APPENDIX J

SAMPLE.SYNOPSIS FILES

SAMPLE.SYNOPSIS Files
Non-Radon Run

PLEASE GIVE TO ===> BARRY PARKS
PHONE NUMBER: (702) 798-2443

SAMPLE.SYNOPSIS Files
Non-Radon Run
(continued)

SYNOPSIS REPORT - CAP-88 (1.00)

ID Code: DOE_ARGONNEP Date/Time: THR 7 September, 1989 12:05:43 PM

Facility: ARGONNE NATIONAL LABORATORY
Address: ADDRESS
City: ARGONNE
State: IL Zipcode:

Source Category: DOE FACILITIES Source Term: 1986

Comments:
ARGONNE NATIONAL LAB, IL UNIV. OF CHICAGO POP RUN

POPULATION ASSESSMENT
(RN-222 DOSE/RISK EXCLUDED)

ICRP Collective Effective Dose Equivalent (Person-Rem/Year): 3.07E-01

Collective Population

	GONADS	BREAST	R MAR	LUNGS	THYROID	ENDOST	RMNDR
Organ dose (P-REM/YR) :	3.1E-01	3.0E-01	2.8E-01	3.3E-01	3.5E-01	2.7E-01	3.1E-01

FREQUENCY DISTRIBUTION OF LIFETIME FATAL CANCER RISKS

RISK	NUMBER OF PEOPLE	NUMBER OF PEOPLE AT THIS RISK OR HIGHER	DEATHS/YEAR AT THIS RISK	DEATHS/YEAR AT THIS RISK OR HIGHER
1.0E+00 TO 1.0E-01	0	0	0.00E+00	0.00E+00
1.0E-01 TO 1.0E-02	0	0	0.00E+00	0.00E+00
1.0E-02 TO 1.0E-03	0	0	0.00E+00	0.00E+00
1.0E-03 TO 1.0E-04	0	0	0.00E+00	0.00E+00
1.0E-04 TO 1.0E-05	0	0	0.00E+00	0.00E+00
1.0E-05 TO 1.0E-06	0	0	0.00E+00	0.00E+00
LESS THAN 1.0E-06	7893815	7893815	1.13E-04	1.13E-04

INDIVIDUAL AT MAXIMUM RISK ASSESSEMENT
(RN-222 RISKS EXCLUDED)

Location to the individual: 750 METERS SOUTH SOUTHWEST

	GONADS	BREAST	R MAR	LUNGS	THYROID	ENDOST	RMNDR
Organ dose (mrem/yr) :	2.6E-03	2.5E-03	2.8E-03	3.1E-02	2.5E-03	2.1E-02	2.7E-03

ICRP Effective Dose Equivalent (mrem/yr): 6.59E-03
Lifetime Fatal Cancer Risk : 1.39E-07

SOURCE TERM (1986)

SAMPLE.SYNOPSIS Files
Non-Radon Run
(continued)

ID CODE: DOE_ARGONNEP DATE/TIME:THR 7 September, 1989 12:05:43 PM PAGE 2

Nuclide	Class	Amad	Stack #1 Ci/yr	TOTAL
AR-41	*	0.00	1.46E+00	1.46E+00
C-11	D	1.00	9.00E+01	9.00E+01
CS-134	D	1.00	2.04E-07	2.04E-07
CS-137	D	1.00	4.95E-07	4.95E-07
BA-137M	D	1.00	0.00E+00	0.00E+00
H-3	*	0.00	5.03E+01	5.03E+01
I-129	D	1.00	1.61E-05	1.61E-05
I-131	D	1.00	1.52E-06	1.52E-06
KR-85	*	0.00	1.70E+00	1.70E+00
NB-95	Y	1.00	1.55E-08	1.55E-08
PU-239	Y	1.00	5.61E-09	5.61E-09
RN-220	*	0.00	6.98E+03	6.98E+03
SB-125	W	1.00	3.38E-05	3.38E-05
ZR-95	W	1.00	7.50E-09	7.50E-09

SITE INFORMATION

Temperature: 10 C
Rainfall: 80 cm/yr
Mixing Height: 700 meters

EMISSION INFORMATION

Stack Number: 1

Stack Height (meters) : 61.00
Stack Diameter (meters): 0.00
Plume Rise
Momentum (m/sec) :0.00E+00

FOOD SUPPLY FRACTIONS

	Local	Regional	Imported
Vegetable:	0.076	0.924	0.000
Meat:	0.008	0.992	0.000
Milk:	0.000	1.000	0.000

FOOD FRACTIONS USED: DB = 3.33E-01 DM = 2.16E-02 FC = 2.80E-02

POPULATION ARRAY (1980 Census)

	250	750	1500	2500	3500	4500	7500
N	0.	0.	0.	2070.	514.	3434.	25640.
NNW	0.	0.	0.	0.	3283.	4172.	17450.
NW	0.	0.	0.	0.	0.	1925.	16327.
WNW	0.	0.	0.	421.	0.	0.	15766.
W	0.	0.	0.	0.	0.	3832.	10282.
WSW	0.	0.	0.	0.	757.	0.	18479.

