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SIMULATION OF THE AIR TRAFFIC CONTROL RADAR BEACON SYSTEM (SOAR) WITH APPLICATION TO A DISCRETE ADDRESS BEACON SYSTEM

Volume II: Appendixes

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FINAL REPORT

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16. Abstract

This report describes a computer simulation of the Air Traffic Control Radar Beacon System (ATCRBS). Operating on real air traffic data and actual characteristics of the relevant ground interrogators, the FORTRAN program re-enacts system operation in a pulse-by-pulse manner. The level of detail thus incorporated into the program structure enables a computer-generated representation of the air traffic controller's display to be produced. The versatility of the simulation model is further evidenced by the incorporation of program modifications which also make possible investigation of the Discrete Address Beacon System (DABS). These program modifications permit examination and evaluation of the effectiveness of DABS interrogations in an ATCRBS environment. Results of simulation of DABS operation in a 1980 interrogator environment are furnished in this document.

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APPENDIX A

TRANSPONDER REPLY RATE LIMIT CONTROL MODEL FOR ATCRBS SIMULATION

APPENDIX A

TRANSPONDER REPLY RATE LIMIT CONTROL MODEL FOR ATCRBS SIMULATION

The following material on the transponder reply rate limit control model is a reprint of a memorandum authored by Louis A. Kleiman, Chief of the Beacon Systems Project Office in the Aeronautical Programs Division at the Transportation Systems Center (TSC), Cambridge, Massachusetts. The memorandum is reproduced in its entirety, so that the reader, in addition to being furnished with a technical analysis of the model design, is also made aware of the background to issuance of the memorandum, and of the constructive conclusions reached on the basis of the aforementioned analysis.

I. INTRODUCTION

This memorandum documents a model of the reply rate limit control of an ATCRBS transponder. The model will be used for our ATCRBS simulation until a more accurate representation is obtained from laboratory measurements for a variety of transponders. An effort was made to keep the model as simple as possible to conform with the simplicity apparent in the schematic diagrams of the reply rate limit circuits of most commercially available transponders.

Nevertheless, the model meets the Minimum Operational Characteristics (MOC) for Airborne ATC Transponder Systems (RTCA Document No. DO-144, prepared by SC-116B, March 12, 1970) and the amendment to the MOC regarding reply rate limit action time. On the basis of the work described in this memorandum, I recommended a change in the amendment to the MOC which the FAA has forwarded to A. R. Applegarth, Chairman of RTCA SC-115. The content of the change is documented in the attached letter.

The model was exercised on a Hewlett-Packard 9100A Calculator and 9125A Plotter. Graphical results of the simulation are attached also.

II. TECHNICAL DISCUSSION

The controlled parameter of the reply rate limit control model is a voltage assumed to be a supply voltage for three successive amplifier stages in the front end of the transponder receiver. As this voltage V is decreased from its nominal value V_o, the power gain of each stage decreases as the square of the voltage. The total effect for three successive stages is to reduce transponder sensitivity to signal power as the sixth power of V (the cube of V-squared).

If the voltage V is reduced instantaneously by a constant amount ΔV every time a reply is transmitted by the transponder, then the voltage just after the time of desensitization t_D is

$$V\left(t_D^+\right) = V\left(t_D^-\right) - \Delta V. \tag{1}$$

By assuming an exponential recovery of V from its value just after desensitization to a steady-state value V_o, one can write an expression for V(t) as follows:

$$V(t) = V_o - \left[V_o - V\left(t_D^+\right)\right] e^{-\left(t-t_D\right)/\left(\alpha\tau_R\right)}, \tag{2}$$

where α is a positive constant, and τ_R is the reciprocal of the reply rate limit setting f_R to be modeled. (For a reply rate limit setting f_R=1000 replies per second, τ_R=.001 second.) Equation 2 is valid only for $t>t_D$, where t_D is the time of the most recent desensitization.

For a constant interrogation rate or test frequency $f_T=(\beta\tau_R)^{-1}$, where β is a positive constant, the steady-state value of V can be determined by induction:

$$V(0^-) = V_o$$

$$V(0^+) = V_o - \Delta V$$

$$V\left(\beta\tau_R^-\right) = V_o - \left[V_o - V(0^+)\right] e^{-\left(\beta\tau_R - 0\right)/\left(\alpha\tau_R\right)}$$

$$= V_o - \Delta V\ e^{-\beta/\alpha}$$

$$V\left(\beta\tau_R^+\right) = V_o - \Delta V\ e^{-\beta/\alpha} - \Delta V = V_o - \Delta V\left(1+e^{-\beta/\alpha}\right)$$

$$V\left(2\beta\tau_R^-\right) = V_o - \left[V_o - V\left(\beta\tau_R^+\right)\right] e^{-\left(2\beta\tau_R - \beta\tau_R\right)/\left(\alpha\tau_R\right)}$$

$$= V_o - \Delta V\left(1+e^{-\beta/\alpha}\right) e^{-\beta/\alpha} = V_o - \Delta V\left(e^{-\beta/\alpha} + e^{-2\beta/\alpha}\right)$$

$$V\left(2\beta\tau_R^+\right) = V_o - \Delta V\ \left(1 + e^{-\beta/\alpha} + e^{-2\beta/\alpha}\right)$$

$$\vdots$$

$$V\left(n\beta\tau_R^-\right) = V_o - \Delta V\ \left(e^{-\beta/\alpha} + e^{-2\beta/\alpha} + \cdots + e^{-n\beta/\alpha}\right) \qquad (3)$$

$$V\left(n\beta\tau_R^+\right) = V_o - \Delta V\ \left(1 + e^{-\beta/\alpha} + e^{-2\beta/\alpha} + \cdots + e^{-n\beta/\alpha}\right). \qquad (4)$$

As n approaches infinity in eqs. 3 and 4, the results converge to

$$V(\infty^-) \equiv V\left(\infty\beta\tau_R^+\right) = V_o - \Delta V\ \left[e^{-\beta/\alpha}/\left(1-e^{-\beta/\alpha}\right)\right] \qquad (5)$$

$$V(\infty^+) \equiv V\left(\infty\beta\tau_R^+\right) = V_o - \Delta V\ \left[1/\left(1-e^{-\beta/\alpha}\right)\right]. \qquad (6)$$

That is to say, V eventually oscillates between a lower bound (eq. 5) and an upper bound (eq. 6) as long as the constant interrogation frequency f_T is maintained.

The constants V_o, ΔV, and α must now be determined to specify completely a reply rate limit control model. V_o can be chosen somewhat arbitrarily by inspection of schematic diagrams for a variety of transponders. For the subject model a value of 12 volts was chosen; although the value is not critical, subsequent deter-

mination of the remaining constants will depend on V_o.

Initially an attempt was made to choose ΔV and α such that all requirements of the MOC were satisfied. It soon became obvious, however, that constraints on reply rate limit action time (both minimum and maximum), recovery time, and levels of desensitization were too restrictive to be satisfied over the entire range specified for f_R(500-2000 replies per second) by a judicious choice of just two constants in the proposed model. A modification of the basic model was thus necessary.

The simplest modification proved to be the incorporation of a two-level threshold which, when exceeded, caused a different value of ΔV to be used in eq. 1 Thus, three different values of ΔV were used depending on the current value of V. Even this technique, however, proved to be too restrictive, particularly with regard to the recovery time constraint. As a result, the basic form of ΔV was changed from a constant-valued function to an exponential function of f_R and time. Specifically, the chosen form is as follows:

$$\Delta V = k\ e^{-2\left(t-t_D\right)/\tau_R}, \qquad (7)$$

where k is a constant. Like eq. 2, eq. 7 is valid only for $t>t_D$, where t_D is the time of the most recent desensitization. The effect of eq. 7 is to cause significantly larger increments of desensitization at high interrogation frequencies (e.g., 1.5 f_R) than those at lower frequencies (e.g., 0.5 f_R). Such an effect allows both desensitization to below -30dB at f_T=1.5 f_R, and recovery from -30dB to -3dB within .05 second at f_T=o.5 f_R, over the entire range of f_R. The threshold detection feature is retained for the purpose of altering the value of k.

The determination of constants can now be performed in a variety of ways. Six values are to be determined: α in eq. 2; two threshold levels V_1 and V_2 of V(t); and the three values of k corresponding to the regions created by the threshold levels, i.e.,

$$k(V) = k_1 \qquad \left[V_1 \leq V(t) \leq V_o\right] \tag{8}$$

$$k(V) = k_2 \qquad \left[V_2 \leq V(t) < V_1\right] \tag{9}$$

$$k(V) = k_3 \qquad \left[0 \leq V(t) < V_2\right] \tag{10}$$

An upper bound on the value of α can be determined by assuming that $\Delta V=0$ during recovery from -30dB to -3dB. For $V_o=12$ volts, the three significant levels of desensitization, -3dB, -20dB, and -30dB, correspond to the values 10.7, 5.6, and 3.8 volts, respectively. Thus, the constraint on recovery time requires that V(t) be able to reach 10.7 volts within .05 second after having a value of 3.8 volts. If $\Delta V=0$, eq. 2 may be applied directly to establish the upper bound on α by assuming $t_D=0$ and $V(t_D)=3.8$ volts:

$$10.7 \leq V(.05) = 12 - (12-3.8)\, e^{-.05/(.002\alpha)} \tag{11}$$

$$\alpha \leq -25/\left[\log_e(1.3/8.2)\right] = 13.6. \tag{12}$$

Because recovery is slowest at the lower limit of f_R required by the MOC (500 replies per second), the value $\tau_R=.002$ second is used in eq. 11. Since ΔV is not zero, and since the recovery to 10.7 volts may have to be made from an initial potential below 3.8 volts, α must be made smaller than 13.6 to effect a shorter recovery time constant.

In an inductive manner similar to that used to obtain eqs. 3 and 4, it can be shown that if V(t) is initially some value V_s, then

$$V\left(n\beta\tau_R^-\right) = V_o - \left(V_o - V_s\right) e^{-n\beta/\alpha} - \Delta V \left(e^{-\beta/\alpha} + e^{-2\beta/\alpha} + \ldots + e^{-n\beta/\alpha}\right) \tag{13}$$

$$V\left(n\beta\tau_R^+\right) = V_o - \left(V_o - V_s\right) e^{-n\beta/\alpha} - \Delta V \left(1 + e^{-\beta/\alpha} + e^{-2\beta/\alpha} + \ldots + e^{-n\beta/\alpha}\right). \tag{14}$$

As n approaches infinity, the term involving V_s vanishes, and the steady-state oscillation of V(t) is described as before by eqs. 5 and 6. Thus, k_3 can be determined with little difficulty by choosing ΔV such that eq. 5 is less than 3.8 volts (corresponding

to the -30dB level of desensitization) when $f_T=1.5\ f_R(\beta=2/3)$. Arbitrarily, the value 12 (which is less than the upper bound of 13.6) can be assigned to α; eq. 5 then becomes

$$3.8 \geq 12 - \Delta V \left[e^{-(2/3)(1/12)} / \left(1-e^{-(2/3)(1/12)}\right) \right] \tag{15}$$

$$\Delta V \geq .47 \tag{16}$$

$$k_3 \geq \Delta V\ e^{4/3} = 1.8. \tag{17}$$

One means of determining a value for k_1 is to specify a steady-state lower bound for V when the model is driven at the set reply rate limit f_R. Although 3dB desensitization is allowed by the MOC at an interrogation rate $f_T=0.9\ f_R$, a conservative choice is 3dB desensitization when $f_T=f_R$. Using this conservative specification and eq. 6,

$$10.7 \leq 12 - \Delta V / \left(1-e^{-1/12}\right) \tag{18}$$

$$\Delta V \leq .103 \tag{19}$$

$$k_1 \leq .768. \tag{20}$$

Using $k_1=.768$, $f_T=1.5\ f_R$, and eq. 5, the upper bound of the steady-state value of V is found to be 8.46 volts. By setting the first threshold just above this limiting value, e.g., $V_1=8.5$ volts, the reply rate limit action time is lengthened, since V decreases less rapidly as its limit is approached. This lengthening is necessary to satisfy the minimum action time specification of the MOC.

When the first threshold is reached, k_2 must be chosen such that a new steady-state value of V has its lower bound near the 20-dB desensitization level (5.6 volts). This choice delays the 20-dB desensitization even more to ensure that it occurs at least .05 second after f_T is increased from 0.5 f_R to 1.5 f_R. Using eq. 6 again,

$$5.6 \leq 12 - \Delta V/\left(1-e^{-2/(3.12)}\right) \tag{21}$$

$$\Delta V \leq .34 \tag{22}$$

$$k_2 \leq 1.3. \tag{23}$$

Since the upper bound of V in the steady-state is just the lower bound plus ΔV, or in this case about 5.6 + 0.3 = 5.9 volts, an appropriate value of the second threshold level V_2 is 6 volts. When this threshold value is reached, the value of k becomes k_3 as determined in eq. 17.

Although the six constants have been assigned approximate values or bounds, a final procedure is needed to determine them precisely and to verify their validity. This was done for the subject model by simulating it on a Hewlett-Packard 9100A Calculator and 9125A Plotter, and varying the constants to produce the desired results. The threshold levels V_1 and V_2 were fixed at 8.5 and 6.0 volts, respectively. Using the values 12.0, .768, 1.3, and 1.8 for α, k_1, k_2, and k_3 respectively, it was apparent that the recovery time constant α was slightly faster than necessary to meet the recovery time requirement of the MOC. This caused the reply rate limit action time, however, to be longer than the .20-second maximum for f_R=500 replies per second. By increasing α to 12.2 and decreasing k_1 and k_2 to .760 and 1.288 respectively, all requirements of the MOC were found to be satisfied.

