2705
2706
2707
2708
2709
2710
(1)
(1)
(1)
(1)
(1)
2711
(1)
(1)
2712
2713
2714
2715
2716
2717
2718
2719
2720
2721
2722
2723
2724
2725
2726
2727
2728
2729
2730
2731

026426
026434
026442 052777 010400 007474
026450 012777 177774 007462
026456 012777 177777 007452
026464 016777 007414 007440
026472 052777 020000 007452
026500 052777 020000 007424
026506 016702 003700
026512 005003
026514 012704 177775
026520 032777 002000 007426
026526 001022
026530 005203
026532 001372
026534 005204
026536 001370
026540 005302
026542 001363
026544
(1) 026544 032777 040000 003636
(1) 026552 001005
(1) 026554 012767 000325 004060
(1) 026562 004767 003626
(1) 000326
2711 026566
(1) 026566 004567 155434
(1) 026572 026426
026574
026602
026610 012777 177774 007322
026616 016777 007262 007306
026624 012777 177777 007304
026632 052777 000200 007272
026640 052777 020001 007304
026646 004567 155674
026652 000010
026654 005777 007256
026660 042777 000200 007244
026666 016704 003520
026672 012703 177757
026676 005203

```
:TEST TO CHECK FOR RCVR TIMEOUT.  
:OPEN CHANNEL, THEN DON'T SEND ANY DATA FOR  
: 3 SECONDS.  
  
TXMERS: BDINIT XMTR :CLR XMTR  
BDINIT RCVR :CLR RCVR  
BIS #10400,@TMTR :SET MASTER & AUTO ADDR  
MOV #-4,@TSBC :INDICATE 2 WD XFR  
MOV #-1,@TSDB :PUT 1 WD IN XMTR SILO  
MOV RCAD,@TCR :POINT XMTR AT RCVR  
BIS #B13,@RCR :SET RCV WD  
BIS #B13,@TCR :SET SND WD  
MOV DLCON,R2  
TXMR1: CLR R3  
MOV #-3,R4 :SET UP 1 SEC DELAY  
XRC1: BIT #B10,@RSR :IS RCVR TIMEOUT SET?  
BNE XRC2 :IF NOT, WAIT 3 SEC FOR IT  
INC R3  
BNE XRC1  
INC R4  
BNE XRC1  
DEC R2  
BNE TXMR1  
ERROR \N :ERROR:NO TIMEOUT IN 3 SEC WITH NULL ON INPUT  
:***** ERROR 325 *****  
  
BIT #B14,@SR  
BNE .+14  
MOV #325,ERRNUM  
JSR PC,ERR  
= N+1  
SCOPE TXMERS  
JSR R5,SCPRTN  
TXMERS  
  
:TEST TO DETERMINE THAT ADDRESSING RCVR AND GENERATING A NULL  
:CYCLE FIRST PROPERLY GENERATES CORRECT RESPONSE CODES  
:AND THAT THE RECEIVER DOES NOT RESPOND.  
:CHANNEL IS OPENED BY POPPING A WORD FROM XMTR SILO.  
  
XRC2: BDINIT XMTR :CLR XMTR  
BDINIT RCVR :CLR RCVR  
MOV #-4,@TSBC :SET UP FOR 1 WD XFR  
MOV RCAD,@TCR :POINT XMTR AT RCVR  
MOV #-1,@TSDB :PUT 1 WD INTO TXM SILO  
BIS #B07,@TCR :SET RD SILO  
BIS #B13+B00,@RCR :SET RCV WD AND RCV DATA  
JSR R5,DELAY :WAIT FOR WORD TO HIT BOTTOM  
.WORD 10  
TST @TSDB :POP WORD OUT  
BIC #B07,@TCR :CLR RD SILO  
MOV DLCON,R4  
XRC2D: MOV #177757,R3 :SET UP TO STALL 100 US.  
XRC2A: INC R3
```

2732	026700	001376				BNE	XRC2A		:STALL (WAIT FOR TIME SLICE
2733	026702	005304				DEC	R4		
2734	026704	001372				BNE	XRC2D		
2735	026706	012767	000000	003732		MOV	#0,GOOD		
2736	026714	017767	007234	003722		MOV	@RSR,BAD		:CHK RESPONSE CODES IN RCVR
2737	026722	042767	177760	003714		BIC	#177760,BAD		
2738	026730	026767	003712	003706		CMP	GOOD,BAD		:RSP CODES = 00 & 00 ?
2739	026736	001414				BEQ	XRC3		
2740	026740					DATERR	\N		:ERROR:RESPONSE CODES AT RECEIVER WRONG
(1)									:***** ERROR 326 *****
(1)	026740	032777	040000	003442		BIT	#B14,@SR		
(1)	026746	001005				BNE	.+14		
(1)	026750	012767	000326	003664		MOV	#326,ERRNUM		
(1)	026756	004767	003516			JSR	PC,DERR		
(1)		000327			N	=	N+1		
2741	026762					SCOPE	XRC2		
(1)	026762	004567	155240			JSR	R5,SCPRTN		
(1)	026766	026574				XRC2			
2742	026770	012767	000001	003650	XRC3:	MOV	#1,GOOD		
2743	026776	017767	007132	003640		MOV	@TSR,BAD		:CHECK RESPONSE CODES IN XMTR
2744	027004	042767	177760	003632		BIC	#177760,BAD		
2745	027012	026767	003630	003624		CMP	GOOD,BAD		:RSP CODES = 00 & 01 ?
2746	027020	001414				BEQ	XRC4		
2747	027022					DATERR	\N		:ERROR:RSP CODES AT XMTR WRONG
(1)									:***** ERROR 327 *****
(1)	027022	032777	040000	003360		BIT	#B14,@SR		
(1)	027030	001005				BNE	.+14		
(1)	027032	012767	000327	003602		MOV	#327,ERRNUM		
(1)	027040	004767	003434			JSR	PC,DERR		
(1)		000330			N	=	N+1		
2748	027044					SCOPE	XRC2		
(1)	027044	004567	155156			JSR	R5,SCPRTN		
(1)	027050	026574				XRC2			
2749	027052	032777	010000	007074	XRC4:	BIT	#B12,@RSR		:IS RSR BIT 12 (TXM ERR) SET?
2750	027060	001414				BEQ	XRC5		:ERROR:RCVR SHOULD NOT BE ADDRESSED
2751	027062					ERROR	\N		:UPON OPENING A CHANNEL WITH INVALID WORD
(1)									:***** ERROR 330 *****
(1)	027062	032777	040000	003320		BIT	#B14,@SR		
(1)	027070	001005				BNE	.+14		
(1)	027072	012767	000330	003542		MOV	#330,ERRNUM		
(1)	027100	004767	003310			JSR	PC,ERR		
(1)		000331			N	=	N+1		
2752	027104					SCOPE	XRC2		
(1)	027104	004567	155116			JSR	R5,SCPRTN		
(1)	027110	026574				XRC2			
2753									
2754									
2755									
2756									
2757									
2758									
2759	027112				XRC5:	BDINIT	XMTR		:CLR XMTR
2760	027120					BDINIT	RCVR		:CLR RCVR
2761	027126	012777	177774	007004		MOV	#-4,@TSBC		:SET UP FOR 2 WD XFR
2762	027134	012777	177777	006774		MOV	#-1,@TSDB		:LOAD A WORD INTO XMTR SILO
2763	027142	016777	006736	006762		MOV	RCAD,@TCR		:POINT XMTR AT RCVR

2764	027150	012777	177777	006760		MOV	#-1,@TSDa	:LOAD 2ND WORD
2765	027156	052777	020000	006766		BIS	#B13,@RCR	:SET RCV WORD
2766	027164	052777	020000	006740		BIS	#B13,@TCR	:SET SND WORD
2767	027172	016704	003214			MOV	DLCON,R4	
2768	027176	012703	177500		XRC5A:	MOV	#177500,R3	:SET UP FOR DELAY
2769	027202	132777	000010	006736	XRC6:	BITB	#B03,@TMMRH	:CHECK FOR CHANNEL OPEN
2770	027210	001020				BNE	XRC6A	
2771	027212	005203				INC	R3	:WAIT A BIT
2772	027214	001372				BNE	XRC6	
2773	027216	005304				DEC	R4	
2774	027220	001366				BNE	XRC5A	
2775	027222					ERROR	\N	:ERROR:CANNOT GET 'CHAN OPEN' IN XMTR :***** ERROR 331 *****
(1)								
(1)	027222	032777	040000	003160		BIT	#B14,@SR	
(1)	027230	001005				BNE	.+14	
(1)	027232	012767	000331	003402		MOV	#331,ERRNUM	
(1)	027240	004767	003150			JSR	PC,ERR	
(1)		000332			N	=	N+1	
2776	027244					SCOPE	XRC5	
(1)	027244	004567	154756			JSR	R5,SCRPTN	
(1)	027250	027112				XRC5		
2777	027252	132777	000020	006674	XRC6A:	BITB	#B04,@RSR	:CHECK FOR CHANNEL OPEN IN RCVR
2778	027260	001014				BNE	XRC7	
2779	027262					ERROR	\N	:ERROR:CANNOT GET 'CHANNEL OPEN' IN RCVR :***** ERROR 332 *****
(1)								
(1)	027262	032777	040000	003120		BIT	#B14,@SR	
(1)	027270	001005				BNE	.+14	
(1)	027272	012767	000332	003342		MOV	#332,ERRNUM	
(1)	027300	004767	003110			JSR	PC,ERR	
(1)		000333			N	=	N+1	
2780	027304					SCOPE	XRC5	
(1)	027304	004567	154716			JSR	R5,SCRPTN	
(1)	027310	027112				XRC5		
2781								
2782	027312	052777	010000	006614	XRC7:	BIS	#B12,@TSR	:KNOCK DOWN THE XMTR
2783	027320	016704	003066			MOV	DLCON,R4	
2784	027324	012703	177757		XRC7D:	MOV	#177757,R3	:SET UP TO STALL 100 US.
2785	027330	005203			XRC7A:	INC	R3	:STALL (WAIT FOR TIME SLICE)
2786	027332	001376				BNE	XRC7A	
2787	027334	005304				DEC	R4	
2788	027336	001372				BNE	XRC7D	
2789	027340	012767	000004	003300		MOV	#4,GOOD	
2790	027346	017767	006602	003270		MOV	@RSR,BAD	
2791	027354	042767	177760	003262		BIC	#177760,BAD	:ARE RESPONSE CODES = 01 & 00 ?
2792	027362	026767	003260	003254		CMP	GOOD,BAD	
2793	027370	001414				BEQ	XRC8	
2794	027372					DATERR	\N	:ERROR:RCVR RSP CODES WRONG :***** ERROR 333 *****
(1)								
(1)	027372	032777	040000	003010		BIT	#B14,@SR	
(1)	027400	001005				BNE	.+14	
(1)	027402	012767	000333	003232		MOV	#333,ERRNUM	
(1)	027410	004767	003064			JSR	PC,DERR	
(1)		000334			N	=	N+1	
2795	027414					SCOPE	XRC5	
(1)	027414	004567	154606			JSR	R5,SCRPTN	
(1)	027420	027112				XRC5		

```
2796 027422 032777 010000 006524 XRC8: BIT #B12,@RSR ;IS RSR BIT 12 (TXM ERR) SET?
2797 027430 001014 BNE XRC9 ;ERROR:XMTR OFF LINE WHILE CHAN OPEN
2798 027432 ERROR \N ;DIDN'T SET RCVR TXM ERR
(1) ;***** ERROR 334 *****
(1) 027432 032777 040000 002750 BIT #B14,@SR
(1) 027440 001005 BNE .+14
(1) 027442 012767 000334 003172 MOV #334,ERRNUM
(1) 027450 004767 002740 JSR PC,ERR
(1) 000335 = N+1
2799 027454 N SCOPE XRC5
(1) 027454 004567 154546 JSR R5,SCRPTN
(1) 027460 027112 XRC5

;TEST TO DETERMINE IF INCORRECT CRC WILL CAUSE A CHECK-FAIL
;AND GENERATE CORRECT RESPONSES IN RCVR AND XMTR THEREBY CAUSING
;TRANSMISSION ERRORS IN BOTH.

2805 027462 XRC9: BDINIT XMTR ;CLR XMTR
2806 027470 BDINIT RCVR ;CLR RCVR
2807 027476 012777 177772 006434 MOV #-6,@TSBC ;SET UP FOR 3 WD XFR
2808 027504 012777 177777 006424 MOV #-1,@TSDB ;LOAD A WORD INTO XMTR SILO
2809 027512 012777 000002 006416 MOV #2,@TSDB ;LOAD 2ND WORD INTO XMTR SILO
2810 027520 012777 177772 006432 MOV #-6,@RDBC
2811 027526 012777 177775 006402 MOV #-3,@TSDB ;LOAD 3RD WORD INTO XMTR SILO
2812 027534 016777 006344 006370 MOV RCAD,@TCR ;POINT XMTR AT RCVR
2813 027542 052777 020000 006402 BIS #B13,@RCR ;SET RCV WD
2814 027550 052777 020000 006354 BIS #B13,@TCR ;SET SND WD
2815 027556 105777 006352 XRC10: TSTB @TSR ;WAIT FOR SUC TXF
2816 027562 100375 BPL XRC10
2817 027564 052777 000200 006340 BIS #B07,@TCR ;SET XMTR RD SILO
2818 027572 005777 006340 TST @TSDB ;POP A WORD FROM SILO
2819 027576 042777 000200 006326 BIC #B07,@TCR ;CLR RD SILO
2820 027604 052777 000200 006340 BIS #B07,@RCR ;SET RCVR LD SILO
2821 027612 012777 000014 006336 MOV #14,@RDDB ;LOAD DIFFERENT 2ND WORD
2822 027620 042777 000200 006324 BIC #B07,@RCR ;CLR LD SILO
2823 027626 042777 000200 006300 BIC #B07,@TSR ;CLR SUC TXF
2824 027634 042777 000200 006312 BIC #B07,@RSR
2825 027642 052777 000001 006302 BIS #B00,@RCR ;SET RCV DATA
2826 027650 052777 000001 006254 BIS #B00,@TCR ;SET ST TXM
2827 027656 016704 002530 MOV DLCON,R4
2828 027662 012703 177000 XRC10B: MOV #177000,R3 ;SET UP TO STALL
2829 027666 005203 XRC10A: INC R3
2830 027670 001376 BNE XRC10A ;STALL (WAIT FOR LAST 2 WORDS)
2831 027672 005304 DEC R4
2832 027674 001372 BNE XRC10B
2833 027676 012767 000013 002742 MOV #13,GOOD
2834 027704 017767 006244 002732 MOV @RSR,BAD ;CHECK RCVR RSP CODES
2835 027712 042767 177760 002724 BIC #177760,BAD ;ARE RSP CODES = 10 & 11 ?
2836 027720 026767 002722 002716 CMP GOOD,BAD
2837 027726 001414 BEQ XRC11
2838 027730 DATERR \N ;ERROR:RCVR RSP CODES WRONG
(1) ;***** ERROR 335 *****
(1) 027730 032777 040000 002452 BIT #B14,@SR
(1) 027736 001005 BNE .+14
(1) 027740 012767 000335 002674 MOV #335,ERRNUM
(1) 027746 004767 002526 JSR PC,DEERR
```


