FPP13EPM

IDENTIFICATION

PRODUCT CODE: MAINDEC-12-D0UA
PRODUCT NAME: FPP-12 INSTRUCTION TEST3---(FPP13)
FOR USE WITH THE EPM 60 BIT VERSION OF THE FPP-12

DATE CREATED: 12-15-71
MAINTAINER: DIAGNOSTIC GROUP
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                /1,0    ABSTRACT
                /
                /1,1    FPP-12 INSTRUCTION TEST 3 (FPPI3) IS DESIGNED TO TEST THE
                /       EXTENDED PRECISION MODE (EPM) VERSION OF THE FPP-12 WHICH UTILIZES
                /       12 BIT EXPONENT AND 60 BIT MANTISSA FOR DATA OPERATION.  FPPI3
                /       WILL TEST:
                /
                /               1)  ALL IOT'S IN EPM
                /               2)  ALL STATUS CONDITIONS IN EPM
                /               3)  ALL INSTRUCTIONS ALTERED BY EPM
                /               4)  ALL INSTRUCTIONS NOT AFFECTED BY EPM EXCEPT LDX
                /                   AND ADDX.
                /
                /       THE ASSUMPTION IS MADE THAT THE PDP-12 OR PDP-8 USED IN
                /       CONJUNCTION WITH THE FPP-12 IS A SOLID, ERROR FREE MACHINE
                /
                /2,0    REQUIREMENTS
                /
                /2,1    EQUIPMENT
                /
                /       1)  A FPP-12 FLOATING POINT PROCESSOR WITH EPM
                /       2)  A STANDARD BASIC PDP-8 OR PDP-12
                /       3)  AN ASR-33 TELETYPE OR EQUIVALENT
                /
                /2,2    STORAGE
                /
                /       THIS PROGRAM IS DESIGNED TO RUN IN MEMORY BANK 0 AND IT OCCUPIES
                /       VIRTUALLY ALL BANK 0 NOT OCCUPIED BY THE BINARY AND/OR RIM
                /       LOADER, (OCTAL LOCATIONS 7600 TO 7777)
                /
                /2,3    PRELIMINARY PROGRAMS
                /
                /       A)  ALL PDP-8 AND/OR PDP-12 PROCESSOR DIAGNOSTICS
                /       B)  FPP-12 DIAGNOSTICS
                /               1)  FLOATING POINT INSTRUCTION TEST 2A (FPPI2A)
                /               2)  FLOATING POINT INSTRUCTION TEST 2B (FPPI2B)
                /               3)  FLOATING POINT INSTRUCTION TEST 2C (FPPI2C)
                /               4)  FLOATING POINT ADDRESS TEST (FPADRS)
                /
                /3,0    LOADING PROCEDURE
                /
                /       REFER TO PARTICULAR LOADING PROCEDURES FOR PDP-12 OR FAMILY
                /       OF 8 MACHINE BEING USED IN CONJUNCTION WITH FPP-12.
                /
                /4,0    STARTING PROCEDURE
                /
                /       THIS PRELIMINARY SET UP PROCEDURE IS CRITICAL AND ANY OMISSION
                /       WILL RESULT IN AN ERROR.
                /
                /       1)  SET THE SWITCH REGISTER TO 0000, IF PDP-12 OR TO 0200 IF PDP-8 FAMILY
                /       2)  SET THE MODE SWITCH TO 8-MODE IF PDP-12
                /       3)  DEPRESS I/O PRESET
                /       4)  DEPRESS START 20 IF PDP-12 OR START SW REG IF PDP-8 FAMILY
                /
                /       THE PROGRAM IS RUNNING
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                        /
                        /3,0    CONTROL SWITCH SETTINGS (MAY BE SELECTED AT ANY TIME)
                        /
                        /       1)  SWITCH REGISTER SET TO 4000 = NO ERROR TYPEOUT
                        /       2)  SWITCH REGISTER SET TO 2000 = NO HALT ON ERROR
                        /
                        /6,0    MESSAGE FORMAT
                        /
                        /       THIS PROGRAM WILL HALT ON AN ERROR OCCURANCE,  IF THE ERROR WAS
                        /       DETECTED IN THE APTCK ROUTINE AN ERROR TYPEOUT WILL OCCUR,
                        /       ABOUT 95% OF THE ERRORS ARE DETECTED HERE AND THEIR FORMAT IS;
                        /
                        /       4425=PROGRAM HALT===ERROR IN FPP APT OR STATUS COMPARE
                        /       FLD  FPC  IR2  BASE OPA  EXP  MSW  LSW  LSW1 LSW2 LSW3 STATUS
                        /       0000 3653 0050 3000 3630 7777 7777 7777 0000 0000 0000 4000   GOOD
                        /       0000 3653 0050 3000 3630 7777 7777 7777 0000 0000 0000 0000   BAD
                        /
                        /       INTERPERATION OF THIS MESSAGE IS AS FOLLOWS;
                        /
                        /               1)  LOCATION 4425 IS LOOKED UP IN THE PROGRAM LISTING TELLING
                        /                   YOU THAT THE HLT OCCURED IN TEST T10,
                        /
                        /               2)  COMPARE THE EXPEXTED RESULTS (GOOD ROW) WITH THOSE RECIEVED
                        /                   (BAD ROW) TO DETERMINE WHAT THE ERROR WAS,
                        /
                        /               3)  EXAMINATION OF THE APT RESULTS SHOWS THAT THE DATA
                        /                    DUMPED INTO THE APT TABLE (LOC 25=37) WAS THE SAME
                        /                    AS THE EXPECTED DATA IN R10M1 (LOC 767=1001),
                        /
                        /               4)  EXAMINATION OF THE FPP12 STATUS WORD INDICATES A DISCREPANCY,
                        /                   A FPP=12 STATUS WORD OF 4000 WAS EXPECTED (GOOD) INDICATING
                        /                   FIXED POINT MODE,  A FPP=12 STATUS WORD OF 0000 WAS RECIEVED
                        /                   (BAD) INDICATING FLOATING POINT MODE, THIS IS THE
                        /                   ERROR DETECTED IN THE APTCHK ROUTINE,
                        /
                        /       THE TELETYPE BELL RINGS EVERY 100 OCTAL PASSES THROUGH
                        /       THE PROGRAM OR ABOUT ONCE EVERY 2 MINUTES,
                        /
                        /7,0    MAINTENANCE INSTRUCTIONS
                        /
                        /       FPP=12 MAINTENANCE INSTRUCTIONS ARE NOT USED IN THIS
                        /       DIAGNOSTIC WITH THE EXCEPTION OF THE 6565 IOT USED IN TEST T2
                        /       TO READ BACK THE "ADRS" REGISTER
                        /
                        /8,0    MISCELLANEOUS
                        /
                        /       1)  THE DIAGNOSTIC WILL START AT LOCATIONS 20, 200 OR 400
                        /
                        /       2)  INDIVIDUAL TESTS DO NOT OVERLAP PAGE BOUNDARIES
                        /
                        /       3)  SCOPE LOOPS MAY BE INSERTED AT THE USERS DISCRETION,
                        /           TO LOOP ON ANY TEST OR TEST FAILURE, BY INSERTING A JMP
                        /           TO THE START OF THE FAILING TEST IN PLACE OF THE HLT
                        /           INSTRUCTION,
                        /
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1294    1532  0000            0
1295    1533  0000            2
1296    1534  0000            0
1297    1535  0004    R44M1,  4
1298    1536  0000            2                       /TEST 44 APT IMAGE
1299    1537  3566            3566
1100    1510  0050            50
1101    1511  3000            3000
1102    1512  3112            3112
1103    1513  0000            0
1104    1514  3777            3777
1105    1515  7777            7777
1106    1516  7777            7777
1107    1517  7777            7777
1108    1520  7774            7774
1109    1521  0004    R45M1,  4
1110    1522  0000            2                       /TEST 45 APT IMAGE
1111    1523  3570            3570
1112    1524  0050            50
1113    1525  3000            3000
1114    1526  3126            3126
1115    1527  7777            7777
1116    1530  3777            3777
1117    1531  7777            7777
1118    1532  7777            7777
1119    1533  7777            7777
1120    1534  7776            7776
1121    1535  0004    R46M1,  4
1122    1536  0000            2                       /TEST 46 APT IMAGE
1123    1537  3572            3572
1124    1540  0050            50
1125    1541  3000            3000
1126    1542  3134            3134
1127    1543  4206            4206
1128    1544  2104            2104
1129    1545  2104            2104
1130    1546  2104            2104
1131    1547  2104            2104
1132    1550  2100            2100
1133    1551  0004    R47M1,  4
1134    1552  0000            2                       /TEST 47 APT IMAGE
1135    1553  3574            3574
1136    1554  0050            50
1137    1555  3000            3000
1138    1556  3142            3142
1139    1557  2105            2105
1140    1560  2210            2210
1141    1561  4210            4210
1142    1562  4210            4210
1143    1563  4210            4210
1144    1564  4210            4210
1145    1565  0004    R50M1,  4
1146    1566  0000            2                       /TEST 50 APT IMAGE
1147    1567  3576            3576
1148    1570  0050            50
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1149    1571  3000            3000
1150    1572  3150            3150
1151    1573  1043            1043
1152    1574  2210            2210
1153    1575  4210            4210
1154    1576  4210            4210
1155    1577  4210            4210
1156    1600  4210            4210
1157    1601  0004    R51M1,  4
1158    1602  3000            0                       /TEST 51 APT IMAGE
1159    1603  3600            3600
1160    1604  0050            50
1161    1605  3000            3000
1162    1606  3156            3156
1163    1607  0000            0
1164    1610  5777            5777
1165    1611  7777            7777
1166    1612  7777            7777
1167    1613  7777            7777
1168    1614  7777            7777
1169    1615  0004    R52M1,  4
1170    1616  0000            0                       /TEST 52 APT IMAGE
1171    1617  3602            3602
1172    1620  0050            50
1173    1621  3000            3000
1174    1622  3164            3164
1175    1623  0000            0
1176    1624  0000            0
1177    1625  0000            0
1178    1626  0000            0
1179    1627  0000            0
1180    1630  0000            0
1181    1631  0004    R53M1,  4
1182    1632  0000            0                       /TEST 53 APT IMAGE
1183    1633  3604            3604
1184    1634  0050            50
1185    1635  3000            3000
1186    1636  3172            3172
1187    1637  0001            1
1188    1640  4000            4000
1189    1641  0000            0
1190    1642  0000            0
1191    1643  0000            0
1192    1644  0001            1
1193    1645  0004    R54M1,  4
1194    1646  0000            0                       /TEST 54 APT IMAGE
1195    1647  3606            3606
1196    1650  0050            50
1197    1651  3000            3000
1198    1652  3200            3200
1199    1653  4205            4205
1200    1654  5673            5673
1201    1655  5673            5673
1202    1656  5673            5673
1203    1657  5673            5673
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1234    .660  5700            5700
1235    .661  0004    R55M1,  4
1236    .662  0000            0                       /TEST 55 APT IMAGE
1237    .663  3610            3610
1238    .664  0050            50
1239    .665  3000            3000
1240    .666  3206            3206
1241    .667  2103            2103
1242    .670  3146            3146
1243    .671  3146            3146
1244    .672  3146            3146
1245    .673  3146            3146
1246    .674  3150            3150
1247    .675  0004    R56M1,  4
1248    .676  0000            0                       /TEST 56 APT IMAGE
1249    .677  3612            3612
1250    .700  0050            50
1251    .701  3000            3000
1252    .702  3214            3214
1253    .703  1040            1040
1254    .704  2104            2104
1255    .705  2104            2104
1256    .706  2104            2104
1257    .707  2104            2104
1258    .710  2110            2110
1259    .711  0004    R57M1,  4
1260    .712  0000            0                       /TEST 57 APT IMAGE
1261    .713  3614            3614
1262    .714  0050            50
1263    .715  3000            3000
1264    .716  3222            3222
1265    .717  6313            6313
1266    .720  3146            3146
1267    .721  3146            3146
1268    .722  3146            3146
1269    .723  3146            3146
1270    .724  3150            3150
1271    .725  0004    R60M1,  4
1272    .726  0000            0                       /TEST 60 APT IMAGE
1273    .727  3616            3616
1274    .730  0050            50
1275    .731  3000            3000
1276    .732  3230            3230
1277    .733  3144            3144
1278    .734  2104            2104
1279    .735  2104            2104
1280    .736  2104            2104
1281    .737  2104            2104
1282    .740  2110            2110
1283    .741  0004    R61M1,  4
1284    .742  0000            0                       /TEST 61 APT IMAGE
1285    .743  3620            3620
1286    .744  0050            50
1287    .745  3000            3000
1288    .746  3236            3236
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1259    1747  7327          327
1260    1750  2000          2000
1261    1751  3000          0
1262    1752  0000          0
1263    1753  7000          0
1264    1754  0000          0
1265    1755  0004    R62M1,  4
1266    1756  0000          0                       /TEST 62 APT IMAGE
1267    1757  3622          3622
1268    1760  0050          50
1269    1761  3000          3000
1270    1762  3244          3244
1271    1763  3777          3777
1272    1764  2000          2000
1273    1765  0000          0
1274    1766  0000          0
1275    1767  0000          0
1276    1770  0000          0
1277    1771  0004    R63M1,  4
1278    1772  0000          0                       /TEST 63 APT IMAGE
1279    1773  3624          3624
1280    1774  0050          50
1281    1775  3000          3000
1282    1776  3252          3252
1283    1777  0000          0
1284    2000  0000          0
1285    2001  0000          0
1286    2002  0000          0
1287    2003  0000          0
1288    2004  0000          0
1289    2005  0004    R64M1,  4
1290    2006  0000          0                       /TEST 64 APT IMAGE
1291    2007  3626          3626
1292    2010  0050          50
1293    2011  3000          3000
1294    2012  3260          3260
1295    2013  0000          0
1296    2014  0000          0
1297    2015  0000          0
1298    2016  0000          0
1299    2017  0000          0
1300    2020  0000          0
1321    2021  0004    R65M1,  4
1322    2022  0000          0                       /TEST 65 APT IMAGE
1323    2023  3630          3630
1324    2024  0050          50
1325    2025  3000          3000
1326    2026  3266          3266
1327    2027  3723          3723
1328    2030  3434          3434
1329    2031  3434          3434
1330    2032  3434          3434
1311    2033  3434          3434
1312    2034  3430          3430
1313    2035  0004    R66M1,  4                       /TEST 66 APT IMAGE
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1314    2036  0000            0
1315    2037  3632            3632
1316    2040  7050            50
1317    2041  3000            3000
1318    2042  3274            3274
1319    2043  5343            5343
1320    2044  2204            2204
1321    2045  1573            1573
1322    2046  1543            1543
1323    2047  3017            3017
1324    2050  4555            4555
1325    2051  7004    R67M1,  4
1326    2052  0000            0                       /TEST 67 APT IMAGE
1327    2053  3634            3634
1328    2054  0050            50
1329    2055  3000            3000
1330    2056  3302            3302
1331    2057  6345            6345
1332    2060  4350            4350
1333    2061  1741            1741
1334    2062  6203            6203
1335    2063  3025            3025
1336    2064  0706            0706
1337    2065  0004    R70M1,  4
1338    2066  0000            0                       /TEST 70 APT IMAGE
1339    2067  3636            3636
1340    2070  0050            50
1341    2071  3000            3000
1342    2072  3310            3310
1343    2073  0001            1
1344    2074  2000            2000
1345    2075  0000            0
1346    2076  0000            0
1347    2077  0000            0
1348    2100  0000            0
1349    2101  0004    R71M1,  4
1350    2102  0000            0                       /TEST 71 APT IMAGE
1351    2103  3640            3640
1352    2104  0050            50
1353    2105  3000            3000
1354    2106  3316            3316
1355    2107  7777            7777
1356    2110  6000            6000
1357    2111  0000            0
1358    2112  0000            0
1359    2113  0000            0
1360    2114  0000            0
1361    2115  0004    R72M1,  4
1362    2116  0000            0                       /TEST 72 APT IMAGE
1363    2117  3642            3642
1364    2120  0050            50
1365    2121  3000            3000
1366    2122  3324            3324
1367    2123  7777            7777
1368    2124  2000            2000
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1369    2125  2000            0
1370    2126  2000            2
1371    2127  2000            0
1372    2130  2000            2
1373    2131  2004    R73M1,  4
1374    2132  2000            0                       /TEST 73 APT IMAGE
1375    2133  3644            3644
1376    2134  2050            50
1377    2135  3000            3000
1378    2136  3332            3332
1379    2137  5221            5221
1380    2140  3425            3425
1381    2141  1476            1476
1382    2142  2613            2613
1383    2143  4651            4651
1384    2144  0513            513
1385    2145  2004    R74M1,  4
1386    2146  2000            0                       /TEST 74 APT IMAGE
1387    2147  3646            3646
1388    2150  2050            50
1389    2151  3000            3000
1390    2152  3340            3340
1391    2153  7175            7175
1392    2154  3777            3777
1393    2155  7776            7776
1394    2156  7507            7507
1395    2157  2730            2730
1396    2160  1736            1736
1397    2161  2004    R75M1,  4
1398    2162  2000            0                       /TEST 75 APT IMAGE
1399    2163  3650            3650
1400    2164  2050            50
1401    2165  3000            3000
1402    2166  3346            3346
1403    2167  3121            3121
1404    2170  2651            2651
1405    2171  2651            2651
1406    2172  2651            2651
1407    2173  2651            2651
1408    2174  2651            2651
1409    2175  2004    R76M1,  4
1410    2176  2000            0                       /TEST 76 APT IMAGE
1411    2177  3662            3662
1412    2200  2050            50
1413    2201  3000            3000
1414    2202  3116            3116
1415    2203  2525            2525
1416    2204  1252            1252
1417    2205  5252            5252
1418    2206  5252            5252
1419    2207  5252            5252
1420    2210  5252            5252
1421    2211  2004    R77M1,  4
1422    2212  2000            0                       /TEST 77 APT IMAGE
1423    2213  3666            3666
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1424   2214  0050          50
1425   2215  3000          3000
1426   2216  3116          3116
1427   2217  2716          2716
1428   2220  3705          3705
1429   2221  1443          1443
1430   2222  7165          7165
1431   2223  3402          3402
1432   2224  6213          6213
1433   2225  0004  R100M1, 4
1434   2226  0000          0                    /TEST 100 APT IMAGE
1435   2227  3667          3667
1436   2230  0050          50
1437   2231  3000          3000
1438   2232  3376          3376
1439   2233  3777          3777
1440   2234  2000          2000
1441   2235  0000          0
1442   2236  0000          0
1443   2237  0000          0
1444   2240  0000          0
1445   2241  0044  R101M1, 44
1446   2242  0000          0                    /TEST 101 APT IMAGE
1447   2243  3671          3671
1448   2244  0050          50
1449   2245  3000          3000
1450   2246  3404          3404
1451   2247  4000          4000
1452   2250  2000          2000
1453   2251  0000          0
1454   2252  0000          0
1455   2253  0000          0
1456   2254  0000          0
1457   2255  0104  R102M1, 104
1458   2256  0000          0                    /TEST 102 APT IMAGE
1459   2257  3673          3673
1460   2260  0050          50
1461   2261  3000          3000
1462   2262  3412          3412
1463   2263  2525          2525
1464   2264  2525          2525
1465   2265  2525          2525
1466   2266  2525          2525
1467   2267  2525          2525
1468   2270  2525          2525
1469   2271  0404  R103M1, 404
1470   2272  0000          0                    /TEST 103 APT IMAGE
1471   2273  3673          3673
1472   2274  0050          50
1473   2275  3000          3000
1474   2276  3412          3412
1475   2277  0000          0
1476   2300  0000          0
1477   2301  0000          0
1478   2302  0000          0
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1479    2303  0000            0
1480    2304  0000            0
1481    2305  1404    R104M1, 1404
1482    2306  0000            0                       /TEST 104 APT IMAGE
1483    2307  3700            3700
1484    2310  0050            50
1485    2311  3000            3000
1486    2312  3677            3677
1487    2313  0000            0
1488    2314  0000            0
1489    2315  0000            0
1490    2316  0000            0
1491    2317  0000            0
1492    2320  0000            0
1493    2321  0004    R105M1, 4
1494    2322  0000            0                       /TEST 106 APT IMAGE
1495    2323  3677            3677
1496    2324  0050            50
1497    2325  3000            3000
1498    2326  3674            3674
1499    2327  0000            0
1500    2330  0000            0
1501    2331  0000            0
1502    2332  0000            0
1503    2333  0000            0
1504    2334  0001            1
1505    2335  0004    R106M1, 4
1506    2336  0000            0                       /TEST 106 APT IMAGE
1507    2337  3677            3677
1508    2340  0050            50
1509    2341  3000            3000
1510    2342  3674            3674
1511    2343  0000            0
1512    2344  4000            4000
1513    2345  0000            0
1514    2346  0000            0
1515    2347  0000            0
1516    2350  0001            1
1517    2351  0004    R107M1, 4
1518    2352  0000            0                       /TEST 107 APT IMAGE
1519    2353  3704            3704
1520    2354  0050            50
1521    2355  3000            3000
1522    2356  3703            3703
1523    2357  0000            0
1524    2360  0000            0
1525    2361  0000            0
1526    2362  0000            0
1527    2363  0000            0
1528    2364  0000            0
1529    2365  0004    R110M1, 4
1530    2366  0000            0                       /TEST 110 APT IMAGE
1531    2367  3704            3704
1532    2370  0050            50
1533    2371  3000            3000
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1534    2372  3703            3703
1535    2373  7000            0
1536    2374  7000            0
1537    2375  0000            0
1538    2376  0000            0
1539    2377  0000            0
1540    2400  0001            1
1541    2401  0004    R111M1, 4
1542    2402  7000            0                       /TEST 111 APT IMAGE
1543    2403  3703            3703
1544    2404  0050            50
1545    2405  3000            3000
1546    2406  3700            3700
1547    2407  0000            0
1548    2410  4000            4000
1549    2411  0000            0
1550    2412  0000            0
1551    2413  0000            0
1552    2414  0001            1
1553    2415  0004    R112M1, 4
1554    2416  0000            0                       /TEST 112 APT IMAGE
1555    2417  3710            3710
1556    2420  0050            50
1557    2421  3000            3000
1558    2422  3707            3707
1559    2423  0000            0
1560    2424  0000            0
1561    2425  0000            0
1562    2426  0000            0
1563    2427  0000            0
1564    2430  0000            0
1565    2431  0004    R113M1, 4
1566    2432  0000            0                       /TEST 113 APT IMAGE
1567    2433  3710            3710
1568    2434  0050            50
1569    2435  3000            3000
1570    2436  3707            3707
1571    2437  0000            0
1572    2440  4000            4000
1573    2441  0000            0
1574    2442  0000            0
1575    2443  0000            0
1576    2444  0001            1
1577    2445  0004    R114M1, 4
1578    2446  0000            0                       /TEST 114 APT IMAGE
1579    2447  3707            3707
1580    2450  0050            50
1581    2451  3000            3000
1582    2452  3704            3704
1583    2453  0000            0
1584    2454  0000            0
1585    2455  0000            0
1586    2456  0000            0
1587    2457  0000            0
1588    2460  0001            1
```

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1589  2461  2004    R115M1, 4
1590  2462  2000            0                       /TEST 115 APT IMAGE
1591  2463  3713            3713
1592  2464  2050            50
1593  2465  3000            3000
1594  2466  3710            3710
1595  2467  2000            0
1596  2470  0000            0
1597  2471  0000            0
1598  2472  0000            0
1599  2473  0000            0
1600  2474  0000            0
1601  2475  0004    R116M1, 4
1602  2476  0000            0                       /TEST 116 APT IMAGE
1603  2477  3714            3714
1604  2500  0050            50
1605  2501  3000            3000
1606  2502  3713            3713
1607  2503  0000            0
1608  2504  0000            0
1609  2505  0000            0
1610  2506  0000            0
1611  2507  0000            0
1612  2510  0001            1
1613  2511  0004    R117M1, 4
1614  2512  0000            0                       /TEST 117 APT IMAGE
1615  2513  3714            3714
1616  2514  0050            50
1617  2515  3000            3000
1618  2516  3713            3713
1619  2517  0000            0
1620  2520  4000            4000
1621  2521  0000            0
1622  2522  0000            0
1623  2523  0000            0
1624  2524  0001            1
1625  2525  0004    R120M1, 4
1626  2526  0000            0                       /TEST 120 APT IMAGE
1627  2527  3717            3717
1628  2530  0050            50
1629  2531  3000            3000
1630  2532  3714            3714
1631  2533  0000            0
1632  2534  0000            0
1633  2535  0000            0
1634  2536  0000            0
1635  2537  0000            0
1636  2540  0000            0
1637  2541  0004    R121M1, 4
1638  2542  0000            0                       /TEST 121 APT IMAGE
1639  2543  3717            3717
1640  2544  0050            50
1641  2545  3000            3000
1642  2546  3714            3714
1643  2547  0000            0
```