Results of the simulation are shown in Figure A-1 (following IV, CONCLUSIONS) for f_R=500, 1000 and 2000 replies per second, i.e., at the minimum, recommended, and maximum values specified in the MOC. For each setting, the model is driven at test frequencies f_T=0.5 f_R, 0.9 f_R, 1.0 f_R, and 1.5 f_R, which demonstrate its compliance with all aspects of the MOC.

III. SUMMARY

The equations and constants which compose the reply rate limit control model are summarized here for convenience.

1. Initially, $V(t)=V(0)=V_o=12$ volts, and the time of the most recent desensitization $t_D=0$.

2. $V(t)$ recovers according to the equation

$$V(t) = V_o - \left[V_o - V\left(t_D^+\right)\right] e^{-\left(t-t_D\right)/\left(\alpha\tau_R\right)} ,$$

where $\alpha=12.2$, $V_o=12$ volts, τ_R is the reciprocal of the reply rate limit setting f_R to be modeled, and $V(t_D^+)$ is the value of V just after the time of the most recent desensitization. The above equation is valid only for $t>t_D$.

3. Upon transmission of a reply by the transponder, the following steps are taken:

   A. The present value of $V(t)$ is computed according to step 2 above. This value of V is used to determine k as follows:

$$k(V) = k_1 \qquad \left[V_1 \leq V(t) \leq V_o\right]$$

$$k(V) = k_2 \qquad \left[V_2 \leq V(t) < V_1\right]$$

$$k(V) = k_3 \qquad \left[0 \leq V(t) < V_2\right]$$

$$k_1 = 0.760 \qquad V_0 = 12.0 \text{ volts}$$

$$k_2 = 1.288 \qquad V_1 = 8.5 \text{ volts}$$

$$k_3 = 1.800 \qquad V_2 = 6.0 \text{ volts.}$$

   B. The value of k determined above is used to compute ΔV:

$$\Delta V = k\, e^{-2\left(t-t_D\right)/\tau_R} ,$$

where t_D is the time of the most recent desensitization.

C. ΔV is then used to effect the desensitization as follows:

$$V\left(t_D^+\right) = V\left(t_D^-\right) - \Delta V.$$

The terms "t_D^+" and "t_D^-" refer to the instants just after and just before the time of instantaneous desensitization, respectively. The time t_D referred to here is the new (most recent) t_D, which will be used in the next pass through steps 2, 3A, and 3B.

If $V(t_D^+)$ is negative, its value is immediately reset to zero.

4. Anytime transponder sensitivity must be determined, $V(t)$ is computed according to step 2. Then, since for the subject model sensitivity is proportional to the sixth power of V, the total change in the minimum detectable signal S_R (in dB) due to the reply rate limit control is

$$S_R = 60 \log_{10} \left[V_o/V(t)\right] .$$

IV. CONCLUSIONS

The necessity for two threshold levels to meet the requirements of the MOC with regard to reply rate limit action time, and the sensitivity of the action time to small changes in the constant k indicate that a simple and inexpensive reply rate limit control for real transponders is unlikely to be built within the present MOC. The major difficulty lies in the requirement to satisfy all specifications over a range of f_R from 500 to 2000 replies per second.

Since transponders are presently TSO'd using a reply rate limit control setting of 1200 replies per second, there is little difficulty in passing the test. I sincerely doubt, however, that any commercially available transponder could pass the minimum and

maximum action time requirements at settings of both 500 and 2000 replies per second. That is not to say, however, that transponders are poorly designed in this respect, but rather that the MOC (and the National Standard) are too stringent. I feel that the lower control limit (500 replies per second), in all probability a vestige of the requirements for older vacuum-tube transponders with automatic overload controls, is lower than necessary.

Thus, I am recommending to the FAA that the minimum required setting of the reply rate limit control be raised to 1000 replies per second. Such a change would decrease the range over which a transponder would have to comply with the MOC, and makes possible the design of a much simpler reply rate limit circuit that would still meet all specifications. The model described herein could probably satisfy the MOC without the use of threshold detection over the range from 1000 to 2000 replies per second.

Louis A. Kleiman

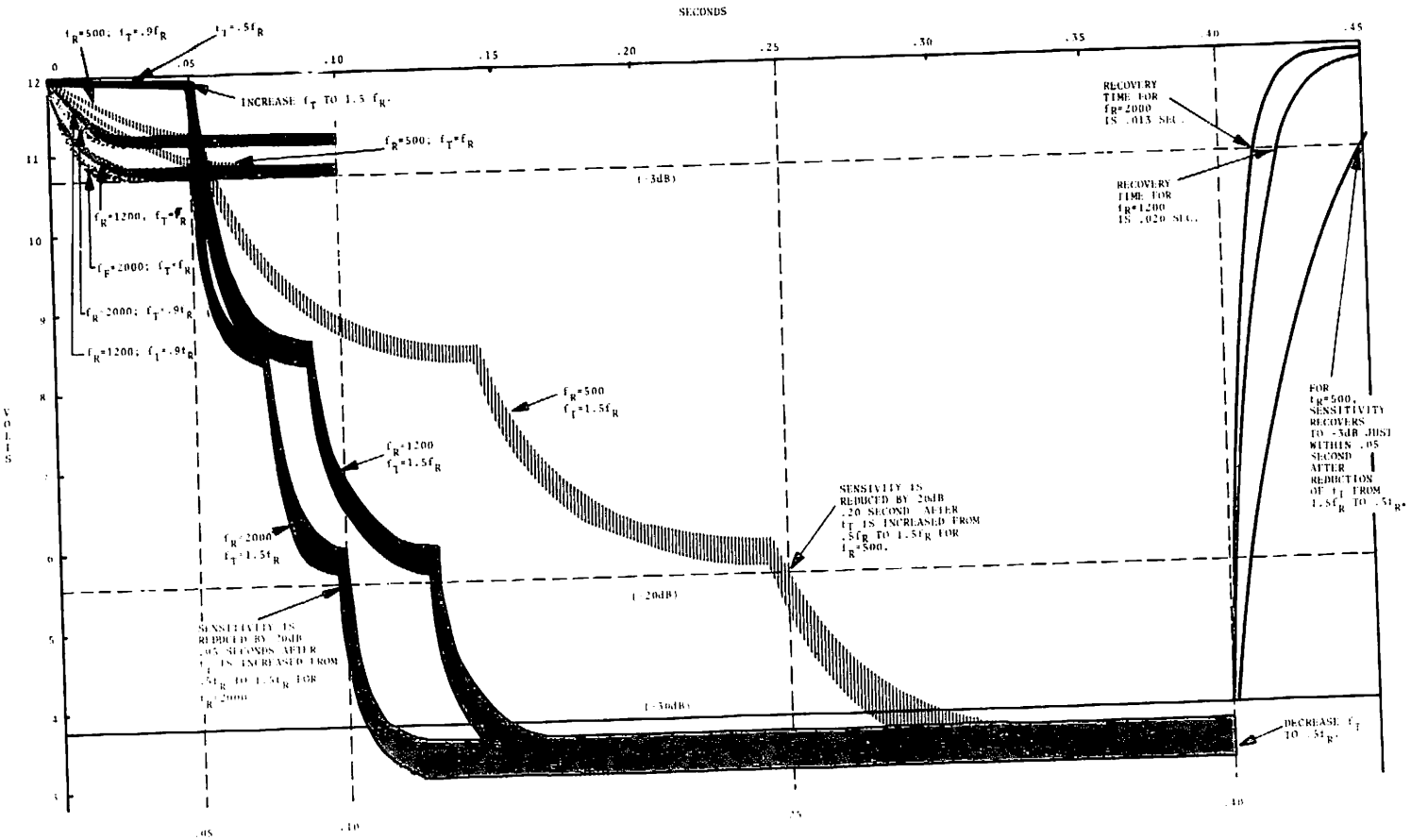

Figure A-1. Results of Simulation for f_R=500, 1200, and 2000 Replies per Second

APPENDIX B

TASK A: EFFECTS OF LENGTHENING SUPPRESSION TIME

APPENDIX B

TASK A: EFFECTS OF LENGTHENING SUPPRESSION TIME

Table B-1 provides a program listing of the simulation model with the necessary modifications to implement Task A. (Refer to paragraph 4.2.3 and figure 4-3 for a review of these modifications.)

The entire simulation program listing is presented in Appendix B for overall continuity. This provides an opportunity for the interested reader to coordinate the transponder functions, toward which this document is primarily oriented, with the remaining simulation model functions symbolized by the functional blocks in figure 2-1.

