```
CLEAR STORAGE 1     ,008015,022026,030037,044,049,053053N000000N00001026                                  1
CLEAR STORAGE 2     L068116,105106,110117B101/I9I#071029C029056B026/B001/0991,001/001117I0?                2
BOOTSTRAP           ,008015,022029,036040,047054,061068,072/061039             ,0010011040                3

                          FORTRAN COMPILER -- DIMENSION PHASE ONE -- 09                          PAGE    1

 SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD

 101               JOB   FORTRAN COMPILER -- DIMENSION PHASE ONE -- 09
 102         *
 103         * A TABLE OF ARRAYS IS GENERATED AT THE END OF STORAGE.
 104         * EACH TABLE ELEMENT CONSISTS OF THE ARRAY NAME, ITS
 105         * DIMENSIONS AND SUFFICIENT SPACE FOR CONTROL STATEMENTS
 106         * AND DATA GENERATED BY THE EQUIVALENCE PHASES AND BY
 107         * DIMENSION PHASE TWO.
 108         *
 109         * DIMENSION TABLE ELEMENTS ARE SEPARATED BY GROUP MARK WORD MARK.
 110         * AT THE TOP OF EACH ELEMENT IS THE ARRAY NAME, SPELT BACKWARD.
 111         * BELOW THAT ARE TWO CELLS USED TO DOUBLE LINK THE ELEMENTS.
 112         * THE UPPER ONE POINTS TO THE NEXT ONE HIGHER IN CORE (UNLESS
 113         * IT'S BLANK); THE LOWER ONE POINTS TO THE NEXT ONE LOWER IN
 114         * CORE (UNLESS IT'S BLANK).  BELOW THAT ARE EMPTY THREE CHARACTER
 115         * AND FIVE CHARACTER FIELDS.  BELOW THAT ARE THE DIMENSIONS, WITH
 116         * THE FIRST DIMENSION AT THE HIGHER ADDRESS.  THE DIGITS OF THE
 117         * DIMENSIONS ARE NOT REVERSED.
 118         *
 119         * 81-83 = START (TOP ADDRESS) OF FIRST (TOP IN MEMORY)
 120         * STATEMENT.  REMEMBER, STATEMENTS ARE SORTED BY TYPE NOW,
 121         * AND PUSHED TO THE BOTTOM OF AVAILABLE CORE.
 122         *
 123         * ON EXIT, 84-86 IS THE ADDRESS OF THE TOPMOST (FIRST)
 124         * DIMENSION TABLE.
 125         *
 126               CTL   6611
 127         *
 128         X1    EQU   89                                                      0089
 129         X2    EQU   94                                                      0094
 130         X3    EQU   99                                                      0099
 131         *
 132         * STUFF IN THE RESIDENT AREA
 133         *
 134         PHASID EQU  110  PHASE ID, FOR SNAPSHOT DUMPS                       0110
 135         GLOBER EQU  184  GLOBAL ERROR FLAG -- WM MEANS ERROR                0184
 136         SNAPSH EQU  333  CORE DUMP SNAPSHOT                                 0333
 137         TOPCOR EQU  688  TOP CORE ADDRESS FROM PARAM CARD                   0688
 138         IMOD   EQU  690  INTEGER MODULUS -- NUMBER OF DIGITS                0690
 139         MANTIS EQU  692  FLOATING POINT MANTISSA DIGITS                     0692
 140         LOADNX EQU  700  LOAD NEXT OVERLAY                                  0700
 141         CLEARL EQU  707  CS AT START OF OVERLAY LOADER                       0707
 142         CDOVLY EQU  769  READ (1) INSTRUCTION IF RUNNING FROM CARDS         0769
 143         TPREAD EQU  780  TAPE READ INSTRUCTION IN OVERLAY LOADER            0780
 144         LOADXX EQU  793  EXIT FROM OVERLAY LOADER                           0793
 145         CLRBOT EQU  833  BOTTOM OF CORE TO CLEAR IN OVERLAY LOADER          0833
 146         *
 147               ORG   838                                                                 0838
```

```
SEQ PG LIN  LABEL   OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD
148         LOADDD  EQU   *&1          LOAD ADDRESS                          0838                      
149    838  DIFF    DCW   @0@   WM IF FP WIDTH /= INTEGER WIDTH          1  0838                      4
150    839  BEGINN  SW    GM                                            4  0839  , W91               4
151    843          MCW   83,X1         TOP OF TOP (FIRST) STATEMENT    7  0843  M 083 089           4