SAMPLE.SYNOPSIS Files
Non-Radon Run
(continued)

ID CODE: DOE_ARGONNEP DATE/TIME:THR 7 September, 1989 12:05:43 PM PAGE 3

	250	750	1500	2500	3500	4500	7500
SW	0.	0.	0.	0.	0.	583.	699.
SSW	0.	371.	0.	0.	0.	754.	3388.
S	0.	0.	0.	0.	0.	0.	11255.
SSE	0.	0.	0.	0.	0.	0.	1524.
SE	0.	0.	0.	0.	0.	0.	1400.
ESE	0.	0.	0.	0.	0.	9.	543.
E	0.	0.	0.	2877.	0.	626.	0.
ENE	0.	0.	0.	0.	549.	807.	7362.
NE	0.	0.	0.	899.	1493.	1477.	6039.
NNE	0.	0.	0.	1245.	4758.	3299.	18169.

	15000	25000	35000	45000	55000	70000
N	79915.	108628.	137641.	198337.	58920.	239266.
NNW	76995.	81605.	153849.	53208.	59104.	111910.
NW	31050.	38804.	39953.	63051.	4973.	21218.
WNW	40030.	32245.	29235.	4906.	2527.	52311.
W	15628.	64259.	34322.	5686.	9600.	6945.
WSW	3255.	3927.	1759.	1552.	2745.	5894.
SW	14087.	25526.	3013.	2211.	11628.	13569.
SSW	25583.	92779.	6919.	6218.	14385.	9580.
S	3057.	17399.	3386.	1227.	3539.	69888.
SSE	1560.	20196.	2956.	3162.	6812.	21119.
SE	38264.	55616.	129090.	26537.	13264.	28396.
ESE	42042.	148331.	186756.	195779.	202379.	109332.
E	110559.	390640.	316868.	23367.	0.	27418.
ENE	85258.	426648.	343806.	0.	0.	0.
NE	104299.	548998.	884496.	132440.	0.	0.
NNE	72950.	210212.	312502.	221810.	53208.	3020.

REFERENCE FILE NAMES FOR ASSESSMENT

JCL FILE ===> CAAR.CAA88.DOE(ARGONNEP)
ALLRAD FILE ===> CBNRACS.CAA88.DATA(ALLRAD88)
POP FILE ===> CAAR.CAA88.POPLIB(ARGONNE)
STARFILE ===> CAAR.CAA88.STARLIB(MDW0675)
PREDA FILE ===> CAAR.AIRDOS.LIB(JOAPOP)
RADRISK FILE ===> CBNRACS.CAA88.RADRISK.V8401RBM

SAMPLE.SYNOPSIS Files
Non-Radon Run
(continued)

ID CODE: DOE_ARGONNEP DATE/TIME:THR 7 September, 1989 12:05:43 PM PAGE 4

FREQUENCY DISTRIBUTION OF LIFETIME FATAL CANCER RISKS

RISK	NUMBER OF PEOPLE	NUMBER OF PEOPLE AT THIS RISK OR HIGHER	DEATHS/YEAR AT THIS RISK	DEATHS/YEAR AT THIS RISK OR HIGHER
1.0E+00 TO 3.0E-01	0	0	0.00E+00	0.00E+00
3.0E-01 TO 1.0E-01	0	0	0.00E+00	0.00E+00
1.0E-01 TO 3.0E-02	0	0	0.00E+00	0.00E+00
3.0E-02 TO 1.0E-02	0	0	0.00E+00	0.00E+00
1.0E-02 TO 3.0E-03	0	0	0.00E+00	0.00E+00
3.0E-03 TO 1.0E-03	0	0	0.00E+00	0.00E+00
1.0E-03 TO 3.0E-04	0	0	0.00E+00	0.00E+00
3.0E-04 TO 1.0E-04	0	0	0.00E+00	0.00E+00
1.0E-04 TO 3.0E-05	0	0	0.00E+00	0.00E+00
3.0E-05 TO 1.0E-05	0	0	0.00E+00	0.00E+00
1.0E-05 TO 3.0E-06	0	0	0.00E+00	0.00E+00
3.0E-06 TO 1.0E-06	0	0	0.00E+00	0.00E+00
1.0E-06 TO 3.0E-07	0	0	0.00E+00	0.00E+00
3.0E-07 TO 1.0E-07	371	371	7.30E-07	7.30E-07
LESS THAN 1.0E-07	7893444	7893815	1.12E-04	1.13E-04

SAMPLE.SYNOPSIS Files
Radon Run

PLEASE GIVE TO ===> LARRY GRAY
PHONE NUMBER: 475-9610

SAMPLE.SYNOPSIS Files
Radon Run
(continued)