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A)

```
MAIN
                                        CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      PROGRAM MAIN (UPANIN, OUTPUT, TAPE5=UPANIN, TAPE6=OUTPUT, TAPE10)
C THIS CARD IS TO MAKE THE NUMBERING OF ATCRBS AND ATCRHSMOVIE CORRESPON
      DIMENSION A(75,17),PRP(75),TINTNW(75,2),TLASTI(75),P3(75,2),
     1P3IN(75,12),GIR(75),TLACE(75),TISLS(75),XLAT(75,3),XLON(75,3),
     3HORANG(75),RLARTH(75)
      DIMENSION S(27,13,3),TPOWER(27),IDAC(27,3),PXPNEX(27,100),TAPNEX(2
     17,100),NPNEX(27),ERPPTI(27),IPOWOM(27),TSNSMX(27),TDESEC(27),TTDSE
     2C(27),IUESRL(27),UEADT(27),ISNSTV(27),TDSNEC(27),TDSNRL(27),SUPPT(
     327),IJFLAG(27),TXPSAV(27),PXPSAV(27),ALTAUR(27),HFTAUR(27),IRLSLS(
     427),IRLREP(27),TRRL(27),IIDSRL(27)
      DIMENSION KNTINT(27),KNISLS(27),RATINT(27),RATSLS(27),AMXINT(27),A
     1MNINT(27),AMASLS(27),AMNSLS(27),TOINTR(27),TOSLSR(27),AVINTR(27),A
     2VSLSR(27)
      DIMENSION KNIINZ(27),KNISLZ(27),RATINZ(27),RATSLZ(27),AMXINZ(27),A
     1MNINZ(27),AMASLZ(27),AMNSLZ(27),TOINTZ(27),TOSLSZ(27),AVINTZ(27),A
     2VSLSZ(27),REPHOB(27),SLPHOB(27)
      DIMENSION CRHFI(27),CRHFR(27),CRHCI(27),CRHCR(27),RRC(27),RHF(27),
     1ITP2Z(27)
      DIMENSION PROPTM(75,27),UPPOWR(75,27,3)
      DIMENSION KNIP2Z(100),NP2PLS(100),IDHP2P(100),IDHPIN(100),IDHPSL(1
     100)
      DIMENSION SS(3),RAPNDR(200),IXPNDR(200),SENSTV(2),REPLY(200)
      DIMENSION R(50)
      DIMENSION EPAC(11),EAAC(11)
      DIMENSION EPIRV(92)
      DIMENSION EPSLS(102)
      DIMENSION PSTRP1(200,2),PSTRP2(200,2),PSTRPA(200,2),PSTRPC(200,2)
      DIMENSION API(62)
      DIMENSION SINEX(902),COSEX(902)
      DIMENSION Y(1000)
      DIMENSION TBLATN(2000)
      DIMENSION TLNIOX (1031)
      DIMENSION FMT(2)
      DIMENSION TMODES(7,2)
      DIMENSION N(1024),IWCNI(1024),JLEFLG(1024),ITST(1024),ITSP(1024)
      DIMENSION IAZC(1024),IRACCE(1024)
      DIMENSION TMD(12)
      DIMENSION IPNRN3(45),IPNHT3(45),IPNMS3(45),IPNSW3(45),IPNSM3(45),
     1IPNTL3(45),IPURN3(45),IPUHT3(45),IPUMS3(45),IPOSW3(45),IPOSM3(45),
     2IPUTL3(45)
      DIMENSION IIRRNX(20),IIRAZX(20),ITRWNX(20),ITRWCX(20),ITRLEX(20),
     1ITRCCX(20)
      DATA EPAC/-15.,-15.,-10.,-4.,-.5,-0.,-.5,-7.,-15.,-11.,-15./
      DATA EAAC/90.,30.,15.,-15.,-30.,-38.,-45.,-59.,-60.,-75.,-90./
      DATA EPIRV/-28.7,-28.,-27.2,-26.3,-25.4,-24.5,-23.7,-22.8,-22.1,-
     421.3
     1,-20.4,-19.7,-18.9,-18.2,-17.4,-16.8,-16.2,-15.5,-14.8,-14.2,-13.4
     2,-12.7,-12.1,-11.3,-10.5,-9.8,-9.1,-8.4,-7.6,-6.9,-6.3,-5.6,-5.1,
     3-4.5,-4.,-3.5,-3.1,-2.6,-2.2,-1.8,-1.4,-1.1,-.9,-.7,-.4,-.3,
     4          -.2,-.1,3*0.,-.1,-.2,-.3,-.4,-.6,-.8,-1.2,-1.6,-2.,
     5-2.4,-2.8,-3.4,-4.1,-4.6,-5.3,-6.1,-6.8,-7.7,-8.6,-9.4,-10.4,-11.5
     6,-12.7,-14.1,-15.4,-16.9,-18.4,-20.4,-22.4,-24.4,-26.8,-29.8,
     7*  -30.3 /
      DATA EPSLS/-31.,-30.15,-29.3,-28.45,-27.6,-26.75,-25.9,-25.05,-24
     4.2,
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CUC 6600 FTN V3.0-P355 OPT=1  12/07/73  1/.14.19.
1-23.35,-22.5,-21.5,-20.5,-19.75,-19.,-18.5,-18.,-17.65,-17.3,-17.,  ATCRBS    54
2-16.7,-16.55,-16.4,-16.25,-16.1,-16.15,-16.2,-16.35,-16.5,-16.65,   ATCRBS    55
3-16.8,-17.25,-17.7,-18.1,-18.5,-19.25,-20.,-21.,-22.,-23.,-24.,-25  ATCRBS    56
4.4,-26.8,-28.2,-29.6,-31.,-29.2,-27.4,-25.6,-23.8,-22.,-20.75,      ATCRBS    57
5-19.5,-18.25,-17.,-16.,-15.,-14.5,-14.,-13.35,-12.7,-12.15,-11.6,   ATCRBS    58
6-11.,-10.5,-10.,-9.5,-9.,-8.5,-8.,-7.5,-7.,-6.5,-6.1,-5.6,-5.1,     ATCRBS    59
7-4.7,-4.4,-4.,-3.6,-3.2,-2.9,-2.6,-2.4,-2.1,-1.7,-1.5,-1.2,-1.,     ATCRBS    60
8-.8,-.7,-.5,2* -.4 ,-.3,-.2,-.1,                                    ATCRBS    61
94* 0. ,-.1,2* -.2 ,-.3,-.4,2* -.5 ,-.6,-.7,-.8,-1.,-1.2,-1.3,-1.5,  ATCRBS    62
A-1.7,-2.,-2.2,-2.4,-2.6,-2.8,-3.1,-3.4,-3.8,-4.2,-4.4,-4.8,-5.2,    ATCRBS    63
B-5.7,-6.2,-6.6,-7.,-7.8,-8.5,-9.,-9.7,-10.5,                        ATCRBS    64
C-11.25,-12.,-12.85,-13.7,                                           ATCRBS    65
D-14.85,-16.,-17.5,-19.,-20.5,-22.,-24.,-26.,-28.5,-31.,-30.4,-29.8  ATCRBS    66
E,-29.2,-28.9,-28.,-27.24,-26.48,-25.72,-24.96,-24.20,-24.,          ATCRBS    67
F-23.8,-23.6,-23.4,-23.5,-24.,-24.5,-25.,-25.5,-26.,-26.5,-27.,-27.  ATCRBS    68
G5,-28.,-28.5,-29.,-29.5,-30.,-30.5,-31.,-31./                       ATCRBS    69
 DATA(AP(I),I=1,180)/                                                ATCRBS    70
1        0.,-2.,-10.,-20.,-26.,-32.,-28.,-33.,-38.,-36.,-28.,-30.,   ATCRBS    71
1-30.,-38.,-32.,-35.,-32.,-34.,-37.,-36.,-33.,-34.,-34.5 ,-35.,-35.  ATCRBS    72
2,-35.,-35.,-35.5 ,-36.5 ,-37.,-38.,-38.5 ,-39.5 ,-40.,-39.5 ,-39.,  ATCRBS    73
3-38.,-37.,-36.,-38.,-40.,-38.,-34.,-32.,-33.5 ,-32.,-31.5 ,-31.,-3  ATCRBS    74
42.,-34.,-36.,-38.,-40.,-37.,-32.,-33.,-34.,-35.,-34.,-34.5 ,-35.5   ATCRBS    75
5,-38.,-40.,-37.,-35.,-38.,-40.,-42.,-40.,-39.5 ,-38.,-40.,-40.,-40  ATCRBS    76
6,-39.,-36.5 ,-37.,-39.,-40.,-41.5 ,-41.5 ,-41.5 ,-41.5 ,-41.5 ,-4   ATCRBS    77
70.,-40.5 ,-41.,-42.,-42.5 ,-43.,-44.,-42.,-39.,-40.,-42.5 ,-42.5 ,  ATCRBS    78
8-42.5 ,-42.,-41.,-40.,-39.,-38.,-39.,-38.5 ,-38.,-38.,-37.5 ,-37.,  ATCRBS    79
                                                                     ATCRBS    80
8-37.,-37.,                                                          ATCRBS    81
9-36.,-36.,-35.,-34.5 ,-34.,-35.,-36.,-36.,-36.5 ,-36.,-35.5 ,-36.,  ATCRBS    82
1-36.5 ,-36.5 ,-37.,-39.,-40.5 ,-42.,-41.,-40.,-39.,-38.5 ,-37.5 ,-  ATCRBS    83
237.,-36.5 ,-36.5 ,-36.,-35.5 ,-38.,-37.,-36.,-36.,-35.5 ,-35.,-34.  ATCRBS    84
35 ,-34.5 ,-34.,-35.,-37.,-40.,-39.,-38.,-37.,-36.,-31.5 ,-32.,-34.  ATCRBS    85
4,-36.,-37.,-38.,-40.,-38.,-35.,-36.,-34.,-30.,-31.,-32.,-30.,-30.,  ATCRBS    86
5-30.,-30.,-30.,-30.,-30.,-30.,-30.,-30.,-30.,-32./                  ATCRBS    87
 DATA(AP(I),I=181,362)/                                              ATCRBS    88
1     -30.,-30.,-32.,-33.5 ,-36.,-37.5 ,-38.,-37.,-36.,-38.,-41.,-41 ATCRBS    89
2          ,-41.,-40.,-38.,-37.,-35.,-37.,-38.,-39.5 ,-38.5 ,-38.,-3 ATCRBS    90
17.5 ,-36.5 ,-35.,-37.5 ,-37.,-36.5 ,-38.,-40.,-38.,-36.,-38.,-39.,  ATCRBS    91
2-40.,-36.,-36.,-35.5 ,-34.5 ,-34.,-30.,-28.,-30.,-31.,-32.,-34.,-3  ATCRBS    92
39.,-40.5 ,-40.,-38.,-36.5 ,-36.,-35.,-34.,-34.,-34.5 ,-35.,-38.,-3  ATCRBS    93
49.,-40.,-41.,-43.,-44.,-42.5 ,-39.,-35.5 ,-36.,-37.,-38.,-39.,-41.  ATCRBS    94
5,-40.5 ,-40.,-40.,-40.,-41.5 ,-40.5 ,-40.,-41.,-40.5 ,-40.,-40.5 ,  ATCRBS    95
6-41.,-41.5 ,-42.,-42.,-41.,-40.5 ,-40.,-40.5 ,-40.,-40.5 ,-42.,-40  ATCRBS    96
7.5 ,-39.,-38.,-36.,-35.,-34.,-38.,-40.,-39.,-38.,-36.,-34.,-30.5 ,  ATCRBS    97
8-32.,-35.,-36.,-35.5 ,-34.,-34.5 ,-36.,-35.,-34.,-35.,-35.5 ,-36.,  ATCRBS    98
9-35.,-34.,-32.,-33.,-34.,-32.,-28.,-29.,-30.,-31.,-32.,-33.,-35.,-  ATCRBS    99
136.,-37.5 ,-38.,-40.,-39.,-36.,-31.,-32.,-34.,-36.5 ,-36.,-36.,-36  ATCRBS   100
2.,-28.,-29.,-34.,-32.,-28.,-32.,-36.,-33.,-30.,-25.,-26.,-28.,-30.  ATCRBS   101
3.-30.5 ,-28.,-29.,-30.5 ,-29.,-27.,-33.5 ,-32.,-33.5 ,-30.,-33.,-3  ATCRBS   102
48.,-34.,-36.,-34.,-36.,-20.,-10.,-2.,0.,0./                         ATCRBS   103
 DATA R/60*0./                                                       ATCRBS   104
 DATA XLASTM/-1.E+20/                                                ATCRBS   105
 DATA IPREP1,IPREP2,IPHEPA,IPHEPC/4*0/                               ATCRBS   106
 DATA TMODES/1H1,1H2,1H3,1HA,1HB,1HC,1HD,3.E-06,5.E-06,8.E-06,8.E-0  DABS      17
16,12.E-06,21.E-06,25.E-06/,BLANK/1H /                                ATCRBS   108
 DATA TMF/10H(1H+   XF5/,FMT(2)/10H.1)        /
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                                                  CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      DATA IRACCF/1024*0/                                                                                  ATCRBS   109
      DATA IWLNT/1024*0/                                                                                   ATCRBS   110
      DATA JLEFLG/1024*0/                                                                                  ATCRBS   111
      DATA N/1024*0/                                                                                       ATCRBS   112
      DATA NFRUIT,NIOTFR,ISCAN/3*0/,MSCAN,MAXFR,MINFR/2*0,10000000/                                        ATCRBS   113
      DATA NFRUTA,NFRUTC,NFRUT1,NFRUT2/4*0/                                                                ATCRBS   114
      DATA ISWEEP,KNT50/2*0/                                                                               ATCRBS   115
      DATA NOLDR3,IWEAK3/2*0/                                                                              ATCRBS   116
      DATA IVDIG3,IRGTG3/2*0/                                                                              ATCRBS   117
      DATA NOLDTX,NPTTOA,ITRGTX/3*0/,NPTTUX/1/                                                             ATCRBS   118
      DATA KNTINT,KNTSLS/54*0/,TLUPDT/0./,TOINTR,TOSLSR/54*0./                                             DABS      18
      DATA AMXINT,AMXSLS/54*0./,AMNINT,AMNSLS/54*10000000./                                                DABS      19
      DATA AVINTR,AVSLSR,RATINT,RATSLS/108*0./                                                             DABS      20
      DATA KNTINZ,KNTSLZ/54*0/,RATINZ,RATSLZ,AVINTZ,AVSLSZ,AMXINZ,AMXSLZ                                   DABS      21
     1,TOINTZ,TOSLSZ/216*0./,AMNINZ,AMNSLZ/54*10000000./                                                   DABS      22
      DATACRRFI,CRRFR,CRRCI,CRRCR,RRC,RRF/162*0./                                                          DABS      23
      DATA NP2PLS/100*1/,ITP2Z/27*0/,IDBP2P/100*0/,KNTP2Z/100*0/                                           DABS      24
      DATA IDBPIN,IDBPSL/200*0/                                                                            ATCRBS   121
      ITRGT=0                                                                                              ATCRBS   126
      NXLSIN=-1000000                                                                                      DABS      25
      ONE38H=1./38.                                                                                        DABS      26
      ONE76H=1./76.                                                                                        DABS      27
      TMF= TMF.A.7777777700000077777 7B                                                                    ATCRBS   127
      READ(5,14) TEND                                                                                      ATCRBS   128
      PRINT 70,TEND                                                                                        ATCRBS   129
   70 FORMAT (*1TEND*,T53,E20.8)                                                                           ATCRBS   130
   14 FORMAT (E20.8)                                                                                       ATCRBS   131
      PI=3.14159265358979                                                                                  ATCRBS   132
      DTR=PI/180.                                                                                          ATCRBS   133
      RTD=180./PI                                                                                          ATCRBS   134
      C=161875.0                                                                                           ATCRBS   135
      DELANG=.5                                                                                            ATCRBS   136
      XANG=-90.0                                                                                           ATCRBS   137
      DO 50 I=1,902                                                                                        ATCRBS   138
      SINEX(I)=SIN(XANG*DTR)                                                                               ATCRBS   139
      COSEX(I)=COS(XANG*DTR)                                                                               ATCRBS   140
      XANG=XANG.DELANG                                                                                     ATCRBS   141
   50 CONTINUE                                                                                             ATCRBS   142
      XL2=ALOG10(2.)                                                                                       ATCRBS   143
      X=.5                                                                                                 ATCRBS   144
      XINC=.001                                                                                            ATCRBS   145
      DO 11 I=500,1000                                                                                     ATCRBS   146
      Y(I)=ALOG10(X)                                                                                       ATCRBS   147
      X=X+XINC                                                                                             ATCRBS   148
   11 CONTINUE                                                                                             ATCRBS   149
      XVAL=0.0                                                                                             ATCRBS   150
      DO 1601 I=1,700                                                                                      ATCRBS   151
      TBLATN(I)=ATAN(XVAL)*RTD                                                                             ATCRBS   152
      XVAL=XVAL+.01                                                                                        ATCRBS   153
 1601 CONTINUE                                                                                             ATCRBS   154
      DO1603 I=701,1730                                                                                    ATCRBS   155
      TBLATN(I)=ATAN(XVAL)*RTD                                                                             ATCRBS   156
      XVAL=XVAL+.1                                                                                         ATCRBS   157
 1603 CONTINUE                                                                                             ATCRBS   158
      DO 1605 I=1731,1919                                                                                  ATCRBS   159
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                        CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      TBLATN(I)=ATAN(XVAL)*RTD                                                ATCRBS   160
      XVAL=XVAL+10.                                                           ATCRBS   161
 1605 CONTINUE                                                                ATCRBS   162
      DO 1607 I=1920,2000                                                     ATCRBS   163
      TBLATN(I)=ATAN(XVAL)*RTD                                                ATCRBS   164
      XVAL=XVAL+.000.                                                         ATCRBS   165
 1607 CONTINUE                                                                ATCRBS   166
      DO 22 I= 1,1031                                                         ATCRBS   167
   22 TENTOX(I)= 10.**((FLOAT(I)-1031.)/100.)                                 ATCRBS   168
      READ(5,103) INTS,NACMX,IRANRT,IRERTH                                    DABS      28
  103 FORMAT(4I5)                                                             DABS      29
      PRINT71,INTS,NACMX,IRANRT,IRERTH                                        DABS      30
   71 FORMAT(* INTS,NACMX,IRANRT,IRERTH *,41X,4(I10,5X))                      DABS      31
      DO 72 I=1,INTS                                                          ATCRBS   173
      ILACE(I)=RANF(DUM)*12.                                                  ATCRBS   174
   72 READ (5,73) A(I,1),A(I,2),A(I,4),A(I,5),(XLAT(I,J),J=1,3),(XLON(I,      ATCRBS   175
     1K),K=1,3),A(I,16),A(I,17),A(I,14),A(I,15),(P3IN(I,J),J=1,12),GIR(I      ATCRBS   176
     2),IISLS(I)                                                              ATCRBS   177
   73 FORMAT (4F5.0,2X,6F3.0,F5.0,F2.0,F5.0,2X,E5.2,2X,12A1,F4.0,1X,I1)       ATCRBS   178
      PRINT 74                                                                ATCRBS   179
   74 FORMAT (//1X,4HINT.,2X,8HROTATION,6X,3HPRF,5X,7HINITIAL,5X,2HP1,6X      ATCRBS   180
     1,4HLAT.,6X,6HLONG.,6X,4HSITE,3X,4HANT.,6X,4HINT.,6X,2HP2,10X,4HMOD      ATCRBS   181
     2E,7X,4HUIR.,5X,5HIISLS)                                                 ATCRBS   182
      PRINT 75                                                                ATCRBS   183
   75 FORMAT (1X,3HNO.,3X,9HRATE(RPM),2X,9H(INT/SEC),3X,4HINT.,5X,5HPOWE      ATCRBS   184
     1R.,4X,5H(DMS),6X,5H(DMS),6X,5HELEV.,3X,3HWT.,5X,5HSTARI,5X,5HROWER.     ATCRBS   185
     2 6X,9HINTERLACE,4X,4HANT.,5X,6HSWITCH)                                  ATCRBS   186