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1644    2550  0000            0
1645    2551  0000            0
1646    2552  0000            0
1647    2553  0000            0
1648    2554  0001            1
1649    2555  0004    R122M1, 4
1650    2556  0000            0                       /TEST 122 APT IMAGE
1651    2557  3720            3720
1652    2560  0050            50
1653    2561  3000            3000
1654    2562  3717            3717
1655    2563  7777            7777
1656    2564  7777            7777
1657    2565  7777            7777
1658    2566  7777            7777
1659    2567  7777            7777
1660    2570  7777            7777
1661    2571  0004    R123M1, 4
1662    2572  0000            0                       /TEST 123 APT IMAGE
1663    2573  3724            3724
1664    2574  0050            50
1665    2575  3000            3000
1666    2576  3723            3723
1667    2577  0000            0
1668    2600  0000            0
1669    2601  0000            0
1670    2602  0000            0
1671    2603  0000            0
1672    2604  0001            1
1673    2605  0004    R124M1, 4
1674    2606  0000            0                       /TEST 124 APT IMAGE
1675    2607  3723            3723
1676    2610  0050            50
1677    2611  3000            3000
1678    2612  3720            3720
1679    2613  0000            0
1680    2614  0000            0
1681    2615  0000            0
1682    2616  0000            0
1683    2617  0000            0
1684    2620  0000            0
1685    2621  0004    R125M1, 4
1686    2622  0000            0                       /TEST 126 APT IMAGE
1687    2623  3723            3723
1688    2624  0050            50
1689    2625  3000            3000
1690    2626  3720            3720
1691    2627  0000            0
1692    2630  4000            4000
1693    2631  0000            0
1694    2632  0000            0
1695    2633  0000            0
1696    2634  0001            1
1697    2635  0004    R127M1, 4
1698    2636  0000            0                       /TEST 127 APT IMAGE
```

```
1699    2637  3734              3734
1700    2640  7050              50
1701    2641  3000              3000
1702    2642  3733              3733
1703    2643  0000              0
1704    2644  0000              0
1705    2645  3733              3733
1706    2646  0000              0
1707    2647  0000              0
1708    2650  0000              0
1709    2651  7004    R130M1,   4
1710    2652  0000              0                   /TEST 130 APT IMAGE
1711    2653  3736              3736
1712    2654  0050              50
1713    2655  3000              3000
1714    2656  3734              3734
1715    2657  2525              2525
1716    2660  2525              2525
1717    2661  2525              2525
1718    2662  2525              2525
1719    2663  2525              2525
1720    2664  2525              2525
1721    2665  0004    R131M1,   4
1722    2666  0000              0                   /TEST 131 APT IMAGE
1723    2667  3741              3741
1724    2670  0050              50
1725    2671  3000              3000
1726    2672  3740              3740
1727    2673  0000              0
1728    2674  0000              0
1729    2675  0000              0
1730    2676  0000              0
1731    2677  0000              0
1732    2700  0000              0
1733    2701  0004    R132M1,   4
1734    2702  0000              0                   /TEST 132 APT IMAGE
1735    2703  3744              3744
1736    2704  0050              50
1737    2705  3000              3000
1738    2706  3741              3741
1739    2707  7777              7777
1740    2710  7777              7777
1741    2711  7777              7777
1742    2712  7777              7777
1743    2713  7777              7777
1744    2714  7777              7777
1745    2715  0004    R133M1,   4
1746    2716  0000              0                   /TEST 133 APT IMAGE
1747    2717  3730              3730
1748    2720  0050              50
1749    2721  3000              3000
1750    2722  3747              3747
1751    2723  0000              0
1752    2724  0000              0
1753    2725  0000              0
```

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1754    2726  2000            0
1755    2727  2000            0
1756    2730  0000            0
1757    2731  2004    R134=1, 4
1758    2732  0000            0                       /TEST 134 APT IMAGE
1759    2733  3755            3755
1760    2734  0050            50
1761    2735  3000            3000
1762    2736  3754            3754
1763    2737  0000            0
1764    2740  0000            0
1765    2741  0000            0
1766    2742  0000            0
1767    2743  0000            0
1768    2744  0000            0
1769    2745  0004    R135=1, 4
1770    2746  0000            0                       /TEST 135 APT IMAGE
1771    2747  3765            3765
1772    2750  0050            50
1773    2751  3000            3000
1774    2752  0055            55
1775    2753  0000            0
1776    2754  0000            0
1777    2755  0000            0
1778    2756  0000            0
1779    2757  0000            0
1780    2760  0000            0
1781    2761  0004            4
1782
1783                  /
1784                  /FPP BASE REGISTER TABLE
1785                  /
1786          3000            *3000
1787    3000  2000    B0,     0       /OFFSET OF 0
1788    3001  0000            0
1789    3002  0000            0
1790    3003  0000    B1,     0       /OFFSET OF 1
1791    3004  0000            0
1792    3005  0000            2
1793    3006  0000    B2,     0       /OFFSET OF 2
1794    3007  0000            0
1795    3010  0000            0
1796    3011  0000    B3,     0       /OFFSET OF 3
1797    3012  0000            0
1798    3013  0000            0
1799    3014  0000    B4,     0       /OFFSET OF 4
1800    3015  0000            0
1801    3016  0000            0
1802    3017  0000    B5,     0       /OFFSET OF 5
1803    3020  0000            2
1804    3021  0000            0
1805    3022  0000    B6,     0       /OFFSET OF 6
1806    3023  0000            0
1807    3024  0000            0
1808    3025  0000    B7,     0       /OFFSET OF 7
```

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1829    3026  7000            0
1830    3027  3074            824
1831    3030  2525    B10,    2525    /OFFSET OF 10
1832    3031  2525            2525
1833    3032  2525            2525
1834    3033  2525    B11,    2525    /OFFSET OF 11
1835    3034  2525            2525
1836    3035  2525            2525
1837    3036  5252    B12,    5252    /OFFSET OF 12
1838    3037  5252            5252
1839    3040  5252            5252
1840    3041  5252    B13,    5252    /OFFSET OF 13
1841    3042  5252            5252
1842    3043  5252            5252
1843    3044  0000    B14,    0       /OFFSET OF 14
1844    3045  0000            0
1845    3046  0000            0
1846    3047  0000    B15,    0       /OFFSET OF 15
1847    3050  0000            0
1848    3051  0000            0
1849    3052  7777    B16,    7777    /OFFSET OF 16
1850    3053  7777            7777
1851    3054  7777            7777
1852    3055  7777    B17,    7777    /OFFSET OF 17
1853    3056  7777            7777
1854    3057  7777            7777
1855    3060  0000    B20,    0       /OFFSET OF 20
1856    3061  2525            2525
1857    3062  2525            2525
1858    3063  2525    B21,    2525    /OFFSET OF 21
1859    3064  2525            2525
1860    3065  2525            2525
1861    3066  0000    B22,    0       /OFFSET OF 22
1862    3067  1252            1252
1863    3070  5252            5252
1864    3071  5252    B23,    5252    /OFFSET OF 23
1865    3072  5252            5252
1866    3073  5252            5252
1867    3074  0000    B24,    0       /OFFSET OF 24
1868    3075  4000            4000
1869    3076  0000            0
1870    3077  0000    B25,    0       /OFFSET OF 25
1871    3100  0000            0
1872    3101  0001            1
1873    3102  0000    B26,    0       /OFFSET OF 26
1874    3103  0000            0
1875    3104  0000            0
1876    3105  0000    B27,    0       /OFFSET OF 27
1877    3106  0000            0
1878    3107  0001            1
1879    3110  0000    B30,    0       /OFFSET OF 30
1880    3111  3777            3777
1881    3112  7777            7777
1882    3113  7777    B31,    7777    /OFFSET OF 31
1883    3114  7777            7777
```

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1864     3115  7777              7777
1865     3116  0000    B32,      0         /OFFSET OF 32 AND
1866     3117  0000              0         /OFFSET OF 33 USED
1867     3120  0000              0         /AS A TARGET AREA FOR
1868     3121  0000    B33,      0         /FPP INSTRUCTIONS
1869     3122  0000              0         /WHICH MODIFY MEMORY
1870     3123  0000              0
1871     3124  7777    B34,      7777      /OFFSET OF 34
1872     3125  7777              7777
1873     3126  7777              7777
1874     3127  7777    B35,      7777      /OFFSET OF 35
1875     3130  7777              7777
1876     3131  7777              7777
1877     3132  4210    B36,      4210      /OFFSET OF 36
1878     3133  0210              210
1879     3134  4210              4210
1880     3135  4210    B37,      4210      /OFFSET OF 37
1881     3136  4210              4210
1882     3137  4210              4210
1883     3140  2104    B40,      2104      /OFFSET OF 40
1884     3141  2314              2314
1885     3142  6314              6314
1886     3143  6314    B41,      6314      /OFFSET OF 41
1887     3144  6314              6314
1888     3145  6314              6314
1889     3146  1042    B42,      1042      /OFFSET OF 42
1890     3147  3356              3356
1891     3150  7356              7356
1892     3151  7356    B43,      7356      /OFFSET OF 43
1893     3152  7356              7356
1894     3153  7356              7356
1895     3154  7777    B44,      7777      /OFFSET OF 44
1896     3155  4000              4000
1897     3156  0000              0
1898     3157  7200    B45,      0         /OFFSET OF 45
1899     3160  0000              0
1900     3161  0001              1
1901     3162  7777    B46,      7777      /OFFSET OF 46
1902     3163  3777              3777
1903     3164  7777              7777
1904     3165  7777    B47,      7777      /OFFSET OF 47
1905     3166  7777              7777
1906     3167  7777              7777
1907     3170  7000    B50,      0         /OFFSET OF 50
1908     3171  3777              3777
1909     3172  7777              7777
1910     3173  7777    B51,      7777      /OFFSET OF 51
1911     3174  7777              7777
1912     3175  7777              7777
1913     3176  4210    B52,      4210      /OFFSET OF 52
1914     3177  4421              4421
1915     3200  0421              421
1916     3201  0421    B53,      421       /OFFSET OF 53
1917     3202  0421              421
1918     3203  0420              420
```

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1919  3204  2104  B54,  2104  /OFFSET OF 54
1920  3205  0421        421
1921  3206  0421        421
1922  3207  0421  B55,  421   /OFFSET OF 55
1923  3210  0421        421
1924  3211  0420        420
1925  3212  1042  B56,  1042  /OFFSET OF 56
1926  3213  0421        421
1927  3214  0421        421
1928  3215  0421  B57,  421   /OFFSET OF 57
1929  3216  0421        421
1930  3217  0420        420
1931  3220  6314  B60,  6314  /OFFSET OF 60
1932  3221  4631        4631
1933  3222  4631        4631
1934  3223  4631  B61,  4631  /OFFSET OF 61
1935  3224  4631        4631
1936  3225  4630        4630
1937  3226  3146  B62,  3146  /OFFSET OF 62
1938  3227  2525        2525
1939  3230  2525        2525
1940  3231  2525  B63,  2525  /OFFSET OF 63
1941  3232  2525        2525
1942  3233  2524        2524
1943  3234  0421  B64,  421   /OFFSET OF 64
1944  3235  0421        421
1945  3236  0421        421
1946  3237  0421  B65,  421   /OFFSET OF 65
1947  3240  0421        421
1948  3241  0420        420
1949  3242  2000  B66,  2000  /OFFSET OF 66
1950  3243  2000        2000
1951  3244  0000        0
1952  3245  0000  B67,  0     /OFFSET OF 67
1953  3246  0000        0
1954  3247  0000        0
1955  3250  0001  B70,  1     /OFFSET OF 70
1956  3251  3000        3000
1957  3252  0000        0
1958  3253  0000  B71,  0     /OFFSET OF 71
1959  3254  0000        0
1960  3255  0000        0
1961  3256  7705  B72,  7705  /OFFSET OF 72
1962  3257  0000        0
1963  3260  0000        0
1964  3261  0000  B73,  0     /OFFSET OF 73
1965  3262  0000        0
1966  3263  0001        1
1967  3264  1200  B74,  1200  /OFFSET OF 74
1968  3265  1252        1252
1969  3266  5232        5252
1970  3267  5252  B75,  5252  /OFFSET OF 75
1971  3270  5252        5252
1972  3271  5252        5252
1973  3272  0071  B76,  71    /OFFSET OF 76
```

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1974    3273  4471            4471
1975    3274  5307            5307
1976    3275  1352    B77,    1352    /OFFSET OF 77
1977    3276  7350            7350
1978    3277  4735            4735
1979    3300  4001    B100,   4001    /OFFSET OF 100
1980    3301  5064            5064
1981    3302  3510            3510
1982    3303  4376    B101,   4376    /OFFSET OF 101
1983    3304  5146            5146
1984    3305  2575            2575
1985    3306  3777    B102,   3777    /OFFSET OF 102
1986    3307  2000            2000
1987    3310  0000            0
1988    3311  0000    B103,   0       /OFFSET OF 103
1989    3312  0000            0
1990    3313  0000            0
1991    3314  0001    B104,   1       /OFFSET OF 104
1992    3315  4000            4000
1993    3316  0000            0
1994    3317  0000    B105,   0       /OFFSET OF 105
1995    3320  0000            0
1996    3321  0001            1
1997    3322  0000    B106,   0       /OFFSET OF 106
1998    3323  3777            3777
1999    3324  7777            7777
2000    3325  7777    B107,   7777    /OFFSET OF 107
2001    3326  7777            7777
2002    3327  7777            7777
2003    3330  0031    B110,   31      /OFFSET OF 110
2004    3331  4771            4771
2005    3332  6730            6730
2006    3333  5137    B111,   5137    /OFFSET OF 111
2007    3334  6407            6407
2008    3335  2173            2173
2009    3336  7301    B112,   7301    /OFFSET OF 112
2010    3337  7261            7261
2011    3340  0376            0376
2012    3341  5742    B113,   5742    /OFFSET OF 113
2013    3342  6572            6572
2014    3343  0713            0713
2015    3344  6565    B114,   6565    /OFFSET OF 114
2016    3345  2525            2525
2017    3346  2525            2525
2018    3347  2525    B115,   2525    /OFFSET OF 115
2019    3350  2525            2525
2020    3351  2525            2525
2021    3352  0001    B116,   1       /OFFSET OF 116
2022    3353  4000            4000
2023    3354  0000            0
2024    3355  0000    B117,   0       /OFFSET OF 117
2025    3356  0000            0
2026    3357  0001            1
2027    3360  2525    B120,   2525    /OFFSET OF 120
2028    3361  1252            1252
```