SYNOPSIS REPORT - CAP-88 (1.00)

ID Code: SUMINERN_DARPIT1P Date/Time: THR 11 May, 1989 8:53:28 PM

Facility: DARROW PIT #1
Address: ADDRESS
City: FALL RIVER COUNTY
State: SD Zipcode:

Source Category: SURFACE URANIUM MINES RADON Source Term: 1986

Comments:
DARROW PIT #1, FALL RIVER COUNTY, SOUTH DAKOTA -- POP RUN

RN-222 POPULATION ASSESSMENT

Collective Exposure (Person Working Levels): 2.03E-04

FREQUENCY DISTRIBUTION OF LIFETIME FATAL CANCER RISKS

RISK	NUMBER OF PEOPLE	NUMBER OF PEOPLE AT THIS RISK OR HIGHER	DEATHS/YEAR AT THIS RISK	DEATHS/YEAR AT THIS RISK OR HIGHER
1.0E+00 TO 1.0E-01	0	0	0.00E+00	0.00E+00
1.0E-01 TO 1.0E-02	0	0	0.00E+00	0.00E+00
1.0E-02 TO 1.0E-03	0	0	0.00E+00	0.00E+00
1.0E-03 TO 1.0E-04	0	0	0.00E+00	0.00E+00
1.0E-04 TO 1.0E-05	0	0	0.00E+00	0.00E+00
1.0E-05 TO 1.0E-06	0	0	0.00E+00	0.00E+00
LESS THAN 1.0E-06	24163	24163	3.87E-06	3.87E-06

RN-222 EXPOSURE AND RISK FOR THE INDIVIDUAL AT MAXIMUM RISK

Location to the individual: 4000 METERS SOUTH SOUTHEAST

Exposure in Working Levels: 1.65E-07
pCi/liter at that location: 3.98E-05
Lifetime Fatal Cancer Risk: 2.26E-07

SOURCE TERM (1986)

Nuclide	Class	Amad	Stack #1 Ci/yr	TOTAL
RN-222	*	0.00	5.40E+00	5.40E+00

SITE INFORMATION

Temperature: 8 C
Rainfall: 48 cm/yr
Mixing Height: 1000 meters

ID CODE: SUMINERN_DARPIT1P DATE/TIME:THR 11 May, 1989 8:53:28 PM PAGE 2

EMISSION INFORMATION

Stack Number: 1

Area Height (meters) : 1.00
Area (sq. m) : 5.83E+04
Area Diameter (meters): 2.72E+02

FOOD SUPPLY FRACTIONS

	Local	Regional	Imported
Vegetable:	0.076	0.924	0.000
Meat:	0.008	0.992	0.000
Milk:	0.000	1.000	0.000

FOOD ARRAYS WERE NOT GENERATED OR SUPPLIED FOR THIS RUN. DEFAULT VALUES USED.

POPULATION ARRAY (1980 Census)

	250	750	1500	2500	4000	7500	15000
N	0.	0.	0.	0.	0.	0.	0.
NNW	0.	0.	0.	0.	0.	0.	0.
NW	0.	0.	0.	0.	6.	0.	0.
WNW	0.	0.	0.	0.	1.	0.	0.
W	0.	0.	0.	0.	0.	0.	0.
WSW	0.	0.	0.	0.	15.	0.	0.
SW	0.	0.	0.	0.	0.	0.	0.
SSW	0.	0.	0.	0.	9.	0.	0.
S	0.	0.	0.	0.	3.	0.	0.
SSE	0.	0.	0.	0.	3.	0.	0.
SE	0.	0.	0.	0.	0.	0.	154.
ESE	0.	0.	0.	0.	0.	0.	0.
E	0.	0.	0.	0.	0.	0.	0.
ENE	0.	0.	0.	0.	0.	0.	0.
NE	0.	0.	0.	0.	0.	0.	0.
NNE	0.	0.	0.	0.	0.	0.	0.

	25000	35000	45000	55000	70000
N	0.	0.	0.	0.	20.
NNW	0.	0.	3600.	0.	1281.
NW	0.	0.	0.	0.	238.
WNW	0.	461.	0.	0.	0.
W	0.	74.	0.	0.	6.
WSW	0.	0.	0.	0.	92.
SW	68.	0.	0.	112.	99.
SSW	0.	0.	0.	103.	0.
S	40.	139.	0.	0.	192.
SSE	1519.	81.	0.	16.	127.
SE	49.	0.	0.	94.	44.
ESE	0.	804.	0.	68.	301.

SAMPLE.SYNOPSIS Files
Radon Run
(continued)

ID CODE: SUMINERN_DARPIT1P DATE/TIME:THR 11 May, 1989 8:53:28 PM PAGE 3

	25000	35000	45000	55000	70000
E	0.	4742.	46.	190.	369.
ENE	0.	124.	0.	0.	491.
NE	0.	1747.	1835.	233.	2496.
NNE	145.	667.	0.	528.	731.