152    850          A     KB1,MANTIS    GET RID OF ZONES IN MANTIS      7  0850  A X01 692           4
153    857          MCW   MANTIS,MANP2                                  7  0857  M 692 X03           4
154    864          A     KP2,MANP2     MANTIS + 2 = TOTAL FP WIDTH     7  0864  A X04 X03           4
155    871          C     IMOD,MANP2    FP WIDTH == INTEGER WIDTH?      7  0871  C 690 X03           5
156    878          BU    DIFWID                                        5  0878  B 887 /             5
157    883          CW    DIFF                                          4  0883  ) 838               5
158    887  DIFWID  LCA   GM,1&X1       SET GMWM ABOVE STATEMENT        7  0887  L W91 0|1           5
159    894          LCA   TOPCOR,X2     X2 = TOPCOR                     7  0894  L 688 094           5
160    901          MN    0&X2                                          4  0901  D 0!0               5
161    905          MN                                                  1  0905  D                   5
162    906          MCW   KB1A                                          4  0906  M X05               6
163    910          SBR   X2            X2 = TOPCOR - 3                 4  0910  H 094               6
164    914  PREV    MCW   KB1,1-0       CLOBBER PREVIOUS LESS-THAN SIGN 7  0914  M X01 001           6
165    921          MCW   KLESS,2&X1    STMT TOP + 2 = LESS-THAN SIGN   7  0921  M X06 0|2           6
166    928          NOP   2&X1                                          4  0928  N 0|2               6
167    932          SAR   PREV&6        REMEMBER WHERE WE PUT IT        4  0932  Q 920               6
168    936          LCA   0&X1,PREFIX                                   7  0936  L 0|0 W90           6
169    943          SAR   X1            POINT X1                        4  0943  Q 089               7
170    947          SBR   X3              AND X3 AFTER LABEL            4  0947  H 099               7
171    951          BCE   DONE,PREFIX,     NO MORE STATEMENTS?          8  0951  B V45 W90           7
172    959          BCE   FIND,PREFIX-3,I  DIMENSION STATEMENT?          8  0959  B 979 W87 I         7
173    967          BCE   END,PREFIX-3,/   END STATEMENT?                8  0967  B V33 W87 /         7
174    975          B     DONE                                          4  0975  B V45               7
175         *
176         * SKIP OVER THE ARRAY NAME -- MUST END WITH LEFT PAREN
177         *
178    979  FIND    BCE   LPAREN,0&X1,%                                 8  0979  B |19 0|0 %           8
179    987          BCE   SYNTAX,0&X1,,                                 8  0987  B U84 0|0 ,           8
180    995          BCE   SYNTAX,0&X1,)                                 8  0995  B U84 0|0 )           8
181  1 003          BCE   SYNTAX,0&X1,}                                 8  1003  B U84 0|0 } GMARK     8
182  1 011          SBR   X1                                            4  1011  H 089               8
183  1 015          B     FIND                                          4  1015  B 979               9
184         *
185         * FOUND THE LEFT PAREN
186         *
187  1 019  LPAREN  SW    LPFLAG                                        4  1019  , X00               9
188  1 023          MN    0&X1        GET BELOW                         4  1023  D 0|0               9
189  1 027          SAR   X1            LEFT PAREN                      4  1027  Q 089               9
190  1 031          SW    2&X1        SET WORD MARK AT BOTTOM OF SYMBOL 4  1031  , 0|2               9
191  1 035          MCW   X2,SAVX2                                      7  1035  M 094 X09           9
192  1 042          BW    FIRST,FIRSTF                                  8  1042  V /12 X10 1         9
193         *
194         * CHECK WHETHER SYMBOL IS IN THE TABLE.  X2 IS AT BOTTOM
195         * OF THE BOTTOM SYMBOL ENTRY.