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2229    3362  5252            5252
2230    3363  5252    B121,   5252    /OFFSET OF 121
2231    3364  5252            5252
2232    3365  5252            5252
2233    3366  2716    B122,   2716    /OFFSET OF 122
2234    3367  3705            3705
2235    3370  1443            1443
2236    3371  7165    B123,   7165    /OFFSET OF 123
2237    3372  3402            3402
2238    3373  6213            6213
2239    3374  4000    B124,   4000    /OFFSET OF 124
2240    3375  0000            0
2241    3376  0000            0
2242    3377  0000    B125,   0       /OFFSET OF 125
2243    3400  0000            0
2244    3401  0001            1
2245    3402  3777    B126,   3777    /OFFSET OF 126
2246    3403  0000            0
2247    3404  0000            0
2248    3405  0000    B127,   0       /OFFSET OF 127
2249    3406  0000            0
2250    3407  0001            1
2251    3410  0000    B130,   0       /OFFSET OF 130
2252    3411  0000            0
2253    3412  0000            0
2254    3413  0000    B131,   0       /OFFSET OF 131
2255    3414  0000            0
2256    3415  0000            0
2257    3416  0000    B132,   0       /OFFSET OF 132
2258                  /
2259                  /FPP INSTRUCTIONS
2260                  /
2261          3500            .3500
2262    3500  0001    FPC,    FPAUSE
2263    3501  0000            FEXIT
2264    3502  0050            STARTE
2265    3503  0001            FPAUSE
2266    3504  0000            FEXIT
2267    3505  0000            0
2268    3506  0000            0
2269    3507  0000            0
2270    3510  0000            0
2271    3511  0002            FCLA
2272    3512  0000            FEXIT
2273    3513  0003            FNEG
2274    3514  0000            FEXIT
2275    3515  0003            FNEG
2276    3516  0003            FNEG
2277    3517  0003            FNEG
2278    3520  0000            FEXIT
2279    3521  0004            FNORM
2280    3522  0000            FEXIT
2281    3523  0030            XTA10   /LOC 0050 TO FAC
2282    3524  0000            FEXIT
2283    3525  0037            XTA17   /LOC 0057 TO FAC
```

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2084    3526  0000            FEXIT
2085    3527  0011            ALN:1   /EXPONENT ALIGNED TO CONTENTS OF LOC 51
2086    3530  0000            FEXIT
2087    3531  0012            ALN:2   /EXPONENT ALIGNED TO CONTENTS OF LOC 0052
2088    3532  0000            FEXIT
2089    3533  0013            ALN:3   /EXPONENT ALIGNED TO CONTENTS OF LOC 0053
2090    3534  0000            FEXIT
2091    3535  0010            ALN:0   /EXPONENT ALIGNED TO CONTENTS OF LOC 0050
2092    3536  0000            FEXIT
2093    3537  0210            FLDA:210  /LOAD LOC 3030 TO 3035 INTO FAC
2094    3540  0000            FEXIT
2095    3541  0212            FLDA:212  /LOAD LOC 3036 TO 3043 INTO FAC
2096    3542  0000            FEXIT
2097    3543  0500            FLDA:500  /LOAD LOC 3044 TO 3051 INTO FAC
2098    3544  3044            B14
2099    3545  0000            FEXIT
2100    3546  0440            FLDA:440  /LOAD LOC 3052 TO 3057 INTO FAC
2101    3547  3044            B14
2102    3550  0000            FEXIT
2103    3551  0540            FLDA:540  /LOAD LOC 3052 TO 3057 FOR TEST #34 OR
2104    3552  3044            B14     /LOAD LOC 3060 TO 3065 FOR TEST #35
2105    3553  0000            FEXIT
2106    3554  0647            FLDA:647  /LOAD LOC 3074 TO 3101 FOR TEST #36 OR
2107    3555  0000            FEXIT   /LOAD LOC 3102 TO 3107 FOR TEST #37
2108    3556  0747            FLDA:747  /LOAD LOC 3110 TO 3115 FOR TEST #40
2109    3557  0000            FEXIT
2110    3560  6232            FSTA:232  /STORE FAC IN LOC 3116 TO 3123
2111    3561  0000            FEXIT
2112    3562  1222            FADD:222  /ADD LOC 3066 TO LOC 3073 TO FAC
2113    3563  0000            FEXIT
2114    3564  1230            FADD:230  /ADD LOC 3110 TO 3115 TO FAC
2115    3565  0000            FEXIT
2116    3566  1234            FADD:234  /ADD LOC 3124 TO 3131 TO FAC
2117    3567  0000            FEXIT
2118    3570  1236            FADD:236  /ADD LOC 3132 TO 3137 TO FAC
2119    3571  0000            FEXIT
2120    3572  1240            FADD:240  /ADD LOC 3140 TO 3145 TO FAC
2121    3573  0000            FEXIT
2122    3574  1242            FADD:242  /ADD LOC 3146 TO 3153 TO FAC
2123    3575  0000            FEXIT
2124    3576  1244            FADD:244  /ADD LOC 3154 TO 3161 TO FAC
2125    3577  0002            FEXIT
2126    3600  2246            FSUB:246  /SUB LOC 3162 TO 3167 FROM FAC
2127    3601  0000            FEXIT
2128    3602  2250            FSUB:250  /SUB LOC 3170 TO 3175 FROM FAC
2129    3603  0000            FEXIT
2130    3604  2252            FSUB:252  /SUB LOC 3176 TO 3203 FROM FAC
2131    3605  0000            FEXIT
2132    3606  2254            FSUB:254  /SUB LOC 3204 TO 3211 FROM FAC
2133    3607  0000            FEXIT
2134    3610  2256            FSUB:256  /SUB LOC 3212 TO 3217 FROM FAC
2135    3611  0000            FEXIT
2136    3612  2260            FSUB:260  /SUB LOC 3220 TO 3225 FROM FAC
2137    3613  0000            FEXIT
2138    3614  2262            FSUB:262  /SUB LOC 3226 TO 3233 FROM FAC
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2139    3615  0000          FEXIT
2140    3616  2264          FSUB!264  /SUB LOC 3234 TO 3241 FROM FAC
2141    3617  0000          FEXIT
2142    3620  4266          FMUL!266  /MUL LOC 3242 TO 3247 X FAC
2143    3621  0000          FEXIT
2144    3622  4270          FMUL!270  /MUL LOC 3250 TO 3255 X FAC
2145    3623  0000          FEXIT
2146    3624  4272          FMUL!272  /MUL LOC 3256 TO 3263 X FAC
2147    3625  0000          FEXIT
2148    3626  4274          FMUL!274  /MUL LOC 3264 TO 3271 X FAC
2149    3627  0000          FEXIT
2150    3630  4276          FMUL!276  /MUL LOC 3272 TO 3277 X FAC
2151    3631  0000          FEXIT
2152    3632  4300          FMUL!300  /MUL LOC 3300 TO 3305 X FAC
2153    3633  0000          FEXIT
2154    3634  3302          FDIV!302  /DIV LOC 3306 TO 3313 INTO FAC
2155    3635  0000          FEXIT
2156    3636  3304          FDIV!304  /DIV LOC 3314 TO 3321 INTO FAC
2157    3637  0000          FEXIT
2158    3640  3306          FDIV!306  /DIV LOC 3322 TO 3327 INTO FAC
2159    3641  0000          FEXIT
2160    3642  3310          FDIV!310  /DIV LOC 3330 TO 3335 INTO FAC
2161    3643  0000          FEXIT
2162    3644  3312          FDIV!312  /DIV LOC 3336 TO 3343 INTO FAC
2163    3645  0000          FEXIT
2164    3646  3314          FDIV!314  /DIV LOC 3344 TO 3351 INTO FAC
2165    3647  0000          FEXIT
2166    3650  0006          STARTD
2167    3651  0001          FPAUSE
2168    3652  0000          FEXIT
2169    3653  0005          STARTF
2170    3654  0001          FPAUSE
2171    3655  0000          FEXIT
2172    3656  6232          FSTA!232  /STORE FAC IN LOC 3116 TO 3123
2173    3657  2320          FLDA!320  /LOAD LOC 3360 TO 3365 INTO FAC
2174    3660  5232          FADDM!232  /ADD LOC 3116 TO 3123 TO FAC
2175    3661  0000          FEXIT
2176    3662  6232          FSTA!232  /STORE FAC IN LOC 3116 TO 3123
2177    3663  0322          FLDA!322  /LOAD LOC 3366 TO 3373 INTO FAC
2178    3664  7232          FMULM!232  /MUL LOC 3116 TO 3123 X FAC
2179    3665  0000          FEXIT
2180    3666  1324          FADD!324  /ADD LOC 3374 TO 3401 TO FAC
2181    3667  0000          FEXIT
2182    3670  1326          FADD!326  /ADD LOC 3402 TO 3407 TO FAC
2183    3671  0000          FEXIT
2184    3672  3330          FDIV!330  /DIV LOC 3410 TO 3415 INTO FAC
2185    3673  0000          FEXIT
2186    3674  1000          JEQ
2187    3675  3677          ,+2
2188    3676  0000          FEXIT
2189    3677  0000          FEXIT
2190    3700  1010          JGE
2191    3701  3703          ,+2
2192    3702  0000          FEXIT
2193    3703  0000          FEXIT
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2194    3704  1020            JLE
2195    3705  3707            ,+2
2196    3706  0000            FEXIT
2197    3707  0000            FEXIT
2198    3710  1040            JNE
2199    3711  3713            ,+2
2200    3712  0000            FEXIT
2201    3713  0000            FEXIT
2202    3714  1050            JLT
2203    3715  3717            ,+2
2204    3716  0000            FEXIT
2205    3717  0000            FEXIT
2206    3720  1060            JGT
2207    3721  3723            ,+2
2208    3722  0000            FEXIT
2209    3723  0000            FEXIT
2210    3724  0000            0
2211    3725  0000            0
2212    3726  0000            0
2213    3727  0000            0
2214    3730  0000            0
2215    3731  0007            JAC
2216    3732  3733            ,+1
2217    3733  0000    TJAC,   FEXIT
2218    3734  0040            FNOP
2219    3735  0000            FEXIT
2220    3736  1030            JA
2221    3737  3740            ,+1
2222    3740  0000            FEXIT
2223    3741  1070            JAL
2224    3742  3744            ,+2
2225    3743  0000            FEXIT
2226    3744  0000            FEXIT
2227    3745  1130            JSR
2228    3746  3750            ,+2
2229    3747  0000            FEXIT
2230    3750  1030            JA
2231    3751  3001            80+1
2232    3752  1120            JSA
2233    3753  3755            ,+2
2234    3754  0000            FEXIT
2235    3755  0000            0
2236    3756  0000            0
2237    3757  1030            JA
2238    3760  3755            ,+3
2239    3761  0000            FEXIT
2240    3762  2150            JXN1,50
2241    3763  3765            ,+2
2242    3764  0000            FEXIT
2243    3765  0000            FEXIT
2244    3766  3000            TRAP1
2245    3767  0000            0
2246    3770  4000            TRAP2
2247    3771  0000            0
2248    3772  5000            TRAP3
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2249    3773  0000            0
2250    3774  6000            TRAP4
2251    3775  0000            0
2252    3776  7000            TRAP5
2253    3777  0000            0
2254                  /
2255                  /SET EXTENDED PRECISION MODE (EPM) BY
2256                  /SETTING AC=4000 AND ISSUING 6567 IOT
2257                  /ALSO TEST THAT 6567 IOT CLEARED THE AC
2258                  /
2259          4000            .=4000
2260    4000  7300    T1,     CLA CLL
2261    4001  6552            FPICL                   /ZERO THE FPP WORLD
2262    4002  6553            FPCOM                   /LOAD FPP COMMAND REGISTER
2263    4003  1113            TAD     K4000           /AC = 4000
2264    4004  6567            LSHFT                   /SET EPM MODE
2265    4005  7440            SZA                     /AC = 0
2266    4006  7402            HLT                     /NO = ERR - LSHFT IOT DID NOT CLEAR AC
2267    4007  6556            FPRST                   /READ FPP STATUS REGISTER INTO AC
2268    4010  7041            CIA
2269    4011  1062            TAD     K4
2270    4012  7440            SZA                     /AC = 0
2271    4013  7402            HLT                     /ERR - ONLY EPM STATUS BIT 9 SHOULD BE SET
2272    4014  6552            FPICL                   /ZERO THE FPP WORLD
2273    4015  6556            FPRST                   /READ FPP STATUS REGISTER INTO AC
2274    4016  7440            SZA                     /AC = 0
2275    4017  7402            HLT                     /ERR-FPICL IOT DID NOT CLEAR FPP STATUS REG
2276    4020  7300            CLA CLL
2277    4021  1113            TAD     K4000           /AC=4000
2278    4022  6567            LSHFT                   /SET EPM MODE
2279    4023  6553            FPCOM                   /LOAD FPP CMD REGISTER (FPP MODE)
2280    4024  7300            CLA CLL
2281    4025  6556            FPRST                   /READ FPP STATUS REGISTER INTO AC
2282    4026  7440            SZA                     /AC=0
2283    4027  7402            HLT                     /ERR-FPP MODE DID NOT RESET EPM
2284    4030  1113            TAD     K4000           /AC=4000
2285    4031  6567            LSHFT                   /SET EPM MODE
2286    4032  1113            TAD     K4000           /AC=4000
2287    4033  6553            FPCOM                   /LOAD FPP CMD REGISTER (SET DP MODE)
2288    4034  7300            CLA CLL
2289    4035  6556            FPRST                   /READ FPP STATUS REGISTER INTO AC
2290    4036  7041            CIA
2291    4037  1113            TAD     K4000
2292    4040  7440            SZA                     /AC=0
2293    4041  7402            HLT                     /ERR=ONLY DP MODE BIT 0 SHOULD BE SET
2294    4042  1113            TAD     K4000           /AC=4000
2295    4043  6567            LSHFT                   /SET EPM
2296    4044  6556            FPRST                   /READ FPP STATUS REGISTER INTO AC
2297    4045  7041            CIA
2298    4046  1062            TAD     K4
2299    4047  7440            SZA                     /AC=0
2300    4050  7402            HLT                     /ERR=ONLY EPM STATUS BIT 9 SHOULD BE SET
2301    4051  6552            FPICL                   /ZERO THE FPP WORLD
2302    4052  6553            FPCOM                   /LOAD FPP CMD REGISTER (SET FPP MODE)
2303    4053  1113            TAD     K4000           /AC=4000
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2324    4054  6567          LSHFT                   /SET EPM MODE
2325    4055  6556          FPRST                   /READ FPP STATUS REGISTER INTO AC
2326    4056  7041          CIA
2327    4057  1062          TAD     K4
2328    4060  7440          SZA                     /AC=0
2329    4061  7402          HLT                     /ERR=ONLY EPM STATUS BIT9 SHOULD BE SET
2330                  /
2331                  /TEST LOADING OF FPP ADRS REGISTER IN EPM
2332                  /USING MAINTENANCE MODE AND READING BACK ALL
2333                  /4096 COMBINATIONS WITH RAPT (6565) IOT
2334                  /
2335    4062  6552    T2,     FPICL                   /ZERO THE FPP WORLD
2336    4063  7200          CLA
2337    4064  3015          DCA     NUM             /CLEAR LOC NUM
2338    4065  1113          TAD     K4000
2339    4066  6567          LSHFT                   /SET EPM
2340    4067  6561          FMAIN                   /SET MAINTENANCE MODE
2341    4070  1015          TAD     NUM
2342    4071  6555          FPST                    /LOAD ADRS REG, AND START FPP
2343    4072  7402          HLT                     /ERR = FPP NOT READY
2344    4073  7200          CLA
2345    4074  6565          RAPT                    /READ ADRS REG INTO AC
2346    4075  7041          CIA
2347    4076  1015          TAD     NUM
2348    4077  7001          IAC                     /ADD 1
2349    4100  7440          SZA                     /ADRS REG SHOULD = LOC NUM CONTENTS +1
2350    4101  7402          HLT                     /ERR = NO
2351    4102  6552          FPICL                   /ZERO THE FPP WORLD
2352    4103  2015          ISZ     NUM             /DONE
2353    4104  5265          JMP     T2+3            /NO
2354                  /
2355                  /START THE FPP SET EPM AND EXECUTE A FPAUSE AND
2356                  /A FEXIT INSTRUCTION FROM LOCATION 3300
2357                  /
2358    4105  4447    T3,     JMS I   CLIP            /CLEAR FPP INDEX REGISTERS
2359    4106  4442          JMS I   APT1            /SET UP APT TABLE WITH FAC=0
2360    4107  1113          TAD     [4000
2361    4110  6567          LSHFT                   /SET EPM
2362    4111  1064          TAD     K25
2363    4112  6555          FPST                    /LOAD ADRS REG AND START FPP
2364    4113  7402          HLT                     /ERR=FPP NOT READY
2365    4114  4443          JMS I   APT2            /SET UP APT TABLE WITH FAC=1'S
2366    4115  6556          FPRST                   /READ FPP STATUS REG INTO AC
2367    4116  7041          CIA
2368    4117  1063          TAD     K7
2369    4120  7440          SZA                     /AC=0
2370    4121  7402          HLT                     /ERR=STATUS SET SHOULD BE RUN, PAUSE, EPM
2371    4122  6555          FPST                    /RE-START FPP
2372    4123  7402          HLT                     /ERR
2373    4124  1122          TAD     K7760           /SET UP
2374    4125  3012          DCA     DELAY           /DELAY
2375    4126  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST
2376    4127  5331          JMP     .+2             /NO
2377    4130  5334          JMP     .+4             /FPP INTERRUPT REQUEST
2378    4131  2012          ISZ     DELAY
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2414  4210  1015          TAD     NUM             /AC=CONTENTS OF LOC NUM
2415  4211  3410          DCA I   10              /DEPOSIT IN APT+1 TO APT+9
2416  4212  2011          ISZ     11              /DONE
2417  4213  5207          JMP     .-4             /NO
2418  4214  1113          TAD     K4000
2419  4215  6507          LSHFT                   /SET EPM MODE
2420  4216  1364          TAD     K3501
2421  4217  3026          DCA     APT+1           /ALTER FPC IN APT
2422  4220  1064          TAD     K25
2423  4221  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
2424  4222  7402          HLT                     /ERR = FPP NOT READY
2425  4223  6557          FPIST                   /FPP INTERRUPT FLAG SET
2426  4224  5223          JMP     .-1             /NO
2427  4225  7041          CIA
2428  4226  1062          TAD     K4
2429  4227  7440          SZA                     /EPM STATUS BIT SET
2430  4230  7402          HLT                     /ERR=NO
2431  4231  1025          TAD     APT             /APT FIELD BITS TO AC
2432  4232  7440          SZA                     /ZERO
2433  4233  7402          HLT                     /ERR
2434  4234  1026          TAD     APT+1           /APT FPC TO AC
2435  4235  7041          CIA
2436  4236  1100          TAD     K3502
2437  4237  7440          SZA                     /SHOULD=3502
2438  4240  7402          HLT                     /ERR=NO
2439  4241  1031          TAD     APT+4           /APT OP ADRS TO AC
2440  4242  7041          CIA
2441  4243  1364          TAD     K3501
2442  4244  7440          SZA                     /SHOULD = 3501
2443  4245  7402          HLT                     /ERR=NO
2444  4246  1015          TAD     NUM             /ALTER
2445  4247  3031          DCA     APT+4           /APT+4 FOR FOLLOWING CODE
2446  4250  1362          TAD     K26
2447  4251  3010          DCA     10              /POINTER TO APT DATA
2448  4252  1133          TAD     M11
2449  4253  3011          DCA     11              /COUNTS APT COMPARISONS
2450  4254  1410          TAD I   10              /GET APT WORD
2451  4255  7041          CIA
2452  4256  1015          TAD     NUM
2453  4257  7440          SZA                     /SHOULD EQUAL CONTENTS OF LOC NUM
2454  4260  7402          HLT                     /ERR
2455  4261  2011          ISZ     11              /DONE WITH THIS PATTERN
2456  4262  5254          JMP     .-6             /NO
2457  4263  2015          ISZ     NUM             /COMPLETED ALL 4096 PATTERNS
2458  4264  5203          JMP     CO              /NO
2459                      /
2460                      /TEST EPM INTERRUPT TO LOCATION 0
2461                      /
2462  4265  4443  T0,     JMS I   APT2            /SET UP APT TABLE WITH FAC=1'S
2463  4266  6552          FPICL                   /ZERO THE FPP WORLD
2464  4267  1100          TAD     K3502
2465  4270  3026          DCA     APT+1           /ALTE FPC POINTER
2466  4271  1363          TAD     K400
2467  4272  6553          FPCOM                   /LOAD FPP COMMAND REGISTER
2468  4273  7200          CLA
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2469  4274  1113          TAD     K4000
2470  4275  6567          LSHFT                   /SET EPM MODE
2471  4276  1064          TAD     K25
2472  4277  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
2473  4300  7402          HLT                     /ERR=FPP NOT READY
2474  4301  4442          JMS I   APT1            /CLEAR APT TABLE
2475  4302  6556          FPRST                   /READ FPP STATUS REGISTER INTO AC
2476  4303  7041          CIA
2477  4304  1063          TAD     K7              /STATUS SHOULD=0007?
2478  4305  7440          SZA                     /AC=0
2479  4306  7402          HLT                     /STATUS SET SHOULD BE RUN, PAUSE, EPM
2480  4307  6001          ION                     /ENABLE INTERRUPTS
2481  4310  6555          FPST                    /RESTART FPP
2482  4311  7402          HLT                     /ERR
2483  4312  7240          CLA CMA                 /ACC=7777
2484  4313  3003          DCA     INFLAG          /INTERRUPT FLAG
2485  4314  1117          TAD     K7700           /WAIT
2486  4315  3310          DCA     10              /IN
2487  4316  2010          ISZ     10              /DELAY
2488  4317  5316          JMP     .-1             /LOOP
2489  4320  1003          TAD     INFLAG          /AC=CONTENTS OF LOC INFLAG
2490  4321  7440          SZA                     /AC=0
2491  4322  7402          HLT                     /NO=FPP DID NOT INTERRUPT
2492  4323  4422          JMS I   APTCK           /TEST APT
2493  4324  0735          R6M1                    /EXPECTED RESULT POINTER =1
2494  4325  7402          HLT                     /ERR IN APT
2495                /
2496                /TEST CMD REG BIT7 (PREVENTION OF DUMPING
2497                /FAC ON EXECUTION OF FEXT INSTRUCTION IN EPM
2498                /
2499  4326  6552    T7,     FPICL                   /ZERO THE FPP WORLD
2500  4327  4443          JMS .   APT2            /SET UP APT TABLE WITH FAC=ONES
2501  4330  1361          TAD     K20
2502  4331  6553          FPCOM                   /LOAD CMD REG
2503  4332  7200          CLA
2504  4333  1160          TAD     K3902
2505  4334  3026          DCA     APT+1           /ALTER FPC IN APT
2506  4335  1113          TAD     K4000
2507  4336  6567          LSHFT                   /SET EPM
2508  4337  1064          TAD     K25
2509  4340  6555          FPST                    /LOAD ADRS REG AND START FPP
2510  4341  7402          HLT                     /ERR=FPP NOT READY
2511  4342  4442          JMS I   APT1            /CLEAR APT
2512  4343  6556          FPRST                   /READ FPP STATUS REGISTER INTO AC
2513  4344  7041          CIA
2514  4345  1063          TAD     K7              /STATUS SHOULD=3307?
2515  4346  7440          SZA                     /AC=2
2516  4347  7402          HLT                     /NO=ERR
2517  4350  6555          FPST                    /RESTART FPP
2518  4351  7402          HLT                     /ERR
2519  4352  6551          FPINT                   /SKIP ON FPP INTERRUPT
2520  4353  5352          JMP     .-1             /NO
2521  4354  4422          JMS I   APTCK           /TEST APT
2522  4355  0731          R7M1                    /EXPECTED RESULT POINTER=1
2523  4356  7402          HLT                     /ERR IN APT
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2524    4337  5760            JMP I   .+1
2525    4340  4400            T10
2526                    /
2527    4341  0020      K20,  20
2528    4342  0026      K26,  26
2529    4343  0400      K400, 400
2530    4344  3501      K3501,3501
2531                    /
2532                    /TEST FAC LSW1,LSW2 AND LSW3 ARE FORCED TO ZERO
2533                    /WHEN EPM IS RESET BY A STARTD INSTRUCTION
2534                    /
2535          4400              *4400
2536    4400  6552      T10,  FPICL                   /ZERO THE FPP WORLD
2537    4401  4443            JMS I   APT2            /SET UP APT WITH FAC=ONES
2538    4402  1113            TAD     K4000
2539    4403  6567            LSHFT                   /SET EPM
2540    4404  1375            TAD     K3650
2541    4405  3026            DCA     APT+1           /ALTER FPC IN APT
2542    4406  1064            TAD     K25
2543    4407  6555            FPST                    /LOAD ADRS REG AND START FPP
2544    4410  7402            HLT                     /ERR=FPP NOT READY
2545    4411  4442            JMS I   APT1            /SET UP APT TABLE WITH FAC=0
2546    4412  6556            FPRST                   /READ FPP STATUS REGISTER INTO AC
2547    4413  7041            CIA
2548    4414  1377            TAD     K4003           /STATUS SHOULD=4003=...DP,PAUSE AND RUN SET
2549
2550    4415  7440            SZA                     /AC=0
2551    4416  7402            HLT                     /NO=ERR
2552    4417  6555            FPST                    /YE=START FPP
2553    4420  7402            HLT                     /ERR=FPP  NOT READY
2554    4421  6551            FPINT                   /FPP INTERRUPT REQUEST
2555    4422  5221            JMP     .-1             /NO
2556    4423  4422            JMS I   APTCK           /TEST APT
2557    4424  0765            RCOM1                   /EXPECTED RESULT POINTER =1
2558    4425  7402            HLT                     /ERR IN APT
2559                    /
2560                    /TEST FAC LSW1, LSW2 AND LSW3 ARE FORCED TO ZERO
2561                    /WHEN EPM IS RESET BY A STARTF INSTRUCTION
2562                    /
2563    4426  6552      T11,  FPICL                   /ZERO THE FPP WORLD
2564    4427  4443            JMS I   APT2            /SET UP APT WITH FAC=ONES
2565    4430  1113            TAD     K3777
2566    4431  3033            DCA     MSW             /ALTER APT MSW
2567    4432  1113            TAD     K4000
2568    4433  6567            LSHFT                   /SET EPM
2569    4434  1376            TAD     K3653
2570    4435  3026            DCA     APT+1           /ALTER APT FPC
2571    4436  1064            TAD     K25
2572    4437  6555            FPST                    /LOAD ADRS REG AND START FPP
2573    4440  7402            HLT                     /ERR=FPP NOT READY
2574    4441  4442            JMS I   APT1            /SET UP APT WITH FAC=0
2575    4442  6556            FPRST                   /READ FPP STATUS REGISTER INTO AC
2576    4443  7041            CIA
2577    4444  1061            TAD     K3              /STATUS SHOULD=3=...RUN AND PAUSE SET
2578    4445  7440            SZA                     /AC=0
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2579    4446  7402            HLT                     /ERR
2580    4447  6555            FPST                    /RESTART FPP
2581    4450  7402            HLT                     /ERR-FPP NOT READY
2582    4451  6551            FPINT                   /FPP INTERRUPT REQUEST
2583    4452  5251            JMP     .+1             /NO
2584    4453  4422            JMS I   APTCK           /TEST APT
2585    4454  1001            R11M1                   /EXPECTED RESULT POINTER +1
2586    4455  7402            HLT                     /ERR IN APT
2587
2588                  /
2589                  /TEST EXECUTION OF FCLA INSTRUCTION IN EPM
2590                  /
2591    4456  6552    T12,    FPICL                   /ZERO THE FPP WORLD
2592    4457  4443            JMS I   APT2            /SET UP APT WITH FAC=ONES
2593    4460  1113            TAD     K4000
2594    4461  6567            LSHFT                   /SET EPM
2595    4462  1372            TAD     K3511
2596    4463  3026            DCA     APT+1           /ALTER APT FPC
2597    4464  1064            TAD     K25
2598    4465  6555            FPST                    /LOAD ADRS REG AND START FPP
2599    4466  7402            HLT                     /ERR-FPP NOT READY
2600    4467  6551            FPINT                   /FPP INTERRUPT REQUEST
2601    4470  5267            JMP     .+1             /NO
2602    4471  4422            JMS I   APTCK           /TEST APT
2603    4472  1019            R12M1                   /EXPECTED RESULT POINTER +1
2604    4473  7402            HLT                     /ERR IN APT
2605                  /
2606                  /TEST EXECUTION OF FNEG INSTRUCTION IN EPM
2607                  /
2608    4474  6552    T13,    FPICL                   /ZERO THE FPP WORLD
2609    4475  4442            JMS I   APT1            /SET UP APT WITH FAC=0
2610    4476  1060            TAD     K1
2611    4477  3037            DCA     LSW3            /ALTER APT LSW3
2612    4500  1113            TAD     K4000
2613    4501  6567            LSHFT                   /SET EPM
2614    4502  1373            TAD     K3513
2615    4503  3026            DCA     APT+1           /ALTER APT FAC
2616    4504  1064            TAD     K25
2617    4505  6555            FPST                    /LOAD ADRS REG AND START FPP
2618    4506  7402            HLT
2619    4507  6551            FPINT                   /FPP INTERRUPT REQUEST
2620    4510  5307            JMP     .+1             /NO
2621    4511  4422            JMS I   APTCK           /TEST APT
2622    4512  1031            R13M1                   /EXPECTED RESULT POINTER +1
2623    4513  7402            HLT                     /ERR-IN APT
2624                  /
2625                  /TEST EXECUTION OF FNEG INSTRUCTION IN EPM
2626                  /
2627    4514  6552    T14,    FPICL                   /ZERO THE FPP WORLD
2628    4515  4443            JMS I   APT2            /SET UP APT WITH FAC=ONES PATTERN
2629    4516  1113            TAD     K4000
2630    4517  6567            LSHFT                   /SET EPM
2631    4520  1373            TAD     K3513
2632    4521  3026            DCA     APT+1           /ALTER APT FAC
2633    4522  1064            TAD     K25
```