      PRINT 76                                                                ATCRBS   187
   76 FORMAT (29X,7HAZIMUTH,2X,7H(WATTS),14X,6H(WEST),5X,4H(FT),3X,4H(FT      ATCRBS   188
     1),5X,4HTIME,6X,6H#.R.T.,18X,4HGAIN,5X,6H(1 ON.)                         ATCRBS   189
      PRINT 77                                                                ATCRBS   190
   77 FORMAT (30X,5H(DEG),51X,6H(USEC),4X,7HP1 (DB),17X,4H(DB),5X,6HO OF      ATCRBS   191
     1F)/)                                                                    ATCRBS   192
      DO 86 I=1,INTS                                                          ATCRBS   193
      A(I,1)=A(I,1)+((RANF(DUM)-0.5)*0.2)*FLOAT(IRANRT)                       DABS      32
      A(I,14)=RANF(DUM)/A(I,2)*1.E+06                                         ATCRBS   196
      A(I,4)=0.                                                               ATCRBS   197
      A(I,14)=0.                                                              ATCRBS   198
   86 PRINT 80,I,A(I,1),A(I,2),A(I,4),A(I,5),(XLAT(I,J),J=1,3),(XLON(I,K      ATCRBS   199
     1),K=1,3),A(I,16),A(I,17),A(I,14),A(I,15),(P3IN(I,J),J=1,12),GIR(I)      ATCRBS   200
     2,IISLS(I)                                                               ATCRBS   201
   80 FORMAT (1X,I3,4X,F5.2,7X,F5.0,5X,F5.0,4X,F5.0,3X,3F3.0,1X,F4.0,2F3      ATCRBS   202
     1.0,2X,F6.0,4X,F3.0,4X,F5.0,5X,F5.1,6X,12A1,1X,F5.0,6X,I1)               ATCRBS   203
      DO 109 I=1,INTS                                                         ATCRBS   204
      A(I,13)=A(I,16)+A(I,17)                                                 ATCRBS   205
      A(I,9)=XLAT(I,1)+(60.*XLAT(I,2)+XLAT(I,3))/3600.                        ATCRBS   206
  109 A(I,11)=-XLON(I,1)-(60.*XLON(I,2)+XLON(I,3))/3600.                      ATCRBS   207
      Q=A(1,11)                                                               ATCRBS   208
      DO 110 I=1,INTS                                                         ATCRBS   209
      DO 115 III=1,12                                                         ATCRBS   210
      DO 113 II=1,7                                                           ATCRBS   211
      IF (P3IN(I,III).EQ.TMODES(II,1)) GO TO 117                              ATCRBS   212
  113 CONTINUE                                                                ATCRBS   213
      IF (III.NE.2) GO TO 119                                                 ATCRBS   214
      IF (P3IN(I,2).EQ.BLANK) GO TO 118                                       ATCRBS   215
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
  119 PRINT 116,I,P3IN(I,III)                                                          ATCRBS   216
  116 FORMAT (*1INTERROGATOR*,I3,* HAS AN ILLEGAL MODE INPUT (*,A1,*).*)                ATCRBS   217
      STOP                                                                             ATCRBS   218
  117 P3IN(I,III)=TMODES(II,2)                                                         ATCRBS   219
      IF (I.NE.1) GO TO 115                                                            ATCRBS   220
      TMD(III)=TMODES(II,1)                                                            ATCRBS   221
      IF(TMD(III).EQ.1H3) TMD(III)=1HA                                                 ATCRBS   222
  115 CONTINUE                                                                         ATCRBS   223
      GO TO 130                                                                        ATCRBS   224
  118 P3(I,1)=P3IN(I,1)                                                                ATCRBS   225
      P3(I,2)=P3IN(I,1)                                                                ATCRBS   226
      ILALE(I)=15                                                                      ATCRBS   227
  130 TLASTI(I)=A(I,14)*1.E-06                                                         ATCRBS   228
      A(I,1)=A(I,1)/60.                                                                ATCRBS   229
      PRP(I)=1.E0/A(I,2)                                                               ATCRBS   230
      A(I,2)=A(I,1)*360.                                                               ATCRBS   231
      A(I,3)=A(I,4)                                                                    ATCRBS   232
      A(I,5)=10.*ALOG10(A(I,5))+30.-3.*GIR(I)                                          ATCRBS   233
      A(I,10)=COS(A(I,9)*DTR)                                                          ATCRBS   234
      A(I,9)=SIN(A(I,9)*DTR)                                                           ATCRBS   235
      A(I,12)=COS((A(I,11)-Q)*DTR)                                                     ATCRBS   236
      A(I,11)=SIN((A(I,11)-Q)*DTR)                                                     ATCRBS   237
      A(I,13)=A(I,13)/6076.103+3437.747+(3437.747/3.*FLOAT(IRERTH))                    DABS      33
      REARTH(I)=3437.747+(3437.747/3.*FLOAT(IRERTH))*A(I,16)/6076.103                  DABS      34
      HORANG(I)=-ASIN((SQRT(A(I,13)**2-REARTH(I)**2))/A(I,13))*RTD                     ATCRBS   240
      A(I,6)=A(I,13)*A(I,10)*A(I,11)                                                   ATCRBS   241
      A(I,7)=A(I,13)*(A(I,9)*A(I,10)-A(I,10)*A(I,9)*A(I,12))                           ATCRBS   242
      A(I,8)=-A(I,13)+A(I,13)*(A(I,9)*A(I,9)+A(I,10)*A(I,10)*A(I,12))                  ATCRBS   243
  110 CONTINUE                                                                         ATCRBS   244
      AZPLOT=A(1,4)                                                                    ATCRBS   245
      READ (5,106) STIME,SENSTV(1),REDSNS,RMN,RMX,KRSLS,RSLVL                          ATCRBS   246
  106 FORMAT (5F10.1,I5,F10.1)                                                         ATCRBS   247
      PRINT 82,STIME,SENSTV(1),REDSNS,RMN,RMX,KRSLS,RSLVL                              ATCRBS   248
   82 FORMAT(* STIME,SENSTV(1),REDSNS,RMN,RMX,KRSLS,RSLVL*,I53,5F10.1,I5                ATCRBS   249
     1,F10.1)                                                                          ATCRBS   250
      INEXT=STIME                                                                      ATCRBS   251
      DO 1111 IJJ=1,INTS                                                               ATCRBS   252
      A(IJJ,3)=AMOD((A(IJJ,3)+STIME*A(IJJ,2)),360.)                                    DABS      35
 1111 TLASTI(IJJ)=STIME+TLASTI(IJJ)                                                    ATCRBS   254
  112 READ (5,104) IXPNDR,GAC,ERPPIT(1),DELAY,TSNSMX(1),TRRL(1),DESDIF,                ATCRBS   255
     1DEADT(1),SUPPT(1)                                                                ATCRBS   256
  104 FORMAT (I5,8F9.1)                                                                ATCRBS   257
      PRINT 83,IXPNDR,GAC,ERPPIT(1),DELAY,TSNSMX(1),TRRL(1),DESDIF,                    ATCRBS   258
     1DEADT(1),SUPPT(1)                                                                ATCRBS   259
   83 FORMAT (* IXPNDR,GAC,ERPPIT(1),DELAY,TSNSMX(1),TRRL(1),DESDIF,DEAD                ATCRBS   260
     1T(1),SUPPT(1)*,/I5,8F9.1)                                                        ATCRBS   261
      READ(5,107) IRLREP(1),IRLSLS(1),RRLCO,IAABYP,IAASWCH                             DABS      36
  107 FORMAT(2I5,F5.2,2X,2I2)                                                          DABS      37
      PRINT 108,IRLREP(1),IRLSLS(1),RRLCO,IAABYP,IAASWCH                               DABS      38
  108 FORMAT(* IRLREP(1),IRLSLS(1),RRLCO,IAABYP,IAASWCH *,20X,2I5,F5.2,3               DABS      39
     1X,2(I2,5X))                                                                      DABS      40
      DEADT(1)=(DEADT(1)+3.+20.3+4.35+0.45)*1.E-06                                     ATCRBS   266
      SUPPT(1)=SUPPT(1)*1.E-06                                                         ATCRBS   267
      DELAY=DELAY*1.E-06                                                               ATCRBS   268
      DO 121 I=2,NACMX                                                                 ATCRBS   269
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                          CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  11.14.19.
      ERPPTT(I)=ERPPTT(1)                                                    ATCRBS   270
      IRRL(I)=IRRL(1)                                                        ATCRBS   271
      DEAUT(I)=DEAUT(1)                                                      ATCRBS   272
      SUPPI(I)=SUPPI(1)                                                      ATCRBS   273
      IRLREP(I)=IRLREP(1)                                                    ATCRBS   274
      IRLSLS(I)=IRLSLS(1)                                                    ATCRBS   275
  121 TSNSMX(I)=TSNSMX(1)                                                    ATCRBS   276
      DO 122 I=1,NACMX                                                       ATCRBS   277
      NPNEX(I)=0                                                             ATCRBS   278
      TDESEC(I)=0.                                                           ATCRBS   279
      TTDSEC(I)=-1.E+50                                                      ATCRBS   280
      TDESRL(I)=0.                                                           ATCRBS   281
      TTDSRL(I)=-1.E+50                                                      ATCRBS   282
      TDSWEC(I)=0.                                                           ATCRBS   283
      TDSNRL(I)=0.                                                           ATCRBS   284
      TDOWOM(I)=0.                                                           ATCRBS   285
  122 CONTINUE                                                               ATCRBS   286
      READ(5,105) TBF,PT                                                     ATCRBS   287
      PRINT 84,TBF,PT                                                        ATCRBS   288
   84 FORMAT(* TBF,PT*,T53,2F10.1)                                           ATCRBS   289
  105 FORMAT (8F10.1)                                                        ATCRBS   290
      READ (5,114) IDFRUT,DFGATE                                             ATCRBS   291
  114 FORMAT (I1,F5.1)                                                       ATCRBS   292
      PRINT 85,IDFRUT,DFGATE                                                 ATCRBS   293
   85 FORMAT (* IDFRUT,DFGATE *,T53,I1,7X,F5.1)                              ATCRBS   294
      DFGATE=DFGATE*1.E-06                                                   ATCRBS   295
      READ (5,89) ICD,IWNL,ITL,ITT,BIASIC                                    ATCRBS   296
   89 FORMAT (4I5,F5.2)                                                      ATCRBS   297
      PRINT 90,ICD,IWNL,ITL,ITT,BIASIC                                       ATCRBS   298
   90 FORMAT (* ICD,IWNL,ITL,ITT,BIASIC*5X4I5,F5.2)                          ATCRBS   299
      READ (5,4)KARTS3,IHY3P3,IMY3P3,IMY4R3,IRNGR3,ITQYH3,IRMRP3,IHY4R3      ATCRBS   300
    4 FORMAT(8I5)                                                            ATCRBS   301
      PRINT 12,KARTS3,IHY3P3,IMY3P3,IMY4R3,IRNGR3,ITQYH3,IRMRP3,IHY4R3       ATCRBS   302
   12 FORMAT(* KARTS3,IHY3P3,IMY3P3,IMY4R3,IRNGR3,ITQYH3,IRMRP3,IHY4R3*,     ATCRBS   303
     1 5X,8I5)                                                               ATCRBS   304
      READ (5,4) KTPX42,IWNLX,ITLX,ITTX,ICONFX                               ATCRBS   305
      PRINT 1916,KTPX42,IWNLX,ITLX,ITTX,ICONFX                               ATCRBS   306
 1916 FORMAT (* KTPX42,IWNLX,ITLX,ITTX,ICONFX*5X5I5)                         ATCRBS   307
      BIASX=(ITLX*ITTX+IWNLX-1)/2                                            ATCRBS   308
      IBIASX=BIASX*PRP(1)*A(1,2)*4096./360.                                  ATCRBS   309
      IRBMX=RMX*4.+1.                                                        ATCRBS   310
C     BAISIC  IS A POSITIVE NUMBER USED IN THE CD TO ADJUST THE COMPUTE      DABS     41
C  CENTER AZIMUTH OF THE TARGET DUE TO IT ELONGATION BY THE SLIDING WIND     DABS     42
C  FOR MODE A ONLY  BIASIC SHOULD BE SET TO 1. - FOR MODE AA2 IT SHOULD      DABS     43
C  SET TO 1.5 - FOR MODE ACA2 OR ACAC, IT SHOULD BE SET TO 2.0               DABS     44
      BIAS=FLOAT((ITL+ITT+IWNL-1)/2)*BIASIC                                  ATCRBS   311
      IBIAS=BIAS*PRP(1)*A(1,2)*4096./360.                                    ATCRBS   312
      ACRHSW=PRP(1)*A(1,2)*4096./360.                                        ATCRBS   313
      CVAL=360./4096.                                                        ATCRBS   314
      AIR4PI=GIR(1)+20.*ALOG10(C/(1.09E09*4.*PI))                            ATCRBS   315
      AAC4PI=GAC+20.*ALOG10(C/(1.03E09*4.*PI))                               ATCRBS   316
      AOM4PI=20.*ALOG10(C/(1.09E09*4.*PI))+4.                                ATCRBS   317
      RMIN=RMN                                                               ATCRBS   318
      RMAX=RMX                                                               ATCRBS   319
      TMIN=2.*RMIN/C+DELAY                                                   ATCRBS   320
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                          CDC 6600 FTN V3.0-P355 OPT=1   2/07/73  11.14.19.
      TMAX=2.*RMAX/C.DELAY                                                    ATCRBS   321
      READ (5,114) IPRINT                                                     ATCRBS   322
      DO 120 I=1,NACMX                                                        ATCRBS   323
      IJFLAG(I)=1                                                             ATCRBS   324
      HFTAUR(I)=0.5/TRRL(I)                                                   ATCRBS   325
      ALTAUR(I)=12.2/TRRL(I)                                                  ATCRBS   326
120   ISNSTV(I)=TSNSMX(I)                                                     ATCRBS   327
      READ(5,87) ISMAX                                                        DABS      45
 87   FORMAT(I5)                                                              DABS      46
      PRINT 81,ISMAX                                                          DABS      47
 81   FORMAT(1X* ISMAX*10X,I5)                                                DABS      48
      IS=ISMAX                                                                ATCRBS   332
      READ(5,8) LASTIM,NAC                                                    ATCRBS   333
      READ(5,88) (IDAC(I,2),(S(I,J,2),J=5,7),(S(I,K,2),K=11,13),I=1,NAC)      ATCRBS   334
 8    FORMAT (2I5)                                                            ATCRBS   335
 88   FORMAT (  (I2,6F13.8))                                                  ATCRBS   336
      CALL SECOND (TTT)                                                       ATCRBS   337
      PRINT 15,TTT                                                            ATCRBS   338
 15   FORMAT (1H1,E20.8)                                                      ATCRBS   339
      GO TO 19                                                                ATCRBS   340
  2   DO 201 J=1,INTS                                                         ATCRBS   341
      A(J,3)=A(J,3)+(TNEXT-TIME)*A(J,2)                                       ATCRBS   342
      IF (A(J,3).LT.360.) GO TO 201                                           ATCRBS   343
      IF(J.EQ.1)MSCAN=1                                                       ATCRBS   344
      A(J,3)=A(J,3)-360.                                                      ATCRBS   345
201   CONTINUE                                                                ATCRBS   346
 19   TIME=TNEXT                                                              ATCRBS   347
      TNEXT=TNEXT+PRP(1)                                                      ATCRBS   348
      TNEX25=TNEXT-25.E-06                                                    ATCRBS   349
      IHEPLY=0                                                                ATCRBS   350
      IR=0                                                                    ATCRBS   351
      IF (IS) 9,397,398                                                       ATCRBS   352
397   IS=-1                                                                   ATCRBS   353
      GO TO 399                                                               ATCRBS   354
398   IS=IS+1                                                                 ATCRBS   355
      IF (IS.LE.ISMAX) GO TO 9                                                ATCRBS   356
      IS=1                                                                    ATCRBS   357
399   IF (TIME.LE.XLASTIM) GO TO 301                                          ATCRBS   358
      DO 330 I=1,NAC                                                          ATCRBS   359