REFERENCE FILE NAMES FOR ASSESSMENT

JCL FILE ===> CAAR.CAA88.SUMINERN(DARPIT1P)
ALLRAD FILE ===> CBNRACS.CAA88.DATA(ALLRAD88)
STAR FILE ===> CAAR.CAA88.STARLIB(RAP0336)
POP FILE ===> CAAR.CAA88.POPLIB(FRCPIT1)
PREDA FILE ===> CAAR.AIRDOS.LIB(JOAPOP)
RADRISK FILE ===> CBNRACS.CAA88.RADRISK.V8401RBM

SAMPLE.SYNOPSIS Files
Radon Run
(continued)

ID CODE: SUMINERN_DARPIT1P DATE/TIME:THR 11 May, 1989 8:53:28 PM PAGE 4

FREQUENCY DISTRIBUTION OF LIFETIME FATAL CANCER RISKS

RISK	NUMBER OF PEOPLE	NUMBER OF PEOPLE AT THIS RISK OR HIGHER	DEATHS/YEAR AT THIS RISK	DEATHS/YEAR AT THIS RISK OR HIGHER
1.0E+00 TO 3.0E-01	0	0	0.00E+00	0.00E+00
3.0E-01 TO 1.0E-01	0	0	0.00E+00	0.00E+00
1.0E-01 TO 3.0E-02	0	0	0.00E+00	0.00E+00
3.0E-02 TO 1.0E-02	0	0	0.00E+00	0.00E+00
1.0E-02 TO 3.0E-03	0	0	0.00E+00	0.00E+00
3.0E-03 TO 1.0E-03	0	0	0.00E+00	0.00E+00
1.0E-03 TO 3.0E-04	0	0	0.00E+00	0.00E+00
3.0E-04 TO 1.0E-04	0	0	0.00E+00	0.00E+00
1.0E-04 TO 3.0E-05	0	0	0.00E+00	0.00E+00
3.0E-05 TO 1.0E-05	0	0	0.00E+00	0.00E+00
1.0E-05 TO 3.0E-06	0	0	0.00E+00	0.00E+00
3.0E-06 TO 1.0E-06	0	0	0.00E+00	0.00E+00
1.0E-06 TO 3.0E-07	0	0	0.00E+00	0.00E+00
3.0E-07 TO 1.0E-07	22	22	5.25E-08	5.25E-08
LESS THAN 1.0E-07	24141	24163	3.81E-06	3.87E-06

APPENDIX K

SECPOP PROGRAM FILES

```
0       1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678
C     PROGRAM SECPOP, MAGNETIC TAPE VERSION                              1.
C     THIS PROGRAM IS AN EXTENSIVELY MODIFIED VERSION OF A PROGRAM       2.
C     DESCRIBED IN THE U. S. DEPT. OF COMMERCE, OFFICE OF TELECOMMUNI-   3.
C     CATIONS, TECHICAL MEMORANDUM 73-146.  IT HAS BEEN TESTED OVER      4.
C     SEVERAL MONTHS UNDER NORMAL OPERATING CONDITIONS, BUT THE USER     5.
C     IS RESPONSIBLE FOR THE FINAL EVALUATION AS TO ITS USEFULLNESS      6.
C     AND VALIDITY IN HIS PARTICULAR APPLICATION.  PLEASE CREDIT THE     7.
C     OFFICE OF TELECOMMUNICATIONS, DEPT. OF COMMERCE, FOR THE           8.
C     PREPARATION OF THE DATA BASE, AND THE OFFICE OF RADIATION          9.
C     PROGRAMS, ENVIRONMENTAL PROTECTION AGENCY, FOR THE PROGRAMS.       10.
C                                                                        11.
C     MODIFIED TO POSITION FILE AT RECORD NREC-1 BEFORE READING DATA FOR 12.
C     RECORD NREC.  REVISED VERSION OF SUBROUTINE RECORD INCORPORATED.   13.
C     C.B.NELSON JULY 25, 1983.                                          14.
C                                                                        15.
      DIMENSION LONPOS(2136),A(3600)                                     16.
      DIMENSION ANUM(17,21), CIRCLE(21), POPTOT(17,21), HSTOT(17,21)     17.
      DIMENSION ISEC(16),JSEC(16),XISEC(16),XJSEC(16)                    18.
      DIMENSION LON(720),LAT(720),IS(720),IC(720),IH(720),IP(720)        19.
      COMMON LONPOS                                                      20.
      REAL*8 NAME(3)                                                     21.
      REAL LONPOS, LAT, LON, INCR, LONI                                  22.
      REAL POP(20,20)                                                    23.
      INTEGER ANUM, POPTOT, HSTOT                                        24.
      INTEGER*2 IS,IC                                                    25.
      EQUIVALENCE (A(1),LON(1)),(A(721),LAT(1)),(A(1441),IS(1)),         26.
     >  (A(1801),IC(1)),(A(2161),IH(1)),(A(2881),IP(1))                  27.
      DIST(DLAT,DLON,COSSQ)= 111.19528*SQRT(DLAT*DLAT +                  28.
     1     DLON*DLON*COSSQ)                                              29.
      IDATAU=9                                                           30.
C     DATA SET IDATAU HAS FODT FILE                                      31.
      PI=3.1415926                                                       32.
      CONV=PI/180.                                                       33.
      ERAD=6371.0200                                                     34.
C     EARTH'S RADIUS = ERAD (KM)                                         35.
      RN= 1.4473133                                                      36.
      NREC=1                                                             37.
      M=1                                                                38.
      READ (IDATAU) LONPOS                                               39.
C     LONPOS HAS INITIAL LONGITUDES OF EACH OF THE 2136 RECORDS          40.
C     READ IN NEW CENTERPOINT                                            41.
10    READ 103, NAME, A1, A2, A3, A4, A5, A6, RADIUS,                    42.
     1     INCR, XSEC, OFFSET                                            43.
C     COL.  1-24  ALPHAMERIC ID OF CENTERPOINT                           44.
C           25-28  BLANK                                                 45.
```