196         *
197  1 050  CHECK   MCM   1&X2                                          4  1050  P 0!1              10
```

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SEQ PG LIN  LABEL   OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD
198  1 054          SAR   X2                                            4  1054  Q 094               10
199  1 058          BCE   FIRST,0&X2,  TOP OF THE TABLE?               8  1058  B /12 0!0           10
200  1 066  HIGHER MCM   2&X2        MOVE UP TO NEXT ELEMENT           4  1066  P 0!2               10
201  1 070          MN                                                  1  1070  D                   10
202  1 071          MN                                                  1  1071  D                   10
203  1 072          SBR   X2          TOP OF ELEMENT (MAYBE)            4  1072  H 094               10
204  1 076          BCE   HIGHER,1&X2,|  NEED TO MOVE UP MORE IF RM     8  1076  B |66 0!1 |         11
205  1 084  COMPAR C     0&X2,0&X3  SAME AS ALREADY IN TABLE?           7  1084  C 0!0 0?0           11
206  1 091          SAR   X2                                            4  1091  Q 094               11
207  1 095          BU    CHECK                                         5  1095  B |50 /             11
208  1 100          BW    DOUBLE,1&X2                                   8  1100  V T56 0!1 1         11
209  1 108          B     CHECK                                         4  1108  B |50               11
210  1 112  FIRST   MCW   SAVX2,X2                                      7  1112  M X09 094           12
211  1 119          LCA   GM,0&X2     MARK TOP OF ELEMENT              7  1119  L W91 0!0           12
212  1 126          LCA   0&X3        SYMBOL TO ELEMENT                4  1126  L 0?0               12
213  1 130          LCA   NEWX3       CHAIN                            4  1130  L W94               12
214  1 134          SBR   X2          BELOW CHAIN IN ELEMENT           4  1134  H 094               12
215  1 138          MCW   NEWX3,X3                                      7  1138  M W94 099           12
216  1 145          BCE   HEAD,X3,                                      8  1145  B /57 099           13
217  1 153          B     NOHEAD                                        4  1153  B /64               13
218  1 157  HEAD    A     KB1,X3      CONVERT BLANK X3 TO ZEROES        7  1157  A X01 099           13
219  1 164  NOHEAD  LCA   K3B,0&X2    PUT TWO THREE-CHARACTER           7  1164  L X13 0!0           13
220  1 171          LCA   K3B           FIELDS INTO SYMBOL TABLE        4  1171  L X13               13
221  1 175          SBR   6&X3        LINK PREV ELEMENT TO THIS ONE     4  1175  H 0?6               13
222  1 179          SBR   NEWX3                                         4  1179  H W94               13
223  1 183          LCA   K5B         ADD FIVE SPACES TO ELEMENT        4  1183  L X18               14
224  1 187          SBR   X2            AND GET X2 BELOW IT             4  1187  H 094               14
225  1 191  NOTHER  MN    DIMSAV-4    MAKE X3&2                         4  1191  D W95               14
226  1 195          MN                  BE THE HIGH-ORDER               1  1195  D                   14
227  1 196          SAR   X3              DIGIT OF DIMSAV               4  1196  Q 099               14
228  1 200          SBR   X1,0&X1     STRANGE KIND OF NOP?              7  1200  H 089 0|0           14
229          *
230          * ACCUMULATE CHARACTERS OF DIMENSION
231          *
232  1 207  MORE    MCW   0&X1,CHAR  GET CHARACTER FROM DIMENSION FIELD 7  1207  M 0|0 X19           14
233  1 214          SAR   X1            AND STEP DOWN TO NEXT ONE       4  1214  Q 089               15
234  1 218          BCE   DIMFIN,CHAR,)                                 8  1218  B S57 X19 )         15
235  1 226          BCE   DIMFIN,CHAR,}                                 8  1226  B S57 X19 } GMARK   15
236  1 234          BCE   DIMFIN,CHAR,,                                8  1234  B S57 X19 ,         15
237  1 242          MCW   CHAR,2&X3  STORE CHAR IN DIMENSION SAVE       7  1242  M X19 0?2           15
238  1 249          SBR   X3                                            4  1249  H 099               15
239  1 253          B     MORE                                          4  1253  B S07               16
240  1 257  DIMFIN  BCE   SYNTAX,1&X1,}                                 8  1257  B U84 0|1 } GMARK   16
241  1 265          LCA   1&X3,0&X2  MOVE DIMENSION TO SYMBOL TABLE     7  1265  L 0?1 0!0           16
242  1 272          SBR   X2                                            4  1272  H 094               16