      IDAC(I,1)=IDAC(I,2)                                                     ATCRBS   360
      S(I,5,1)=S(I,5,2)                                                       ATCRBS   361
      S(I,6,1)=S(I,6,2)                                                       ATCRBS   362
      S(I,7,1)=S(I,7,2)                                                       ATCRBS   363
      S(I,11,1)=S(I,11,2)                                                     ATCRBS   364
      S(I,12,1)=S(I,12,2)                                                     ATCRBS   365
330   S(I,13,1)=S(I,13,2)                                                     ATCRBS   366
      IF(S.GT.0) GO TO 1006                                                   DABS      49
      NACP1=NAC                                                               DABS      50
      GO TO 1000                                                              DABS      51
1006  XLSTIM=LASTIM                                                           DABS      52
      READ (5,8 ) LASTIM,NACP1                                                ATCRBS   368
      READ(5,88) (IDAC(I,2),(S(I,J,2),J=5,7),(S(I,K,2),K=11,13),I=1,NAC       ATCRBS   369
     1P1)                                                                     ATCRBS   370
1000  XLASTM=LASTIM                                                           ATCRBS   371
      NACRFT=0                                                                ATCRBS   373
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.

      DO 304 I=1,NAC                                                    ATCRBS   374
      DO 303 J=1,NACP1                                                  ATCRBS   375
      IF (IDAC(I,1).EQ.IDAC(J,2)) GO TO 325                             ATCRBS   376
  303 CONTINUE                                                          ATCRBS   377
      GO TO 304                                                         ATCRBS   378
  325 NACRFT=NACRFT+1                                                   ATCRBS   379
      S(NACRFT, 2,1)=S(I, 5,1)                                          ATCRBS   380
      S(NACRFT, 3,1)=S(I, 6,1)                                          ATCRBS   381
      S(NACRFT, 4,1)=S(I, 7,1)                                          ATCRBS   382
      S(NACRFT,8,1)=S(I,11,1)                                           ATCRBS   383
      S(NACRFT,9,1)=S(I,12,1)                                           ATCRBS   384
      S(NACRFT,10,1)=S(I,13,1)                                          ATCRBS   385
      S(NACRFT, 2,2)=S(J, 5,2)                                          ATCRBS   386
      S(NACRFT, 3,2)=S(J, 6,2)                                          ATCRBS   387
      S(NACRFT, 4,2)=S(J, 7,2)                                          ATCRBS   388
      S(NACRFT,8,2)=S(J,11,2)                                           ATCRBS   389
      S(NACRFT,9,2)=S(J,12,2)                                           ATCRBS   390
      S(NACRFT,10,2)=S(J,13,2)                                          ATCRBS   391
      IDAC(NACRFT,3)=IDAC(I,1)                                          ATCRBS   392
      S(NACRFT,9,3)=S(NACRFT,9,1)                                       ATCRBS   393
  304 CONTINUE                                                          ATCRBS   394
      NAC=NACP1                                                         ATCRBS   395
      GO TO 399                                                         ATCRBS   396
  301 TERPOL=1.-(XLASTM-TIME)/(XLASTM-(FLOAT(NXLSTM)))                  DABS      53
      DO 322 JAC=1,NACRFT                                               ATCRBS   398
      S(JAC,2,3)=S(JAC,2,1)+(S(JAC,2,2)-S(JAC,2,1))*TERPOL              ATCRBS   399
      S(JAC,3,3)=S(JAC,3,1)+(S(JAC,3,2)-S(JAC,3,1))*TERPOL              ATCRBS   400
      S(JAC,4,3)=S(JAC,4,1)+(S(JAC,4,2)-S(JAC,4,1))*TERPOL              ATCRBS   401
      S(JAC,8,3)=S(JAC,8,1)+(S(JAC,8,2)-S(JAC,8,1))*TERPOL              ATCRBS   402
      S21=S(JAC,10,2)-S(JAC,10,1)                                       ATCRBS   403
      IF (ABS(S21).LT.180.) GO TO 318                                   ATCRBS   404
      IF (S21) 310,318,311                                              ATCRBS   405
  310 S(JAC,10,2)=S(JAC,10,2)+360.                                      ATCRBS   406
      GO TO 318                                                         ATCRBS   407
  311 S(JAC,10,1)=S(JAC,10,1)+360.                                      ATCRBS   408
  318 S(JAC,10,3)=S(JAC,10,1)+(S(JAC,10,2)-S(JAC,10,1))*TERPOL          ATCRBS   409
      IF (S(JAC,10,3).GT.360.)    S(JAC,10,3)=S(JAC,10,3)-360.          ATCRBS   410
      DO 320 INO=1,INTS                                                 ATCRBS   411
      PROPTM(INO,JAC)=SQRT((S(JAC,2,3)-A(INO,6))**2+(S(JAC,3,3)-A(INO,7) ATCRBS   412
     1)**2+(S(JAC,4,3)-A(INO,8))**2)/C                                  ATCRBS   413
      SS(1)=-A(INO,11)*(A(1,10)*(A(1,13)+S(JAC,4,3))-S(JAC,3,3)*A(1,9))  ATCRBS   414
     1+S(JAC,2,3)*A(INO,12)                                             ATCRBS   415
      SS(2)=-A(1,13)*(A(1,10)*A(INO,9)*A(INO,12)-A(1,9)*A(INO,10))-     ATCRBS   416
     1S(JAC,2,3)*A(INO,9)*A(INO,11)+S(JAC,3,3)*(A(1,10)*A(INO,10)+      ATCRBS   417
     2A(1,9)*A(INO,9)*A(INO,12))-S(JAC,4,3)*(A(INO,9)*A(1,10)*A(INO,12) ATCRBS   418
     3-A(1,9)*A(INO,10))                                                ATCRBS   419
      SS(3)=-A(INO,13)+A(1,13)*(A(1,9)*A(INO,9)+A(1,10)*A(INO,10)*      ATCRBS   420
     1A(INO,12))+S(JAC,2,3)*A(INO,10)*A(INO,11)-S(JAC,3,3)*(A(1,9)*     ATCRBS   421
     2A(INO,10)*A(INO,12)-A(1,10)*A(INO,9))+S(JAC,4,3)*(A(1,9)*A(INO,9)+ ATCRBS   422
     3A(1,10)*A(INO,10)*A(INO,12))                                      ATCRBS   423
      SS12=SS(1)*SS(1)+SS(2)*SS(2)                                      ATCRBS   424
      Y1=SS(2)                                                          ATCRBS   425
      X1=SS(1)                                                          ATCRBS   426
      IF(X1.EQ.0.)X1=1.E-200                                            ATCRBS   427
      AT1=Y1/X1                                                         ATCRBS   428
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      AT=ABS(AT1)                                                                    ATCRBS   429
      IF(AT.LT.7.0)GO TO 1614                                                        ATCRBS   430
      IF(AT.LT.110.0)GO TO 1610                                                      ATCRBS   431
      IF(AT.LT.2000.0)GO TO 1611                                                     ATCRBS   432
      IF(AT.LT.82000.0)GO TO 1612                                                    ATCRBS   433
      ATIP=90.                                                                       ATCRBS   434
      GO TO 1613                                                                     ATCRBS   435
 1610 ATP=AT*10.+631.                                                                ATCRBS   436
      GO TO 1618                                                                     ATCRBS   437
 1611 ATP=AT*.1+1720.                                                                ATCRBS   438
      GO TO 1618                                                                     ATCRBS   439
 1612 ATP=AT*.001+1918.                                                              ATCRBS   440
      GO TO 1618                                                                     ATCRBS   441
 1614 ATP=AT*100.+1.                                                                 ATCRBS   442
 1618 IAT=ATP                                                                        ATCRBS   443
      ATIP=TBLATN(IAT)+(TBLATN(IAT+1)-TBLATN(IAT))*(ATP-FLOAT(IAT))                  ATCRBS   444
 1613 IF(AT1.LT.0.)GO TO 1620                                                        ATCRBS   445
      IF(X1.LT.0.)ATIP=ATIP-180.                                                     ATCRBS   446
      GO TO 1625                                                                     ATCRBS   447
 1620 IF (X1.LT.0.) ATIP=ATIP+180.                                                   ATCRBS   448
      ATIP=-ATIP                                                                     ATCRBS   449
 1625 UPPOWR(INO,JAC,3)=90.-ATIP                                                     ATCRBS   450
      Y1=SS(3)                                                                       ATCRBS   451
      X1=SQRT(SS12)                                                                  ATCRBS   452
      IF(X1.EQ.0.)X1=1.E-200                                                         ATCRBS   453
      AT1=Y1/X1                                                                      ATCRBS   454
      AT=ABS(AT1)                                                                    ATCRBS   455
      IF(AT.LT.7.0)GO TO 1634                                                        ATCRBS   456
      IF(AT.LT.110.0)GO TO 1630                                                      ATCRBS   457
      IF(AT.LT.2000.0)GO TO 1631                                                     ATCRBS   458
      IF(AT.LT.82000.0)GO TO 1632                                                    ATCRBS   459
      ATIP=90.                                                                       ATCRBS   460
      GO TO 1633                                                                     ATCRBS   461
 1630 ATP=AT*10.+631.                                                                ATCRBS   462
      GO TO 1628                                                                     ATCRBS   463
 1631 ATP=AT*.1+1720.                                                                ATCRBS   464
      GO TO 1628                                                                     ATCRBS   465
 1632 ATP=AT*.001+1918.                                                              ATCRBS   466
      GO TO 1628                                                                     ATCRBS   467
 1634 ATP=AT*100.+1.                                                                 ATCRBS   468
 1628 IAT=ATP                                                                        ATCRBS   469
      ATIP=TBLATN(IAT)+(TBLATN(IAT+1)-TBLATN(IAT))*(ATP-FLOAT(IAT))                  ATCRBS   470
 1633 IF(AT1.LT.0.)GO TO 1640                                                        ATCRBS   471
      IF(X1.LT.0.)ATIP=ATIP-180.                                                     ATCRBS   472
      GO TO 1650                                                                     ATCRBS   473
 1640 IF(X1.LT.0.)ATIP=ATIP-180.                                                     ATCRBS   474
      ATIP=-ATIP                                                                     ATCRBS   475
 1650 ELWRTA=ATIP                                                                    ATCRBS   476
      XIN=SS12+SS(3)*SS(3)                                                           ATCRBS   477
      XTEST=(XIN.AND.0000777777777777777B).OR.17170000000000000000B                  ATCRBS   478
      SUBSCR=XTEST*1000.                                                             ATCRBS   479
      L=SUBSCR                                                                       ATCRBS   480
      XLOG=Y(L)+(Y(L+1)-Y(L))*(SUBSCR-FLOAT(L))+XL2*FLOAT(SHIFT(XIN,-48)             ATCRBS   481
     1-975)                                                                          ATCRBS   482
      UPPOWR(INO,JAC,1)=A(INO,5)+AAC4PI_10.*XLOG                                     ATCRBS   483
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
                                                                                ATCRBS   484
      THTP1=S(JAC,10,3)*2.+181.                                                 ATCRBS   485
      ITHP1=THTP1                                                               ATCRBS   486
      SH=SINEX(ITHP1)+(SINEX(ITHP1+1)-SINEX(ITHP1))*(THTP1-FLOAT(ITHP1))        ATCRBS   487
      CH=COSEX(ITHP1)+(COSEX(ITHP1+1)-COSEX(ITHP1))*(THTP1-FLOAT(ITHP1))        ATCRBS   488
      THTP2=S(JAC,9,3)*2.+181.                                                  ATCRBS   489
      ITHP2=THTP2                                                               ATCRBS   490
      SP=SINEX(ITHP2)+(SINEX(ITHP2+1)-SINEX(ITHP2))*(THTP2-FLOAT(ITHP2))        ATCRBS   491
      CP=COSEX(ITHP2)+(COSEX(ITHP2+1)-COSEX(ITHP2))*(THTP2-FLOAT(ITHP2))        ATCRBS   492
      THTP3=S(JAC,8,3)*2.+181.                                                  ATCRBS   493
      ITHP3=THTP3                                                               ATCRBS   494
      SR=SINEX(ITHP3)+(SINEX(ITHP3+1)-SINEX(ITHP3))*(THTP3-FLOAT(ITHP3))        ATCRBS   495
      CR=COSEX(ITHP3)+(COSEX(ITHP3+1)-COSEX(ITHP3))*(THTP3-FLOAT(ITHP3))        ATCRBS   496
      ARG1=-CH*SS(1)+SH*SS(2)                                                   ATCRBS   497
      ARG2=-SH*SS(1)-CH*SS(2)                                                   ATCRBS   498
      E=CR*ARG1+SR*(SP*ARG2+CP*SS(3))                                           ATCRBS   499
      F=-CP*(SH*SS(1)+CH*SS(2))-SP*SS(3)                                        ATCRBS   500
      G=SR*ARG1-CR*(SP*ARG2+CP*SS(3))                                           ATCRBS   501
      Y1=F                                                                      ATCRBS   502
      X1=E                                                                      ATCRBS   503
      IF(X1.EQ.0.)X1=1.E-200                                                    ATCRBS   504
      AT1=Y1/X1                                                                 ATCRBS   505
      AT=ABS(AT1)                                                               ATCRBS   506
      IF(AT.LT.7.0)GO TO 1664                                                   ATCRBS   507
      IF(AT.LT.110.0)GO TO 1660                                                 ATCRBS   508
      IF(AT.LT.2000.0)GO TO 1661                                                ATCRBS   509
      IF(AT.LT.82000.0)GO TO 1662                                               ATCRBS   510
      ATIP=90.                                                                  ATCRBS   511
      GO TO 1673                                                                ATCRBS   512
 1660 ATP=AT*10.+631.                                                           ATCRBS   513
      GO TO 1668                                                                ATCRBS   514
 1661 ATP=AT*.1+1720.                                                           ATCRBS   515
      GO TO 1668                                                                ATCRBS   516
 1662 ATP=AT*.001+1918.                                                         ATCRBS   517
      GO TO 1668                                                                ATCRBS   518
 1664 ATP=AT*100.+1.                                                            ATCRBS   519
 1668 IAT=ATP                                                                   ATCRBS   520
      ATIP=TBLATN(IAT)+(TBLATN(IAT+1)-TBLATN(IAT))*(ATP-FLOAT(IAT))             ATCRBS   521
 1673 IF(AT1.LT.0.)GO TO 1670                                                   ATCRBS   522
      IF(X1.LT.0.)ATIP=ATIP-180.                                                ATCRBS   523
      GO TO 1675                                                                ATCRBS   524
 1670 IF(X1.LT.0.)ATIP=ATIP-180.                                                ATCRBS   525
      ATIP=-ATIP                                                                ATCRBS   526
 1675 AZ=90.-ATIP                                                               ATCRBS   527
      Y1=G                                                                      ATCRBS   528
      X1=SQRT(E*E+F*F)                                                          ATCRBS   529
      IF(X1.EQ.0.)X1=1.E-200                                                    ATCRBS   530
      AT1=Y1/X1                                                                 ATCRBS   531
      AT=ABS(AT1)                                                               ATCRBS   532
      IF(AT.LT.7.0)GO TO 1684                                                   ATCRBS   533
      IF(AT.LT.110.0)GO TO 1680                                                 ATCRBS   534
      IF(AT.LT.2000.0)GO TO 1681                                                ATCRBS   535
      IF(AT.LT.82000.0)GO TO 1682                                               ATCRBS   536
      ATIP=90.                                                                  ATCRBS   537
      GO TO 1693                                                                ATCRBS   538
 1680 ATP=AT*10.+631.
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)