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2634    4523  6555            FPST                    /LOAD ADRS REG AND START FPP
2635    4524  7402            HLT
2636    4525  6551            FPINT                   /FPP INTERRUPT REQUEST
2637    4526  5325            JMP     .+1             /NO
2638    4527  4422            JMS I   APTCK           /TEST APT
2639    4530  1045            R14M1                   /EXPECTED RESULT POINTER +1
2640    4531  7402            HLT                     /ERR-IN APT
2641
2642                  /
2643                  /TEST EXECUTION OF FNEG INSTRUCTION IN EPM
2644                  /
2645    4532  6552    T15,    FPICL                   /ZERO THE FPP WORLD
2646    4533  4444            JMS I   APT3            /SET UP APT WITH FAC=2525 PATTERN
2647    4534  1113            TAD     K4000
2648    4535  6567            LSHFT                   /SET EPM
2649    4536  1374            TAD     K3515
2650    4537  3026            DCA     APT+1           /ALTER APT FAC
2651    4540  1064            TAD     K25
2652    4541  6555            FPST                    /LOAD ADRS REG AND START FPP
2653    4542  7402            HLT                     /ERR = FPP NOT READY
2654    4543  6551            FPINT                   /FPP INTERRUPT REQUEST
2655    4544  5343            JMP     .+1             /NO
2656    4545  4422            JMS I   APTCK           /TEST APT
2657    4546  1061            R25M1                   /EXPECTED RESULT POINTER +1
2658    4547  7402            HLT                     /ERR-IN APT
2659                  /
2660                  /TEST EXECUTION OF FNORM INSTRUCTION IN EPM
2661                  /
2662    4550  6552    T16,    FPICL                   /ZERO THE FPP WORLD
2663    4551  4442            JMS I   APT1            /SET UP APT WITH FAC ZERO
2664    4552  1060            TAD     K1
2665    4553  3037            DCA     LSW3            /ALTER LSW3 IN APT
2666    4554  1101            TAD     K3531
2667    4555  3026            DCA     APT+1           /ALTER FPC IN APT
2668    4556  1113            TAD     K4000
2669    4557  6567            LSHFT                   /SET EPM
2670    4560  1064            TAD     K25
2671    4561  6555            FPST                    /LOAD ADRS REG AND START FPP
2672    4562  7402            HLT                     /ERR-FPP NOT READY
2673    4563  6551            FPINT                   /FPP INTERRUPT REQUEST
2674    4564  5363            JMP     .+1             /NO
2675    4565  4422            JMS I   APTCK           /TEST APT
2676    4566  1075            R10M1                   /EXPECTED RESULT POINTER +1
2677    4567  7402            HLT                     /ERR- IN APT
2678    4570  5771            JMP I   .+1
2679    4571  4600            T17
2680    4572  3511    K3511,  3511
2681    4573  3513    K3513,  3513
2682    4574  3515    K3515,  3515
2683    4575  3650    K3650,  3650
2684    4576  3653    K3653,  3653
2685    4577  4003    K4003,  4003
2686                  /
2687                  /TEST EXECUTION OF FNORM INSTRUCTION IN EPM
2688                  /
```

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2689          4600    .4600
2690    4600  6552    T17,    FPICL                   /ZERO THE FPP WORLD
2691    4601  4442            JMS I   APT1
2692    4602  1372            TAD     K5
2693    4603  3037            DCA     LSW3            /ALTER LSW3 IN APT
2694    4604  1101            TAD     K3521
2695    4605  3026            DCA     APT+1           /ALTER FPC IN APT
2696    4606  1113            TAD     K4000
2697    4607  6567            LSHFT                   /SET EPM
2698    4610  1064            TAD     K25
2699    4611  6555            FPST                    /LOAD ADRS REG AND START FPP
2700    4612  7402            HLT                     /ERR=FPP NOT READY
2701    4613  6551            FPINT                   /FPP INTERRUPT REQUEST
2702    4614  5213            JMP     .-1             /NO
2703    4615  4422            JMS I   APTCK           /TEST APT
2704    4616  1111            R17M1                   /EXPECTED RESULT POINTER +1
2705    4617  7402            HLT                     /ERR=IN APT
2706
2707                  /
2708                  /TEST EXECUTION OF A FNORM INSTRUCTION IN EPM
2709                  /
2710    4620  6552    T20,    FPICL                   /ZERO THE FPP WORLD
2711    4621  4443            JMS I   APT2            /SETUP APT WITH FAC=ONES
2712    4622  1121            TAD     K7776
2713    4623  3037            DCA     LSW3            /ALTER LSW3 IN APT FAC
2714    4624  1101            TAD     K3521
2715    4625  3026            DCA     APT+1           /ALTER FPC IN APT
2716    4626  1113            TAD     K4000
2717    4627  6567            LSHFT                   /SET EPM MODE
2718    4630  1064            TAD     K25
2719    4631  6555            FPST                    /LOAD ADRS REG AND START FPP
2720    4632  7402            HLT                     /ERR=FPP NOT READY
2721    4633  6551            FPINT                   /FPP INTERRUPT REQUEST
2722    4634  5233            JMP     .-1             /NO
2723    4635  4422            JMS I   APTCK           /TEST APT
2724    4636  1125            R20M1                   /POINTER TO EXPECTED APT RESULT -1
2725    4637  7402            HLT                     /ERR=APT BAD
2726                  /
2727                  /TEST EXECUTION OF A FNORM INSTRUCTION IN EPM
2728                  /
2729    4640  6552    T21,    FPICL                   /ZERO THE FPP WORLD
2730    4641  4442            JMS I   APT1            /SET UP APT WITH FAC=0
2731    4642  1113            TAD     K4000
2732    4643  3033            DCA     MSW             /ALTER MSW IN APT FAC
2733    4644  1101            TAD     K3521
2734    4645  3026            DCA     APT+1           /ALTER FPC IN APT
2735    4646  1113            TAD     K4000
2736    4647  6567            LSHFT                   /SET EPM
2737    4650  1064            TAD     K25
2738    4651  6555            FPST                    /LOAD ADRS REG AND START FPP
2739    4652  7402            HLT                     /ERR=FPP NOT READY
2740    4653  6551            FPINT                   /FPP INTERRUPT REQUEST
2741    4654  5253            JMP     .-1             /NO
2742    4655  4422            JMS I   APTCK           /TEST APT
2743    4656  1141            R21M1                   /POINTER TO EXPECTED APT RESULT -1
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2744    4657  7402            HLT                     /ERR-APT BAD
2745                  /
2746                  /TEST EXECUTION OF AN XTA INSTRUCTION IN EPM
2747                  /
2748    4660  6552    T22,    FPICL                   /ZERO THE FPP WORLD
2749    4661  4443            JMS I   APT2            /SET UP APT WITH FAC=ONES
2750    4662  4447            JMS I   CLIR            /CLEAR FPP IR
2751    4663  1060            TAD     K1
2752    4664  3050            DCA     FPIR0           /ALTER FPP IR 0
2753    4665  1373            TAD     K3523
2754    4666  3026            DCA     APT+1           /ALTER FPC IN APT
2755    4667  1113            TAD     K4000
2756    4670  6567            LSHFT                   /SET EPM MODE
2757    4671  1064            TAD     K25
2758    4672  6555            FPST                    /LOAD ADRS REG AND START FPP
2759    4673  7402            HLT                     /ERR-FPP NOT READY
2760    4674  6551            FPINT                   /FPP INTERRUPT REQUEST
2761    4675  5274            JMP     .-1             /NO
2762    4676  4422            JMS I   APTCK           /TEST APT
2763    4677  1155            R22M1                   /POINTER TO EXPECTED APT RESULT -1
2764    4700  7402            HLT                     /ERR-APT BAD
2765
2766                  /
2767                  /TEST EXECUTION OF XTA INSTRUCTION IN EPM
2768                  /
2769    4701  6552    T23,    FPICL                   /ZERO THE FPP WORLD
2770    4702  4444            JMS I   APT3            /SET UP APT WITH FAC=2525 PATTERN
2771    4703  4447            JMS I   CLIR            /CLEAR FPP IR
2772    4704  1121            TAD     K7776
2773    4705  3057            DCA     FPIR7           /ALTER FPP IR 7
2774    4706  1374            TAD     K3525
2775    4707  3026            DCA     APT+1           /ALTER FPC IN APT
2776    4710  1113            TAD     K4000
2777    4711  6567            LSHFT                   /SET EPM MODE
2778    4712  1064            TAD     K25
2779    4713  6555            FPST                    /LOAD ADRS REG AND START FPP
2780    4714  7402            HLT                     /ERR-FPP NOT READY
2781    4715  6551            FPINT                   /FPP INTERRUPT REQUEST
2782    4716  5315            JMP     .-1             /NO
2783    4717  4422            JMS I   APTCK           /TEST APT
2784    4720  1171            R23M1                   /POINTER TO EXPECTED APT RESULT -1
2785    4721  7402            HLT                     /ERR = APT BAD
2786                  /
2787                  /TEST EXECUTION OF A ALN INSTRUCTION IN EPM
2788                  /
2789    4722  6552    T24,    FPICL                   /ZERO THE FPP WORLD
2790    4723  4442            JMS I   APT1            /SET UP APT WITH FAC=0
2791    4724  4447            JMS I   CLIR            /CLEAR FPP IR
2792    4725  1120            TAD     K7706
2793    4726  3051            DCA     FPIR1           /ALTER FPP IR1
2794    4727  1060            TAD     K1
2795    4730  3037            DCA     LSW3            /ALTER LSWS OF FAC IN APT
2796    4731  1375            TAD     K3527
2797    4732  3026            DCA     APT+1           /ALTER FPC IN APT
2798    4733  1113            TAD     K4002
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2799  4734  6567          LSHFT                   /SET EPM
2800  4735  1064          TAD     K25
2801  4736  6555          FPST                    /LOAD ADRS REG AND START FPP
2802  4737  7402          HLT                     /ERR=FPP NOT READY
2803  4740  6551          FPINT                   /FPP INT, REQ,
2804  4741  5340          JMP     .+1             /NO
2805  4742  4422          JMS I   APTCK           /TEST APT
2806  4743  1205          R24M1                   /POINTER TO EXPECTED APT RESULT -1
2807  4744  7402          HLT                     /ERR=APT BAD
2808                /
2809                /TEST EXECUTION OF A ALN INSTRUCTION IN EPM
2810                /
2811  4745  6552  T25,     FPICL                   /ZERO THE FPP WORLD
2812  4746  4442          JMS I   APT1            /SET UP APT WITH FAC=0
2813  4747  4447          JMS I   CLIR            /CLEAR FPP IR
2814  4750  1065          TAD     K72
2815  4751  3052          DCA     FPIR2           /ALTER FPP IR2
2816  4752  1074          TAD     K2000
2817  4753  3033          DCA     MSW             /ALTER MSW OF FAC IN APT
2818  4754  1376          TAD     K3331
2819  4755  3026          DCA     APT+1           /ALTER FPC IN APT
2820  4756  1113          TAD     K4000
2821  4757  6567          LSHFT
2822  4760  1064          TAD     K25
2823  4761  6555          FPST                    /LOAD ADRS REG AND START FPP
2824  4762  7402          HLT                     /ERR=FPP NOT READY
2825  4763  6551          FPINT                   /FPP INT, REQ,
2826  4764  5363          JMP     .-1             /NO
2827  4765  4422          JMS I   APTCK           /TEST APT
2828  4766  1221          R25M1                   /POINTER TO EXPECTED APT RESULT -1
2829  4767  7402          HLT                     /ERR=APT BAD
2830  4770  5771          JMP I   .+1
2831  4771  5000          T26
2832                /
2833  4772  0005  K5,      5
2834  4773  3523  K3523,   3523
2835  4774  3525  K3525,   3525
2836  4775  3527  K3527,   3527
2837  4776  3531  K3531,   3531
2838
2839                /
2840                /TEST EXECUTION OF ALN INSTRUCTION IN EPM
2841                /
2842        5000          *5000
2843  5000  6552  T26,     FPICL                   /ZERO FPP WORLD
2844  5001  4442          JMS I   APT1            /SET UP APT WITH FAC=ZERO
2845  5002  4447          JMS I   CLIR            /CLEAR FPP IR'S
2846  5003  1065          TAD     K72
2847  5004  3053          DCA     FPIR3           /ALTER FPP IR3
2848  5005  1371          TAD     K6000
2849  5006  3033          DCA     MSW             /ALTER FAC MSW IN APT
2850  5007  1363          TAD     K3333
2851  5010  3026          DCA     APT+1           /ALTER FPC IN APT
2852  5011  1113          TAD     K4000
2853  5012  6567          LSHFT
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2854  5013  1064          TAD     K25
2855  5014  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
2856  5015  7402          HLT                     /ERR-FPP NOT READY
2857  5016  6551          FPINT                   /FPP INTERRUPT REQUEST
2858  5017  5216          JMP     .-1             /NO
2859  5020  4422          JMS I   APTCK           /TEST APT
2860  5021  1235          R26M1                   /POINTER TO EXPECTED APT RESULTS
2861  5022  7402          HLT                     /ERR-APT BAD
2862                /
2863                /TEST EXECUTION OF ALN INSTRUCTION IN EPM
2864                /
2865  5023  6552  T27,    FPICL                   /ZERO THE FPP WORLD
2866  5024  4442          JMS I   APT1            /SET UP APT WITH FAC = 0
2867  5025  4447          JMS I   CLIR            /CLEAR FPP IR'S
2868  5026  1120          TAD     K7706
2869  5027  3032          DCA     EXP
2870  5030  1074          TAD     K2000
2871  5031  3033          DCA     MSW             /ALTER MSW IN APT
2872  5032  1364          TAD     K3535
2873  5033  3026          DCA     APT+1           /ALTER FPC IN APT
2874  5034  1113          TAD     K4000
2875  5035  6567          LSHFT                   /SET EPM
2876  5036  1064          TAD     K25
2877  5037  6555          FPST                    /LOAD ADRS REG AND START FPP
2878  5040  7402          HLT                     /FPP NOT READY
2879  5041  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST
2880  5042  5241          JMP     .-1             /NO
2881  5043  4422          JMS I   APTCK           /TEST APT
2882  5044  1251          R27M1                   /POINTER TO EXPECTED APT RESULT
2883  5045  7402          HLT                     /ERR-APT BAD
2884
2885                /
2886                /TEST EXECUTION OF FLDA INSTRUCTION IN EMP
2887                /
2888  5046  6552  T30,    FPICL                   /ZERO THE FPP WORLD
2889  5047  4442          JMS I   APT1            /SET UP APT WITH FAC=0
2890  5050  1365          TAD     K3537
2891  5051  3026          DCA     APT+1           /ALTER FPC IN APT
2892  5052  1113          TAD     K4000
2893  5053  6567          LSHFT                   /SET EPM
2894  5054  1064          TAD     K25
2895  5055  6555          FPST                    /LOAD ADRS REG AND START FPP
2896  5056  7402          HLT                     / ERR = FPP NOT READY
2897  5057  6551          FPINT                   /FPP INTERRUPT REQUEST
2898  5060  5257          JMP     .-1             /NO
2899  5061  4422          JMS I   APTCK           /TEST APT
2900  5062  1265          R30M1                   /EXPECTED RESULT POINTER
2901  5063  7402          HLT                     /ERR = APT DATA BAD
2902                /
2903                /TEST EXECUTION OF FLDA INSTRUCTION IN EPM
2904                /
2905  5064  6552  T31,    FPICL                   /ZERO THE FPP WORLD
2906  5065  4443          JMS I   APT2            /SET UP APT WITH FAC=ONE'S
2907  5066  1366          TAD     K3541
2908  5067  3026          DCA     APT+1           /ALTER FPC IN APT
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2909    5070  1113          TAD     K4000
2910    5071  6567          LSHFT                   /SET EPM
2911    5072  1064          TAD     K25
2912    5073  6555          FPST                    /LOAD ADRS REG AND START FPP
2913    5074  7402          HLT                     /ERR = FPP NOT READY
2914    5075  6551          FPINT                   /FPP INTERRUPT REQUEST
2915    5076  5275          JMP     .-1             /NO
2916    5077  4422          JMS I   APTCK           /TEST APT
2917    5100  1301          R31M1                   /EXPECTED RESULT POINTER
2918    5101  7402          HLT                     /ERR = APT DATA BAD
2919                  /
2920                  /TEST EXECUTION OF FLDA INSTRUCTION IN EPM
2921                  /
2922    5102  6552  T32,    FPICL                   /ZERO THE FPP WORLD
2923    5103  4443          JMS I   APT2            /SET UP APT WITH FAC=ONE'S
2924    5104  4447          JMS I   CLIR            /CLEAR FPP IR'S
2925    5105  1367          TAD     K3543
2926    5106  3026          DCA     APT+1           /ALTER FPC IN APT
2927    5107  1113          TAD     K4000
2928    5110  6567          LSHFT                   /SET EPM
2929    5111  1064          TAD     K25
2930    5112  6555          FPST                    /LOAD ADRS REG AND START FPP
2931    5113  7402          HLT                     /ERR = FPP NOT READY
2932    5114  6551          FPINT                   /FPP INTERRUPT REQUEST
2933    5115  5314          JMP     .-1             /NO
2934    5116  4422          JMS I   APTCK           /TEST APT
2935    5117  1315          R32M1                   /EXPECTED RESULT POINTER
2936    5120  7402          HLT                     /ERR = APT DATA BAD
2937                  /
2938                  /TEST EXECUTION OF FLDA INSTRUCTION IN EPM
2939                  /
2940    5121  6552  T33,    FPICL                   /ZERO THE FPP WORLD
2941    5122  4442          JMS I   APT1            /SET UP APT WITH FAC=0
2942    5123  4447          JMS I   CLIR            /CLEAR FPP IR'S
2943    5124  1060          TAD     K1
2944    5125  3054          DCA     FPIR4           /ALTER FPP IR4
2945    5126  1370          TAD     K3546
2946    5127  3026          DCA     APT+1           /ALTER FPC IN APT
2947    5130  1113          TAD     K4000
2948    5131  6567          LSHFT                   /SET EPM
2949    5132  1064          TAD     K25
2950    5133  6555          FPST                    /LOAD ADRS REG AND START FPP
2951    5134  7402          HLT                     /ERR = FPP NOT READY
2952    5135  6551          FPINT                   /FPP INTERRUPT REQUEST
2953    5136  5335          JMP     .-1             /NO
2954    5137  4422          JMS I   APTCK           /TEST APT
2955    5140  1331          R33M1                   /EXPECTED RESULT POINTER
2956    5141  7402          HLT                     /ERR = APT DATA BAD
2957                  /
2958                  /TEST EXECUTION OF FLDA INSTRUCTION IN EPM
2959                  /
2960    5142  6552  T34,    FPICL                   /ZERO THE FPP WORLD
2961    5143  4442          JMS I   APT1            /SET UP APT WITH FAC=0
2962    5144  4447          JMS I   CLIR            /CLEAR FPP IR'S
2963    5145  1102          TAD     K3351
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2964  5146  3026          DCA     APT+1           /ALTER FPC IN APT
2965  5147  1113          TAD     K4000
2966  5150  6567          LSHFT                   /SET EPM
2967  5151  1064          TAD     K25
2968  5152  6555          FPST                    /LOAD ADRS REG AND START FPP
2969  5153  7402          HLT                     /ERR = FPP NOT READY
2970  5154  6551          FPINT                   /FPP INTERRUPT REQUEST
2971  5155  5354          JMP     .+1             /NO
2972  5156  4422          JMS I   APTCK           /TEST APT
2973  5157  1345          R34M1                   /EXPECTED RESULT POINTER
2974  5160  7402          HLT                     /ERR = APT DATA BAD
2975  5161  5762          JMP I   .+1
2976  5162  5200          T35
2977                /
2978  5163  3533    K3533,  3533
2979  5164  3535    K3535,  3535
2980  5165  3537    K3537,  3537
2981  5166  3541    K3541,  3541
2982  5167  3543    K3543,  3543
2983  5170  3546    K3546,  3546
2984  5171  6000    K6000,  6000
2985                /
2986                /TEST EXECUTION OF FLDA INSTRUCTION IN EPM
2987                /
2988        5200            *5200
2989  5200  6552    T35,    FPICL                   /ZERO THE FPP WORLD
2990  5201  4444          JMS I   APT3            /SET UP APT WITH FAC=5252 PATTERN
2991  5202  4447          JMS I   CLIR            /CLEAR FPP IR'S
2992  5203  1060          TAD     K1
2993  5204  3054          DCA     FPIR4           /ALTER FPP IR4
2994  5205  1102          TAD     K3551
2995  5206  3026          DCA     APT+1           /ALTER FPC IN APT
2996  5207  1113          TAD     K4000
2997  5210  6567          LSHFT                   /SET EPM
2998  5211  1064          TAD     K25
2999  5212  6555          FPST                    /LOAD ADRS REG AND START FPP
3000  5213  7402          HLT                     /ERR = FPP NOT READY
3001  5214  6551          FPINT                   /FPP INTERRUPT REQUEST
3002  5215  5214          JMP     .-1             /NO
3003  5216  4422          JMS I   APTCK           /TEST APT
3004  5217  1361          R35M1                   /EXPECTED RESULT POINTER
3005  5220  7402          HLT                     /ERR = APT BAD
3006                /
3007                /TEST EXECUTION OF FLDA INSTRUCTION IN EPM
3008                /
3009  5221  6552    T36,    FPICL                   /ZERO THE FPP WORLD
3010  5222  4444          JMS I   APT3            /SET UP APT WITH THE FAC=2525 PATTERN
3011  5223  4447          JMS I   CLIR            /CLEAR FPP IR'S
3012  5224  1361          TAD     K3554
3013  5225  3026          DCA     APT+1           /ALTER FPC IN APT
3014  5226  1113          TAD     K4000
3015  5227  6567          LSHFT                   /SET EPM
3016  5230  1064          TAD     K25
3017  5231  6555          FPST                    /LOAD ADRS REG AND START FPP
3018  5232  7402          HLT                     /ERR = FPP NOT READY
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3219  5233  6551          FPINT                   /FPP INTERRUPT REQUEST
3220  5234  5233          JMP     .-1             /NO
3221  5235  4422          JMS I   APTCK           /TEST APT
3222  5236  1375          R36M1                   /EXPECTED RESULT POINTER
3223  5237  7402          HLT                     /ERR = APT DATA BAD
3224                /
3225                /TEST EXECUTION OF FLDA INSTRUCTION IN EPM
3226                /
3227  5240  6552    T37,  FPICL                   /ZERO THE FPP WORLD
3228  5241  4443          JMS I   APT2            /SET UP APT WITH FAC=ONE'S
3229  5242  4447          JMS I   CLIR            /CLEAR FPP IR'S
3230  5243  1060          TAD     K1
3231  5244  3054          DCA     FPIR4           /ALTER FPP IR4
3232  5245  1361          TAD     K3554
3233  5246  3026          DCA     APT+1           /ALTER FPC IN APT
3234  5247  1113          TAD     K4000
3235  5250  6567          LSHFT                   /SET EPM
3236  5251  1064          TAD     K25
3237  5252  6555          FPST                    /LOAD ADRS REG AND START FPP
3238  5253  7402          HLT                     /ERR = FPP NOT READY
3239  5254  6551          FPINT                   /FPP INTERRUPT REQUEST
3240  5255  5254          JMP     .-1             /NO
3241  5256  4422          JMS I   APTCK           /TEST APT
3242  5257  1411          R37M1                   /EXPECTED RESULT POINTER
3243  5260  7402          HLT                     /ERR = APT DATA BAD
3244                /
3245                /TEST EXECUTION OF FLDA
3246                /
3247  5261  6552    T40,  FPICL                   /ZERO THE FPP WORLD
3248  5262  4443          JMS I   APT2            /SET UP THE APT WITH FAC=ONE'S
3249  5263  4447          JMS I   CLIR            /CLEAR FPP IR'S
3250  5264  1060          TAD     K1
3251  5265  3054          DCA     FPIR4           /ALTER FPP IR4
3252  5266  1362          TAD     K3556
3253  5267  3026          DCA     APT+1           /ALTER FPC IN APT
3254  5270  1113          TAD     K4000
3255  5271  6567          LSHFT                   /SET EPM
3256  5272  1064          TAD     K25
3257  5273  6555          FPST                    /LOAD ADRS REG AND START FPP
3258  5274  7402          HLT                     /ERR = FPP NOT READY
3259  5275  6551          FPINT                   /FPP INTERRUPT REQUEST
3260  5276  5275          JMP     .-1             /NO
3261  5277  4422          JMS I   APTCK           /TEST APT
3262  5300  1425          R40M1                   /EXPECTED RESULT POINTER
3263  5301  7402          HLT
3264                /
3265                /TEST EXECUTION OF FSTA INSTRUCTION IN EPM
3266                /
3267  5302  6552    T41,  FPICL                   /ZERO THE FPP WORLD
3268  5303  4445          JMS I   APT4            /SET UP APT WITH FAC=5252 PATTERN
3269  5304  4406          JMS I   CLB32           /CLEAR B32 TARGET
3270  5305  1363          TAD     K3560
3271  5306  3026          DCA     APT+1           /ALTER FPC IN APT
3272  5307  1113          TAD     K4000
3273  5310  6567          LSHFT                   /SET EPM
```