243  1 276          BCE   NOTHER,1&X1,,  GET ANOTHER DIMENSION         8  1276  B /91 0|1 ,         16
244  1 284          MCW   PREV&6,X3                                     7  1284  M 920 099           16
245  1 291          BCE   NOTBIG,0&X3,<                                 8  1291  B T03 0?0 <         17
246  1 299          B     TOOBIG                                        4  1299  B W46               17
247  1 303  NOTBIG  CW    FIRSTF  CLEAR FIRST-TIME FLAG                 4  1303  ) X10               17
```

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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD
248  1 307  TSTFIN BCE   FINI,0&X1,}  FINISHED                             8  1307  B T44 0|0 } GMARK   17
249  1 315         B                    WITH STATEMENT?                    1  1315  B                   17
250  1 316         BCE   NEWVAR,0&X1,,  ANOTHER VARIABLE?                  8  1316  B T28 0|0 ,         17
251  1 324         B     SYNTAX                                            4  1324  B U84               17
252  1 328  NEWVAR MN    0&X1       GET BELOW COMMA                        4  1328  D 0|0               18
253  1 332         SAR   X1                                               4  1332  Q 089               18
254  1 336         SBR   X3                                               4  1336  H 099               18
255  1 340         B     FIND         AND GO FIND END OF NEXT VARIABLE     4  1340  B 979               18
256         *
257         * FINISHED WITH DIMENSION STATEMENT
258         *
259  1 344  FINI   C     0&X1                                              4  1344  C 0|0               18
260  1 348         SAR   X1                                               4  1348  Q 089               18
261  1 352         B     PREV                                              4  1352  B 914               18
262         *
263         * DOUBLY DEFINED ARRAY
264         *
265  1 356  DOUBLE CS    332                                               4  1356  / 332               19
266  1 360         CS                                                      1  1360  /                   19
267  1 361         SW    GLOBER                                            4  1361  , 184               19
268  1 365         MCW   ERROR2,230                                        7  1365  M X49 230           19
269  1 372         MCW   COMPAR&6,X2                                       7  1372  M |90 094           19
270  1 379         MN    232                                               4  1379  D 232               19
271  1 383         MN                                                      1  1383  D                   19
272  1 384         SAR   X2                                               4  1384  Q 094               20
273  1 388         SBR   X3,0&X3                                          7  1388  H 099 0?0           20
274  1 395  MORECH MCW   0&X3,CH                                          7  1395  M 0?0 X50           20
275  1 402         SAR   X3                                               4  1402  Q 099               20
276  1 406         MCW   CH,2&X2                                          7  1406  M X50 0!2           20
277  1 413         SBR   X2                                               4  1413  H 094               20
278  1 417         BW    DONECH,1&X3   AT THE END OF THE VARIABLE NAME?    8  1417  V U29 0?1 1         21
279  1 425         B     MORECH                                            4  1425  B T95               21
280  1 429  DONECH W                                                       1  1429  2                   21
281  1 430         BCV   OVFL                                             5  1430  B U39 @             21
282  1 435         B     NOOVFL                                            4  1435  B U41               21
283  1 439  OVFL   CC    1                                                 2  1439  F 1                 21
284  1 441  NOOVFL BCE   BOTTOM,0&X1,)  BOTTOM OF STATEMENT?              8  1441  B U65 0|0 )         21
285  1 449         SBR   X1                                               4  1449  H 089               22
286  1 453         BCE   SYNTAX,1&X1,}                                    8  1453  B U84 0|1 } GMARK   22
287  1 461         B     NOOVFL                                            4  1461  B U41               22
288  1 465  BOTTOM MN    0&X1                                              4  1465  D 0|0               22
289  1 469         SAR   X1                                               4  1469  Q 089               22