```
      GO TO 1688                                                        ATCRBS    539
 1681 ATP=AT*.1+1720.                                                   ATCRBS    540
      GO TO 1688                                                        ATCRBS    541
 1682 ATP=AT*.001*1918.                                                 ATCRBS    542
      GO TO 1688                                                        ATCRBS    543
 1684 ATP=AT*100.+1.                                                    ATCRBS    544
 1688 IAT=ATP                                                           ATCRBS    545
      ATIP=TBLATN(IAT)+(TBLATN(IAT+1)-TBLATN(IAT))*(ATP-FLOAT(IAT))     ATCRBS    546
 1693 IF(ATI.LT.0.)GO TO 1691                                           ATCRBS    547
      IF(ATI.LT.0.)ATIP=ATIP-180.                                       ATCRBS    548
      GO TO 1690                                                        ATCRBS    549
 1691 IF(ATI.LT.0.)ATIP=ATIP+180.                                       ATCRBS    550
      ATIP=-ATIP                                                        ATCRBS    551
 1690 EL=ATIP                                                           ATCRBS    552
  505 IF(IAABYP.EQ.1) GO TO 401                                         DABS       54
      IF(AZ.GT.180.) GO TO 502                                          ATCRBS    554
  507 IF (AZ.LT.-180.) GO TO 506                                        ATCRBS    555
  501 AAZ=ABS(AZ)                                                       ATCRBS    556
      IF ((AAZ.GE.158.).AND.(AAZ.LE.178.).AND.(EL.GE.-50.).AND.(EL.LE.3. ATCRBS    557
     1)) GO TO 535                                                      ATCRBS    558
      IF (EL.LE.-10.) GO TO 503                                         ATCRBS    559
      IF ((AAZ.LE.52.).AND.(EL.GE.0.).AND.(EL.LE.23.)) GO TO 535        ATCRBS    560
      IF ((AAZ.GT.117.6).AND.(EL.LE.15.)) GO TO 520                     ATCRBS    561
  503 DO 530 I=2,11                                                     ATCRBS    562
      IF (EL.GE.EAAC(I)) GO TO 531                                      ATCRBS    563
  530 CONTINUE                                                          ATCRBS    564
      WRITE(6,504)                                                      ATCRBS    565
  504 FORMAT (26H SOMETHING WRONG IN ANTAC.  )                          ATCRBS    566
      STOP                                                              ATCRBS    567
  531 UPPOWR(INO,JAC,1)=UPPOWR(INO,JAC,1)+EPAC(I-1)+(EL-EAAC(I-1))/     ATCRBS    568
     1(EAAC(I)-EAAC(I-1))*(EPAC(I)-EPAC(I-1))                           ATCRBS    569
      GO TO 401                                                         ATCRBS    570
  520 UPPOWR(INO,JAC,1)=UPPOWR(INO,JAC,1)-10.                           ATCRBS    571
      GO TO 401                                                         ATCRBS    572
  535 UPPOWR(INO,JAC,1)=UPPOWR(INO,JAC,1)-20.                           ATCRBS    573
      GO TO 401                                                         ATCRBS    574
  502 AZ=AZ-360.                                                        ATCRBS    575
      GO TO 505                                                         ATCRBS    576
  506 AZ=AZ+360.                                                        ATCRBS    577
      GO TO 507                                                         ATCRBS    578
  401 UPPOWR(INO,JAC,2)=UPPOWR(INO,JAC,1)+A(INO,15)                     ATCRBS    579
      IF (ELWRTA.LT.HORANG(INO)) GO TO 710                              ATCRBS    580
  709 ELD2P=ELWRTA/2.+45.                                               ATCRBS    581
      IEL=ELD2P                                                         ATCRBS    582
      UPPOWR(INO,JAC,1)=UPPOWR(INO,JAC,1)+EPIRV(IEL)+(EPIRV(IEL+1)-EPIRV ATCRBS    583
     1(IEL))*(ELD2P-FLOAT(IEL))                                         ATCRBS    584
      ELP91=ELWRTA+91.                                                  ATCRBS    585
      IEL=ELP91                                                         ATCRBS    586
      UPPOWR(INO,JAC,2)=UPPOWR(INO,JAC,2)+EPSLS(IEL)+(EPSLS(IEL+1)-     ATCRBS    587
     1EPSLS(IEL))*(ELP91-FLOAT(IEL))                                    ATCRBS    588
      GO TO 320                                                         ATCRBS    589
  710 IF ((PHOPTM(INO,JAC)*C).GT.(SQRT((A(INO,13))**2-REARTH(INO)**2))) ATCRBS    590
     1GO TO 807                                                         ATCRBS    591
      GO TO 709                                                         ATCRBS    592
  807 UPPOWR(INO,JAC,2)=-1.E+27                                         ATCRBS    593
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.