(1)	2839	027752	000336			N	=	N+1		
		027752	004567	154250			SCOPE	XRC9		
(1)		027756	027462				JSR	R5,SCPRTN		
(1)	2840	027760	017767	006150	002656	XRC11:	XRC9			
		027766	042767	177760	002650		MOV	@TSR,BAD		
	2841	027766	042767	177760	002650		BIC	#177760,BAD		:CHK XMTR RSP CODES
	2842	027774	026767	002646	002642		CMP	GOOD,BAD		:ARE THEY 10 & 11 ?
	2843	030002	001414				BEQ	XRC12		
	2844	030004					DATERR	\N		:ERROR:XMTR RSP CODES WRONG
(1)		030004	032777	040000	002376		BIT	#B14,@SR		:***** ERROR 336 *****
(1)		030012	001005				BNE	+.14		
(1)		030014	012767	000336	002620		MOV	#336,ERRNUM		
(1)		030022	004767	002452			JSR	PC,DERR		
(1)		030026	000337			N	=	N+1		
	2845	030026	004567	154174			SCOPE	XRC9		
(1)		030026	027462				JSR	R5,SCPRTN		
(1)		030032	032777	010000	006072	XRC12:	XRC9			:IS TXM ERR SET IN THE XMTR ?
	2846	030034	032777	010000	006072		BIT	#B12,@TSR		
	2847	030042	001014				BNE	XRC13		:ERROR:XMTR TXM ERR NOT SET WITH INVALID DATA
	2848	030044					ERROR	\N		:***** ERROR 337 *****
(1)		030044	032777	040000	002336		BIT	#B14,@SR		
(1)		030052	001005				BNE	+.14		
(1)		030054	012767	000337	002560		MOV	#337,ERRNUM		
(1)		030062	004767	002326			JSR	PC,ERR		
(1)		030066	000340			N	=	N+1		
	2849	030066	004567	154134			SCOPE	XRC9		
(1)		030066	027462				JSR	R5,SCPRTN		
(1)		030072	032777	010000	006052	XRC13:	XRC9			:IS TXM ERR SET IN THE RCVR?
	2850	030074	032777	010000	006052		BIT	#B12,@RSR		
	2851	030102	001014				BNE	XRC14		:ERROR:RCVR TXM ERR NOT SET WITH INVALID DATA
	2852	030104					ERROR	\N		:***** ERROR 340 *****
(1)		030104	032777	040000	002276		BIT	#B14,@SR		
(1)		030112	001005				BNE	+.14		
(1)		030114	012767	000340	002520		MOV	#340,ERRNUM		
(1)		030122	004767	002266			JSR	PC,ERR		
(1)		030126	000341			N	=	N+1		
	2853	030126	004567	154074			SCOPE	XRC9		
(1)		030126	027462				JSR	R5,SCPRTN		
(1)		030132					XRC9			
2854										
2855										
2856										
2857										
2858										
2859										
2860	030134					XRC14:	BDINIT	XMTR		
2861	030142						BDINIT	RCVR		
2862	030150	052777	000200	005774			BIS	#B07,@RCR		:SET LD SILO IN RCVR
2863	030156	012703	000100				MOV	#64,R3		:R3 IS WORD COUNTER
2864	030162	012704	033564				MOV	#SILDAT,R4		:R4 IS CURRENT ADDRESS
2865	030166	012477	005764			XRC15:	MOV	(R4)+,@Rddb		:FILL UP RCVR SILO
2866	030172	005303					DEC	R3		:FULL?
2867	030174	001374					BNE	XRC15		