290  1 473         MCW   SAVX2,X2                                         7  1473  M X09 094           22
291  1 480         B     TSTFIN                                            4  1480  B T07               22
292         *
293         * DIMENSION SYNTAX ERROR
294         *
295  1 484  SYNTAX CS    332                                               4  1484  / 332               23
296  1 488         CS                                                      1  1488  /                   23
297  1 489         SW    GLOBER                                            4  1489  , 184               23
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SEQ PG LIN  LABEL   OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD
298  1 493          MN    PREFIX,241                                      7  1493  D W90 241           23
299  1 500          MN                                                    1  1500  D                   23
300  1 501          MN                                                    1  1501  D                   23
301  1 502          MCW   ERROR3                                          4  1502  M X88               23
302  1 506          W                                                     1  1506  2                   24
303  1 507          BCV   OVFL2                                          5  1507  B V16 @             24
304  1 512          B     NOVL2                                         4  1512  B V18               24
305  1 516  OVFL2   CC    1                                             2  1516  F 1                 24
306  1 518  NOVL2   MCW   SAVX2,X2                                      7  1518  M X09 094           24
307  1 525          BCE   PREV,1&X1,}                                   8  1525  B 914 0|1 } GMARK   24
308  1 533  END     C     0&X1                                          4  1533  C 0|0               24
309  1 537          SAR   X1                                            4  1537  Q 089               25
310  1 541          B     PREV                                          4  1541  B 914               25
311          *
312  1 545  DONE    BW    GOTLP,LPFLAG                                  8  1545  V V88 X00 1         25
313  1 553          LCA   GM,0&X2                                       7  1553  L W91 0!0           25
314  1 560          LCA   COLON                                         4  1560  L X89               25
315  1 564          LCA   W3                                            4  1564  L X92               25
316  1 568          LCA   W3                                            4  1568  L X92               25
317  1 572          LCA   W3                                            4  1572  L X92               26
318  1 576          LCA   W5                                            4  1576  L X97               26
319  1 580          LCA   W10                                           4  1580  L X99               26
320  1 584          SBR   X2                                            4  1584  H 094               26
321  1 588  GOTLP   NOP   2&X1                                         4  1588  N 0|2               26
322  1 592          MCM                                                 1  1592  P                   26
323  1 593          MCW                                                 1  1593  M                   26
324  1 594          SAR   X1                                            4  1594  Q 089               27
325  1 598          MCW   6,86           TOPMOST TABLE ENTRY ADDRESS TO 86  7  1598  M 006 086           27
326  1 605          BSS   SNAPSH,C                                      5  1605  B 333 C             27
327  1 610          SBR   TPREAD&6,839   LOAD ADDRESS FOR NEXT OVERLAY   7  1610  H 786 839           27
328  1 617          SBR   CLRBOT           AND CLEAR BOTTOM              4  1617  H 833               27
329  1 621          SBR   LOADXX&3,1034  EXIT FROM LOADER                7  1621  H 796 |34           27
330  1 628          SBR   CLEARL&3,1845  CLEAR TOP                       7  1628  H 710 Y45           28
331  1 635          LCA   EQUIV,PHASID                                  7  1635  L Y08 110           28
332  1 642          B     LOADNX                                        4  1642  B 700               28
333          *
334          * PROGRAM IS TOO BIG
335          *
336  1 646  TOOBIG  CS    332                                           4  1646  / 332               28
337  1 650          CS                                                  1  1650  /                   28
338  1 651          CC    1                                             2  1651  F 1                 28