      UPPOWR(INO,JAC,1)=-1.E+25                                          ATCRBS   594
  320 CONTINUE                                                           ATCRBS   595
  322 CONTINUE                                                           ATCRBS   596
    9 TINTNW(1,1)=TIME                                                   ATCRBS   597
      IF (ILACE(1)-12) 922,923,926                                       ATCRBS   598
  923 ILACE(1)=1                                                         ATCRBS   599
      P3(1,1)=P3IN(1,1)                                                  ATCRBS   600
      GO TO 926                                                          ATCRBS   601
  922 ILACE(1)=ILACE(1)+1                                                ATCRBS   602
      IL=ILACE(1)                                                        ATCRBS   603
      P3(1,1)=P3IN(1,IL)                                                 ATCRBS   604
  926 IF (INTS.LE.1) GO TO 904                                           ATCRBS   605
      DO 901 I=2,INTS                                                    ATCRBS   606
      TINTNW(I,1)=-10000.                                                ATCRBS   607
      TINTNW(I,2)=-10000.                                                ATCRBS   608
      IF (TLASTI(I).GE.TNEXT) GO TO 901                                  ATCRBS   609
      TINTNW(I,1)=TLASTI(I)                                              ATCRBS   610
      IF (ILACE(I)-12) 902,903,906                                       ATCRBS   611
  903 ILACE(I)=1                                                         ATCRBS   612
      P3(I,1)=P3IN(I,1)                                                  ATCRBS   613
      GO TO 906                                                          ATCRBS   614
  902 ILACE(I)=ILACE(I)+1                                                ATCRBS   615
      IL=ILACE(I)                                                        ATCRBS   616
      P3(I,1)=P3IN(I,IL)                                                 ATCRBS   617
  906 TLASTI(I)=TLASTI(I)+PRP(I)                                         ATCRBS   618
      IF (TLASTI(I).GE.TNEXT) GO TO 901                                  ATCRBS   619
      TINTNW(I,2)=TLASTI(I)                                              ATCRBS   620
      IF (ILACE(I)-12) 912,913,916                                       ATCRBS   621
  913 ILACE(I)=1                                                         ATCRBS   622
      P3(I,2)=P3IN(I,1)                                                  ATCRBS   623
      GO TO 916                                                          ATCRBS   624
  912 ILACE(I)=ILACE(I)+1                                                ATCRBS   625
      IL=ILACE(I)                                                        ATCRBS   626
      P3(I,2)=P3IN(I,IL)                                                 ATCRBS   627
  916 TLASTI(I)=TLASTI(I)+PRP(I)                                         ATCRBS   628
  901 CONTINUE                                                           ATCRBS   629
  904 TRANP3=TIME                                                        ATCRBS   630
      IL=ILACE(1)                                                        ATCRBS   631
      IF (IL.GT.12) IL=1                                                 ATCRBS   632
      DO 7 JAC=1,NACRFT                                                  ATCRBS   633
      NPJLS=0                                                            ATCRBS   634
      NPNEJ=0                                                            ATCRBS   635
      IF (NPNEX(JAC).EQ.0) GO TO 1002                                    ATCRBS   636
      NPNEJ=NPNEX(JAC)                                                   ATCRBS   637
      DO 1001 I=1,NPNEJ                                                  ATCRBS   638
      TXPNDR(I)=TAPNEX(JAC,I)                                            ATCRBS   639
 1001 PXPNDR(I)=PAPNEX(JAC,I)                                            ATCRBS   640
      NPJLS=NPNEJ                                                        ATCRBS   641
      NPNEX(JAC)=0                                                       ATCRBS   642
 1002 AZWRTA=UPPOWR(1,JAC,3)=A(1,3)                                      ATCRBS   643
      P3POW=UPPOWR(1,JAC,1)                                              ATCRBS   644
      IF (AZWRTA.LT.0.) AZWRTA=AZWRTA+360.                               ATCRBS   645
      AZ3P1=AZWRTA+1.                                                    ATCRBS   646
      IAZ=AZ3P1                                                          ATCRBS   647
      P3POW=P3POW+AP(IAZ)+(AP(IAZ+1)-AP(IAZ))*(AZ3P1-FLOAT(IAZ))         ATCRBS   648
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                        CDC 6600 FTN V3.0-P355 OPT=1   12/07/73   11.14.19.
      DWNPOW=P3POW                                                          ATCRBS    649
      P1POW=P3POW                                                           ATCRBS    650
      P2POW=OPPOWR(1,JAC,2)                                                 ATCRBS    651
      DWNPOW=P2POW                                                          ATCRBS    652
      IF (IISLS(1).GT.0) GO TO 1075                                         ATCRBS    653
      IF (P2POW.GE.TSNSMX(JAC)) GO TO 1070                                  ATCRBS    654
1076  IF (P1POW.LT.TSNSMX(JAC)) GO TO 1004                                  ATCRBS    655
1081  TP3=TIME+PROPTM(1,JAC)                                                ATCRBS    656
      NPULS=NPULS+2                                                         ATCRBS    657
      TXPNDR(NPULS-1)=TP3-P3(1,1)                                           ATCRBS    658
      PXPNDR(NPULS-1)=P1POW                                                 ATCRBS    659
      TXPNDR(NPULS)=TP3                                                     ATCRBS    660
      PXPNDR(NPULS)=P3POW                                                   ATCRBS    661
      GO TO 1004                                                            ATCRBS    662
1070  IF (P1POW.LT.TSNSMX(JAC)) GO TO 1080                                  ATCRBS    663
1082  TP3=TIME+PROPTM(1,JAC)                                                ATCRBS    664
      NPULS=NPULS+3                                                         ATCRBS    665
      TXPNDR(NPULS-2)=TP3-P3(1,1)                                           ATCRBS    666
      PXPNDR(NPULS-2)=P1POW                                                 ATCRBS    667
      TXPNDR(NPULS-1)=TXPNDR(NPULS-2)+2.E-06                                ATCRBS    668
      PXPNDR(NPULS-1)=P2POW                                                 ATCRBS    669
      TXPNDR(NPULS)=TP3                                                     ATCRBS    670
      PXPNDR(NPULS)=P3POW                                                   ATCRBS    671
      GO TO 1004                                                            ATCRBS    672
1075  IF (P2POW.LT.-100.) GO TO 1076                                        ATCRBS    673
      IF (P1POW.LT.-100.) GO TO 1077                                        ATCRBS    674
      XA= 10.*P3POW+103I.                                                   ATCRBS    675
      XB= 10.*(P2POW-3.)+1031.                                              ATCRBS    676
      IA= XA                                                                ATCRBS    677
      IB= XB                                                                ATCRBS    678
      P1POW= 10.*ALOG10(TENTOX(IA)+(XA-FLOAT(IA))*(TENTOX(IA+1)-            ATCRBS    679
     1TENTOX(IA))+TENTOX(IB)+(XB-FLOAT(IB))*(TENTOX(IB+1)-TENTOX(IB)))      ATCRBS    680
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1078                                  ATCRBS    681
      IF (P3POW.LT.TSNSMX(JAC)) GO TO 1079                                  ATCRBS    682
      IF (P2POW.LT.TSNSMX(JAC)) GO TO 1081                                  ATCRBS    683
      GO TO 1082                                                            ATCRBS    684
1077  IF (P2POW.LT.TSNSMX(JAC)) GO TO 1004                                  ATCRBS    685
      P1POW=P2POW-3.                                                        ATCRBS    686
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1080                                  ATCRBS    687
1083  NPULS=NPULS+2                                                         ATCRBS    688
      TXPNDR(NPULS-1)=TIME+PROPTM(1,JAC)-P3(1,1)                            ATCRBS    689
      PXPNDR(NPULS-1)=P1POW                                                 ATCRBS    690
      TXPNDR(NPULS)=TXPNDR(NPULS-1)+2.E-06                                  ATCRBS    691
      PXPNDR(NPULS)=P2POW                                                   ATCRBS    692
      GO TO 1004                                                            ATCRBS    693
1079  IF (P2POW.GE.TSNSMX(JAC)) GO TO 1083                                  ATCRBS    694
      NPULS=NPULS+1                                                         ATCRBS    695
      TXPNDR(NPULS)=TIME+PROPTM(1,JAC)-P3(1,1)                              ATCRBS    696
      PXPNDR(NPULS)=P1POW                                                   ATCRBS    697
      GO TO 1004                                                            ATCRBS    698
1078  IF (P2POW.LT.TSNSMX(JAC)) GO TO 1004                                  ATCRBS    699
1080  NPULS=NPULS+1                                                         ATCRBS    700
      TXPNDR(NPULS)=TIME+PROPTM(1,JAC)-P3(1,1)+2.E-06                       ATCRBS    701
      PXPNDR(NPULS)=P2POW                                                   ATCRBS    702
1004  IF (INTS.LE.1) GO TO 1005                                             ATCRBS    703
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                        CDC 6600 FTN V3.0-P355 OPT=1   12/07/73  17.14.19.
      DO 1003 I=2,INTS                                                      ATCRBS   704
      IF (TINTNW(I,1).LT.0.) GO TO 1003                                     ATCRBS   705
      P3POW=UPPOWR(I,JAC,1)                                                 ATCRBS   706
      P2POW=UPPOWR(I,JAC,2)                                                 ATCRBS   707
      IF (IISLS(I).GT.0) GO TO 1096                                         ATCRBS   708
      IF (P3POW.GE.TSNSMX(JAC)) GO TO 1090                                  ATCRBS   709
1057  IF (P2POW.GE.TSNSMX(JAC)) GO TO 1091                                  ATCRBS   710
      GO TO 1003                                                            ATCRBS   711
1090  AZWRTA=UPPOWR(I,JAC,3)-A(I,3)                                         ATCRBS   712
      IF (AZWRTA.LT.0.) AZWRTA=AZWRTA+360.                                  ATCRBS   713
      AZ3P1=AZWRTA+1.                                                       ATCRBS   714
      IAZ=AZ3P1                                                             ATCRBS   715
      P3POW=P3POW+AP(IAZ)+(AP(IAZ+1)-AP(IAZ))*(AZ3P1-FLOAT(IAZ))            ATCRBS   716
      P1POW=P3POW                                                           ATCRBS   717
      IF (P2POW.GE.TSNSMX(JAC)) GO TO 1030                                  ATCRBS   718
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1003                                  ATCRBS   719
1096  TP3=TINTNW(I,1)+PROPTM(I,JAC)                                         ATCRBS   720
      IF (TINTNW(I,2).GE.0.) GO TO 1031                                     ATCRBS   721
      IF (TP3.GE.TNEX25) GO TO 1032                                         ATCRBS   722
      NPULS=NPULS+2                                                         ATCRBS   723
      TXPNDR(NPULS-1)=TP3-P3(I,1)                                           ATCRBS   724
      PXPNDR(NPULS-1)=P1POW                                                 ATCRBS   725
      TXPNDR(NPULS)=TP3                                                     ATCRBS   726
      PXPNDR(NPULS)=P3POW                                                   ATCRBS   727
      GO TO 1003                                                            ATCRBS   728
1032  TP1=TP3-P3(I,1)                                                       ATCRBS   729
      IF (TP1.GE.TNEX25) GO TO 1033                                         ATCRBS   730
      NPULS=NPULS+1                                                         ATCRBS   731
      TXPNDR(NPULS)=TP1                                                     ATCRBS   732
      PXPNDR(NPULS)=P1POW                                                   ATCRBS   733
      NPNEX(JAC)=NPNEX(JAC)+1                                               ATCRBS   734
      NPNEJ=NPNEX(JAC)                                                      ATCRBS   735
      TXPNEX(JAC,NPNEJ)=TP3                                                 ATCRBS   736
      PXPNEX(JAC,NPNEJ)=P3POW                                               ATCRBS   737
      GO TO 1003                                                            ATCRBS   738
1033  NPNEX(JAC)=NPNEX(JAC)+2                                               ATCRBS   739
      NPNEJ=NPNEX(JAC)                                                      ATCRBS   740
      TXPNEX(JAC,NPNEJ-1)=TP1                                               ATCRBS   741
      PXPNEX(JAC,NPNEJ-1)=P1POW                                             ATCRBS   742
      TXPNEX(JAC,NPNEJ)=TP3                                                 ATCRBS   743
      PXPNEX(JAC,NPNEJ)=P3POW                                               ATCRBS   744
      GO TO 1003                                                            ATCRBS   745
1031  IF (TP3.GE.TNEX25) GO TO 1034                                         ATCRBS   746
      TP32=TINTNW(I,2)+PROPTM(I,JAC)                                        ATCRBS   747
      IF (TP32.GE.TNEX25) GO TO 1035                                        ATCRBS   748
      NPULS=NPULS+4                                                         ATCRBS   749
      TXPNDR(NPULS-3)=TP3-P3(I,1)                                           ATCRBS   750
      PXPNDR(NPULS-3)=P1POW                                                 ATCRBS   751
      TXPNDR(NPULS-2)=TP3                                                   ATCRBS   752
      PXPNDR(NPULS-2)=P3POW                                                 ATCRBS   753
      TXPNDR(NPULS-1)=TP32-P3(I,2)                                          ATCRBS   754
      PXPNDR(NPULS-1)=P1POW                                                 ATCRBS   755
      TXPNDR(NPULS)=TP32                                                    ATCRBS   756
      PXPNDR(NPULS)=P3POW                                                   ATCRBS   757
      GO TO 1003                                                            ATCRBS   758
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  11.14.19.