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3074  5311  1064          TAD     K25
3075  5312  6555          FPST                    /LOAD ADRS REG AND START FPP
3076  5313  7402          HLT                     /ERR-FPP NOT READY
3077  5314  6551          FPINT
3078  5315  5314          JMP     .-1
3079  5316  4422          JMS I   APTCK           /TEST APT
3080  5317  1441          R41M1                   /POINTER TO EXPECTED APT RESULT -1
3081  5320  7402          HLT                     /ERR-APT BAD
3082  5321  1525          TAD I   KB32           /GET FAC EXPONENT FROM B32
3083  5322  7041          CIA
3084  5323  1115          TAD     K5252           /SHOULD-5252
3085  5324  7440          SZA
3086  5325  7402          HLT                     /ERR-EXPONENT BAD IN LOC B32
3087  5326  1526          TAD I   KB32P1          /GET FAC MSW FROM B32+1
3088  5327  7041          CIA
3089  5330  1115          TAD     K5252           /SHOULD-5252
3092  5331  7440          SZA
3091  5332  7402          HLT                     /ERR-MSW BAD IN LOC B32+1
3092  5333  1527          TAD I   KB32P2          /GET FAC LSW0 FROM B32+2
3093  5334  7041          CIA
3094  5335  1115          TAD     K5252           /SHOULD
3095  5336  7440          SZA
3096  5337  7402          HLT                     /ERR-LSW0 BAD IN LOC B32+2
3097  5340  1530          TAD I   KB32P3          /GET FAC LSW1 FROM B32+3
3098  5341  7041          CIA
3099  5342  1115          TAD     K5252           /SHOULD-5252
3100  5343  7440          SZA
3101  5344  7402          HLT                     /ERR-LSW1 BAD IN LOC B32+3
3102  5345  1531          TAD I   KB32P4          /GET FAC LSW2 FROM B32+4
3103  5346  7041          CIA
3104  5347  1115          TAD     K5252           /SHOULD-5252
3105  5350  7440          SZA
3106  5351  7402          HLT                     /ERR-LSW2 BAD IN LOC B32+4
3107  5352  1532          TAD I   KB32P5          /GET FAC LSW3 FROM B32+5
3108  5353  7041          CIA
3109  5354  1115          TAD     K5252           /SHOULD-5252
3110  5355  7440          SZA
3111  5356  7402          HLT                     /ERR-LSW3 BAD IN LOC B32+5
3112  5357  5760          JMP I   .+1
3113  5360  5400          T42
3114                /
3115  5361  3554    K3554,  3554
3116  5362  3556    K3556,  3556
3117  5363  3560    K3560,  3560
3118
3119                /
3120                /TEST EXECUTION OFFADD INSTRUCTION IN EPM
3121                /
3122        5400            *5400
3123  5400  6552    T42,    FPICL                   /ZERO THE FPP WORLD
3124  5401  4444          JMS I   APT3            /SET APT WITH FAC-2525 PATTERN
3125  5402  3032          DCA     EXP             /ALTER FAC EXP
3126  5403  1362          TAD     K3562
3127  5404  3026          DCA     APT+1           /ALTER FPC IN APT
3128  5405  1113          TAD     K4000
```

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3129    5406  6567            LSHFT                   /SET EPM
3130    5407  1064            TAD     K25
3131    5410  6555            FPST                    /LOAD ADRS REG AND START FPP
3132    5411  7402            HLT                     /ERR-FPP NOT READY
3133    5412  6551            FPINT                   /FPP INTERRUPT REQUEST
3134    5413  5212            JMP     .-1             /NO
3135    5414  4422            JMS I   APTCK           /TEST APT
3136    5415  1455            R42M1                   /EXPECTED APT RESULT POINTER -1
3137    5416  7402            HLT                     /ERR-APT BAD
3138
3139                  /
3140                  /TEST EXECUTION OF FADD INSTRUCTION IN EPM
3141                  /
3142    5417  6552    T43,    FPICL                   /ZERO THE FPP WORLD
3143    5420  4442            JMS I   APT1            /SET UP APT WITH FAC=0
3144    5421  1060            TAD     K1
3145    5422  3037            DCA     LSW3            /ALTER FAC LSW3
3146    5423  1363            TAD     K3564
3147    5424  3026            DCA     APT+1           /ALTER FPC IN APT
3148    5425  1113            TAD     K4000
3149    5426  6567            LSHFT                   /SET EPM
3150    5427  1064            TAD     K25
3151    5430  6555            FPST                    /LOAD ADRS REG, AND START FPP
3152    5431  7402            HLT                     /ERR-FPP NOT READY
3153    5432  6551            FPINT                   /FPP INTERRUPT REQUEST
3154    5433  5232            JMP     .-1             /NO
3155    5434  4422            JMS I   APTCK           /TEST APT
3156    5435  1471            R43M1                   /EXPECTED APT RESULT POINTER -1
3157    5436  7402            HLT                     /ERR-APT BAD
3158
3159                  /
3160                  /TEST EXECUTION OF FADD INSTRUCTION IN EPM
3161                  /
3162    5437  6552    T44,    FPICL                   /ZERO THE FPP WORLD
3163    5440  4443            JMS I   APT2            /SET UP APT WITH FAC=ONE/S
3164    5441  1370            TAD     K7775
3165    5442  3037            DCA     LSW3            /ALTER FAC LSW3
3166    5443  3032            DCA     EXP             /ALTER FAC EXP
3167    5444  1363            TAD     K3564
3168    5445  3026            DCA     APT+1           /ALTER FPC IN APT
3169    5446  1113            TAD     K4000
3170    5447  6567            LSHFT                   /SET EPM
3171    5450  1064            TAD     K25
3172    5451  6555            FPST                    /LOAD ADRS REG, AND START FPP
3173    5452  7402            HLT                     /ERR-FPP NOT READY
3174    5453  6551            FPINT                   /FPP INTERRUPT REQUEST
3175    5454  5253            JMP     .-1             /NO
3176    5455  4422            JMS I   APTCK           /TEST APT
3177    5456  1505            R44M1                   /EXPECTED APT RESULT POINTER -1
3178    5457  7402            HLT                     /ERR-APT BAD
3179
3180                  /
3181                  /TEST EXECUTION OF FADD INSTRUCTION IN EPM
3182                  /
3183    5460  6552    T45,    FPICL                   /ZERO THE FPP WORLD
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3184    5461  4443          JMS I   APT2            /SET UP APT WITH FAC=ONES
3185    5462  1112          TAD     K3777
3186    5463  3033          DCA     MSW             /ALTER FAC MSW
3187    5464  1364          TAD     K3566
3188    5465  3026          DCA     APT+1           /ALTER FPC IN APT
3189    5466  1113          TAD     K4000
3190    5467  6567          LSHFT                   /SET EPM
3191    5470  1064          TAD     K25
3192    5471  6555          FPST                    /LOAD ADRS REG', AND START FPP
3193    5472  7402          HLT                     /ERR=FPP NOT READY
3194    5473  6551          FPINT                   /FPP INTERRUPT REQUEST
3195    5474  5273          JMP     .-1             /NO
3196    5475  4422          JMS I   APTCK           /TEST APT
3197    5476  1521          R45M1                   /EXPECTED APT RESULT POINTER -1
3198    5477  7402          HLT                     /ERR=APT BAD
3199
3200                  /
3201                  /TEST EXECUTION OFFADD INSTRUCTION IN EPM
3202                  /
3203    5500  6552  T46,    FPICL                   /ZERO THE FPP WORLD
3204    5501  1116          TAD     K4210
3205    5502  4446          JMS I   APT5            /SET UP APT WITH FAC=4210 PATTERN
3206    5503  1361          TAD     K210
3207    5504  3033          DCA     MSW             /ALTER FAC MSW
3208    5505  1365          TAD     K3570
3209    5506  3026          DCA     APT+1           /ALTER FPC IN APT
3210    5507  1113          TAD     K4000
3211    5510  6567          LSHFT                   /SET EPM
3212    5511  1064          TAD     K25
3213    5512  6555          FPST                    /LOAD ADRS REG', AND START FPP
3214    5513  7402          HLT                     /ERR=FPP NOT READY
3215    5514  6551          FPINT                   /FPP INTERRUPT REQUEST
3216    5515  5314          JMP     .-1             /NO
3217    5516  4422          JMS I   APTCK           /TEST APT
3218    5517  1535          R46M1                   /EXPECTED APT RESULT POINTER -1
3219    5520  7402          HLT                     /ERR=APT BAD
3220
3221                  /
3222                  /TEST EXECUTION OF FADD INSTRUCTION IN EPM
3223                  /
3224    5521  6552  T47,    FPICL                   /ZERO THE FPP WORLD
3225    5522  1076          TAD     K2104
3226    5523  4446          JMS I   APT5            /SET UP APT WITH FAC=2104 PATTERN
3227    5524  1366          TAD     K3572
3228    5525  3026          DCA     APT+1           /ALTER FPC IN APT
3229    5526  1113          TAD     K4000
3230    5527  6567          LSHFT                   /SET EPM
3231    5530  1064          TAD     K25
3232    5531  6555          FPST                    /LOAD ADRS REG', AND START FPP
3233    5532  7402          HLT                     /ERR=FPP NOT READY
3234    5533  6551          FPINT                   /FPP INTERRUPT REQUEST
3235    5534  5333          JMP     .-1             /NO
3236    5535  4422          JMS I   APTCK           /TEST APT
3237    5536  1551          R47M1                   /EXPECTED APT RESULT POINTER -1
3238    5537  7402          HLT                     /ERR=APT BAD
```