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678
C           29-39  DEGREES, MINUTES, SECONDS OF LATTITUDE                  46.
C           40-50  DEGREES, MINUTES, SECONDS OF LONGITUDE                 47.
C           51-56  RADIUS OF LARGEST OF CONCENTRIC CIRCLES                48.
C           57-62  RADIUS INCREMENT (KM)                                  49.
C           63-67  NUMBER OF SECTORS                                      50.
C           68-72  SECTOR OFFSET IN DEGREES                               51.
      IF (XSEC.EQ.0.) XSEC=1.                                             52.
C     WHEN SECTOR FIELD IS BLANK, USE FULL CIRCLE                         53.
      NSEC=XSEC                                                           54.
      MSEC=360/NSEC                                                       55.
      XMSEC=360./XSEC                                                     56.
      YMSEC=MSEC                                                          57.
      ISW=0                                                               58.
      IF (XMSEC.NE.YMSEC.OR.OFFSET.NE.0..OR.NSEC.GT.12) ISW=1             59.
      IF (XSEC.GT.16) GO TO 25                                            60.
      NBINS =0                                                            61.
C     WHEN NBINS=0, CIRCLES ARE COMPUTED FROM RADIUS, INCR                62.
C     WHEN NBINS.NE.0 (IE. WHEN RADIUS=99999.9), CIRCLES ARE READ IN:     63.
      IF (RADIUS.NE.99999.9) GO TO 2                                      64.
      NBINS=INCR                                                          65.
      NRADS=NBINS                                                         66.
      READ 106, (CIRCLE(N),N=1,NBINS)                                     67.
106   FORMAT (7F10.2)                                                     68.
      RADIUS=CIRCLE(NBINS)                                                69.
2     IF (A1.EQ.0.) GO TO 23                                              70.
C     END OF PROGRAM ON BLANK CARD                                        71.
      AL= A1 + A2/60. + A3/3600.                                          72.
      OL = A4 + A5/60. + A6/3600.                                         73.
C     LATITUDE AND LONGITUDE TO DEGREES AND FRACTIONS                     74.
      PRINT 101,NAME,AL,OL,NSEC                                           75.
      ALR = AL*CONV                                                       76.
C     LATITUDE TO RADIANS                                                 77.
      RN = RADIUS/(ERAD*CONV)                                             78.
      COSA = COS(ALR)                                                     79.
      RNSECA = RN/COSA + .01                                              80.
C     RNSECA IS LONGITUDE (DIFFERENCE) CORRESPONDING TO ONE               81.
C           RADIUS (EAST-WEST)                                            82.
      ALONMX = OL + RNSECA                                                83.
C     WESTERN BOUNDARY FOR SQUARE AROUND RADIUS CIRCLE                    84.
      XLON = OL - RNSECA                                                  85.
C     EASTERN BOUNDARY ETC.                                               86.
      CALL RECORD(XLON,NREC)                                              87.
      IF (LONPOS(NREC).GT.XLON) NREC = NREC - 1                           88.
      IF (NREC.GT.2136) GO TO 23                                          89.
      NREC = (NREC-1)/6 + 2                                               90.
```

SECPOP Program Files
SECPOP3A.FOR Program Listing
(continued)