:TEST THAT IF THE CHANNEL IS OPENED AND THE RECEIVER RESPONDS
 :TO THE FIRST VALID WORD WITH A NULL, A XMTR TXM ERR RESULTS
 : NULL ON FIRST WORD IS ACHIEVED BY MANUALLY FILLING UP THE
 :RCVR SILO, THEN TRYING TO SEND A WORD FROM XMTR TO RCVR.

```
2868 030176 016777 005702 005726      MOV      RCAD,@TCR      ;POINT XMTR AT RCVR
2869 030204 042777 000200 005740      BIC      #B07,@RCR     ;CLR LD SILO IN RCVR
2870 030212 012777 177777 005716      MOV      #-1,@TSDB    ;LOAD A WORD INTO XMTR SILO
2871 030220 012777 177774 005712      MOV      #-4,@TSBC    ;SET UP TO XFR 2 WDS
2872 030226 012777 177777 005702      MOV      #-1,@TSDB    ;LOAD 2ND WORD INTO XMTR SILO
2873 030234 052777 020001 005710      BIS      #B13+B00,@RCR ;SET RCV WD & RCV DATA
2874 030242 052777 020001 005662      BIS      #B13+B00,@TCR ;SET SND WD & ST TXM
2875 030250 016704 002136      MOV      DLCON,R4
2876 030254 012703 177000      XRC15B: MOV     #177000,R3 ;SET UP TO STALL
2877 030260 005203      XRC15A: INC      R3
2878 030262 001376      BNE      XRC15A        ;STALL (WAIT FOR TIME SLICE)
2879 030264 005304      DEC      R4
2880 030266 001372      BNE      XRC15B
2881 030270 012767 000006 002350      MOV      #6,GOOD      ;CHK TXM RSP CODES
2882 030276 017767 005632 002340      MOV      @TSR,BAD
2883 030304 042767 177760 002332      BIC      #177760,BAD
2884 030312 026767 002330 002324      CMP      GOOD,BAD     ;ARE THEY 01 & 10 ?
2885 030320 001414      BEQ      XRC16
2886 030322      DATERR  \N           ;ERROR:XMTR RSP CODES WRONG
(1)                                     ;***** ERROR 341 *****
(1) 030322 032777 040000 002060      BIT      #B14,@SR
(1) 030330 001005      BNE      .+14
(1) 030332 012767 000341 002302      MOV      #341,ERRNUM
(1) 030340 004767 002134      JSR      PC,DERR
(1) 000342      =      N+1
2887 030344      SCOPE   XRC14
(1) 030344 004567 153656      JSR      R5,SCPRTN
(1) 030350 030134      XRC14
2888 030352 032777 010000 005554      XRC16: BIT      #B12,@TSR ;IS XMTR TXM ERR SET?
2889 030360 001014      BNE      XRC17        ;ERROR:XMISSION TO FULL RCVR SILO
2890 030362      ERROR  \N           ;DID NOT SET TXM ERR IN XMTR
(1)                                     ;***** ERROR 342 *****
(1) 030362 032777 040000 002020      BIT      #B14,@SR
(1) 030370 001005      BNE      .+14
(1) 030372 012767 000342 002242      MOV      #342,ERRNUM
(1) 030400 004767 002010      JSR      PC,ERR
(1) 000343      =      N+1
2891 030404      SCOPE   XRC14
(1) 030404 004567 153616      JSR      R5,SCPRTN
(1) 030410 030134      XRC14
2892
2893      ;TEST TO DETERMINE IF , WITH CHANNEL OPEN, THE RCVR IS KNOCKED DOWN
2894      ;THE CORRECT RESPONSE CODES ARE GENERATED AND THE XMTR
2895      ;GETS A TXM ERROR.
2896      ; THE RCVR IS KNOCKED DOWN VIA FORCING A TIMEOUT IN THE RCVR.
2897
2898 030412      XRC17: BDINIT  XMTR
2899 030420      BDINIT  RCVR
2900 030426 012777 177777 005502      MOV      #-1,@TSDB    ;LOAD A WORD INTO XMTR SILO
2901 030434 012777 177774 005476      MOV      #-4,@TSBC    ;SETUP FOR 2 WD XFR
2902 030442 012777 177777 005466      MOV      #-1,@TSDB    ;LOAD 2ND WD INTO XMTR SILO
2903 030450 016777 005430 005454      MOV      RCAD,@TCR    ;POINT XMTR AT RCVR
2904 030456 052777 020000 005466      BIS      #B13,@RCR    ;SET RCV WD
2905 030464 052777 020000 005440      BIS      #B13,@TCR    ;SET SND WD
2906 030472 132777 000010 005446      XRC18: BITB   #B03,@TMMRH ;IS CHANNEL OPEN SET?
2907 030500 001774      BEQ      XRC18        ;WAIT FOR IT
```



```
2908 030502 016704 001704      MOV      DLCON,R4
2909 030506 012703 177000      XRC18X: MOV      #177000,R3      ;DELAY FOR SYNC
2910 030512 005203      XRC18L: INC      R3
2911 030514 001376      BNE      XRC18L
2912 030516 005304      DEC      R4
2913 030520 001372      BNE      XRC18X
2914 030522 052777 002000 005424      BIS      #B10,@RSR      ;KNOCK DOWN RCVR WITH TIMEOUT
2915 030530 016704 001656      MOV      DLCON,R4
2916 030534 012703 177000      XRC18Y: MOV      #177000,R3      ;SET UP FOR STALL
2917 030540 005203      XRC18A: INC      R3
2918 030542 001376      BNE      XRC18A      ;STALL (WAIT FOR TIME SLICE)
2919 030544 005304      DEC      R4
2920 030546 001372      BNE      XRC18Y
2921 030550 012767 000001 002070      MOV      #1,GOOD
2922 030556 017767 005352 002060      MOV      @TSR,BAD      ;CHECK TXM RESP CODES
2923 030564 042767 177760 002052      BIC      #177760,BAD
2924 030572 026767 002050 002044      CMP      GOOD,BAD      ;ARE THEY 00 & 01 ?
2925 030600 001414      BEQ      XRC19
2926 030602      DATERR  \N      ;ERROR:XMTR RSP CODES WRONG
(1)                                     ;***** ERROR 343 *****
(1) 030602 032777 040000 001600      BIT      #B14,@SR
(1) 030610 001005      BNE      .+14
(1) 030612 012767 000343 002022      MOV      #343,ERRNUM
(1) 030620 004767 001654      JSR      PC,DERR
(1) 000344      =      N+1
2927 030624      N      SCOPE  XRC17
(1) 030624 004567 153376      JSR      R5,SCPRTN
(1) 030630 030412      XRC17
2928 030632 032777 010000 005274 XRC19: BIT      #B12,@TSR      ;IS TX ERR SET IN XMTR
2929 030640 001014      BNE      XRC19A      ;ERROR:XMTR TO OFFLINE RCVR DIDN'T
2930 030642      ERROR  \N      ;CAUSE TXM ERR IN XMTR
(1)                                     ;***** ERROR 344 *****
(1) 030642 032777 040000 001540      BIT      #B14,@SR
(1) 030650 001005      BNE      .+14
(1) 030652 012767 000344 001762      MOV      #344,ERRNUM
(1) 030660 004767 001530      JSR      PC,ERR
(1) 000345      =      N+1
2931 030664      N      SCOPE  XRC17
(1) 030664 004567 153336      JSR      R5,SCPRTN
(1) 030670 030412      XRC17
2932 030672 004767 000774      XRC19A: JSR      PC,MONIT
2933 030676 032777 010000 001504      BIT      #B12,@SR      ;IS SW 12 SET?
2934 030704 001402      BEQ      XRCRET      ;NO, EXIT
2935 030706 000167 175514      JMP      TXMERS      ;YES, STAY HERE
2936 030712 000207      XRCRET: RTS      PC
```

```
2938 .SBTTL REJECT TEST
2939
2940
2941 ;TEST OF THE REJECT-RELATED HARDWARE
2942 ; CAUSE A REJECT IN THE RCVR AND CHECK ALL RELATED
2943 ;RESPONSES IN RCVR AND XMTR
2944
2945 030714 XRC20: BDINIT XMTR ;CLR XMTR
2946 030722 BDINIT RCVR ;CLR RCVR
2947 030730 012777 177777 005200 MOV #-1,@TSDB ;LOAD A WORD INTO SILO
2948 030736 012777 177774 005174 MOV #-4,@TSBC ;BYTE COUNT FOR 2 WD XFR
2949 030744 012777 177777 005164 MOV #-1,@TSDB ;LOAD 2ND WD INTO SILO
2950 030752 012777 177774 005200 MOV #-4,@RDBC
2951 030760 016777 005120 005144 MOV RCAD,@TCR ;POINT XMTR AT RCVR
2952 030766 052777 020000 005156 BIS #B13,@RCR ;SET RCV WD
2953 030774 052777 020001 005130 BIS #B13+B00,@TCR ;SET SND WD & ST TXM
2954 031002 032777 000400 005144 XRC21: BIT #B08,@RSR ;DAT OUTP RDY IN XMTR?
2955 031010 001774 BEQ XRC21
2956 031012 052777 100000 005132 BIS #B15,@RCR ;SET R E J E C T
2957 031020 016704 001366 MOV DLCON,R4
2958 031024 012703 177500 XRC21A: MOV #177500,R3
2959 031030 032777 000040 005116 XRC22: BIT #B05,@RSR ;CHECK FOR RECOM IN RCVR
2960 031036 001020 BNE XRC23
2961 031040 005203 INC R3
2962 031042 001372 BNE XRC22 ;WAIT A COUPLE OF MS FOR IT
2963 031044 005304 DEC R4
2964 031046 001366 BNE XRC21A
2965 031050 ERROR \N ;ERROR:REJECT DID NOT RESULT IN SETTING RSR-05
(1) ;***** ERROR 345 *****
(1) 031050 032777 040000 001332 BIT #B14,@SR
(1) 031056 001005 BNE .+14
(1) 031060 012767 000345 001554 MOV #345,ERRNUM
(1) 031066 004767 001322 JSR PC,ERR
(1) 000346 = N+1
2966 031072 N SCOPE XRC20
(1) 031072 004567 153130 JSR R5,SCPRTN
(1) 031076 030714 XRC20
2967 031100 032777 000001 005024 XRC23: BIT #B00,@TCR ;IS ST TXM CLR (CLR'D BY INTR REQ)?
2968 031106 001414 BEQ XRC24
2969 031110 ERROR \N ;ERROR: SORE DID NOT INTERRUPT XMTR
(1) ;***** ERROR 346 *****
(1) 031110 032777 040000 001272 BIT #B14,@SR
(1) 031116 001005 BNE .+14
(1) 031120 012767 000346 001514 MOV #346,ERRNUM
(1) 031126 004767 001262 JSR PC,ERR
(1) 000347 = N+1
2970 031132 N SCOPE XRC20
(1) 031132 004567 153070 JSR R5,SCPRTN
(1) 031136 030714 XRC20
2971 031140 032777 100000 005004 XRC24: BIT #B15,@RCR ;CHECK IF REJECT GOT CLR'D
2972 031146 001414 BEQ XRC25
2973 031150 ERROR \N ;ERROR:RECOM DID NOT CLR REJECT
(1) ;***** ERROR 347 *****
(1) 031150 032777 040000 001232 BIT #B14,@SR
(1) 031156 001005 BNE .+14
(1) 031160 012767 000347 001454 MOV #347,ERRNUM
```


(1)	031166	004767	001222			JSR	PC,ERR
(1)		000350			N	=	N+1
2974	031172					SCOPE	XRC20
(1)	031172	004567	153030			JSR	R5,SCPRTN
(1)	031176	030714				XRC20	
2975	031200	032777	000040	004726	XRC25:	BIT	#B05,@TSR
2976	031206	001014				BNE	XRC26
2977	031210					ERROR	\N
(1)							
(1)	031210	032777	040000	001172		BIT	#B14,@SR
(1)	031216	001005				BNE	.+14
(1)	031220	012767	000350	001414		MOV	#350,ERRNUM
(1)	031226	004767	001162			JSR	PC,ERR
(1)		000351			N	=	N+1
2978	031232					SCOPE	XRC20
(1)	031232	004567	152770			JSR	R5,SCPRTN
(1)	031236	030714				XRC20	
2979	031240				XRC26:	BDINIT	RCVR
2980	031246					BDINIT	XMTR
2981	031254	052777	020000	004670		BIS	#B13,@RCR
2982	031262	052777	000040	004664		BIS	#B05,@RSR
2983	031270	032777	020000	004654		BIT	#B13,@RCR
2984	031276	001414				BEQ	XRC27
2985	031300					ERROR	\N
(1)							
(1)	031300	032777	040000	001102		BIT	#B14,@SR
(1)	031306	001005				BNE	.+14
(1)	031310	012767	000351	001324		MOV	#351,ERRNUM
(1)	031316	004767	001072			JSR	PC,ERR
(1)		000352			N	=	N+1
2986	031322					SCOPE	XRC26
(1)	031322	004567	152700			JSR	R5,SCPRTN
(1)	031326	031240				XRC26	

;CHECK IF REJECT SET SORE IN XMTR
;ERROR:REJECT DID NOT SET SORE IN XMTR
;***** ERROR 350 *****

;SET RCV WD IN RCVR
;SET RECOM
;CHECK IF RCV WD GOT CLR'D
;ERROR:RECOM DID NOT INTERRUPT RCVR
;***** ERROR 351 *****

.SBTTL TRUNCATION TEST

2988
2989
2990
2991
2992
2993
2994
2995
2996
2997
2998
2999
3000
3001
3002
3003
3004
3005
3006
3007
3008
3009
3010
3011
3012
3013
3014
3015
(1)
(1)
(1)
(1)
(1)
3016
(1)
(1)
3017
3018
3019
(1)
(1)
(1)
(1)
(1)
3020
(1)
(1)
3021
3022
3023
(1)
(1)
(1)

031330
031336
031344 012777 177754 004566
031352 012777 177770 004600
031360 012777 033564 004554
031366 012777 034164 004566
031374 016777 004504 004530
031402 052777 060001 004542
031410 052777 060001 004514
031416 032777 001000 004530
031424 001774
031426 052777 100000 004516
031434 016704 000752
031440 012703 175000
031444 105777 004464
031450 100420
031452 005203
031454 001373
031456 005304
031460 001367
031462
(1) 031462 032777 040000 000720
(1) 031470 001005
(1) 031472 012767 000352 001142
(1) 031500 004767 000710
(1) 000353
3016 031504
(1) 031504 004567 152516
(1) 031510 031330
3017 031512 032777 000040 004414
3018 031520 001014
3019 031522
(1) 031522 032777 040000 000660
(1) 031530 001005
(1) 031532 012767 000353 001102
(1) 031540 004767 000650
(1) 000354
3020 031544
(1) 031544 004567 152456
(1) 031550 031330
3021 031552 105777 004376
3022 031556 100414
3023 031560
(1) 031560 032777 040000 000622
(1) 031566 001005
(1) 031570 012767 000354 001044

```
;TEST OF THE TRUNCATE-RELATED HARDWARE  
; CAUSE A TRUNCATE IN THE RCVR AND CHECK ALL RELATED  
;RESPONSES IN RCVR AND XMTR.  
  
XRC27: BDINIT XMTR ;CLR XMTR  
BDINIT RCVR ;CLR RCVR  
MOV #-20.,@TSBC ;SET TXM BYTE CNT FOR 10 WORD XFR  
MOV #-8.,@RDBC ;SET RCVR BYTE CNT FOR 4 WORDS  
MOV #SILDAT,@TSBA ;POINT XMTR SILO AT DATA BUFFER  
MOV #CMPBUF,@RDBA ;POINT RCVR SILO TO DATA BUFFER  
MOV RCAD,@TCR ;POINT XMTR AT RCVR  
BIS #B14+B13+B00,@RCR ;SET RCV WD & RCV DATA &START NPR  
BIS #B14+B13+B00,@TCR ;SET SND WD & ST TXM & START NPR  
  
XRC29: BIT #B09,@RSR ;WAIT FOR BYTE COUNT OVERFLOW  
BEQ XRC29 ;SET REJECT (TRUNCATE MESSAGE)  
BIS #B15,@RCR  
MOV DLCON,R4  
XRC29A: MOV #175000,R3  
XRC30: TSTB @TSR ;LOOK FOR XMTR SUC TXF  
BMI XRC31  
INC R3  
BNE XRC30 ;WAIT ABOUT 20 MS  
DEC R4  
BNE XRC29A  
ERROR \N ;ERROR:NO SUC TXF AFTER TRUNCATION  
;***** ERROR 352 *****  
  
BIT #B14,@SR  
BNE .+14  
MOV #352,ERRNUM  
JSR PC,ERR  
N = N+1  
SCOPE XRC27  
JSR R5,SCPRTN  
XRC27  
  
XRC31: BIT #B05,@TSR ;IS SORE SET?  
BNE XRC32  
ERROR \N ;ERROR:SORE NOT SET BY TRUNCATION  
;***** ERROR 353 *****  
  
BIT #B14,@SR  
BNE .+14  
MOV #353,ERRNUM  
JSR PC,ERR  
N = N+1  
SCOPE XRC27  
JSR R5,SCPRTN  
XRC27  
  
XRC32: TSTB @RSR ;IS RCVR SUC TXF SET?  
BMI XRC33  
ERROR \N ;ERROR:NO RCVR SUC TXF AFTER TRUNCATION  
;***** ERROR 354 *****  
  
BIT #B14,@SR  
BNE .+14  
MOV #354,ERRNUM
```