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3239
3240                    /
3241                    /TEST EXECUTION OF FADD INSTRUCTION IN EPM
3242                    /
3243    5540  6552      T50,    FPICL                   /ZERO THE FPP WORLD
3244    5541  1073              TAD     K1042
3245    5542  4446              JMS I   APT3            /SET UP APT FAC=1042 PATTERN
3246    5543  1367              TAD     K3574
3247    5544  3026              DCA     APT+1           /ALTER FPC IN APT
3248    5545  1113              TAD     K4000
3249    5546  6567              LSHFT                   /SET EPM
3250    5547  1064              TAD     K25
3251    5550  6555              FPST                    /LOAD ADRS REG', AND START FPP
3252    5551  7402              HLT                     /ERR=FPP NOT READY
3253    5552  6551              FPINT                   /FPP INTERRUPT REQUEST
3254    5553  5352              JMP     .+1             /NO
3255    5554  4422              JMS I   APTCK           /TEST APT
3256    5555  1565              R50M1                   /EXPECTED APT RESULT POINTER =1
3257    5556  7402              HLT                     /ERR=APT BAD
3258    5557  5760              JMP I   .+1
3259    5560  5600              T51
3260                    /
3261    5561  0210      K210,   210
3262    5562  3562      K3562,  3562
3263    5563  3564      K3564,  3564
3264    5564  3566      K3566,  3566
3265    5565  3570      K3570,  3570
3266    5566  3572      K3572,  3572
3267    5567  3574      K3574,  3574
3268    5570  7775      K7775,  7775
3269
3270                    /
3271                    /TEST EXECUTION OF FADD INSTRUCTION IN EPM
3272                    /
3273          5600              *5600
3274    5600  6552      T51,    FPICL                   /ZERO THE FPP WORLD
3275    5601  4443              JMS I   APT2            /SET UP APT WITH FAC=ONE'S
3276    5602  1121              TAD     K7776
3277    5603  3037              DCA     LSW3            /ALTER FAC LSW3
3278    5604  1364              TAD     K3576
3279    5605  3026              DCA     APT+1           /ALTER FPC IN APT
3280    5606  1113              TAD     K4000
3281    5607  6567              LSHFT                   /SET EPM
3282    5610  1064              TAD     K25
3283    5611  6555              FPST                    /LOAD ADRS REG', AND START FPP
3284    5612  7402              HLT                     /ERR=FPP NOT READY
3285    5613  6551              FPINT                   /FPP INTERRUPT REQUEST
3286    5614  5213              JMP     .+1             /NO
3287    5615  4422              JMS I   APTCK           /TEST APT
3288    5616  1601              R31M1                   /EXPECTED APT RESULT POINTER =1
3289    5617  7402              HLT                     /ERR=APT BAD
3290
3291                    /
3292                    /TEST EXECUTION OF FSUB INSTRUCTION IN EPM
3293                    /
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3294  5620  6552  T52,  FPICL                  /ZERO THE FPP WORLD
3295  5621  4443        JMS I   APT2.          /SET UP APT WITH FAC = ONE'S
3296  5622  1112        TAD     K3777
3297  5623  3033        DCA     MSW            /ALTER FAC MSW
3298  5624  1365        TAD     K3600
3299  5625  3026        DCA     APT+1          /ALTER FPC IN APT
3300  5626  1113        TAD     K4000
3301  5627  6567        LSHFT                  /SET EPM
3302  5630  1064        TAD     K25
3303  5631  6555        FPST                   /LOAD ADRS REG', AND START FPP
3304  5632  7402        HLT                    /ERR = FPP NOT READY
3305  5633  6551        FPINT                  /FPP INTERRUPT REQUEST
3306  5634  5233        JMP     .-1            /NO
3307  5635  4422        JMS I   APTCK          /TEST APT
3308  5636  1615        R52M1                  /EXPECTED APT RESULT POINTER -1
3309  5637  7402        HLT                    /ERR = APT BAD
3310                    /
3311                    /TEST EXECUTION OF FSUB INSTRUCTION IN EPM
3312                    /
3313  5640  6552  T53,  FPICL                  /ZERO THE FPP WORLD
3314  5641  4442        JMS I   APT1           /SET UP APT WITH FAC = 0
3315  5642  1113        TAD     K4000
3316  5643  3033        DCA     MSW            /ALTER FAC MSW
3317  5644  1060        TAD     K1
3318  5645  3037        DCA     LSW3           /ALTER FAC LSW3
3319  5646  1366        TAD     K3602
3320  5647  3026        DCA     APT+1          /ALTER FPC IN APT
3321  5650  1113        TAD     K4000
3322  5651  6567        LSHFT                  /SET EPM
3323  5652  1064        TAD     K25
3324  5653  6555        FPST                   /LOAD ADRS REG', AND START FPP
3325  5654  7402        HLT                    /ERR = FPP NOT READY
3326  5655  6551        FPINT                  /FPP INTERRUPT REQUEST
3327  5656  5255        JMP     .-1            /NO
3328  5657  4422        JMS I   APTCK          /TEST APT
3329  5660  1631        R53M1                  /EXPECTED APT RESULT POINTER -1
3330  5661  7402        HLT                    /ERR = APT BAD
3331                    /
3332                    /TEST EXECUTION OF FSUB INSTRUCTION IN EPM
3333                    /
3334  5662  6552  T54,  FPICL                  /ZERO THE FPP WORLD
3335  5663  7200        CLA
3336  5664  1116        TAD     K4213
3337  5665  4446        JMS I   APT5           /SET UP APT WITH FAC = AC PATTERN
3338  5666  1367        TAD     K3604
3339  5667  3026        DCA     APT+1          /ALTER FPC IN APT
3340  5670  1113        TAD     K4000
3341  5671  6567        LSHFT                  /SET EPM
3342  5672  1064        TAD     K25
3343  5673  6555        FPST                   /LOAD ADRS REG', AND START FPP
3344  5674  7402        HLT                    /ERR = FPP NOT READY
3345  5675  6551        FPINT                  /FPP INTERRUPT REQUEST
3346  5676  5275        JMP     .-1            /NO
3347  5677  4422        JMS I   APTCK          /TEST APT
3348  5700  1645        R54M1                  /EXPECTED APT RESULT POINTER -1
```