```
0        1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678
      CALL RECPOS(M,NREC-1,IDATAU)                                      91.
      M=NREC-1                                                          92.
      IF (INCR.EQ.0.) GO TO 4                                           93.
      IF (NBINS.NE.0) GO TO 3                                           94.
      AF1 = RADIUS/INCR                                                 95.
      NRADS = AF1                                                       96.
      AF2 = NRADS                                                       97.
      IF (AF1.NE.AF2) NRADS = NRADS + 1                                 98.
      IF (NRADS.GT.20) GO TO 25                                         99.
4     IF (INCR.EQ.0.) NRADS = 1                                        100.
      DO 5 I = 1,NRADS                                                 101.
5     CIRCLE(I) = INCR*FLOAT(I)                                        102.
      CIRCLE(NRADS) = RADIUS                                           103.
3     DO 6 I=1,NSEC                                                    104.
      IF (ISW.EQ.1) GO TO 7                                            105.
      ISEC(I)=(I-1)*MSEC                                               106.
      JSEC(I)=I*MSEC                                                   107.
      GO TO 8                                                          108.
7     XISEC(I)=XMSEC*FLOAT(I-1) -OFFSET                                109.
      XJSEC(I)=XMSEC*FLOAT(I) - OFFSET                                 110.
8     DO 6 J = 1, NRADS                                                111.
      POPTOT(I,J) = 0                                                  112.
      HSTOT(I,J) = 0                                                   113.
6     ANUM(I,J) = 0                                                    114.
C     SELECT CENSUS ENUMERATION DISTRICTS (CEDS)                       115.
32    READ (IDATAU,ERR=26) A                                           116.
C     IS AND IC ARE DUMMY VARIABLES                                    117.
      M= M+ 1                                                          118.
      DO 19 I = 1, 720                                                 119.
      LONI = LON(I)                                                    120.
      IF (LONI.GT.ALONMX) GO TO 20                                     121.
      IF (LONI.LT.XLON) GO TO 19                                       122.
      DLAT = LAT(I)-AL                                                 123.
      IF (ABS(DLAT).GT.RN) GO TO 19                                    124.
      DLON = LONI - OL                                                 125.
      COSSQ=COSA*COS(LAT(I)*CONV)                                      126.
      D = DIST(DLAT, DLON, COSSQ)                                      127.
      IF (D.GT.RADIUS) GO TO 19                                        128.
C     NEXT 9 LINES PART OF ANGLE COMPUTATION                           129.
C     THETA IS FINALLY IN DEGREES EAST OF NORTH (0-360)                130.
      IF (DLAT) 12,11,13                                               131.
11    DLAT = -1E-70                                                    132.
12    THETA = PI                                                       133.
      GO TO 16                                                         134.
13    IF (-DLON) 14, 15, 15                                            135.
```

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567
```

```
14    THETA = 6.283185
      GO TO 16
15    THETA = 0.
16    THETA = (THETA + ATAN(-DLON*SQRT(COSSQ)/DLAT))/CONV + OFFSET
      DO 17 J=1,NRADS
      IF (D.LE.CIRCLE(J)) GO TO 18
17    CONTINUE
18    JA = THETA*XSEC/360. + 1.
      IF (JA.EQ.(NSEC+1)) JA=1
      POPTOT(JA,J) = POPTOT(JA,J) + IP(I)
      HSTOT(JA,J) = HSTOT(JA,J) + IH(I)
      ANUM(JA,J) = ANUM(JA,J) + 1
19    CONTINUE
      GO TO 32
20    PRINT 107
C     CALCULATE MARGINAL TOTALS
      NSEC1=NSEC+1
      NRAD1=NRADS+1
      CIRCLE(NRAD1)=RADIUS
      DO 121 I=1,NSEC1
      ANUM(I,NRAD1)=0.
      POPTOT(I,NRAD1)=0.
  121 HSTOT(I,NRAD1)=0.
      DO 122 J=1,NRADS
      ANUM(NSEC1,J)=0.
      POPTOT(NSEC1,J)=0.
  122 HSTOT(NSEC1,J)=0.
      DO 124 I=1,NSEC
      DO 123 J=1,NRADS
      ANUM(I,NRAD1)=ANUM(I,NRAD1)+ANUM(I,J)
      ANUM(NSEC1,J)=ANUM(NSEC1,J)+ANUM(I,J)
      POPTOT(I,NRAD1)=POPTOT(I,NRAD1)+POPTOT(I,J)
      POPTOT(NSEC1,J)=POPTOT(NSEC1,J)+POPTOT(I,J)
      HSTOT(I,NRAD1)=HSTOT(I,NRAD1)+HSTOT(I,J)
  123 HSTOT(NSEC1,J)=HSTOT(NSEC1,J)+HSTOT(I,J)
      ANUM(NSEC1,NRAD1)=ANUM(NSEC1,NRAD1)+ANUM(I,NRAD1)
      POPTOT(NSEC1,NRAD1)=POPTOT(NSEC1,NRAD1)+POPTOT(I,NRAD1)
  124 HSTOT(NSEC1,NRAD1)=HSTOT(NSEC1,NRAD1)+HSTOT(I,NRAD1)
C   FLOAT AND TRANSPOSE POPULATION MATRIX FOR AIRDOS-EPA FORMAT
      DO 132 J=1,20
      JM=MOD(NSEC+1-J,NSEC)+1
      DO 132 I=1,20
      IF(J.GT.NSEC.OR.I.GT.NRADS) GO TO 130
      POP(I,J)=POPTOT(JM,I)
      GO TO 132
```

```
0        1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678
```

```
  130 POP(I,J)=0.                                                        181.
  132 CONTINUE                                                           182.
C                                                                        183.
      PUNCH 133, NAME,AL,OL,NSEC,NRADS                                   184.
  133 FORMAT('$ ',3A8,1X,'LAT=',F8.4,1X,'LON=',F8.4,1X,                  185.
     >       'NSEC=',I2,1X,'NRADS=',I2)                                  186.
      PUNCH 1331, (CIRCLE(I),I=1,NRADS)                                  187.
 1331 FORMAT(8F10.1)                                                     188.
      PUNCH 134, POP                                                     189.
  134 FORMAT(8F10.0)                                                     190.
C                                                                        191.
      IF (ISW.EQ.1) GO TO 41                                             192.
      PRINT 104,(ISEC(K),JSEC(K),K=1,NSEC)                               193.
      DO 22 N=1,NRAD1                                                    194.
      PRINT 102, CIRCLE(N),(ANUM(K,N),K=1,NSEC1)                         195.
102   FORMAT (/,1H ,F8.2,1X,13I9)                                        196.
      PRINT 112,(HSTOT(K,N),K=1,NSEC1)                                   197.
22    PRINT 112,(POPTOT(K,N),K=1,NSEC1)                                  198.
112   FORMAT (1H ,9X,13I9)                                               199.
      GO TO 10                                                           200.
41    PRINT 204,(XISEC(K),K=1,NSEC)                                      201.
204   FORMAT ('    KM   ', 1X, 16(F6.1,'-'))                             202.
      PRINT 205,(XJSEC(K),K=1,NSEC)                                      203.
205   FORMAT (10X,16F7.1)                                                204.
      DO 42 N=1,NRAD1                                                    205.
      PRINT 202, CIRCLE(N),(ANUM(K,N),K=1,NSEC1)                         206.
202   FORMAT (/,1H ,F8.2,1X,16I7,I9)                                     207.
      PRINT 212, (HSTOT(K,N),K=1,NSEC1)                                  208.
42    PRINT 212, (POPTOT(K,N),K=1,NSEC1)                                 209.
212   FORMAT (1H ,9X,16I7,I9)                                            210.
      GO TO 10                                                           211.
101   FORMAT (1H1,3A8,6H   LAT,F9.4,7H    LON,F10.4,11H   SECTORS=,I3)   212.
103   FORMAT (3A8,4X,2(F5.0,2F3.0),2F6.1,3F5.1)                          213.
107   FORMAT (11H  RADIUS IN,5X,31HCEDS, HOUSING UNITS, POPULATION,      214.
     1     41H WITHIN SECTORS, WHOLE CIRCLE (LAST COL.)/ )               215.
104   FORMAT (12H    KM      ,1X,12(I4,1H-,I3,1X))                       216.
111   FORMAT (22H   TOO MANY INCREMENTS)                                 217.
25    PRINT 111                                                          218.
      GO TO 10                                                           219.
26    PRINT 105                                                          220.
105   FORMAT (22H0I/O ERROR, NEXT POINT)                                 221.
      GO TO 10                                                           222.
23    STOP                                                               223.
      END                                                                224.
      SUBROUTINE RECPOS(NA,NB,IDATA)                                     225.
```