(1)	031576	004767	000612			JSR	PC_ERR	
(1)		000355			N	=	N+1	
3024	031602					SCOPE	XRC27	
(1)	031602	004567	152420			JSR	R5,SCPRTN	
(1)	031606	031330				XRC27		
3025	031610	032777	000040	004336	XRC33:	BIT	#B05,@RSR	:IS RECOM SET?
3026	031616	001014				BNE	XRC34	
3027	031620					ERROR	W	:ERROR:RECOM NOT SET BY TRUNCATION
(1)								:***** ERROR 355 *****
(1)	031620	032777	040000	000562		BIT	#B14,@SR	
(1)	031626	001005				BNE	+.14	
(1)	031630	012767	000355	001004		MOV	#355,ERRNUM	
(1)	031636	004767	000552			JSR	PC_ERR	
(1)		000356			N	=	N+1	
3028	031642					SCOPE	XRC27	
(1)	031642	004567	152360			JSR	R5,SCPRTN	
(1)	031646	031330				XRC27		
3029	031650	004767	000016		XRC34:	JSR	PC_MONIT	
3030	031654	032777	010000	000526		BIT	#B12,@SR	:IS SW 12 SET?
3031	031662	001402				BEQ	XRCRT	:NO, EXIT
3032	031664	000167	177024			JMP	XRC20	:YES, STAY HERE
3033	031670	000207			XRCRT:	RTS	PC	

```

3035          .SBTTL "SWITCH" MONITOR ROUTINE
3036
3037          ;ENTER AT MONIT FROM EVERY SUB-TEST TO SEE IF CNTRL-S OR CNTRL-C WAS TYPED
3038          ;ENTER AT SWDMP FROM ERROR HALTS IF SW 15 = 0
3039          ;ALSO MONITORS THE FOLLOWING CONTROL FUNCTIONS:
3040          ;      CNTRL-T RESTART TEST SELECTOR
3041          ;      CNTRL-D ALLOW CHANGING OF DELAY
3042          ;      CNTRL-P CONTINUE (PROCEED)
3043
3044
3045          031672 005000          MONIT: CLR      R0
3046          031674 105777 004266      TSTB   @KBS          ;CHECK KEYBOARD FLAG
3047          031700 100402          BMI    MONIC        ;IF SET, CHECK WHAT CHAR.
3048          031702 000167 000372      JMP    EX5          ;OTHERWISE, EXIT
3049          031706 017700 004256      MONIC: MOV   @KBD,R0
3050          031712 042700 177600      MONCH: BIC   #177600,R0
3051          031716 020027 000023      CMP    R0,#23      ;TRIM OFF PARITY BIT
3052          031722 001056          BNE    EX1          ;WAS IT ^S?
3053          031724          SWDMP: PNTM   SWRMSG        ;NO, EXIT
3054          (1) 031724 012700 032302      MOV   #SWRMSG,R0   ;PRINT "SWR = "
3055          (1) 031730 004767 000714      JSR   PC,TYP0UT    ;PRINT MESSAGE
3056          031734 017700 000450      MOV   @SR,R0       ;POINTED TO BY SWRMSG
3057          031740 004767 001222      JSR   PC,OCTPNT    ;GET CONTENTS OF SR
3058          031744          PNTM   TWOSP          ;PRINT IT
3059          (1) 031744 012700 032401      MOV   #TWOSP,R0    ;SPACE AND PROMPT (:)
3060          (1) 031750 004767 000674      JSR   PC,TYP0UT    ;PRINT MESSAGE
3061          031754 017767 000430 001202      MOV   @SR,KBBUF    ;POINTED TO BY TWOSP
3062          031762 004767 000724      JSR   PC,INPKB     ;LOAD OLD SWITCHES
3063          031766 016777 001172 000414      MOV   KBBUF,@SR   ;GET KBD INPUT
3064          031774          CCRTN: PNTM   TYPCTP        ;LOAD NEW SWITCHES
3065          (1) 031774 012700 032335      MOV   #TYPCTP,R0  ;PRINT "CNTRL-P TO CONTINUE"
3066          (1) 032000 004767 000644      JSR   PC,TYP0UT    ;PRINT MESSAGE
3067          032004 105777 004156          CONTW1: TSTB   @KBS   ;POINTED TO BY TYPCTP
3068          032010 100375          BPL    CONTW1
3069          032012 017700 004152      MOV   @KBD,R0
3070          032016 042700 177600      BIC   #177600,R0
3071          032022 020027 000023      CMP    R0,#23      ;TRIM OFF PARITY BIT
3072          032026 001736          BEQ   SWDMP        ;^S?
3073          032030 020027 000020      CMP    R0,#20      ;YES, GET SWR AGAIN
3074          032034 001363          BNE   CONTW1       ;^P?
3075          032036 012700 000015      MOV   #15,R0       ;NO, KEEP LOOKING
3076          032042 004767 001424      JSR   PC,TTO       ;RETURN LINE
3077          032046 005000          CLR    R0          ;FILL CHARACTERS
3078          032050 004767 001416      JSR   PC,TTO
3079          032054 004767 001412      JSR   PC,TTO
3080          032060 020027 000024      EX1:  CMP    R0,#24
3081          032064 001004          BNE   EX2
3082          032066 012706 002000      MOV   #ISP,SP
3083          032072 000167 151250      JMP   BCONT
3084          032076 020027 000004      EX2:  CMP    R0,#4
3085          032102 001026          BNE   EX3
3086          032104          EX2A: PNTM   DELYMG
3087          (1) 032104 012700 032312      MOV   #DELYMG,R0
3088          (1) 032110 004767 000534      JSR   PC,TYP0UT
3089          032114 016767 000272 001042      MOV   DLCON,KBBUF
3090          032122 016700 000264          MOV   DLCON,R0    ;DEFAULT OLD VALUE
3091          ;GET CONSTANT

```


CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 E 9 PAGE 44-2
"SWITCH" MONITOR ROUTINE

SEQ 0108

3122 032406 000000
3123
3124 032410 000000
3125
3126 032412 000006

SWREG: .WORD 0
SR: .WORD 0
DLCON: .WORD 6

: SOFTWARE SWITCH REGISTER
: SWITCH REGISTER POINTER
: DELAY CONSTANT


```
3128 .SBTTL COMMON SUBROUTINES
3129
3130 ;ERROR ROUTINE
3131
3132 032414 011667 000220 ERR: MOV (SP),ERRAD ;GET ADDRESS OF ERROR CALL
3133 032420 162767 000022 000212 SUB #22,ERRAD ;OFFSET IT
3134 032426 ERR1: PNTM ERRM ;PRINT '**ERROR **
(1) 032426 012700 032564 MOV #ERRM,RO ;PRINT MESSAGE
(1) 032432 004767 000212 JSR PC,TYPOUT ;POINTED TO BY ERRM
3135 032436 016700 000200 MOV ERRNUM,RC
3136 032442 004767 000520 JSR PC,OCTPNT ;PRINT ERROR NUMBER (P)
3137 032446 PNTM WDAT ;PRINT 'AT LOCATION '
(1) 032446 012700 032577 MOV #WDAT,RO ;PRINT MESSAGE
(1) 032452 004767 000172 JSR PC,TYPOUT ;POINTED TO BY WDAT
3138 032456 016700 000156 MOV ERRAD,RO
3139 032462 004767 000500 JSR PC,OCTPNT ;PRINT ADDRESS OF ERROR
3140 032466 004767 177200 JSR PC,MONIT
3141 032472 004767 000652 JSR PC,NULLS ;PRINT NULLS IN CASE OF 'RESET'
3142 032476 000207 RTS PC ;RETURN
3143
3144 ;DATA ERROR ROUTINE
3145
3146 032500 011667 000134 DERR: MOV (SP),ERRAD ;GET ADDRESS OF ERROR CALL
3147 032504 162767 000022 000126 SUB #22,ERRAD ;OFFSET IT
3148 032512 004767 177710 JSR PC,ERR1 ;PRINT '**ERROR (P) AT LOCATION XXX
3149 032516 PNTM WDSDB ;PRINT 'SHOULD BE '
(1) 032516 012700 032615 MOV #WDSDB,RO ;PRINT MESSAGE
(1) 032522 004767 000122 JSR PC,TYPOUT ;POINTED TO BY WDSDB
3150 032526 016700 000114 MOV GOOD,RO
3151 032532 004767 000430 JSR PC,OCTPNT ;PRINT GOOD DATA
3152 032536 PNTM WDWAS ;PRINT ', WAS '
(1) 032536 012700 032631 MOV #WDWAS,RO ;PRINT MESSAGE
(1) 032542 004767 000102 JSR PC,TYPOUT ;POINTED TO BY WDWAS
3153 032546 016700 000072 MOV BAD,RO
3154 032552 004767 000410 JSR PC,OCTPNT ;PRINT BAD DATA
3155 032556 004767 000566 JSR PC,NULLS ;PRINT NULLS IN CASE OF 'RESET'
3156 032562 000207 RTS PC
3157
3158
3159
3160 ;ASSOCIATED ASCII FOR THIS MODULE:
3161
3162 032564 023046 025052 051105 ERRM: .ASCII /&&**ERROR @/
032572 047522 020122 100
3163 032577 040 052101 046040 WDAT: .ASCII / AT LOCATION @/
032604 041517 052101 047511
032612 020116 100
3164 032615 046 044123 052517 WDSDB: .ASCII /&SHOULD BE @/
032622 042114 041040 020105
032630 100
3165 032631 054 053440 051501 WDWAS: .ASCII /, WAS @/
032636 040040
3166
3167
3168
3169 .EVEN
;OTHER VARIABLES:
```

CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 ⁶ ⁹ PAGE 45-1
COMMON SUBROUTINES

SEQ 0110

3170
3171 032640 000000
3172 032642 000000
3173 032644 000000
3174 032646 000000

ERRAD: .WORD 0
ERRNUM: .WORD 0
BAD: .WORD 0
GOOD: .WORD 0

.SBTTL MESSAGE PRINT ROUTINE

:MESSAGE TYP0UT ROUTINE (CALLED BY MACRO PNTM A)
:MESSAGES ARE IN THE FORMAT:
: MESSG: .ASCII /&MESSAGE&@/
: :
:WHERE: & IS TRANSLATED INTO CR. AND LF.
: :
:USES THE SUBROUTINE "TTO"
:WHICH PRINTS CR. & LF. UPON SEEING A CR. CODE.
:AND @ IS MESSAGE TERMINATOR
: :
:ENTER WITH ADDRESS OF MESSAGE IN RO

3176
3177
3178
3179
3180
3181
3182
3183
3184
3185
3186
3187
3188
3189
3190 032650 010046
3191 032652 117600 000000
3192 032656 022700 000100
3193 032662 001411
3194 032664 022700 000046
3195 032670 001002
3196 032672 012700 000015
3197 032676 004767 000570
3198 032702 005216
3199 032704 000762
3200 032706 005726
3201 032710 000207
3202