```
3349  5701  7402          HLT                     /ERR = APT BAD
3350
3351                      /
3352                      /TEST EXECUTION OF FSUB INSTRUCTION IN EPM
3353                      /
3354  5702  6552  T55,     FPICL                   /ZERO THE FPP WORLD
3355  5703  7200          CLA
3356  5704  1076          TAD     K2104
3357  5705  4446          JMS I   APT5            /SET UP APT WITH FAC = AC PATTERN
3358  5706  1370          TAD     K3606
3359  5707  3026          DCA     APT+1           /ALTER FPC IN APT
3360  5710  1113          TAD     K4000
3361  5711  6567          LSHFT                   /SET EPM
3362  5712  1064          TAD     K25
3363  5713  6555          FPST                    /LOAD ADRS REG', AND START FPP
3364  5714  7402          HLT                     /ERR = FPP NOT READY
3365  5715  6551          FPINT                   /FPP INTERRUPT REQUEST
3366  5716  5315          JMP     .+1             /NO
3367  5717  4422          JMS I   APTCK           /TEST APT
3368  5720  1661          R55M1                   /EXPECTED APT RESULT POINTER +1
3369  5721  7402          HLT                     /ERR = APT BAD
3370                      /
3371                      /TEST EXECUTION OF FSUB INSTRUCTION IN EPM
3372                      /
3373  5722  6552  T56,     FPICL                   /ZERO THE FPP WORLD
3374  5723  7200          CLA
3375  5724  1073          TAD     K1042
3376  5725  4446          JMS I   APT5            /SET UP APT WITH FAC = AC PATTERN
3377  5726  1371          TAD     K3610
3378  5727  3026          DCA     APT+1           /ALTER FPC IN APT
3379  5730  1113          TAD     K4000
3380  5731  6567          LSHFT                   /SET EPM
3381  5732  1064          TAD     K25
3382  5733  6555          FPST                    /LOAD ADRS REG', AND START FPP
3383  5734  7402          HLT                     /ERR = FPP NOT READY
3384  5735  6551          FPINT                   /FPP INTERRUPT REQUEST
3385  5736  5335          JMP     .+1             /NO
3386  5737  4422          JMS I   APTCK           /TEST APT
3387  5740  1675          R56M1                   /EXPECTED APT RESULT POINTER +1
3388  5741  7402          HLT                     /ERR = APT BAD
3389                      /
3390                      /TEST EXECUTION OF FSUB INSTRUCTION IN EPM
3391                      /
3392  5742  6552  T57,     FPICL                   /ZERO THE FPP WORLD
3393  5743  7200          CLA
3394  5744  1373          TAD     K6314
3395  5745  4446          JMS I   APT5            /SET UP APT WITH FAC = AC PATTERN
3396  5746  1372          TAD     K3612
3397  5747  3026          DCA     APT+1           /ALTER FPC IN APT
3398  5750  1113          TAD     K4000
3399  5751  6567          LSHFT                   /SET EPM
3400  5752  1064          TAD     K25
3421  5753  6555          FPST                    /LOAD ADRS REG', AND START FPP
3422  5754  7402          HLT                     /ERR = FPP NOT READY
3423  5755  6551          FPINT                   /FPP INTERRUPT REQUEST
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3424    5756  5355          JMP     .-1             /NO
3425    5757  4422          JMS I   APTCK           /TEST APT
3426    5760  1711          R57M1                   /EXPECTED APT RESULT POINTER -1
3427    5761  7402          HLT                     /ERR = APT BAD
3428    5762  5763          JMP I   .+1
3429    5763  6000          T60
3430                  /
3431    5764  3576  K3576,  3576
3432    5765  3600  K3600,  3600
3433    5766  3602  K3602,  3602
3434    5767  3604  K3604,  3604
3435    5770  3606  K3606,  3606
3436    5771  3610  K3610,  3610
3437    5772  3612  K3612,  3612
3438    5773  6314  K6314,  6314
3439                  /
3440                  /TEST EXECUTION OF FSUB INSTRUCTION IN EPM
3441                  /
3442          6000          *6000
3443    6000  6552  T60,    FPICL                   /ZERO THE FPP WORLD
3444    6001  7200          CLA
3445    6002  1366          TAD     K3140
3446    6003  4446          JMS I   APT5            /SET UP APT WITH FAC = AC PATTERN
3447    6004  1357          TAD     K3614
3448    6005  3026          DCA     APT+1           /ALTER FPC IN APT
3449    6006  1113          TAD     K4000
3450    6007  6567          LSHFT                   /SET EPM
3451    6010  1064          TAD     K25
3452    6011  6555          FPST                    /LOAD ADRS REG', AND START FPP
3453    6012  7402          HLT                     /ERR = FPP NOT READY
3454    6013  6551          FPINT                   /FPP INTERRUPT REQUEST
3455    6014  5213          JMP     .-1             /NO
3456    6015  4422          JMS I   APTCK           /TEST APT
3457    6016  1725          R60M1                   /EXPECTED APT RESULT POINTER -1
3458    6017  7402          HLT                     /ERR = APT BAD
3459                  /
3460                  /TEST EXECUTION OF FSUB INSTRUCTION IN EPM
3461                  /
3462    6020  6552  T61,    FPICL                   /ZERO THE FPP WORLD
3463    6021  7200          CLA
3464    6022  1356          TAD     K421
3465    6023  4446          JMS I   APT5            /SET UP APT WITH FAC = AC PATTERN
3466    6024  1360          TAD     K3616
3467    6025  3026          DCA     APT+1           /ALTER FPC IN APT
3468    6026  1113          TAD     K4000
3469    6027  6567          LSHFT                   /SET EPM
3470    6030  1064          TAD     K25
3471    6031  6555          FPST                    /LOAD ADRS REG', AND START FPP
3472    6032  7402          HLT                     /ERR = FPP NOT READY
3473    6033  6551          FPINT                   /FPP INTERRUPT REQUEST
3474    6034  5233          JMP     .-1             /NO
3475    6035  4422          JMS I   APTCK           /TEST APT
3476    6036  1741          R61M1                   /EXPECTED APT RESULT POINTER -1
3477    6037  7402          HLT                     /ERR = APT BAD
3478                  /
```

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                        /TEST EXECUTION OF FMUL INSTRUCTION IN EPM
                        /
6040  6552      T62,    FPICL                   /ZERO THE FPP WORLD
6041  4442              JMS I   APT1            /SET UP APT WITH FAC=0
6042  1074              TAD     K2000
6043  3032              DCA     EXP             /ALTER FAC EXP
6044  1074              TAD     K2000
6045  3033              DCA     MSW             /ALTER FAC MSW
6046  1361              TAD     K3620
6047  3026              DCA     APT+1           /ALTER FPC IN APT
6050  1113              TAD     K4000
6051  6567              LSHFT                   /SET EPM
6052  1064              TAD     K25
6053  6555              FPST                    /LOAD ADRS REG', AND START FPP
6054  7402              HLT                     /ERR = FPP NOT READY
6055  6551              FPINT                   /FPP INTERRUPT REQUEST
6056  5255              JMP     .-1             /NO
6057  4422              JMS I   APTCK           /TEST APT
6060  1755              R62M1                   /EXPECTED APT RESULT POINTER
6061  7402              HLT                     /ERR = APT BAD

                        /
                        /TEST EXECUTION OF FMUL INSTRUCTION IN EPM
                        /
6062  6552      T63,    FPICL                   /ZERO THE FPP WORLD
6063  4443              JMS I   APT2            /SET UP APT WITH FAC=ONE'S
6064  1362              TAD     K3622
6065  3026              DCA     APT+1           /ALTER FPC IN APT
6066  1113              TAD     K4000
6067  6567              LSHFT                   /SET EPM
6070  1064              TAD     K25
6071  6555              FPST                    /LOAD ADRS REG', AND START FPP
6072  7402              HLT                     /ERR = FPP NOT READY
6073  6551              FPINT                   /FPP INTERRUPT REQUEST
6074  5273              JMP     .-1             /NO
6075  4422              JMS I   APTCK           /TEST APT
6076  1771              R63M1                   /EXPECTED APT RESULT POINTER
6077  7402              HLT                     /ERR = APT BAD

                        /
                        /TEST EXECUTION OF FMUL INSTRUCTION IN EPM
                        /
6100  6552      T64,    FPICL                   /ZERO THE FPP WORLD
6101  4443              JMS I   APT2            /SET UP APT WITH FAC=ONE'S
6102  1112              TAD     K3777
6103  3033              DCA     MSW             /ALTER FAC MSW
6104  1363              TAD     K3624
6105  3026              DCA     APT+1           /ALTER FPC IN APT
6106  1113              TAD     K4000
6107  6567              LSHFT                   /SET EPM
6110  1064              TAD     K25
6111  6555              FPST                    /LOAD ADRS REG', AND START FPP
6112  7402              HLT                     /ERR=FPP NOT READY
6113  6551              FPINT                   /FPP INTERRUPT REQUEST
6114  5313              JMP     .-1             /NO
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3514    6115  4422          JMS I   APTCK            /TEST APT
3515    6116  2005          R64M1                    /EXPECTED APT RESULT POINTER -1
3516    6117  7402          HLT                      /ERR-APT BAD
3517
3518                /
3519                /TEST EXECUTION OF FMUL INSTRUCTION IN EPM
3520                /
3521    6120  6552  T65,    FPICL                    /ZERO THE FPP WORLD
3522    6121  4444          JMS I   APT3             /SET UP APT WITH FAC=2525 PATTERN
3523    6122  1364          TAD     K3626
3524    6123  3026          DCA     APT+1            /ALTER FPC IN APT
3525    6124  1113          TAD     K4000
3526    6125  6567          LSHFT                    /SET EPM
3527    6126  1064          TAD     K25
3528    6127  6555          FPST                     /LOAD ADRS REG, AND START FPP
3529    6130  7402          HLT                      /ERR-FPP NOT READY
3530    6131  6551          FPINT                    /FPP INTERRUPT REQUEST
3531    6132  5331          JMP     .-1              /NO
3532    6133  4422          JMS I   APTCK            /TEST APT
3533    6134  2021          R65M1                    /EXPECTED APT RESULT POINTER -1
3534    6135  7402          HLT                      /ERR-APT BAD
3535
3536                /
3537                /TEST EXECUTION OF FMUL INSTRUCTION IN EPM
3538                /
3539    6136  6552  T66,    FPICL                    /ZERO THE FPP WORLD
3540    6137  4445          JMS I   APT4             /SET UP APT WITH FAC= 5252 PATTERN
3541    6140  1365          TAD     K3630
3542    6141  3026          DCA     APT+1            /ALTER FPC IN APT
3543    6142  1113          TAD     K4000
3544    6143  6567          LSHFT                    /SET EPM
3545    6144  1064          TAD     K25
3546    6145  6555          FPST                     /LOAD ADRS REG, AND START FPP
3547    6146  7402          HLT                      /ERR-FPP NOT READY
3548    6147  6551          FPINT                    /FPP INTERRUPT REQUEST
3549    6150  5347          JMP     .-1              /NO
3550    6151  4422          JMS I   APTCK            /TEST APT
3551    6152  2035          R66M1                    /EXPECTED APT RESULT POINTER -1
3552    6153  7402          HLT                      /ERR-APT BAD
3553    6154  5755          JMP I   .+1
3554    6155  6200          T67
3555
3556    6156  0421  K421,   421
3557    6157  3614  K3614,  3614
3558    6160  3616  K3616,  3616
3559    6161  3620  K3620,  3620
3560    6162  3622  K3622,  3622
3561    6163  3624  K3624,  3624
3562    6164  3626  K3626,  3626
3563    6165  3630  K3630,  3630
3564    6166  3146  K3146,  3146
3565                /
3566                /TEST EXECUTION OF FMULINSTRUCTION IN EPM
3567                /
3568          6200              *6200
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3569  6200  6552  T67,  FPICL                   /ZERO THE FPP WORLD
3570  6201  7300        CLA CLL
3571  6202  1367        TAD     K2345
3572  6203  4446        JMS I   APT5            /SET UP APT WITH FAC=AC PATTERN
3573  6204  1370        TAD     K3632
3574  6205  3026        DCA     APT+1           /ALTER FPC IN APT
3575  6206  1113        TAD     K4000
3576  6207  6567        LSHFT                   /SET EPM
3577  6210  1064        TAD     K25
3578  6211  6555        FPST                    /LOAD ADRS REG', AND START FPP
3579  6212  7402        HLT                     /ERR=FPP NOT READY
3580  6213  6551        FPINT                   /FPP INTERRUPT REQUEST
3581  6214  5213        JMP     .-1             /NO
3582  6215  4422        JMS I   APTCK           /TEST APT
3583  6216  2051        R67M1                   /EXPECTED APT RESULT POINTER -1
3584  6217  7402        HLT                     /ERR=APT BAD
3585
3586                    /
3587                    /TEST EXECUTION OF FDIV INSTRUCTION IN EPM
3588                    /
3589  6220  6552  T70,  FPICL                   /ZERO THE FPP WORLD
3590  6221  4442        JMS I   APT1            /SET UP APT WITH FAC=0
3591  6222  1112        TAD     K3777
3592  6223  3032        DCA     EXP             /ALTER FAC EXP
3593  6224  1074        TAD     K2000
3594  6225  3033        DCA     MSW             /ALTER FAC MSW
3595  6226  1371        TAD     K3634
3596  6227  3026        DCA     APT+1           /ALTER FPC IN APT
3597  6230  1113        TAD     K4000
3598  6231  6567        LSHFT                   /SET EPM
3599  6232  1064        TAD     K25
3600  6233  6555        FPST                    /LOAD ADRS REG', AND START FPP
3601  6234  7402        HLT                     /ERR=FPP NOT READY
3602  6235  6551        FPINT                   /FPP INTERRUPT REQUEST
3603  6236  5235        JMP     .-1             /NO
3604  6237  4422        JMS I   APTCK           /TEST APT
3605  6240  2065        P70M1                   /EXPECTED APT RESULT POINTER -1
3606  6241  7402        HLT                     /ERR=APT BAD
3607
3608                    //
3609                    /TEST EXECUTION OF FDIV INSTRUCTION IN EPM
3610                    /
3611  6242  6552  T71,  FPICL                   /ZERO THE FPP WORLD
3612  6243  4443        JMS I   APT2            /SET UP APT WITH FAC=ONE'S
3613  6244  1112        TAD     K3777
3614  6245  3033        DCA     MSW             /ALTER FAC MSW
3615  6246  1372        TAD     K3636
3616  6247  3026        DCA     APT+1           /ALTER FPC IN APT
3617  6250  1113        TAD     K4000
3618  6251  6567        LSHFT                   /SET EPM
3619  6252  1064        TAD     K25
3620  6253  6555        FPST                    /LOAD ADRS REG', AND START FPP
3621  6254  7402        HLT                     /ERR=FPP NOT READY
3622  6255  6551        FPINT                   /FPP INTERRUPT REQUEST
3623  6256  5255        JMP     .-1             /NO
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3624    6257  4422          JMS I   APTCK           /TEST APT
3625    6260  2101          R71M1                   /EXPECTED APT RESULT POINTER =1
3626    6261  7402          HLT                     /ERR=APT BAD
3627                  /
3628                  /TEST EXECUTION OF FDIV INSTRUCTION IN EPM
3629                  /
3630    6262  6552  T72,    FPICL                   /ZERO THE FPP WORLD
3631    6263  4442          JMS I   APT1            /SET UP APT WITH FAC=0
3632    6264  1365          TAD     K70
3633    6265  3032          DCA     EXP             /ALTER FAC EXP
3634    6266  1364          TAD     K2
3635    6267  3037          DCA     LSW3            /ALTER FAC LSW3
3636    6270  1373          TAD     K3640
3637    6271  3026          DCA     APT+1           /ALTER FPC IN APT
3638    6272  1113          TAD     K4000
3639    6273  6567          LSHFT                   /SET EPM
3640    6274  1064          TAD     K25
3641    6275  6555          FPST                    /LOAD ADRS REG', AND START FPP
3642    6276  7402          HLT                     /ERR=FPP NOT READY
3643    6277  6551          FPINT                   /FPP INTERRUPT REQUEST
3644    6300  5277          JMP     .-1             /NO
3645    6301  4422          JMS I   APTCK           /TEST APT
3646    6302  2115          R72M1                   /EXPECTED APT RESULT POINTER =1
3647    6303  7402          HLT                     /ERR=APT BAD
3648
3649
3650                  /
3651                  /TEST EXECUTION OF FDIV INSTRUCTION IN EPM
3652                  /
3653    6304  6552  T73,    FPICL                   /ZERO THE FPP WORLD
3654    6305  4445          JMS I   APT4            /SET UP APT WITH FAC=5252 PATTERN
3655    6306  1374          TAD     K3642
3656    6307  3026          DCA     APT+1           /ALTER FPC IN APT
3657    6310  1113          TAD     K4000
3658    6311  6567          LSHFT                   /SET EPM
3659    6312  1064          TAD     K25
3660    6313  6555          FPST                    /LOAD ADRS REG', AND START FPP
3661    6314  7402          HLT                     /ERR=FPP NOT READY
3662    6315  6551          FPINT                   /FPP INTERRUPT REQUEST
3663    6316  5315          JMP     .-1             /NO
3664    6317  4422          JMS I   APTCK           /TEST APT
3665    6320  2131          R73M1                   /EXPECTED APT RESULT POINTER =1
3666    6321  7402          HLT                     /ERR=APT BAD
3667
3668                  /
3669                  /TEST EXECUTION OF FDIV INSTRUCTION IN EPM
3670                  /
3671    6322  6552  T74,    FPICL                   /ZERO THE FPP WORLD
3672    6323  7200          CLA
3673    6324  1377          TAD     K6475
3674    6325  4446          JMS I   APT5            /SET UP APT WITH FAC=AC PATTERN
3675    6326  1375          TAD     K3644
3676    6327  3026          DCA     APT+1           /ALTER FPC IN APT
3677    6330  1113          TAD     K4000
3678    6331  6567          LSHFT                   /SET EPM
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3679  6332  1064          TAD     K25
3680  6333  6555          FPST                    /LOAD ADRS REG, AND START FPP
3681  6334  7402          HLT                     /ERR-FPP NOT READY
3682  6335  6551          FPINT                   /FPP INTERRUPT REQUEST
3683  6336  5335          JMP     .-1             /NO
3684  6337  4422          JMS I   APTCK           /TEST APT
3685  6340  2145          R74M1                   /EXPECTED APT RESULT POINTER -1
3686  6341  7402          HLT                     /ERR-APT BAD
3687                /
3688                /TEST EXECUTION OF FDIV INSTRUCTION IN EPM
3689                /
3690  6342  6552  T75,    FPICL                   /ZERO THE FPP WORLD
3691  6343  7200          CLA
3692  6344  1366          TAD     K1706
3693  6345  4446          JMS I   APT5            /SET UP APT WITH FAC-AC PATTERN
3694  6346  1376          TAD     K3646
3695  6347  3026          DCA     APT+1           /ALTER FPC IN APT
3696  6350  1113          TAD     K4000
3697  6351  6567          LSHFT                   /SET EPM
3698  6352  1064          TAD     K25
3699  6353  6555          FPST                    /LOAD ADRS REG, AND START FPP
3700  6354  7402          HLT                     /ERR-FPP NOT READY
3701  6355  6551          FPINT                   /FPP INTERRUPT REQUEST
3702  6356  5355          JMP     .-1             /NO
3703  6357  4422          JMS I   APTCK           /TEST APT
3704  6360  2161          R75M1                   /EXPECTED APT RESULT POINTER -1
3705  6361  7402          HLT                     /ERR-APT BAD
3706  6362  5763          JMP I   .+1
3707  6363  6400          T76
3708                /
3709  6364  0002  K2,     2
3710  6365  0070  K70,    70
3711  6366  1706  K1706,  1706
3712  6367  2345  K2345,  2345
3713  6370  3632  K3632,  3632
3714  6371  3634  K3634,  3634
3715  6372  3636  K3636,  3636
3716  6373  3640  K3640,  3640
3717  6374  3642  K3642,  3642
3718  6375  3644  K3644,  3644
3719  6376  3646  K3646,  3646
3720  6377  6475  K6475,  6475
3721                /
3722                /TEST EXECUTION OF FADDM INSTRUCTION IN EPM
3723                /
3724        6400          *6400
3725  6400  6552  T76,    FPICL                   /ZERO THE FPP WORLD
3726  6401  4444          JMS I   APT3            /SET UP APT WITH FAC-2525 PATTERN
3727  6402  4406          JMS I   CLB32           /CLEAR B32 AND B33 TARGET
3728  6403  1361          TAD     K3656
3729  6404  3026          DCA     APT+1           /ALTER FPC IN APT
3730  6405  1113          TAD     K4000
3731  6406  6567          LSHFT                   /SET EPM
3732  6407  1064          TAD     K25
3733  6410  6555          FPST                    /LOAD ADRS REG AND START FPP
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3734  6411  7402          HLT                     /ERR = FPP NOT READY
3735  6412  6551          FPINT                   /FPP INTERRUPT REQUEST
3736  6413  5212          JMP     .-1             /NO
3737  6414  4422          JMS I   APTCK           /TEST APT AND FPP STATUS WORD
3738  6415  2175          R76M1
3739  6416  7402          HLT
3740  6417  1525          TAD I   KB32            /GET EXPONENT FROM B32
3741  6420  7041          CIA
3742  6421  1077          TAD     K2525           /SHOULD = 2525
3743  6422  7440          SZA
3744  6423  7402          HLT                     /ERR = EXPONENT BAD IN LOC B32
3745  6424  1526          TAD I   KB32P1          /GET MSW FROM B32+1
3746  6425  7041          CIA
3747  6426  1112          TAD     K3777           /SHOULD = 3777
3748  6427  7440          SZA
3749  6430  7402          HLT                     /ERR = MSW BAD IN LOC B32+1
3750  6431  1527          TAD I   KB32P2          /GET LSW FROM LOC B32+2
3751  6432  7040          CMA                     /SHOULD = 7777
3752  6433  7440          SZA
3753  6434  7402          HLT                     /ERR = LSW BAD IN LOC B32+2
3754  6435  1530          TAD I   KB32P3          /GET LSW1 FROM LOC B32+3
3755  6436  7040          CMA                     /SHOULD = 7777
3756  6437  7440          SZA
3757  6440  7402          HLT                     /ERR = LSW1 BAD IN LOC B32+3
3758  6441  1531          TAD I   KB32P4          /GET LSW2 FROM LOC B32+4
3759  6442  7040          CMA                     /SHOULD = 7777
3760  6443  7440          SZA
3761  6444  7402          HLT                     /ERR = LSW2 BAD IN LOC B32+4
3762  6445  1532          TAD I   KB32P5          /GET LSW3 FROM LOC B32+5
3763  6446  7040          CMA                     /SHOULD = 7777
3764  6447  7440          SZA
3765  6450  7402          HLT                     /ERR = LSW3 BAD IN LOC B32+5
3766                /
3767                /TEST EXECUTION OF FMULM INSTRUCTION IN EPM
3768                /
3769  6451  6552    T77,  FPICL                   /ZERO THE FPP WORLD
3770  6452  7200          CLA
3771  6453  1370          TAD     K7316
3772  6454  4446          JMS I   APT5            /SET UP APT WITH FAC = 7316 PATTERN
3773  6455  4406          JMS I   CLB32           /CLEAR B32 & B33 TARGET
3774  6456  1362          TAD     K3662
3775  6457  3026          DCA     APT+1           /ALTER FPC IN APT
3776  6460  1113          TAD     K4000
3777  6461  6567          LSHFT                   /SET EPM
3778  6462  1064          TAD     K25
3779  6463  6555          FPST                    /LOAD ADRS REG AND START FPP
3782  6464  7402          HLT                     /ERR = FPP NOT READY
3781  6465  6551          FPINT                   /FPP INTERRUPT REQUEST
3782  6466  5265          JMP     .-1             /NO
3783  6467  4422          JMS I   APTCK           /TEST APT AND FPP STATUS WORD
3784  6470  2211          R77M1                   /POINTER TO EXPECTED RESULTS
3785  6471  7402          HLT                     /ERR
3786  6472  1525          TAD I   KB32            /AC = B32 TARGET CONTENTS
3787  6473  7041          CIA
3788  6474  1360          TAD     K2232           /SHOULD BE 2232
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3789    6475  7440          SZA                     /AC = 0
3790    6476  7402          HLT                     /NO-ERR
3791    6477  1526          TAD I   KB32P1          /AC = B32+1 TARGET CONTENTS
3792    6500  7041          CIA
3793    6501  1364          TAD     K5536           /SHOULD BE 5536
3794    6502  7440          SZA                     /AC = 0
3795    6503  7402          HLT                     /NO = ERR
3796    6504  1527          TAD I   KB32P2          /AC = B32+2 TARGET CONTENTS
3797    6505  7041          CIA
3798    6506  1366          TAD     K5727           /SHOULD BE 5727
3799    6507  7440          SZA                     /AC = 0
3800    6510  7402          HLT                     /NO = ERR
3801    6511  1530          TAD I   KB32P3          /AC = B32+3 TARGET CONTENTS
3802    6512  7041          CIA
3803    6513  1367          TAD     K6642           /SHOULD BE 6642
3804    6514  7440          SZA                     /AC = 0
3805    6515  7402          HLT                     /NO = ERR
3806    6516  1531          TAD I   KB32P4          /AC = B32+4 TARGET CONTENTS
3807    6517  7041          CIA
3808    6520  1371          TAD     K7115           /SHOULD BE 7115
3809    6521  7440          SZA                     /AC = 0
3810    6522  7402          HLT                     /NO = ERR
3811    6523  1532          TAD I   KB32P5          /AC = B32+5 TARGET CONTENTS
3812    6524  7041          CIA
3813    6525  1365          TAD     K5704           /SHOULD BE 5704
3814    6526  7440          SZA                     /AC = 0
3815    6527  7402          HLT                     /NO = ERR
3816                  /
3817                  /TEST EXITING ON AND SETTING OF STATUS ON EXPONENT UNDERFLOW
3818                  /
3819    6530  6552  T100,   FPICL                   /ZERO THE FPP WORLD
3820    6531  4443          JMS I   APT2            /SET UP APT WITH FAC = ONES
3821    6532  1363          TAD     K3666
3822    6533  3026          DCA     APT+1           /ALTER FPC IN APT
3823    6534  1113          TAD     K4000
3824    6535  3032          DCA     EXP             /ALTER FAC EXP IN APT
3825    6536  1357          TAD     K777
3826    6537  3033          DCA     MSW             /ALTER FAC MSW IN APT
3827    6540  1074          TAD     K2000
3828    6541  6553          FPCOM                   /LOAD FPP CMD REGISTER
3829    6542  7200          CLA
3830    6543  1113          TAD     K4000
3831    6544  6567          LSHFT                   /SET EPM
3832    6545  1064          TAD     K25
3833    6546  6555          FPST                    /LOAD ADRS REG AND START FPP
3834    6547  7402          HLT                     /ERR = FPP NOT READY
3835    6550  6551          FPINT                   /FPP INTERRUPT REQUEST
3836    6551  5350          JMP     .-1             /NO
3837    6552  4422          JMS I   APTCK           /TEST APT AND FPP STATUS
3838    6553  2225          R100M1                  /EXPECTED RESULT POINTER
3839    6554  7402          HLT                     /ERR
3840    6555  5756          JMP I   .+1
3841    6556  6600          T101
3842                  /
3843    6557  0777  K777,   777
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3844    6560  2232    K2232,  2232
3845    6561  3656    K3656,  3656
3846    6562  3662    K3662,  3662
3847    6563  3666    K3666,  3666
3848    6564  5536    K5536,  5536
3849    6565  5704    K5704,  5704
3850    6566  5727    K5727,  5727
3851    6567  6642    K6642,  6642
3852    6570  7316    K7316,  7316
3853    6571  7115    K7115,  7115
3854                  /
3855                  /TEST SETTING OF EXPONENT OVERFLOW STATUS
3856                  /
3857          6600            *6600
3858    6600  6552    T101,   FPICL                   /ZERO THE FPP WORLD
3859    6601  4443            JMS I   APT2            /SET UP APT WITH FAC = ONES
3860    6602  1377            TAD     K3670
3861    6603  3026            DCA     APT+1           /ALTER FPC IN APT
3862    6604  1112            TAD     K3777
3863    6605  3032            DCA     EXP             /ALTER FAC EXP IN APT
3864    6606  1112            TAD     K3777
3865    6607  3033            DCA     MSW             /ALTER FAC MSW IN APT
3866    6610  1113            TAD     K4000
3867    6611  6567            LSHFT                   /SET EPM
3868    6612  1064            TAD     K25
3869    6613  6555            FPST                    /LOAD ADRS REG AND START FPP
3870    6614  7402            HLT                     /ERR = FPP NOT READY
3871    6615  6551            FPINT                   /FPP INTERRUPT REQUEST
3872    6616  5215            JMP     .+1             /NO
3873    6617  4422            JMS I   APTCK           /TEST APT AND FPP STATUS WORD
3874    6620  2241            R101M1                  /EXPECTED RESULT POINTER
3875    6621  7402            HLT                     /ERR
3876
3877                  /
3878                  /TEST SETTING OF DIVIDE BY ZERO STATUS IN EPM
3879                  /
3880    6622  6552    T102,   FPICL                   /ZERO THE FPP WORLD
3881    6623  4444            JMS I   APT3            /SET UP APT WITH FAC = 2525 PATTERN
3882    6624  1103            TAD     K3672
3883    6625  3026            DCA     APT+1           /ALTER FAC IN APT
3884    6626  1113            TAD     K4000
3885    6627  6567            LSHFT                   /SET EPM
3886    6630  1064            TAD     K25
3887    6631  6555            FPST                    /LOAD ADRS REG AND START FPP
3888    6632  7402            HLT                     /ERR = FPP NOT READY
3889    6633  6551            FPINT                   /FPP INTERRUPT REQUEST
3890    6634  5233            JMP     .+1             /NO
3891    6635  4422            JMS I   APTCK           /TEST APT AND FPP STATUS
3892    6636  2255            R102M1                  /EXPECTED RESULT POINTER
3893    6637  7402            HLT                     /ERR
3894                  /
3895                  /TEST FPHLT IOT IN EPM
3896                  /
3897    6640  6552    T103,   FPICL                   /ZERO THE FPP WORLD
3898    6641  4442            JMS I   APT1            /SET UP APT WITH FAC = 0
```

```
3899    6642  1123          TAD     K3672
3900    6643  3026          DCA     APT+1           /ALTER FPC IN APT+1
3901    6644  1113          TAD     K4000
3902    6645  6567          LSHFT                   /SET EPM
3903    6646  1064          TAD     K25
3904    6647  6555          FPST                    /LOAD ADRS REG AND START FPP
3905    6650  7402          HLT                     /ERR = FPP NOT READY
3906    6651  6554          FPHLT                   /ISSUE FPHLT (STOP FPP) IOT
3907    6652  6551          FPINT                   /FPP INTERRUPT REQUEST
3908    6653  5252          JMP     .+1             /NO
3909    6654  4422          JMS I   APTCK           /TEST APT AND FPP STATUS
3910    6655  2271          R103M1                  /EXPECTED RESULT POINTER
3911    6656  7402          HLT                     /ERR
3912                  /
3913                  /TEST EXECUTION OF JEQ INSTRUCTION IF EPM
3914                  /
3915    6657  6552  T104,   FPICL                   /ZERO THE FPP WORLD
3916    6660  4442          JMS I   APT1            /SET UP APT WITH FAC = 0
3917    6661  1104          TAD     K3674
3918    6662  3026          DCA     APT+1           /ALTER FPC IN APT
3919    6663  1113          TAD     K4500
3920    6664  6567          LSHFT                   /SET EPM
3921    6665  1064          TAD     K25
3922    6666  6555          FPST                    /LOAD ADRS REG, AND START FPP
3923    6667  7402          HLT                     /FPP NOT READY
3924    6670  6551          FPINT                   /FPP INTERRUPT REQUEST
3925    6671  5270          JMP     .+1             /NO
3926    6672  4422          JMS I   APTCK           /TEST APT AND FPP STATUS WORD
3927    6673  2305          R104M1
3928    6674  7402          HLT
3929                  /
3930                  /TEST NON-EXCUTION OF JEQ INSTRUCTION INEPM
3931                  /
3932    6675  6552  T105,   FPICL                   /ZERO THE FPP WORLD
3933    6676  4442          JMS I   APT1            /SET UP APT WITH FAC = 0
3934    6677  1060          TAD     K1
3935    6700  3037          DCA     LSWC            /ALTER FAC LSW3
3936    6701  1104          TAD     K3674
3937    6702  3026          DCA     APT+1           /ALTER FPC IN APT
3938    6703  1113          TAD     K4000
3939    6704  6567          LSHFT                   /SET EPM
3940    6705  1064          TAD     K25
3941    6706  6555          FPST                    /LOAD ADRS REG, AND START FPP
3942    6707  7402          HLT                     /ERR = FPP NOT READY
3943    6710  6551          FPINT                   /FPP INTERRUPT REQUEST
3944    6711  5310          JMP     .+1             /NO
3945    6712  4422          JMS I   APTCK           /TEST APT
3946    6713  2321          R105M1                  /EXPECTED APT RESULT POINTER +1
3947    6714  7402          HLT                     /ERR = APT BAD
3948                  /
3949                  /TEST NON-EXECUTION OF JEQ INSTRUCTION IN EPM
3950                  /
3951    6715  6552  T106,   FPICL                   /ZERO THE FPP WORLD
3952    6716  4442          JMS I   APT1            /SET UP APT WITH FAC = 0
3953    6717  1113          TAD     K4000
```

```
3954    6720  3033            DCA     MSW             /ALTER FAC MSW IN APT
3955    6721  1060            TAD     K1
3956    6722  3037            DCA     LSW3            /ALTER FAC LSW3 IN APT
3957    6723  1104            TAD     K3674
3958    6724  3026            DCA     APT+1           /ALTER FPC IN APT
3959    6725  1113            TAD     K4000
3960    6726  6567            LSHFT                   /SET EPM
3961    6727  1064            TAD     K25
3962    6730  6555            FPST                    /LOAD ADRS REG', AND START FPP
3963    6731  7402            HLT                     /ERR = FPP NOT READY
3964    6732  6551            FPINT                   /FPP INTERRUPT REQUEST
3965    6733  5332            JMP     .-1             /NO
3966    6734  4422            JMS I   APTCK           /TEST APT
3967    6735  2335            R106M1                  /EXPECTED APT RESULT POINTER -1
3968    6736  7402            HLT                     /ERR = APT BAD
3969                    /
3970                    /TEST EXECUTION OF JGE INSTRUCTION IN EPM
3971                    /
3972    6737  6552    T107,   FPICL                   /ZERO THE FPP WORLD
3973    6740  4442            JMS I   APT1            /SET UP APT WITH FAC = 0
3974    6741  1105            TAD     K3700
3975    6742  3026            DCA     APT+1           /ALTER FPC IN APT
3976    6743  1113            TAD     K4000
3977    6744  6567            LSHFT                   /SET EPM
3978    6745  1064            TAD     K25
3979    6746  6555            FPST                    /LOAD ADRS REG', AND START FPP
3980    6747  7402            HLT                     /ERR = FPP NOT READY
3981    6750  6551            FPINT                   /FPP INTERRUPT REQUEST
3982    6751  5350            JMP     .-1             /NO
3983    6752  4422            JMS I   APTCK           /TEST APT
3984    6753  2351            R107M1                  /EXPECTED APT RESULT POINTER -1
3985    6754  7402            HLT                     /ERR = APT BAD
3986                    /
3987                    /TEST EXECUTION OF JGE INSTRUCTION IN EPM
3988                    /
3989    6755  6552    T110,   FPICL                   /ZERO THE FPP WORLD
3990    6756  4442            JMS I   APT1            /SET UP APT WITH FAC = 0
3991    6757  1060            TAD     K1
3992    6760  3037            DCA     LSW3            /ALTER FAC LSW3
3993    6761  1105            TAD     K3700
3994    6762  3026            DCA     APT+1           /ALTER FPC IN APT
3995    6763  1113            TAD     K4000
3996    6764  6567            LSHFT                   /SET EPM
3997    6765  1064            TAD     K25
3998    6766  6555            FPST                    /LOAD ADRS REG', AND START FPP
3999    6767  7402            HLT                     /ERR = FPP NOT READY
4000    6770  6551            FPINT                   /FPP INTERRUPT REQUEST
4001    6771  5370            JMP     .-1             /NO
4002    6772  4422            JMS I   APTCK           /TEST APT
4003    6773  2365            R110M1                  /EXPECTED APT RESULT POINTER -1
4004    6774  7402            HLT                     /ERR = APT BAD
4005    6775  5776            JMP I   .+1
4006    6776  7000            T111
4007                    /
4008    6777  3670    K3670,  3670
```

```
4209                    /
4210                    /TEST NON-EXECUTION OF JGE INSTRUCTION INEPM
4211                    /
4212            7000            *7000
4213    7000    6552    T111,   FPICL                   /ZERO THE FPP WORLD
4214    7001    4442            JMS I   APT1            /SET UP APT WITH FAC = 0
4215    7002    1113            TAD     K4000
4216    7003    3033            DCA     MSW             /ALTER FAC MSW IN APT
4217    7004    1060            TAD     K1
4218    7005    3037            DCA     LSW3            /ALTER FAC LSW3
4219    7006    1105            TAD     K3700
4220    7007    3026            DCA     APT+1           /ALTER FPC IN APT
4221    7010    1113            TAD     K4000
4222    7011    6567            LSHFT                   /SET EPM
4223    7012    1064            TAD     K23
4224    7013    6555            FPST                    /LOAD ADRS REG', AND START FPP
4225    7014    7402            HLT                     /ERR = FPP NOT READY
4226    7015    6551            FPINT                   /FPP INTERRUPT REQUEST
4227    7016    5215            JMP     .-1             /NO
4228    7017    4422            JMS I   APTCK           /TEST APT
4229    7020    2401            R111M1                  /EXPECTED APT RESULT POINTER -1
4230    7021    7402            HLT                     /ERR = APT BAD
4231                    /
4232                    /TEST EXECUTION OF JLF INSTRUCTION IN EPM
4233                    /
4234    7022    6552    T112,   FPICL                   /ZERO THE FPP WORLD
4235    7023    4442            JMS I   APT1            /SET UP APT WITH FAC = 0
4236    7024    1364            TAD     K3704
4237    7025    3026            DCA     APT+1           /ALTER FPC IN APT
4238    7026    1113            TAD     K4000
4239    7027    6567            LSHFT                   /SET EPM
4240    7030    1064            TAD     K23
4241    7031    6555            FPST                    /LOAD ADRS REG', AND START FPP
4242    7032    7402            HLT                     /ERR = FPP NOT READY
4243    7033    6551            FPINT                   /FPP INTERRUPT REQUEST
4244    7034    5233            JMP     .-1             /NO
4245    7035    4422            JMS I   APTCK           /TEST APT
4246    7036    2415            R112M1                  /EXPECTED APT RESULT POINTER -1
4247    7037    7402            HLT                     /ERR = APT BAD
4248                    /
4249                    /TEST EXECUTION OF JLE INSTRUCTION IN EPM
4250                    /
4251    7040    6552    T113,   FPICL                   /ZERO THE FPP WORLD
4252    7041    4442            JMS I   APT1            /SET UP APT WITH FAC = 0
4253    7042    1113            TAD     K4000
4254    7043    3033            DCA     MSW             /ALTER FAC MSW IN APT
4255    7044    1060            TAD     K1
4256    7045    3037            DCA     LSW3            /ALTER FAC LSW3
4257    7046    1364            TAD     K3704
4258    7047    3026            DCA     APT+1           /ALTER FPC IN APT
4259    7050    1113            TAD     K4000
4260    7051    6567            LSHFT                   /SET EPM
4261    7052    1064            TAD     K23
4262    7053    6555            FPST                    /LOAD ADRS REG', AND START FPP
4263    7054    7402            HLT                     /ERR = FPP NOT READY
```