SECPOP Program Files
SECPOP3A.FOR Program Listing
(continued)

```
0       1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678
C     POSITION TAPE FROM RECORD NA TO RECORD NB IN DATASET IDATA          226.
      NUM = NB - NA                                                       227.
      IF (NUM) 10, 40, 30                                                 228.
10    NUM = -NUM                                                          229.
      DO 11 I = 1, NUM                                                    230.
11    BACKSPACE IDATA                                                     231.
      GO TO 40                                                            232.
30    DO 32 I = 1, NUM                                                    233.
32    READ (IDATA)                                                        234.
40    RETURN                                                              235.
      END                                                                 236.
      SUBROUTINE RECORD(LON,K)                                            237.
C                                                                         238.
C...  DETERMINE FIRST RECORD FOR PROCESSING.  ENTER WITH LON;             239.
C...  ON RETURN, LONPOS(K).LT.LON.LE.LONPOS(K+1).                         240.
C...  C.B.NELSON 7/6/83                                                   241.
C                                                                         242.
      COMMON LONPOS(2136)                                                 243.
      REAL*4 LONPOS,LON                                                   244.
      INTEGER MM/2136/,II/12/                                             245.
C                                                                         246.
      L=1                                                                 247.
      M=MM                                                                248.
      IF(LONPOS(L).LT.LON) GO TO 10                                       249.
      K=L                                                                 250.
C...  LON IS LESS THAN LONPOS(1)                                          251.
      RETURN                                                              252.
   10 IF(LON.LE.LONPOS(M)) GO TO 20                                       253.
      K=M                                                                 254.
C...  LON IS GREATER THAN LONPOS(MM)                                      255.
      RETURN                                                              256.
   20 DO 40 I=1,II                                                        257.
      K=(L+M)/2                                                           258.
      IF(LONPOS(K).LT.LON) GO TO 30                                       259.
      M=K                                                                 260.
C...  LONPOS(K) IS NOT LESS THAN LON                                      261.
      GO TO 40                                                            262.
   30 IF(LON.LE.LONPOS(K+1)) RETURN                                       263.
      L=K                                                                 264.
C...  LON IS GREATER THAN LONPOS(K+1)                                     265.
   40 CONTINUE                                                            266.
C...  LONPOS IS NOT PROPERLY SORTED.                                      267.
      STOP 999                                                            268.
      END                                                                 269.
```