TYP0UT: MOV R0,-(SP) :STACK ADDRESS OF MESSAGE
TPOFCH: MOVB @ (SP),R0 :FETCH ASCII BYTE
CMP #100,R0 :IS IT @ (TERMINATOR)?
BEQ TPOUTX :YES-EXIT
CMP #46,R0 :IS IT CR/LF FLAG?
BNE TPCONT :NO-TYPE CHARACTER
MOV #15,R0 :YES, CHANGE DATA TO CR
TPCONT: JSR PC,TTO :TYPE IT
INC (SP) :MOVE POINTER TO NEXT BYTE
BR TPOFCH :FETCH NEXT CHARACTER
TPOUTX: TST (SP)+ :POP STACK TO REACH RETURN VECTOR
RTS PC

```

3204                                     .SBTTL  KEYBOARD INPUT ROUTINE
3205
3206                                     ;KEYBOARD INPUT ROUTINE CALLED BY JSR  PC,INPKB
3207                                     ;ENTERED WITH OLD CONTENTS IN KBBUF
3208                                     ;IF JUST <CR> TYPED, EXIT WITH SAME CONTENTS IN KBBUF
3209                                     ;IF NEW NUMBER TYPED, EXIT WITH NEW CONTENTS IN KBBUF
3210
3211 032712 005067 000244  INPKB:  CLR      NOKEFL      ;CLEAR NO NUMBER FLAG
3212 032716 010146          MOV      R1,-(SP)      ;STACK OLD R1
3213 032720 016746 000240          MOV      KBBUF,-(SP)  ;STACK 'OLD CONTENTS'
3214 032724 005067 000234          CLR      KBBUF      ;CLEAR INPUT BUFFER
3215 032730 004767 000206  GETCHR: JSR      PC,KBRD ;FETCH A CHARACTER IN R0
3216 032734 004767 000532          JSR      PC,TTO      ;ECHO IT
3217 032740 020027 000012          CMP      R0,#12      ;WAS IT A <CR> OR <LF>?
3218 032744 001002          BNE      1$          ;NO
3219 032746 000167 000144          JMP      NRTRN      ;YES, RETURN WITH PROPER KBBUF
3220 032752 010001 177407  1$:  MOV      R0,R1      ;SET UP TO CHECK FOR A NUMBER
3221 032754 042701 000060          BIC      #177407,R1 ;MASK ALL BUT # CODE
3222 032760 020127 000177          CMP      R1,#60      ;IS IT A # FROM 0-7?
3223 032764 001435          BEQ      3$          ;YES, PACK IT
3224 032766 020027 000057          CMP      R0,#177     ;WAS IT A DELETE/RUBOUT?
3225 032772 001024          BNE      2$          ;NO, MUST BE GARBAGE
3226 032774 012700 000466          MOV      #57,R0      ;YES, BUT PRINT '\
3227 033000 004767          JSR      PC,TTO
3228 033004 000241          CLC          ;CLEAR THE C-BIT
3229 033006 006067 000152          ROR      KBBUF      ;DELETE LAST DIGIT
3230 033012 000241          CLC
3231 033014 006067 000144          ROR      KBBUF      ; THAT WAS STUFFED
3232 033020 000241          CLC
3233 033022 006067 000136          ROR      KBBUF      ; INTO KBBUF
3234 033026 005767 000132          TST      KBBUF      ;HAVE WE DELETED EVERYTHING?
3235 033032 001002          BNE      11$         ;NO
3236 033034 005067 000122          CLR      NOKEFL      ;YES, BACK TO NO NUMBER INPUT
3237 033040 000167 177664  11$:  JMP      GETCHR      ;GO FOR MORE INPUT
3238 033044 012700 000077  2$:  MOV      #77,R0      ;ECHO '?' FOR ERRONEOUS INPUT
3239 033050 004767 000416          JSR      PC,TTO
3240 033054 000167 177650          JMP      GETCHR
3241 033060 012767 177777 000074  3$:  MOV      #-1,NOKEFL ;AND GET ANOTHER CHARACTER
3242 033066 042700 177770          BIC      #177770,R0 ;GOT A DIGIT. SET FLAG
3243 033072 006367 000066          ASL      KBBUF      ;GET THE DIGIT PART OF THE CHARACTER
3244 033076 006367 000062          ASL      KBBUF      ;SHIFT KBBUF BUFFER
3245 033102 006367 000056          ASL      KBBUF      ; TO ACCEPT THE
3246 033106 050067 000052          BIS      R0,KBBUF   ; NEW DIGIT.
3247 033112 000167 177612          JMP      GETCHR      ;ADD THE NEW DIGIT
3248                                     ;GO FOR MORE INPUT
3249 033116 005767 000040  NRTRN: TST      NOKEFL      ;WAS THERE NEW DATA?
3250 033122 001004          BNE      NEK        ;YES, GO BACK WITH IT
3251 033124 012667 000034          MOV      (SP)+,KBBUF ;NO, RETRIEVE OLD DATA
3252 033130 012601          MOV      (SP)+,R1   ;RESTORE R1
3253 033132 000207          RTS      PC         ;AND RETURN
3254 033134 005726  NEK:  TST      (SP)+      ;DUMP OLD DATA
3255 033136 012601          MOV      (SP)+,R1   ;RESTORE R1
3256 033140 000207          RTS      PC         ;AND RETURN
3257
3258 033142 105777 003020  KBRD:  TSTB   @KBS      ;WAIT FOR INPUT FROM CONSOLE
3259 033146 100375          BPL      KBRD

```


CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 PAGE 47-1
KEYBOARD INPUT ROUTINE

SEQ 0113

3260 033150 017700 003014
3261 033154 042700 177600
3262 033160 000207

KBRET: MOV @KBD,RO
BIC #177600,RO
RTS PC

:PUT THE CHAR INTO RO
:TRIM PARITY

CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 ^{K 9} PAGE 48
KEYBOARD INPUT ROUTINE

SEQ 0114

3264
3265
3266 033162 000000
3267 033164 000000

;ASSOCIATED VARIABLE STORAGE:

NOKEFL: .WORD 0
KBBUF: .WORD 0

.SBTTL BINARY TO ASCII CONVERSION ROUTINES

```
3269
3270
3271 ;CONVERTS BINARY TO BINARY, BINARY TO
3272 ;OCTAL, AND BINARY TO DECIMAL; EITHER
3273 ;UNJUSTIFIED WITH LEADING ZERO'S SUPPRESSED
3274 ;OR RIGHT JUSTIFIED WITH LEADING 0'S
3275 ;SUPPRESSED
3276
3277
3278 ;REGULAR BIN-OCTAL UNJUSTIFIED:
3279
3280 OCTPNT: REGSAV
(1) 033166 004567 151420 JSR R5,REGSAV
3281 033172 005067 000356 CLR RJFLG ;CLEAR RIGHT JUSTIFY FLAG
3282 033176 012701 000010 MOV #10,R1 ;SET RADIX FOR OCTAL
3283 033202 004767 000156 JSR PC,NUMPNT ;CONVERT & PRINT
3284 033206 REGRES
(1) 033206 004567 151414 JSR R5,REGRES
3285 033212 000207 RTS PC ;RETURN
3286
3287 ;BIN-OCTAL JUSTIFIED:
3288
3289 OCTJSP: REGSAV
(1) 033214 004567 151372 JSR R5,REGSAV
3290 033220 012767 177777 000326 MOV #-1,RJFLG ;SET RIGHT JUSTIFY FLAG
3291 033226 012701 000010 MOV #10,R1 ;SET RADIX FOR OCTAL
3292 033232 004767 000126 JSR PC,NUMPNT ;CONVERT & PRINT
3293 033236 REGRES
(1) 033236 004567 151364 JSR R5,REGRES
3294 033242 000207 RTS PC
3295
3296 ;BIN-BIN
3297
3298 BINPNT: REGSAV
(1) 033244 004567 151342 JSR R5,REGSAV
3299 033250 005067 000300 CLR RJFLG ;CLEAR RIGHT JUSTIFY FLAG
3300 033254 012701 000002 MOV #2,R1 ;SET RADIX FOR BINARY
3301 033260 004767 000100 JSR PC,NUMPNT ;CONVERT & PRINT
3302 033264 REGRES
(1) 033264 004567 151336 JSR R5,REGRES
3303 033270 000207 RTS PC
3304
3305 ;BIN-DECIMAL UNJUSTIFIED:
3306
3307 DECPNT: REGSAV
(1) 033272 004567 151314 JSR R5,REGSAV
3308 033276 005067 000252 CLR RJFLG ;CLEAR RIGHT JUSTIFY FLAG
3309 033302 012701 000012 MOV #12,R1 ;SET RADIX FOR DECIMAL
3310 033306 004767 000052 JSR PC,NUMPNT ;CONVERT & PRINT
3311 033312 REGRES
(1) 033312 004567 151310 JSR R5,REGRES
3312 033316 000207 RTS PC
3313
3314 ;BIN-DECIMAL JUSTIFIED (6 PLACES)
3315
3316 DECJSP: REGSAV
```

CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 M 9 PAGE 49-1
BINARY TO ASCII CONVERSION ROUTINES

SEQ 0116

(1)	033320	004567	151266		JSR	R5,REGSAV	
3317	033324	012767	177777	000222	MOV	#-1,RJFLG	:SET RIGHT JUSTIFY FLAG
3318	033332	012701	000012		MUV	#12,R1	:SET RADIX FOR DECIMAL
3319	033336	004767	000022		JSR	PC,#JMPNT	:CONVERT & PRINT
3320	033342				REGRES		
(1)	033342	004567	151260		JSR	R5,REGRES	
3321	033346	000207			RTS	PC	
3322							
3323							
3324	033350	005000			NULLS: CLR	R0	
3325	033352	004767	000114		JSR	PC,TTO	
3326	033356	004767	000110		JSR	PC,TTO	
3327	033362	000207			NULOUT: RTS	PC	


```

3329 ;UNSGNED CONVERT-PRINT ROUTINE (BIN -- ASCII)
3330
3331 033364 010167 000166 NUMPNT: MOV R1,RADIX ;SAVE RADIX
3332 033370 005002 CLR R2 ;CLEAR TAB COUNTER
3333 033372 005001 DIVSET: CLR R1 ;CLEAR WORK REGISTER
3334 033374 020067 000156 DIVID: CMP R0,RADIX ;IS NUMBER BELOW RADIX?
3335 033400 103404 BLO GETDG ;IF YES, STORE DIGIT
3336 033402 166700 000150 SUB RADIX,R0 ;ELSE, KEEP SUBTRACTING
3337 033406 005201 INC R1 ;AND KEEP COUNT
3338 033410 000771 BR DIVID
3339 033412 010046 GETDG: MOV R0,-(SP) ;STACK REMAINDER
3340 033414 010100 MOV R1,R0
3341 033416 001403 BEQ PNTEXT ;PRINT IF HIGHEST ORDER STACKED
3342 033420 005202 INC R2 ;ELSE COUNT DIGITS FOR R. JUSTIFY
3343 033422 004767 177744 JSR PC,DIVSET
3344
3345 033426 012703 000006 PNTEXT: MOV #6,R3 ;GET DIGIT COUNT CONSTANT
3346 033432 160203 SUB R2,R3 ;HAVE WE PRODUCED 6 DIGITS?
3347 033434 003413 BLE PNT ;YES, JUSTIFICATION UNNECESSARY
3348 033436 005767 000112 TST RJFLG ;IS THE JUSTIFY FLAG SET?
3349 033442 001410 BEQ PNT ;NO-DON'T JUSTIFY
3350 033444 012700 000040 JUST: MOV #40,R0 ;YES, PRINT LEADING SPACES
3351 033450 004767 000016 JSR PC,TTO
3352 033454 005303 DEC R3
3353 033456 001372 BNE JUST
3354 033460 005067 000070 CLR RJFLG ;CLEAR JUSTIFY FLG WHEN DONE
3355 033464 012600 PNT: MOV (SP)+,R0 ;GET REST OF DIGITS OFF STACK
3356 033466 052700 000060 BIS #'0,R0 ;MAKE THEM ASCII
3357 ;TYPE OUT ROUTINE
3358 ;PRINTS A CHARACTER WHICH IS IN R0
3359 ;IF THE CHARACTER IS 'CR.', ALSO PRINT A 'LF.'.
3360
3361
3362 033472 010077 002476 TTO: MOV R0,@TTB ;PRINT CONTENTS OF R0
3363 033476 105777 002470 TTOLP: TSTB @TTS ;WAIT TILL PRINT DONE
3364 033502 100375 BPL TTOLP
3365 033504 022700 000015 CMP #15,R0 ;WAS IT A <CR>?
3366 033510 001401 BEQ TTOLF ;YES, ECHO A LF AS WELL
3367 033512 000207 RTS PC ;NO, JUST RETURN
3368 033514 012700 000012 TTOLF: MOV #12,R0
3369 033520 004767 177746 JSR PC,TTO
3370 033524 016767 000030 000030 MOV FILL,FILCNT ;PREPARE TO PRINT NULLS
3371 033532 005000 CLR R0
3372 033534 004767 177732 1$: JSR PC,TTO
3373 033540 005367 000016 DEC FILCNT ;AS MANY AS FILL COUNT
3374 033544 003373 BGT 1$
3375 033546 012700 000012 MOV #12,R0 ;RESTORE LOST R0
3376 033552 000207 RTS PC ;AND RETURN
3377
3378
3379 ;ASSOCIATED VARIABLE STORAGE:
3380
3381 033554 000000 RJFLG: .WORD 0
3382 033556 000000 RADIX: .WORD 0
3383 033560 000010 FILL: .WORD 10
3384 033562 000000 FILCNT: .WORD 0