339  1 653          MCW   MSG2,270                                      7  1653  M Y44 270           28
340  1 660          W                                                   1  1660  2                   29
341  1 661          CC    1                                             2  1661  F 1                 29
342  1 663          BCE   HALT,CDOVLY,1                                8  1663  B W76 769 1         29
343  1 671          RWD   1                                             5  1671  U %U1 R             29
344  1 676  HALT    H     HALT                                          4  1676  . W76               29
345          *
346          * DATA
347          *
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SEQ PG LIN  LABEL   OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD
348  1 690  PREFIX DCW   @0          @                                     11  1690                      29
349  1 691  GM     DC    @}@                                              1  1691              GMARK   29
350  1 694  NEWX3  DCW   #3                                               3  1694                      29
351  1 699  DIMSAV DCW   #5                                               5  1699                      30
352  1 700  LPFLAG DC    #1   WM IN LOW-ORDER CHARACTER IF LEFT PAREN      1  1700                      30
353  1 701  KB1    DCW   #1                                               1  1701                      30
354  1 703  MANP2  DCW   #2   MANTIS + 2                                  2  1703                      30
355  1 704  KP2    DCW   &2                                               1  1704                      30
356  1 705  KB1A   DCW   #1                                               1  1705                      30
357  1 706  KLESS  DCW   @<@                                              1  1706                      30
358  1 709  SAVX2  DCW   #3                                               3  1709                      30
359  1 710  FIRSTF DCW   #1   WM IS FIRST-TIME FLAG                       1  1710                      31
360  1 713  K3B    DCW   #3                                               3  1713                      31
361  1 718  K5B    DCW   #5                                               5  1718                      31
362  1 719  CHAR   DCW   #1   CHARACTER FROM DIMENSION FIELD              1  1719                      31
363  1 749  ERROR2 DCW   @ERROR 2 - DOUBLY DEFINED ARRAY@                30  1749                      32
364  1 750  CH     DCW   #1                                               1  1750                      32
365  1 788  ERROR3 DCW   @ERROR 3 - DIMENSION SYNTAX, STATEMENT @        38  1788                      33
366  1 789  COLON  DCW   @:@                                              1  1789                      33
367  1 792  W3     DCW   #3                                               3  1792                      34
368  1 797  W5     DCW   #5                                               5  1797                      34
369  1 799  W10    DCW   10                                               2  1799                      34
370  1 808  EQUIV  DCW   @EQUIV ONE@                                      9  1808                      34
371  1 844  MSG2   DCW   @MESSAGE 2 - OBJECT PROGRAM TOO LARGE@          36  1844                      35
372  1 845  GMWM   DCW   @}@                                              1  1845              GMARK   35
373                ORG   201                                                        0201
374    203         DSA   LOADDD    LOAD ADDRESS FOR CARD-TO-TAPE PROGRAM   3  0203  838                 36
375                EX    BEGINN                                                     B 839                 37
376                END                                                              / 000 080
```

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
BEGINN	839	BOTTOM	1465	CDOVLY	769	CH	1750	CHAR	1719	CHECK	1050	CLEARL	707
CLRBOT	833	COLON	1789	COMPAR	1084	DIFF	838	DIFWID	887	DIMFIN	1257	DIMSAV	1699
DONE	1545	DONECH	1429	DOUBLE	1356	END	1533	EQUIV	1808	ERROR2	1749	ERROR3	1788
FIND	979	FINI	1344	FIRST	1112	FIRSTF	1710	GLOBER	184	GM	1691	GMWM	1845
GOTLP	1588	HALT	1676	HEAD	1157	HIGHER	1066	IMOD	690	K3B	1713	K5B	1718
KB1	1701	KB1A	1705	KLESS	1706	KP2	1704	LOADDD	838	LOADNX	700	LOADXX	793
LPAREN	1019	LPFLAG	1700	MANP2	1703	MANTIS	692	MORE	1207	MORECH	1395	MSG2	1844
NEWVAR	1328	NEWX3	1694	NOHEAD	1164	NOOVFL	1441	NOTBIG	1303	NOTHER	1191	NOVL2	1518
OVFL	1439	OVFL2	1516	PHASID	110	PREFIX	1690	PREV	914	SAVX2	1709	SNAPSH	333
SYNTAX	1484	TOOBIG	1646	TOPCOR	688	TPREAD	780	TSTFIN	1307	W10	1799	W3	1792
W5	1797	X1	89	X2	94	X3	99						