SECPOP Program Files
JCL and Sample Problem Input Data for SECPOP3A.FOR

```
0        1         2         3         4         5         6         7         8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
//CBN JOB (RACSRDSST,D013),'C.B.NELSON 557-9380',TIME=(,3)                      00010000
/*ROUTE PRINT HOLD                                                             00020000
//*JOBPARM FORMS=8391,BURST=Y                                                  00030000
//* USE REVISED VERSION (8/21/85) OF SECPOP3 TO DETERMINE                      00040000
//* POPULATIONS FOR SITES IN CAA BID.                                          00050000
//PROCLIB DD DSN=CBNRACS.PROC.LIB,DISP=SHR                                     00060000
//POP EXEC FORTVLG,PGMNAME=SECPOP3A,GREGION=400K                               00070000
//LKED.LOADLIB DD DSN=CBNRACS.LLIB,DISP=SHR                                    00080000
//LKED.SYSIN DD *                                                              00090000
  INCLUDE LOADLIB(SECPOP3A)                                                    00100000
  ENTRY MAIN                                                                   00110000
//*GO.FT07F001 DD DSN=CBNRACS.CAA.POP,DISP=(,CATLG),                           00120000
//*             UNIT=DISK,SPACE=(TRK,(10,10),RLSE),                            00130000
//*             DCB=(RECFM=FB,LRECL=80,BLKSIZE=3120)                           00140000
//GO.FT07F001 DD SYSOUT=*                                                      00150001
//GO.FT09F001 DD DSN=CBNRACS.POP.LIB(SQ80A),DISP=SHR                           00160001
//GO.SYSIN DD *                                                                00170000
SITE A: NEW YORK, NY           40 43 29  074 04 25999999 16.   16. 11.2500180000
      .500       .800      1.00       1.50       2.00       3.00       4.00  00190000
      5.00       8.00      10.0       15.0       20.0       30.0       40.0  00200000
      50.0       80.0                                                        00210000
SITE B: ST. LOUIS, MO          38 54 50  090 17 18999999 16.   16. 11.2500220000
      .500       .800      1.00       1.50       2.00       3.00       4.00  00230000
      5.00       8.00      10.0       15.0       20.0       30.0       40.0  00240000
      50.0       80.0                                                        00250000
SITE C: BARTOW, FL             27 53 06  082 01 30999999 16.   16. 11.2500260000
      .500       .800      1.00       1.50       2.00       3.00       4.00  00270000
      5.00       8.00      10.0       15.0       20.0       30.0       40.0  00280000
      50.0       80.0                                                        00290000
SITE D: LITTLE ROCK, AK        34 32 24  092 30 00999999 16.   16. 11.2500300000
      .500       .800      1.00       1.50       2.00       3.00       4.00  00310000
      5.00       8.00      10.0       15.0       20.0       30.0       40.0  00320000
      50.0       80.0                                                        00330000
SITE E: GRANTS, NM             35 21 28  107 50 17999999 16.   16. 11.2500340000
      .500       .800      1.00       1.50       2.00       3.00       4.00  00350000
      5.00       8.00      10.0       15.0       20.0       30.0       40.0  00360000
      50.0       80.0                                                        00370000
SITE F: 'REMOTE', MT           45 53 14  106 37 56999999 16.   16. 11.2500380000
      .500       .800      1.00       1.50       2.00       3.00       4.00  00390000
      5.00       8.00      10.0       15.0       20.0       30.0       40.0  00400000
      50.0       80.0                                                        00410000
SITE G: POCATELLO, ID          42 54 16  112 32 12999999 16.   16. 11.2500420000
      .500       .800      1.00       1.50       2.00       3.00       4.00  00430000
      5.00       8.00      10.0       15.0       20.0       30.0       40.0  00440000
      50.0       80.0                                                        00450000
                                                                             00460000
```