```

```
3386                                     .SBTTL TEST BUFFERS
3387
3388                                     :DATA SILO DATA-BUFFER
3389
3390 033564 125252      SILDAT: 125252
3391 033566 052525      052525
3392 033570 125252      125252
3393 033572 052525      052525
3394 033574 125252      125252
3395 033576 052525      052525
3396 033600 125252      125252
3397 033602 052525      052525
3398 033604 125252      125252
3399 033606 052525      052525
3400
3401 033610 177400      177400
3402 033612 000377      000377
3403 033614 177400      177400
3404 033616 000377      000377
3405 033620 177400      177400
3406 033622 000377      000377
3407 033624 177400      177400
3408 033626 000377      000377
3409 033630 177400      177400
3410 033632 000377      000377
3411
3412 033634 000000      000000
3413 033636 177777      177777
3414 033640 000000      000000
3415 033642 177777      177777
3416 033644 000000      000000
3417 033646 177777      177777
3418 033650 000000      000000
3419 033652 177777      177777
3420 033654 000000      000000
3421 033656 177777      177777
3422
3423 033660 010421      010421
3424 033662 021042      021042
3425 033664 031463      031463
3426 033666 042104      042104
3427 033670 052525      052525
3428 033672 063146      063146
3429 033674 076567      076567
3430 033676 104210      104210
3431 033700 114631      114631
3432 033702 125252      125252
3433
3434 033704 000001      000001
3435 033706 177776      177776
3436 033710 000002      000002
3437 033712 177775      177775
3438 033714 000003      000003
3439 033716 177774      177774
3440 033720 000004      000004
3441 033722 177773      177773
```


3442	033724	000005	000005
3443	033726	177772	177772
3444			
3445	033730	000000	000000
3446	033732	000000	000000
3447	033734	000000	000000
3448	033736	000000	000000
3449	033740	000000	000000
3450	033742	111111	111111
3451	033744	111111	111111
3452	033746	111111	111111
3453	033750	111111	111111
3454	033752	111111	111111
3455			
3456	033754	125252	125252
3457	033756	052525	052525
3458	033760	177777	177777
3459	033762	000000	000000

			:CRC TEST BUFFER
3461			
3462			
3463	033764	125252	SILCRC: 125252
3464	033766	050521	050521
3465	033770	124200	124200
3466	033772	000665	000665
3467	033774	141436	141436
3468	033776	164003	164003
3469	034000	075106	075106
3470	034002	027371	027371
3471	034004	002562	002562
3472	034006	135105	135105
3473			
3474	034010	002640	002640
3475	034012	045405	045405
3476	034014	060152	060152
3477	034016	013403	013403
3478	034020	153756	153756
3479	034022	072577	072577
3480	034024	164176	164176
3481	034026	025435	025435
3482	034030	111272	111272
3483	034032	052673	052673
3484			
3485	034034	157140	157140
3486	034036	102461	102461
3487	034040	066234	066234
3488	034042	016141	016141
3489	034044	175726	175726
3490	034046	121477	121477
3491	034050	036420	036420
3492	034052	122203	122203
3493	034054	045272	045272
3494	034056	016435	016435
3495			
3496	034060	010703	010703
3497	034062	103142	103142
3498	034064	177121	177121
3499	034066	016654	016654
3500	034070	033047	033047
3501	034072	042734	042734
3502	034074	046205	046205
3503	034076	014300	014300
3504	034100	024677	024677
3505	034102	103302	103302
3506			
3507	034104	106245	106245
3508	034106	124160	124160
3509	034110	132304	132304
3510	034112	015025	015025
3511	034114	017305	017305
3512	034116	044754	044754
3513	034120	044406	044406
3514	034122	061203	061203
3515	034124	140621	140621
3516	034126	054620	054620

3517			
3518	034130	110312	110312
3519	034132	130174	130174
3520	034134	116116	116116
3521	034136	120462	120462
3522	034140	021446	021446
3523	034142	114411	114411
3524	034144	133325	133325
3525	034146	050737	050737
3526	034150	106501	106501
3527	034152	007625	007625
3528			
3529	034154	117626	117626
3530	034156	041245	041245
3531	034160	031477	031477
3532	034162	014726	014726

CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACV11 304(1052) 20-JUN-79 07:50 PAGE 53
TEST BUFFERS

F 10

SEQ 0122

3534
3535
3536 034164 000100

;RECEIVER DATA COMPARE BUFFER
.EVEN
CMPBUF: .BLKW 64.

.SBTTL ASCII STORAGE

3538					
3539					
3540	034364	023046	044523	047514	SLOWD: .ASCII /B&SILO OUTPUT WORD WAS @/
	034372	047440	052125	052520	
	034400	020124	047527	042122	
	034406	053440	051501	040040	
3541	034414	023046	044523	047514	SLIWD: .ASCII /B&SILO INPUT WORD WAS @/
	034422	044440	050116	052125	
	034430	053440	051117	020104	
	034436	040527	020123	100	
3542	034443	046	047105	020104	PEND: .ASCII /BEND PASS @@/
	034450	040520	051523	021440	
	034456	100			
3543	034457	046	041523	050117	SCSEC: .ASCII /BSCOPE SECTION FOR SLICE TIMING&SET SW OR TO EXIT THIS LOOP.@/
	034464	020105	042523	052103	
	034472	047511	020116	047506	
	034500	020122	046123	041511	
	034506	020105	044524	044515	
	034514	043516	051446	052105	
	034522	051440	020127	034460	
	034530	052040	020117	054105	
	034536	052111	052040	044510	
	034544	020123	047514	050117	
	034552	040056			
3544	034554	052046	040522	051516	TXSTAT: .ASCII /BTRANSMITTER STATUS REG = @/
	034562	044515	052124	051105	
	034570	051440	040524	052524	
	034576	020123	042522	020107	
	034604	020075	100		
3545	034607	046	042522	042503	RCSTAT: .ASCII /BRECEIVER STATUS REG = @/
	034614	053111	051105	051440	
	034622	040524	052524	020123	
	034630	042522	020107	020075	
	034636	100			
3546	034637	046	047516	020056	REBTON: .ASCII /BNO. OF WORDS RECEIVED = @/
	034644	043117	053440	051117	
	034652	051504	051040	041505	
	034660	044505	042526	020104	
	034666	020075	100		
3547	034671	046	041520	030514	TXHDR: .ASCII /BPCL11 TRANSMITTER TEST & @/
	034676	020061	051124	047101	
	034704	046523	052111	042524	
	034712	020122	042524	052123	
	034720	023040	020040	100	
3548	034725	046	041520	030514	RCHDR: .ASCII /BPCL11 RECEIVER TEST& @/
	034732	020061	042522	042503	
	034740	053111	051105	052040	
	034746	051505	023124	020040	
	034754	040040			
3549	034756	052046	040522	051516	KRHDR: .ASCII /BTRANSMITTER - RECEIVER LOOP TESTS& @/
	034764	044515	052124	051105	
	034772	026440	051040	041505	
	035000	044505	042526	020122	
	035006	047514	050117	052040	
	035014	051505	051524	020046	
	035022	020040	100		

3550	035025	046	041520	030514	ALTHDR: .ASCII /@PCL11 TESTS 1 - 3 SEQUENCE@ @/
	035032	020061	042524	052123	
	035040	020123	020061	020055	
	035046	020063	042523	052521	
	035054	047105	042503	020046	
	035062	020040	100		
3551	035065	046	046530	051124	TMTR: .ASCII /@XMTR @/
	035072	040040			
3552	035074	051046	053103	020122	RECVR: .ASCII /@RCVR @/
	035102	100			
3553	035103	061	052123	052440	FRAD: .ASCII /1ST UNIBUS ADDR..@/
	035110	044516	052502	020123	
	035116	042101	051104	027056	
	035124	100			
3554	035125	046	044124	052101	TOOLW: .ASCII /@THAT WAS TOO LOW! I'LL GIVE YOU ANOTHER CHANCE...@ @/
	035132	053440	051501	052040	
	035140	047517	046040	053517	
	035146	020041	023511	046114	
	035154	043440	053111	020105	
	035162	047531	020125	047101	
	035170	052117	042510	020122	
	035176	044103	047101	042503	
	035204	027056	023056	100	
3555	035211	046	044124	052101	AGAIN: .ASCII /@THAT WON'T DO. TRY AGAIN!@ @/
	035216	053440	047117	052047	
	035224	042040	027117	052040	
	035232	054522	040440	040507	
	035240	047111	023041	100	
3556	035245	126	041505	047524	VCTR: .ASCII /VECTOR..@/
	035252	027122	040056		
3557	035256	051120	047511	044522	PRIOTY: .ASCII /PRIORITY (4-7)..@/
	035264	054524	020040	032050	
	035272	033455	027051	040056	
3558	035300	042124	020115	052502	TDMAD: .ASCII /TDM BUS ADDR (1-37)..@/
	035306	020123	042101	051104	
	035314	024040	026461	033463	
	035322	027051	040056		
3559	035326	044446	053116	046101	INVLAD: .ASCII /@INVALID DEVICE ADDRESS...(IT'S NOT THERE)@/
	035334	042111	042040	053105	
	035342	041511	020105	042101	
	035350	051104	051505	027123	
	035356	027056	044450	023524	
	035364	020123	047516	020124	
	035372	044124	051105	024505	
	035400	100			
3560	035401	046	051124	050101	TRAP4: .ASCII /@TRAPPED TO LOCATION 4 FROM LOCATION @/
	035406	042520	020104	047524	
	035414	046040	041517	052101	
	035422	047511	020116	020064	
	035430	051106	046517	046040	
	035436	041517	052101	047511	
	035444	020116	100		
3561	035447	046	050046	046103	TSTHDR: .ASCII /@@PCL11 STANDALONE TESTS V02C CZPLBCO 06-JUN-79@ @/
	035454	030461	051440	040524	
	035462	042116	046101	047117	
	035470	020105	042524	052123	

035476 020123 030126 041462
035504 020040 041440 050132
035512 041114 030103 020040
035520 033060 045055 047125
035526 033455 023071 100
3562 035533 046 042523 042514
035540 052103 052040 051505
035546 020124 036050 051103
035554 020076 020075 042510
035562 050114 027051 040056
3563 035570 023046 042522 050123
035576 047117 020104 044527
035604 044124 047440 042516
035612 047440 020106 044124
035620 020105 047506 046114
035626 053517 047111 035107
3564 035634 020046 020040 020040
035642 020061 020075 052522
035650 020116 051124 047101
035656 046523 052111 042524
035664 020122 042524 052123
3565 035672 020046 020040 020040
035700 020062 020075 052522
035706 020116 042522 042503
035714 053111 051105 052040
035722 051505 124
3566 035725 046 020040 020040
035732 031440 036440 051040
035740 047125 054040 052115
035746 026522 041522 051126
035754 046040 047517 020120
035762 042524 052123
3567 035766 020046 020040 020040
035774 020064 020075 052522
036002 020116 042524 052123
036010 030440 020054 044124
036016 047105 052040 051505
036024 020124 026062 052040
036032 042510 020116 042524
036040 052123 031440 040046