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4064    7055  6551          FPINT                   /FPP INTERRUPT REQUEST
4065    7056  5255          JMP     .-1             /NO
4066    7057  4422          JMS I   APTCK           /TEST APT
4067    7060  2431          R113M1                  /EXPECTED APT RESULT POINTER -1
4068    7061  7402          HLT                     /ERR = APT BAD
4069                  /
4070                  /TEST NON-EXECUTION OF JLE INSTRUCTION IN EPM
4071                  /
4072    7062  6552  T114,   FPICL                   /ZERO THE FPP WORLD
4073    7063  4442          JMS I   APT1            /SET UP APT WITH FAC = 0
4074    7064  1060          TAD     K1
4075    7065  3037          DCA     LSW3            /ALTER FAC LSW3
4076    7066  1364          TAD     K3704
4077    7067  3026          DCA     APT+1           /ALTER FPC IN APT
4078    7070  1113          TAD     K4000
4079    7071  6567          LSHFT                   /SET EPM
4080    7072  1064          TAD     K25
4081    7073  6555          FPST                    /LOAD ADRS REG', AND START FPP
4082    7074  7402          HLT                     /ERR = FPP NOT READY
4083    7075  6551          FPINT                   /FPP INTERRUPT REQUEST
4084    7076  5275          JMP     .-1             /NO
4085    7077  4422          JMS I   APTCK           /TEST APT
4086    7100  2443          R113M1                  /EXPECTED APT RESULT POINTER -1
4087    7101  7402          HLT                     /ERR = APT BAD
4088                  /
4089                  /TEST NON-EXECUTION OF JNE INSTRUCTION IN EPM
4090                  /
4091    7102  6552  T115,   FPICL                   /ZERO THE FPP WORLD
4092    7103  4442          JMS I   APT1            /SET UP APT WITH FAC = 0
4093    7104  1365          TAD     K3710
4094    7105  3026          DCA     APT+1           /ALTER FPC IN APT
4095    7106  1113          TAD     K4000
4096    7107  6567          LSHFT                   /SET EPM
4097    7110  1064          TAD     K25
4098    7111  6555          FPST                    /LOAD ADRS REG', AND START FPP
4099    7112  7402          HLT                     /ERR = FPP NOT READY
4100    7113  6551          FPINT                   /FPP INTERRUPT REQUEST
4101    7114  5313          JMP     .-1             /NO
4102    7115  4422          JMS I   APTCK           /TEST APT
4103    7116  2461          R113M1                  /EXPECTED APT RESULT POINTER -1
4104    7117  7402          HLT                     /ERR = APT BAD
4105                  /
4106                  /TEST EXECUTION OF JNE INSTRUCTION IN EPM
4107                  /
4108    7120  6552  T116,   FPICL                   /ZERO THE FPP WORLD
4109    7121  4442          JMS I   APT1            /SET UP APT WITH FAC = 0
4110    7122  1060          TAD     K1
4111    7123  3037          DCA     LSW3            /ALTER FAC LSW3
4112    7124  1365          TAD     K3710
4113    7125  3026          DCA     APT+1           /ALTER FPC IN APT
4114    7126  1113          TAD     K4000
4115    7127  6567          LSHFT                   /SET EPM
4116    7130  1064          TAD     K25
4117    7131  6555          FPST                    /LOAD ADRS REG', AND START FPP
4118    7132  7402          HLT                     /ERR = FPP NOT READY
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4119  7133  6551          FPINT                   /FPP INTERRUPT REQUEST
4120  7134  5333          JMP     .-1             /NO
4121  7135  4422          JMS I   APTCK           /TEST APT
4122  7136  2475          R116M1                  /EXPECTED APT RESULT POINTER -1
4123  7137  7402          HLT                     /ERR = APT BAD
4124                      /
4125                      /TEST EXECUTION OF JNE INSTRUCTION IN EPM
4126                      /
4127  7140  6552  T117,   FPICL                   /ZERO THE FPP WORLD
4128  7141  4442          JMS I   APT1            /SET UP APT WITH FAC = 0
4129  7142  1113          TAD     K4000
4130  7143  5033          DCA     MSW             /ALTER FAC MSW IN APT
4131  7144  1060          TAD     K1
4132  7145  5057          DCA     LSW3            /ALTER FAC LSW3 IN APT
4133  7146  1505          TAD     K3713
4134  7147  5026          DCA     APT+1           /ALTER FPC IN APT
4135  7150  1113          TAD     K4000
4136  7151  6547          LSHFT                   /SET EPM
4137  7152  1064          TAD     K25
4138  7153  6555          FPST                    /LOAD ADRS REG, AND START FPP
4139  7154  7402          HLT                     /ERR = FPP NOT READY
4140  7155  6551          FPINT                   /FPP INTERRUPT REQUEST
4141  7156  5355          JMP     .-1             /NO
4142  7157  4422          JMS I   APTCK           /TEST APT
4143  7160  2525          R120M1                  /EXPECTED APT RESULT POINTER -1
4144  7161  7402          HLT                     /ERR = APT BAD
4145  7162  5161          JMP .                   .-1
4146  7163  7777          7777
4147                      /
4148  7164  3726  K3726,  3726
4149  7165  3713  K3713,  3713
4150                      /
4151                      /TEST NON-EXECUTION OF JLT INSTRUCTION IN EPM
4152                      /
4153        7200          *7200
4154  7200  6552  T120,   FPICL                   /ZERO THE FPP WORLD
4155  7201  4442          JMS I   APT1            /SET UP APT WITH FAC = 0
4156  7202  1106          TAD     K3714
4157  7203  5026          DCA     APT+1           /ALTER FPC IN APT
4158  7204  1113          TAD     K4000
4159  7205  6547          LSHFT                   /SET EPM
4160  7206  1064          TAD     K25
4161  7207  6555          FPST                    /LOAD ADRS REG, AND START FPP
4162  7210  7402          HLT                     /ERR = FPP NOT READY
4163  7211  6551          FPINT                   /FPP INTERRUPT REQUEST
4164  7212  5211          JMP     .-1             /NO
4165  7213  4422          JMS I   APTCK           /TEST APT
4166  7214  2525          R120M1                  /EXPECTED APT RESULT POINTER -1
4167  7215  7402          HLT                     /ERR = APT BAD
4168                      /
4169                      /TEST NON-EXECUTION OF JLT INSTRUCTION IN EPM
4170                      /
4171  7216  6552  T121,   FPICL                   /ZERO THE FPP WORLD
4172  7217  4442          JMS I   APT1                    /SET UP APT WITH FAC = 0
4173  7220  1060          TAD     K1
```

```
7221 3037          DCA     LSW3              /ALTER FAC LSW3
7222 1106          TAD     K3714
7223 3026          DCA     APT+1             /ALTER FPC IN APT
7224 1113          TAD     K4000
7225 6567          LSHFT                             /SET EPM
7226 1004          TAD     K23
7227 6555          FPST                      /LOAD ADRS REG, AND START FPP
7230 7402          HLT                       /ERR - FPP NOT READY
7231 6551          FPINT                     /FPP INTERRUPT REQUEST
7232 5231          JMP     .-1               /NO
7233 4422          JMS I   APTCK             /TEST APT
7234 2541          R121M1                    /EXPECTED APT RESULT POINTER +1
7235 7402          HLT                       /ERR - APT BAD
                /
                /TEST EXECUTION [illegible]
                /
[illegible]
7264 6555          [illegible]               /LOAD [illegible] REG, AND START FPP
7265 7402          [illegible]               /ERR [illegible] FPP NOT READY
7267 6551          [illegible]               /FPP [illegible] REQUEST
7270 5267          JMP     [illegible]       /NO
7271 4422          JMS I   APTCK             /TEST APT
7272 2571          R123M1                    /EXPECTED APT RESULT POINTER +1
7273 7402          HLT                       /ERR - APT BAD
                /
                /TEST NON-EXECUTION OFJST INSTRUCTION IN EPM
                /
7274 6552   T124,  FPICL                     /ZERO THE FPP WORLD
7275 4442          JMS I   APT1              /SET UP ATP WITH FAC = 0
7276 1107          TAD     K3720
```

```
7277  3026          DCA     APT+1          /ALTER FPC IN APT
7300  1113          TAD     K4000
7301  6567          LSHFT                  /SET EPM
7302  1064          TAD     K25
7303  6555          FPST                   /LOAD ADRS REG. AND START FPP
7304  7402          HLT                    /ERR - FPP NOT READY
7305  6551          FPINT                  /FPP INTERRUPT REQUEST
7306  5305          JMP     .-1            /NO
7307  4422          JMS I   [illegible]    /TEST APT
7310  2335          R[illegible]1          /EXPECTED APT RESULT PRINTED [illegible]
7311  7402          HLT                    /ERR - APT [illegible]
                /
                /TEST NON-EXECUTION OF [illegible] INSTRUCTION IN EPM
                /
7312  [illegible]  T[illegible]  FPICL     /[illegible]
7313  [illegible]   JMS I   [illegible]    /[illegible] APT WITH [illegible]
7314  [illegible]   TAD     [illegible]
7315  [illegible]   DCA     [illegible]    /[illegible] APT
7316  [illegible]   TAD     [illegible]
7317  [illegible]   DCA     [illegible]    /[illegible]
7320  [illegible]   TAD     [illegible]
7321  [illegible]   [illegible]            /[illegible]
7322  [illegible]   [illegible]
7323  [illegible]   [illegible]            /[illegible] EPM
7324  [illegible]   [illegible]
7325  [illegible]   [illegible]            /LOAD ADRS REG. AND START FPP
7326  [illegible]   [illegible]            /ERR - FPP NOT READY
7327  [illegible]   [illegible]            /FPP INTERRUPT REQUEST
7330  [illegible]   [illegible]            /NO
7331  [illegible]   [illegible]            /TEST APT
7332  [illegible]   [illegible]            /EXPECTED APT RESULT PRINTED [illegible]
7333  [illegible]   [illegible]            /ERR - [illegible]
                /
                /TEST EXECUTION OF [illegible] IN EPM
                /
7334  [illegible]  [illegible]  [illegible]  /[illegible]
7335  [illegible]   CLA CLL
7336  [illegible]   TAD     [illegible]
7337  [illegible]   DCA     CNTR           /[illegible] LOC CNTR TO [illegible]
7340  [illegible]   TAD     K3700
7341  [illegible]   DCA     NUM            /SET CONTENTS LOC NUM TO 3700
7342  [illegible]  [illegible]  TAD  NUM
7343  3026          DCA     APT+1          /ALTER FPC IN APT
7344  [illegible]   TAD     K4000
7345  6567          LSHFT                  /SET EPM
7346  1064          TAD     K25
7347  6555          FPST                   /LOAD ADRS REG AND START FPP
7350  7402          HLT                    /ERR - FPP NOT READY
7351  6551          FPINT                  /FPP INTERRUPT REQUEST
7352  5351          JMP     .-1            /NO
7353  2015          ISZ     NUM            /INC LOC NUM
7354  2015          ISZ     NUM            /INC LOC NUM
7355  7300          CLA CLL
7356  1026          TAD     APT+1          /APT FPC TO AC
```

```
7357 7041           CIA
7360 1015           TAD     NUM     /SHOULD = CONTENTS OF LOC NUM
7361 7440           SZA
7362 7402           HLT                     /ERR = TRAP INSTRUCTION FAILED
7363 1031           TAD     APT+4           /FPP OP ADRS FROM APT TO AC
7364 7440           SZA
7365 7402           HLT                     /ERR-FPP OP ADRS SHOULD = 0
7366 6556           FPRST                   /FPP STATUS REG TO AC
7367 7041           CIA
7370 1075           TAD     X2004           /SHOULD = 2004
7371 7440           SZA
7372 7402           HLT                     /FPP STATUS WORD  ST = 2004
7373 6552           FPICL                   /ZERO THE FPP WORLD
7374 [illegible]    ISZ     [illegible]     /DONE
7375 [illegible]    JMP     [illegible]     /NO
7376 7[illegible]   [illegible]
7377 [illegible]   NOP

                    /
                    /TEST EXECUTION OF [illegible] IN EPM
                    /
          [illegible]
7400 6552 [illegible] FPICL                 /ZERO THE FPP WORLD
7[illegible] [illegible] [illegible] [illegible] /SET UP APT WITH [illegible]
7402 [illegible]    [illegible]   [illegible]
7403 [illegible]    [illegible]   [illegible] /ALTER APT [illegible]
7404 [illegible]    [illegible]   [illegible]
7405 [illegible]    [illegible]   [illegible] /ALTER APT [illegible]
7406 [illegible]    [illegible]   [illegible]
7407 6567           [illegible]             /[illegible] EPM
74[illegible] [illegible] [illegible] [illegible]
741[illegible] 6555 [illegible]             /LOAD ADRS REG AND START FPP
74[illegible] [illegible] [illegible]       /ERR = FPP NOT READY
74[illegible] [illegible] [illegible]       /FPP INTERRUPT REQUEST
74[illegible] [illegible] JMP  [illegible]  /NO
74[illegible] [illegible] [illegible]       /TEST APT AND FPP STATUS
7415 [illegible]    [illegible]             /EXPECTED RESULT POINTER
7417 7402           [illegible]             /[illegible] APT

                    /
                    /TEST EXECUTION OF [illegible] INSTRUCTION IN EPM
                    /
7[illegible] 6552 [illegible] [illegible]   /ZERO THE FPP WORLD
7[illegible] [illegible] JMS I  [illegible] /SET UP APT WITH FPC = 2323 PATTERN
7422 [illegible]    [illegible]
7423 [illegible]    DCA     [illegible]     /ALTER FPC IN APT
7424 1113           TAD     [illegible]
7425 6567           LEAP                    /SET EPM
7426 1[illegible]   TAD     [illegible]
7427 6555           FPST                    /LOAD ADRS REG AND START FPP
7430 7402           HLT                     /ERR = FPP NOT READY
7431 6551           FPINT                   /FPP INTERRUPT REQUEST
7432 5231           JMP     .-1             /NO
7433 4421           JMS I   APTCK           /TEST APT
7434 2651           R133M1                  /EXPECTED APT RESULT POINTER -1
7435 7402           HLT                     /ERR = APT BAD
                    /
```

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4339                        /TEST EXECTION OF JA INSTRUCTION IN EPM
4342                        /
4341    7436  6552  T131,   FPICL                /ZERO THE FPP WORLD
4342    7437  4442          JMS I   APT1          /SETUP APT WITH FAC = 0
4343    7440  1362          TAD     K3736
4344    7441  3026          DCA     APT+1         /ALTER FPC IN APT
4345    7442  1113          TAD     K1000
4346    7443  6367          LSHFT                 /SET EPM
4347    7444  1064          TAD     K25
4348    7445  6555          FPST                  /LOAD ADRS REG AND START FPP
4349    7446  7402          HLT                   /ERR - FPP NOT READY
4350    7447  6551          FPINT                 /FPP INTERRUPT REQUEST
4351    7450  5247          JMP     .+1           /NO
4352    7451  4422          JMS I   APTCK         /TEST APT
4353    7452  2715          R133M1                /EXPECTED APT RESULT POINTER +1
4354    7453  7402          HLT                   /ERR = APT BAD
4355
4356                        /TEST EXECUTION OF JSA INSTRUCTION IN EPM
4357                        /
4360    7454  6552  T132,   FPICL                /ZERO THE FPP WORLD
4361    7455  4442          JMS I   APT1          /SETUP APT WITH FAC = 0
4362    7456  1362          TAD     K3736
4363    7457  3026          DCA     APT+1         /ALTER FPC IN APT
4364    7460  1113          TAD     K1000
4365    7461  6367          LSHFT                 /SET EPM
4366    7462  1064          TAD     K25
4367    7463  6555          FPST                  /LOAD ADRS REG AND START FPP
4370    7464  7402          HLT                   /ERR=FPP NOT READY
4371    7465  6551          FPINT                 /FPP INTERRUPT REQUEST
4372    7466  5265          JMP     .+1           /NO
4373    7467  4422          JMS I   APTCK         /TEST APT
4374    7470  2715          R133M1                /EXPECTED APT RESULT POINTER +1
4375    7471  7402          HLT                   /ERR=APT BAD
4376
4377                        /
4400                        /TEST EXECTION OF JSA INSTRUCTION IN EPM
4401                        /
4402    7472  6552  T133,   FPICL                /ZERO THE FPP WORLD
4403    7473  4442          JMS I   APT1          /SETUP APT WITH FAC = 0
4404    7474  1364          TAD     K3736
4405    7475  3026          DCA     APT+1         /ALTER FPC IN APT
4406    7476  1115          TAD     K1003
4407    7477  6367          LSHFT                 /SET EPM
4410    7500  1064          TAD     K25
4411    7501  6555          FPST                  /LOAD ADRS REG, AND START FPP
4412    7502  7402          HLT                   /ERR=FPP NOT READY
4413    7503  6551          FPINT                 /FPP INTERRUPT REQUEST
4414    7504  5303          JMP     .+1           /NO
4415    7505  4422          JMS I   APTCK         /TEST APT
4416    7506  2715          R133M1                /EXPECTED APT RESULT POINTER +1
4417    7507  7402          HLT                   /ERR=APT BAD
4420
4421                        /TEST EXECUTION OF JSA INSTRUCTION IN EPM
4422                        /
4423    7510  6552  T134,   FPICL                /ZERO THE FPP WORLD
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