TSTSEL: .ASCII /&SELECT TEST (<CR> = HELP)..@/

HLPMSG: .ASCII /&&RESPOND WITH ONE OF THE FOLLOWING: /

.ASCII /& 1 = RUN TRANSMITTER TEST/

.ASCII /& 2 = RUN RECEIVER TEST/

.ASCII /& 3 = RUN XMTR-RCVR LOOP TEST/

.ASCII /& 4 = RUN TEST 1, THEN TEST 2, THEN TEST 3&@/

3569 .SBTTL CONSTANTS AND VARIABLE STORAGE
3570 .EVEN

3571
3572
3573 ;VARIABLES
3574

3575	036046	000000	DILLY:	.WORD	0
3576	036050	000000	DLY:	.WORD	0
3577	036052	000000	SWRFLG:	.WORD	0
3578	036054	000000	PNTFLG:	.WORD	0
3579	036056	000000	ITER:	.WORD	0
3580	036060	000000	SWI:	.WORD	0
3581	036062	000000	PAT:	.WORD	0
3582	036064	000000	MASK:	.WORD	0
3583	036066	000000	PSNO1:	.WORD	0
3584	036070	000000	PSNO2:	.WORD	0
3585	036072	000000	PSNO3:	.WORD	0
3586	036074	000000	PSNO4:	.WORD	0
3587	036076	000000	TEMP:	.WORD	0
3588	036100	000000	TESTNO:	.WORD	0
3589	036102	000000	\$4FLAG:	.WORD	0
3590	036104	000000	RCAD:	.WORD	0
3591	036106	000000	TRAD:	.WORD	0
3592	036110	000000	COUNT:	.WORD	0
3593	036112	000000	DATWD:	.WORD	0
3594	036114	000000	TMPRIO:	.WORD	0

;RECEIVER ADDRESS
;TRANSMITTER ADDRESS

3595
3596 ;CONSTANTS:
3597

3598					
3599	036116	000005	FKPRIO:	.WORD	5
3600	036120	000005	FKPRI1:	.WORD	5
3601	036122	000170	TXVEC:	.WORD	170
3602	036124	000174	RCVEC:	.WORD	174
3603	036126	000240	XPRIO:	.WORD	240
3604	036130	000240	RPRIO:	.WORD	240
3605	036132	164200	TCR:	.WORD	164200
3606	036134	164202	TSR:	.WORD	164202
3607	036136	164204	TSDB:	.WORD	164204
3608	036140	164206	TSBC:	.WORD	164206
3609	036142	164210	TSBA:	.WORD	164210
3610	036144	164212	TMMR:	.WORD	164212
3611	036146	164213	TMMRH:	.WORD	164213
3612	036150	164214	TSCRC:	.WORD	164214
3613	036152	164220	RCR:	.WORD	164220
3614	036154	164222	RSR:	.WORD	164222
3615	036156	164224	Rddb:	.WORD	164224
3616	036160	164226	RDBC:	.WORD	164226
3617	036162	164230	RDBA:	.WORD	164230
3618	036164	164234	RDCRC:	.WORD	164234
3619	036166	177560	KBS:	.WORD	177560
3620	036170	177562	KBD:	.WORD	177562
3621	036172	177564	TTS:	.WORD	177564
3622	036174	177566	TTB:	.WORD	177566
3623	036176	036176	MEM:	.WORD	MEM
3624	036200	177777	TSTWRD:	.WORD	177777

CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACV11 304(1052) 20-JUN-79 07:50 PAGE 55-1
CONSTANTS AND VARIABLE STORAGE

K 10

SEQ 0127

3625
3626

CZPLBCO PCL11 STND ALN V02C
CZPLBC.P11 07-JUN-79 15:47

MACV11 30A(1052) 20-JUN-79 07:50 PAGE 56
CONSTANTS AND VARIABLE STORAGE

L 10

SEQ 0128

3628 036202 000170
3629 036204 000174
3630 036206 164200
3631 036210 164220
3632 000001

TXMVEC: .WORD 170
RCVVEC: .WORD 174
TXMADR: .WORD 164200
RCVADR: .WORD 164220
.END

:170 IS XMTR DEFAULT VECTOR
:174 IS RCVR DEFAULT VECTOR
:164200 IS XMTR DEFAULT BASIC ADDR
:164220 IS RCVR DEFAULT BASIC ADDR

ADGD	003212	697	700#															
ADOK	003166	693	696#															
ADRGD	003340	713	716#															
ADROK	003314	709	712#															
AGAIN	035211	626	638	649	653	671	675	694	698	710	714	3103	3555#					
ALTHDR	035025	757	3550#															
BAD	032644	949#	951	955*	957	961*	962*	964	966	970*	972	976*	978	982*				
		984	1001*	1002	1008*	1009*	1010	1018*	1019	1028*	1030	1034*	1035	1039*				
		1040	1044*	1046	1065*	1066	1091*	1092	1198*	1200*	1202	1226*	1258*	1259*				
		1261	1304*	1306	1325*	1327	1361*	1363	1378*	1379	1434*	1692*	1695	1775*				
		1777	1781*	1783	1787*	1789	1793*	1795	1799*	1801	1818*	1819	1825*	1826*				
		1827	1836*	1838	1842*	1844	1848*	1850	1854*	1856	1875*	1876	1901*	1902				
		1943*	1945	1963*	1965	2001*	2002	2114*	2115	2288*	2289	2385*	2430*	2432				
		2485*	2486	2491*	2492*	2493	2538*	2539	2592*	2593	2637*	2638	2736*	2737*				
		2738	2743*	2744*	2745	2790*	2791*	2792	2834*	2835*	2836	2840*	2841*	2842				
		2882*	2883*	2884	2922*	2923*	2924	3153	3173#									
BATST	006246	805	1086#	1105														
BCONT	003346	575	717#	726	909	3077												
BCTST	006064	804	1060#	1079														
BEGIN	002000	471	568	579#														
BHLPNG	003412	721	723	725#														
BINPNT	033244	3298#																
B00	= 000001	467#	1062	1088	1392	1872	1898	2724	2825	2826	2873	2874	2953	2967				
		3002	3003															
B01	= 000002	466#	1060	1086	1112	1285	1302	1309	1330	1332	1371	1382	1391	1408				
		1444	1455	1500	1549	1567	1578	1593	1605	1617	1648	1657	1664	1678				
		1711	1835	1870	1896	1922	1941	1948	1968	1971	2019	2034	2075	2095				
		2131	2179	2202	2214	2249	2258	2265	2271	2280	2306	2358	2359	2388				
		2389	2443	2444	2497	2498	2544	2545	2602	2603	2691	2692	2718	2719				
		2759	2760	2805	2806	2860	2861	2898	2899	2945	2946	2979	2980	2995				
		2996																
B02	= 000004	465#	2104															
B03	= 000010	464#	1288	1299	1313	1323	1354	1404	1457	1929	1954	1978	2030	2769				
		2906																
B04	= 000020	463#	1463	2777														
B05	= 000040	462#	2959	2975	2982	3017	3025											
B06	= 000100	461#	1471	1481	1621	1627	1633	1651	2077	2218	2224	2230	2252					
B07	= 000200	460#	1197	1225	1257	1264	1271	1311	1321	1358	1366	1368	1432	1437				
		1445	1446	1450	1451	1634	1652	1688	1933	1935	1958	1960	1972	1982				
		2049	2054	2081	2082	2090	2091	2180	2184	2231	2233	2253	2281	2417				
		2429	2723	2728	2817	2819	2820	2822	2823	2824	2862	2869						
B08	= 000400	459#	1292	1317	1350	1571	1925	1938	1950	1961	2008	2109	2182	2234				
		2456	2509	2612	2954													
B09	= 001000	458#	1119	1128	1487	1488	1502	1574	2119	3004								
B10	= 002000	457#	791	1507	1508	1583	1733	2133	2134	2322	2702	2914						
B11	= 004000	456#	811	1517	1518	1601	1750	2147	2148	2337								
B12	= 010000	455#	989	1051	1077	1103	1276	1411	1527	1528	1607	1659	1708	1806				
		1861	1887	1913	2036	2157	2158	2204	2260	2303	2412	2679	2749	2782				
		2796	2846	2850	2888	2928	2933	3030										
B13	= 020000	454#	848	1477	1496	1537	1538	2076	2086	2127	2132	2142	2167	2168				
		2449	2451	2503	2504	2697	2698	2724	2765	2766	2813	2814	2873	2874				
		2904	2905	2952	2953	2981	2983	3002	3003									
B14	= 040000	453#	953	959	968	974	980	986	1004	1012	1021	1032	1037	1042				
		1048	1068	1094	1116	1133	1138	1143	1149	1154	1159	1167	1171	1177				
		1185	1189	1193	1204	1212	1216	1224	1231	1245	1252	1263	1270	1290				
		1294	1301	1308	1315	1319	1329	1335	1336	1338	1348	1352	1356	1365				

		1381	1406	1420	1448	1453	1469	1473	1479	1483	1490	1494	1498	1504
		1510	1514	1520	1524	1530	1534	1540	1544	1557	1559	1561	1565	1576
		1591	1603	1628	1640	1644	1670	1681	1684	1686	1697	1702	1779	1785
		1791	1797	1803	1821	1829	1840	1846	1852	1858	1878	1904	1927	1931
		1940	1947	1952	1956	1967	1980	1985	1994	1996	2004	2010	2032	2061
		2079	2084	2088	2093	2106	2111	2117	2121	2125	2129	2136	2140	2144
		2150	2154	2160	2164	2170	2174	2192	2194	2196	2200	2225	2241	2245
		2272	2291	2296	2376	2380	2386	2405	2409	2462	2466	2467	2475	2478
		2488	2495	2515	2519	2520	2528	2531	2541	2568	2571	2579	2582	2595
		2618	2621	2640	2641	2658	2661	2669	2672	2710	2740	2747	2751	2775
		2779	2794	2798	2838	2844	2848	2852	2886	2890	2926	2930	2965	2969
		2973	2977	2985	3002	3003	3015	3019	3023	3027				
B15 = 100000		452#	1070	1096	1475	1492	1512	1522	1532	1542	1563	1880	1906	2123
		2138	2152	2162	2172	2198	2956	2971	3006					
CCRTN	031774	3060#	3087											
CHXDAT	024014	2378	2407	2427#										
CLRCBF	020210	1970	2040#	2543										
CMPBUF	034164	1984	1998	2041	2060	2105	2113	2547	2590	3000	3536#			
CONTW1	032004	3061#	3062	3068										
COUNT	036110	1689*	1705*	3592#										
CRCTST	014646	810	1678#	1687	1703	1710								
DATLPS	024074	2334	2443#	2463	2472	2483	2489	2496	2681					
DATWD	036112	2285*	2286	2294	3593#									
DECJSP	033320	3316#												
DECPNT	033272	764	820	1759	2346	3307#								
DELAY	004546	916#	1220	1248	1254	1266	1286	1297	1596	1599	1923	1936	2420	2725
DELYMG	032312	3080	3113#											
DERR	032500	953	959	968	974	980	986	1004	1012	1021	1032	1037	1042	1048
		1068	1094	1204	1263	1308	1329	1365	1381	1702	1779	1785	1791	1797
"		1803	1821	1829	1840	1846	1852	1858	1878	1904	1947	1967	2004	2117
		2296	2380	2386	2409	2488	2495	2541	2595	2640	2740	2747	2794	2838
		2844	2886	2926	3146#									
DEVGEN	004264	684	859#											
DILLY	036046	916*	923*	3575#										
DIVID	033374	3334#	3338											
DIVSET	033372	3333#	3343											
DLCON	032412	917	919*	920	1237	1340	1421	1461	1580	1986	2062	2365	2394	2452
		2505	2553	2610	2650	2699	2729	2767	2783	2827	2875	2908	2915	2957
		3007	3081	3082	3086*	3126#								
DLWT	004566	918	920#	924										
DLWT1	004574	921#	922											
DLY	036050	920*	921*	3576#										
DTLPS1	024166	2453#	2461											
DVATST	004456	600	894#											
EROINT	022204	2217	2222#											
ERR	032414	1116	1133	1138	1143	1149	1154	1159	1167	1171	1177	1185	1189	1193
		1212	1216	1224	1231	1245	1252	1270	1290	1294	1301	1315	1319	1338
		1348	1352	1356	1406	1448	1453	1469	1473	1479	1483	1490	1494	1498
		1504	1510	1514	1520	1524	1530	1534	1540	1544	1557	1561	1565	1576
		1591	1603	1628	1640	1644	1670	1686	1927	1931	1940	1952	1956	1980
		1994	2010	2032	2079	2084	2088	2093	2111	2121	2125	2129	2136	2140
		2144	2150	2154	2160	2164	2170	2174	2192	2196	2200	2225	2241	2245
		2272	2376	2405	2462	2466	2475	2515	2519	2528	2568	2579	2618	2658
		2669	2710	2751	2775	2779	2798	2848	2852	2890	2930	2965	2969	2973
		2977	2985	3015	3019	3023	3027	3132#						
ERRAD	032640	3132*	3133*	3138	3146*	3147*	3171#							

TEST3	023054	752	760	2319#										
TMMP	036144	870*	961	1179*	1198	1219*	1226	1233*	1258	2360*	2446*	2693*	3610#	
TMMRH	036146	872*	1113*	1114	1130*	1131	1135*	1136	1140*	1141	1145*	1146	1148*	1151
		1153*	1156	1158*	1164*	1165	1169	1175	1183	1187	1191	1210	1214	1222
		1228*	1229	1234	1236*	1239	1247*	1250	1256*	1268	1273*	1392*	1409*	1459*
		1594*	2769	2906	3611#									
TMPRIO	036114	1630*	1635	1638	1642	1646	1649*	1653	1665*	2227*	2236	2239	2243	2247
		2250*	2254	2266*	3594#									
TMTR	035065	588	616	640	685	3551#								
TOLOW	035125	598	612	3554#										
TPCONT	032676	3195	3197#											
TPOF CH	032652	3191#	3199											
TPOUTX	032706	3193	3200#											
TRAD	036106	700*	2490	3591#										
TRAP4	035401	905	3560#											
TREND	023212	2338	2341#											
TSBA	036142	868*	955	1025*	1039	1090*	1091	1334*	1373*	1378	1419*	1551*	1680*	2392*
		2546*	2604*	2999*	3609#									
TSBC	036140	866*	949	1024*	1034	1064*	1065	1333*	1342	1372*	1376	1418*	1550*	1555
		1679*	1682	2368	2391*	2397	2450*	2500*	2548*	2605*	2694*	2720*	2761*	2807*
		2871*	2901*	2948*	2997*	3608#								
TSCRC	036150	874*	982	1692	3612#									
TSDB	036136	864*	1296*	1304	1312	1322*	1325	1361	1434	1456*	1501*	1568*	1573*	1595*
		1693	2363	2430	2445*	2499*	2695*	2722*	2727	2762*	2764*	2808*	2809*	2811*
		2818	2870*	2872*	2900*	2902*	2947*	2949*	3607#					
TSR	036134	862*	970	1015*	1026*	1044	1292	1317	1350	1445*	1446	1450*	1451	1463
		1471	1481	1485*	1487*	1488	1492	1502	1506*	1507*	1508	1512	1516*	1517*
		1518	1522	1526*	1527*	1528	1532	1536*	1537*	1538	1542	1559	1563	1571
		1574	1583	1601	1634*	1652*	2473	2476	2481	2526	2529	2534	2556	2558
		2569	2574	2619	2624	2654	2659	2664	2743	2782*	2815	2823*	2840	2846
		2882	2888	2922	2928	2975	3009	3017	3606#					
TSRTST	012120	808	1444#	1449	1609									
TSTHDR	035447	587	3561#											
TSTSEL	035533	717	3562#											
TSTWRD	036200	2604	2636	3624#										
TTB	036174	3362*	3622#											
TTO	033472	766	768	770	771	822	824	1761	1763	1765	1767	2348	2350	2352
		2353	3070	3072	3073	3197	3216	3227	3239	3325	3326	3351	3362#	3369
		3372												
TTOLF	033514	3366	3368#											
TTOLP	033476	3363#	3364											
TTS	036172	3363	3621#											
TWOSP	032401	592	606	620	632	644	666	689	705	3056	3084	3098	3116#	
TXHDR	034671	739	3547#											
TXMADR	036206	590	593	595*	596	601	859	3630#						
TXMERS	026426	2335	2691#	2711	2935									
TXMR1	026512	2700#	2709											
TXMVEC	036202	618	621	623*	875	3628#								
TXSTAT	034554	2480	2533	2573	2623	2663	3544#							
TXVEC	036122	875*	1618	1620*	1631*	1650*	3601#							
TYPCTP	032335	3060	3114#											
TYPOUT	032650	587	588	589	592	598	602	603	606	612	616	617	620	626
		628	629	632	638	640	641	644	649	653	662	663	666	671
		675	685	686	689	694	698	701	702	705	710	714	717	725
		739	745	751	757	762	818	895	905	1122	1699	1757	2293	2344
		2469	2480	2522	2533	2573	2584	2623	2628	2631	2643	2663	2674	3053

XRB14	026310	2655	2667#					
XRB14S	026376	2671	2673	2677#				
XRB15	026404	2668	2678#					
XRB2	024336	2465	2473#					
XRB3	024432	2474	2484#					
XRB4	024506	2487	2490#					
XRB4C	024570	2494	2497#	2516	2525	2536	2542	
XRB4D	024654	2506#	2514					
XRB5	024660	2507#	2512					
XRB6	025024	2518	2521	2526#				
XRB6S	025112	2530	2532	2536#				
XRB7	025120	2527	2537#					
XRB8	025172	2540	2543#	2576	2587	2598		
XRB8A	025270	2554#	2567					
XRB9	025276	2556#	2563	2565				
XRB9S	025414	2570	2572	2576#				
XRCNT	024032	2430#	2435					
XRCRET	030712	2934	2936#					
XRCRT	031670	3031	3033#					
XRC1	026520	2702#	2705	2707				
XRC10	027556	2815#	2816					
XRC10A	027666	2829#	2830					
XRC10B	027662	2828#	2832					
XRC11	027760	2837	2840#					
XRC12	030034	2843	2846#					
XRC13	030074	2847	2850#					
XRC14	030134	2851	2860#	2887	2891			
XRC15	030166	2865#	2867					
XRC15A	030260	2877#	2878					
XRC15B	030254	2876#	2880					
XRC16	030352	2885	2888#					
XRC17	030412	2889	2898#	2927	2931			
XRC18	030472	2906#	2907					
XRC18A	030540	2917#	2918					
XRC18L	030512	2910#	2911					
XRC18X	030506	2909#	2913					
XRC18Y	030534	2916#	2920					
XRC19	030632	2925	2928#					
XRC19A	030672	2929	2932#					
XRC2	026574	2703	2718#	2741	2748	2752		
XRC2A	026676	2731#	2732					
XRC2D	026672	2730#	2734					
XRC20	030714	2336	2945#	2966	2970	2974	2978	3032
XRC21	031002	2954#	2955					
XRC21A	031024	2958#	2964					
XRC22	031030	2959#	2962					
XRC23	031100	2960	2967#					
XRC24	031140	2968	2971#					
XRC25	031200	2972	2975#					
XRC26	031240	2976	2979#	2986				
XRC27	031330	2984	2995#	3016	3020	3024	3028	
XRC29	031416	3004#	3005					
XRC29A	031440	3008#	3014					
XRC3	026770	2739	2742#					
XRC30	031444	3009#	3012					
XRC31	031512	3010	3017#					

CZPLBCO PCL11 STD ALN V02C
 CZPLBC.P11 07-JUN-79 15:47

MACY11 30A(1052) 20-JUN-79 07:50 PAGE 58
 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0143

BDINIT	477#	1060	1086	1112	1285	1302	1309	1330	1332	1371	1382	1391	1408	1444	1455
	1500	1549	1567	1578	1593	1605	1617	1548	1657	1664	1678	1711	1870	1896	1922
	1941	1948	1968	1971	2019	2034	2075	2095	2131	2179	2202	2214	2249	2258	2265
	2271	2280	2306	2358	2359	2388	2389	2443	2444	2497	2498	2544	2545	2602	2603
	2691	2692	2718	2719	2759	2760	2805	2806	2860	2861	2898	2899	2945	2946	2979
	2980	2995	2996												
DATERR	503#	953	959	968	974	980	986	1004	1012	1021	1032	1037	1042	1048	1068
	1094	1204	1263	1308	1329	1365	1381	1702	1779	1785	1791	1797	1803	1821	1829
	1840	1846	1852	1858	1878	1904	1947	1967	2004	2117	2296	2380	2386	2409	2488
	2495	2541	2595	2640	2740	2747	2794	2838	2844	2886	2926				
ERROR	494#	1116	1133	1138	1143	1149	1154	1159	1167	1171	1177	1185	1189	1193	1212
	1216	1224	1231	1245	1252	1270	1290	1294	1301	1315	1319	1338	1348	1352	1356
	1406	1448	1453	1469	1473	1479	1483	1490	1494	1498	1504	1510	1514	1520	1524
	1530	1534	1540	1544	1557	1561	1565	1576	1591	1603	1628	1640	1644	1670	1686
	1927	1931	1940	1952	1956	1980	1994	2010	2032	2079	2084	2088	2093	2111	2121
	2125	2129	2136	2140	2144	2150	2154	2160	2164	2170	2174	2192	2196	2200	2225
	2241	2245	2272	2376	2405	2462	2466	2475	2515	2519	2528	2568	2579	2618	2658
	2669	2710	2751	2775	2779	2798	2848	2852	2890	2930	2965	2969	2973	2977	2985
	3015	3019	3023	3027											
HLT	512#	845													
MTPS	536#	570	574	581	788	1616	1622	1625	1632	1635	1653	1730	2213	2219	2222
	2229	2236	2254	2319											
PNTM	518#	587	588	589	592	598	602	603	606	612	616	617	620	626	628
	629	632	638	640	641	644	649	653	662	663	666	671	675	685	686
	689	694	698	701	702	705	710	714	717	725	739	745	751	757	762
	818	895	905	1122	1699	1757	2293	2344	2469	2480	2522	2533	2573	2584	2623
	2628	2631	2643	2663	2674	3053	3056	3060	3080	3084	3095	3098	3103	3134	3137
	3149	3152													
REGRES	547#	3284	3293	3302	3311	3320									
REGSAV	543#	3280	3289	3298	3307	3316									
SCOPE	525#	954	960	969	975	981	987	1005	1013	1022	1033	1038	1043	1049	1069
	1095	1117	1134	1139	1144	1150	1155	1160	1168	1172	1178	1186	1190	1194	1205
	1213	1217	1227	1232	1246	1253	1265	1272	1291	1295	1303	1310	1316	1320	1331
	1339	1349	1353	1357	1367	1383	1407	1449	1454	1470	1474	1480	1484	1491	1495
	1499	1505	1511	1515	1521	1525	1531	1535	1541	1545	1558	1562	1566	1577	1592
	1604	1629	1641	1645	1671	1687	1703	1780	1786	1792	1798	1804	1822	1830	1841
	1847	1853	1859	1879	1905	1928	1932	1942	1949	1953	1957	1969	1981	1995	2005
	2011	2033	2080	2085	2089	2094	2112	2118	2122	2126	2130	2137	2141	2145	2151
	2155	2161	2165	2171	2175	2193	2197	2201	2226	2242	2246	2273	2297	2377	2381
	2387	2406	2410	2463	2472	2483	2489	2496	2516	2525	2536	2542	2576	2587	2598
	2635	2647	2666	2677	2711	2741	2748	2752	2776	2780	2795	2799	2839	2845	2849
	2853	2887	2891	2927	2931	2966	2970	2974	2978	2986	3016	3020	3024	3028	

. ABS. 036212 000

ERRORS DETECTED: 0

CZPLBC.CZPLBC/CR=CZPLBC
 RUN-TIME: 17 36 5 SECONDS
 RUN-TIME RATIO: 127/60=2.1
 CORE USED: 12K (23 PAGES)