1035  TP12=TP32-P3(I,2)                                                ATCRBS   759
      IF (TP12.GE.INEX25) GO TO 1036                                   ATCRBS   760
      NPULS=NPULS+3                                                    ATCRBS   761
      TXPNDR(NPULS-2)=TP3-P3(I,1)                                      ATCRBS   762
      PXPNDR(NPULS-2)=P1POW                                            ATCRBS   763
      TXPNDR(NPULS-1)=TP3                                              ATCRBS   764
      PXPNDR(NPULS-1)=P3POW                                            ATCRBS   765
      TXPNDR(NPULS)=TP12                                               ATCRBS   766
      PXPNDR(NPULS)=P1POW                                              ATCRBS   767
      NPNEX(JAC)=NPNEX(JAC)+1                                          ATCRBS   768
      NPNEJ=NPNEX(JAC)                                                 ATCRBS   769
      TXPNEX(JAC,NPNEJ)=TP32                                           ATCRBS   770
      PXPNEX(JAC,NPNEJ)=P3POW                                          ATCRBS   771
      GO TO 1003                                                       ATCRBS   772
1036  NPULS=NPULS+2                                                    ATCRBS   773
      TXPNDR(NPULS-1)=TP3-P3(I,1)                                      ATCRBS   774
      PXPNDR(NPULS-1)=P1POW                                            ATCRBS   775
      TXPNDR(NPULS)=TP3                                                ATCRBS   776
      PXPNDR(NPULS)=P3POW                                              ATCRBS   777
      NPNEX(JAC)=NPNEX(JAC)+2                                          ATCRBS   778
      NPNEJ=NPNEX(JAC)                                                 ATCRBS   779
      TXPNEX(JAC,NPNEJ-1)=TP12                                         ATCRBS   780
      PXPNEX(JAC,NPNEJ-1)=P1POW                                        ATCRBS   781
      TXPNEX(JAC,NPNEJ)=TP32                                           ATCRBS   782
      PXPNEX(JAC,NPNEJ)=P3POW                                          ATCRBS   783
      GO TO 1003                                                       ATCRBS   784
1034  TP1=TP3-P3(I,1)                                                  ATCRBS   785
      IF (TP1.GE.INEX25) GO TO 1037                                    ATCRBS   786
      NPULS=NPULS+1                                                    ATCRBS   787
      TXPNDR(NPULS)=TP1                                                ATCRBS   788
      PXPNDR(NPULS)=P1POW                                              ATCRBS   789
      NPNEX(JAC)=NPNEX(JAC)+3                                          ATCRBS   790
      NPNEJ=NPNEX(JAC)                                                 ATCRBS   791
      TXPNEX(JAC,NPNEJ-2)=TP3                                          ATCRBS   792
      PXPNEX(JAC,NPNEJ-2)=P3POW                                        ATCRBS   793
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                      ATCRBS   794
      PXPNEX(JAC,NPNEJ)=P3POW                                          ATCRBS   795
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ)-P3(I,2)                    ATCRBS   796
      PXPNEX(JAC,NPNEJ-1)=P1POW                                        ATCRBS   797
      GO TO 1003                                                       ATCRBS   798
1037  NPNEX(JAC)=NPNEX(JAC)+4                                          ATCRBS   799
      NPNEJ=NPNEX(JAC)                                                 ATCRBS   800
      TXPNEX(JAC,NPNEJ-3)=TP1                                          ATCRBS   801
      PXPNEX(JAC,NPNEJ-3)=P1POW                                        ATCRBS   802
      TXPNEX(JAC,NPNEJ-2)=TP3                                          ATCRBS   803
      PXPNEX(JAC,NPNEJ-2)=P3POW                                        ATCRBS   804
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                      ATCRBS   805
      PXPNEX(JAC,NPNEJ)=P3POW                                          ATCRBS   806
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ)-P3(I,2)                    ATCRBS   807
      PXPNEX(JAC,NPNEJ-1)=P1POW                                        ATCRBS   808
      GO TO 1003                                                       ATCRBS   809
1030  IF (P1POW.GE.TSNSMX(JAC)) GO TO 1040                             ATCRBS   810
1091  TP2=TINTNW(I,1)+PROPTM(I,JAC)-P3(I,1)+2.E-06                     ATCRBS   811
      IF (TINTNW(I,2).GE.0.) GO TO 1041                                ATCRBS   812
      IF (TP2.GE.INEX25) GO TO 1042                                    ATCRBS   813
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)


```
      NPULS=NPULS+1                                                     ATCRBS   814
      TXPNDR(NPULS)=TP2                                                 ATCRBS   815
      PXPNDR(NPULS)=P2POW                                               ATCRBS   816
      GO TO 1003                                                        ATCRBS   817
 1042 NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS   818
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   819
      TXPNEX(JAC,NPNEJ)=TP2                                             ATCRBS   820
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS   821
      GO TO 1003                                                        ATCRBS   822
 1041 IF (TP2.GE.INEX25) GO TO 1043                                     ATCRBS   823
      TP22=TININW(I,2)+PROPTM(I,JAC)-P3(I,2)+2.E-06                     ATCRBS   824
      IF (TP22.GE.INEX25) GO TO 1044                                    ATCRBS   825
      NPULS=NPULS+2                                                     ATCRBS   826
      TXPNDR(NPULS-1)=TP2                                               ATCRBS   827
      PXPNDR(NPULS-1)=P2POW                                             ATCRBS   828
      TXPNDR(NPULS)=TP22                                                ATCRBS   829
      PXPNDR(NPULS)=P2POW                                               ATCRBS   830
      GO TO 1003                                                        ATCRBS   831
 1044 NPULS=NPULS+1                                                     ATCRBS   832
      TXPNDR(NPULS)=TP2                                                 ATCRBS   833
      PXPNDR(NPULS)=P2POW                                               ATCRBS   834
      NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS   835
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   836
      TXPNEX(JAC,NPNEJ)=TP22                                            ATCRBS   837
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS   838
      GO TO 1003                                                        ATCRBS   839
 1043 NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS   840
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   841
      TXPNEX(JAC,NPNEJ-1)=TP2                                           ATCRBS   842
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   843
      TXPNEX(JAC,NPNEJ)=TP22                                            ATCRBS   844
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS   845
      GO TO 1003                                                        ATCRBS   846
 1040 TP3=TININW(I,1)+PROPTM(I,JAC)                                     ATCRBS   847
      IF (TININW(I,2).GE.0.) GO TO 1045                                 ATCRBS   848
      IF (TP3.GE.INEX25) GO TO 1046                                     ATCRBS   849
      NPULS=NPULS+3                                                     ATCRBS   850
      TXPNDR(NPULS-2)=TP3-P3(I,1)                                       ATCRBS   851
      PXPNDR(NPULS-2)=P1POW                                             ATCRBS   852
      TXPNDR(NPULS-1)=TXPNDR(NPULS-2)+2.E-06                            ATCRBS   853
      PXPNDR(NPULS-1)=P2POW                                             ATCRBS   854
      TXPNDR(NPULS)=TP3                                                 ATCRBS   855
      PXPNDR(NPULS)=P3POW                                               ATCRBS   856
      GO TO 1003                                                        ATCRBS   857
 1046 TP1=TP3-P3(I,1)                                                   ATCRBS   858
      IF (TP1.GE.INEX25) GO TO 1047                                     ATCRBS   859
      TP2=TP1+2.E-06                                                    ATCRBS   860
      IF (TP2.GE.INEX25) GO TO 1048                                     ATCRBS   861
      NPULS=NPULS+2                                                     ATCRBS   862
      TXPNDR(NPULS-1)=TP1                                               ATCRBS   863
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   864
      TXPNDR(NPULS)=TP2                                                 ATCRBS   865
      PXPNDR(NPULS)=P2POW                                               ATCRBS   866
      NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS   867
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   868
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  11.14.19.
      TXPNEX(JAC,NPNEJ)=TP3                                          ATCRBS   869
      PXPNEX(JAC,NPNEJ)=P3POW                                        ATCRBS   870
      GO TO 1003                                                     ATCRBS   871
 1048 NPULS=NPULS+1                                                  ATCRBS   872
      TXPNDR(NPULS)=TP1                                              ATCRBS   873
      PXPNDR(NPULS)=P1POW                                            ATCRBS   874
      NPNEX(JAC)=NPNEX(JAC)+2                                        ATCRBS   875
      NPNEJ=NPNEX(JAC)                                               ATCRBS   876
      TXPNEX(JAC,NPNEJ-1)=TP2                                        ATCRBS   877
      PXPNEX(JAC,NPNEJ-1)=P2POW                                      ATCRBS   878
      TXPNEX(JAC,NPNEJ)=TP3                                          ATCRBS   879
      PXPNEX(JAC,NPNEJ)=P3POW                                        ATCRBS   880
      GO TO 1003                                                     ATCRBS   881
 1047 NPNEX(JAC)=NPNEX(JAC)+3                                        ATCRBS   882
      NPNEJ=NPNEX(JAC)                                               ATCRBS   883
      TXPNEX(JAC,NPNEJ-2)=TP1                                        ATCRBS   884
      PXPNEX(JAC,NPNEJ-2)=P1POW                                      ATCRBS   885
      TXPNEX(JAC,NPNEJ-1)=TP1+2.E-06                                 ATCRBS   886
      PXPNEX(JAC,NPNEJ-1)=P2POW                                      ATCRBS   887
      TXPNEX(JAC,NPNEJ)=TP3                                          ATCRBS   888
      PXPNEX(JAC,NPNEJ)=P3POW                                        ATCRBS   889
      GO TO 1003                                                     ATCRBS   890
 1045 IF (TP3.GE.TNEX25) GO TO 1049                                  ATCRBS   891
      TP32=TINTNW(I,2)+PHOPTM(I,JAC)                                 ATCRBS   892
      IF (TP32.GE.TNEX25) GO TO 1050                                 ATCRBS   893
      NPULS=NPULS+6                                                  ATCRBS   894
      TXPNDR(NPULS-5)=TP3-P3(I,1)                                    ATCRBS   895
      PXPNDR(NPULS-5)=P1POW                                          ATCRBS   896
      TXPNDR(NPULS-4)=TXPNDR(NPULS-5)+2.E-06                         ATCRBS   897
      PXPNDR(NPULS-4)=P2POW                                          ATCRBS   898
      TXPNDR(NPULS-3)=TP3                                            ATCRBS   899
      PXPNDR(NPULS-3)=P3POW                                          ATCRBS   900
      TXPNDR(NPULS-2)=TP32-P3(I,2)                                   ATCRBS   901
      PXPNDR(NPULS-2)=P1POW                                          ATCRBS   902
      TXPNDR(NPULS-1)=TXPNDR(NPULS-2)+2.E-06                         ATCRBS   903
      PXPNDR(NPULS-1)=P2POW                                          ATCRBS   904
      TXPNDR(NPULS)=TP32                                             ATCRBS   905
      PXPNDR(NPULS)=P3POW                                            ATCRBS   906
      GO TO 1003                                                     ATCRBS   907
 1050 TP12=TP32-P3(I,2)                                              ATCRBS   908
      IF (TP12.GE.TNEX25) GO TO 1051                                 ATCRBS   909
      TP22=TP12+2.E-06                                               ATCRBS   910
      IF (TP22.GE.TNEX25) GO TO 1052                                 ATCRBS   911
      NPULS=NPULS+6                                                  ATCRBS   912
      TXPNDR(NPULS-4)=TP3-P3(I,1)                                    ATCRBS   913
      PXPNDR(NPULS-4)=P1POW                                          ATCRBS   914
      TXPNDR(NPULS-3)=TXPNDR(NPULS-4)+2.E-06                         ATCRBS   915
      PXPNDR(NPULS-3)=P2POW                                          ATCRBS   916
      TXPNDR(NPULS-2)=TP3                                            ATCRBS   917
      PXPNDR(NPULS-2)=P3POW                                          ATCRBS   918
      TXPNDR(NPULS-1)=TP12                                           ATCRBS   919
      PXPNDR(NPULS-1)=P1POW                                          ATCRBS   920
      TXPNDR(NPULS)=TP22                                             ATCRBS   921
      PXPNDR(NPULS)=P2POW                                            ATCRBS   922
      NPNEX(JAC)=NPNEX(JAC)+1                                        ATCRBS   923
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TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   924
      TXPNEX(JAC,NPNEJ)=TP32                                            ATCRBS   925
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   926
      GO TO 1003                                                        ATCRBS   927
 1052 NPULS=NPULS+4                                                     ATCRBS   928
      TXPNDR(NPULS-3)=TP3-P3(I,1)                                       ATCRBS   929
      PXPNDR(NPULS-3)=P1POW                                             ATCRBS   930
      TXPNDR(NPULS-2)=TXPNDR(NPULS-3)+2.E-06                            ATCRBS   931
      PXPNDR(NPULS-2)=P2POW                                             ATCRBS   932
      TXPNDR(NPULS-1)=TP3                                               ATCRBS   933
      PXPNDR(NPULS-1)=P3POW                                             ATCRBS   934
      TXPNDR(NPULS)=TP12                                                ATCRBS   935
      PXPNDR(NPULS)=P1POW                                               ATCRBS   936
      NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS   937
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   938
      TXPNEX(JAC,NPNEJ-1)=TP22                                          ATCRBS   939
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   940
      TXPNEX(JAC,NPNEJ)=TP32                                            ATCRBS   941
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   942
      GO TO 1003                                                        ATCRBS   943
 1051 NPULS=NPULS+3                                                     ATCRBS   944
      TXPNDR(NPULS-2)=TP3-P3(I,1)                                       ATCRBS   945
      PXPNDR(NPULS-2)=P1POW                                             ATCRBS   946
      TXPNDR(NPULS-1)=TXPNDR(NPULS-2)+2.E-06                            ATCRBS   947
      PXPNDR(NPULS-1)=P2POW                                             ATCRBS   948
      TXPNDR(NPULS)=TP3                                                 ATCRBS   949
      PXPNDR(NPULS)=P3POW                                               ATCRBS   950
      NPNEX(JAC)=NPNEX(JAC)+3                                           ATCRBS   951
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   952
      TXPNEX(JAC,NPNEJ-2)=TP12                                          ATCRBS   953
      PXPNEX(JAC,NPNEJ-2)=P1POW                                         ATCRBS   954
      TXPNEX(JAC,NPNEJ-1)=TP12+2.E-06                                   ATCRBS   955
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   956
      TXPNEX(JAC,NPNEJ)=TP32                                            ATCRBS   957
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   958
      GO TO 1003                                                        ATCRBS   959
 1049 TP1=TP3-P3(I,1)                                                   ATCRBS   960
      IF (TP1.GE.TNEX25) GO TO 1053                                     ATCRBS   961
      TP2=TP1+2.E-06                                                    ATCRBS   962
      IF (TP2.GE.TNEX25) GO TO 1054                                     ATCRBS   963
      NPULS=NPULS+2                                                     ATCRBS   964
      TXPNDR(NPULS-1)=TP1                                               ATCRBS   965
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   966
      TXPNDR(NPULS)=TP2                                                 ATCRBS   967
      PXPNDR(NPULS)=P2POW                                               ATCRBS   968
      NPNEX(JAC)=NPNEX(JAC)+4                                           ATCRBS   969
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   970
      TXPNEX(JAC,NPNEJ-3)=TP3                                           ATCRBS   971
      PXPNEX(JAC,NPNEJ-3)=P3POW                                         ATCRBS   972
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                       ATCRBS   973
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   974
      TXPNEX(JAC,NPNEJ-2)=TXPNEX(JAC,NPNEJ)-P3(I,2)                     ATCRBS   975
      PXPNEX(JAC,NPNEJ-2)=P1POW                                         ATCRBS   976
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ-2)+2.E-06                    ATCRBS   977
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   978
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      GO TO 1003                                                                                  ATCRBS   979
 1054 NPULS=NPULS+1                                                                               ATCRBS   980
      TXPNDR(NPULS)=TP1                                                                           ATCRBS   981
      PXPNDR(NPULS)=P1POW                                                                         ATCRBS   982
      NPNEX(JAC)=NPNEX(JAC)+5                                                                     ATCRBS   983
      NPNEJ=NPNEX(JAC)                                                                            ATCRBS   984
      TXPNEX(JAC,NPNEJ-4)=TP2                                                                     ATCRBS   985
      PXPNEX(JAC,NPNEJ-4)=P2POW                                                                   ATCRBS   986
      TXPNEX(JAC,NPNEJ-3)=TP3                                                                     ATCRBS   987
      PXPNEX(JAC,NPNEJ-3)=P3POW                                                                   ATCRBS   988
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                                                 ATCRBS   989
      PXPNEX(JAC,NPNEJ)=P3POW                                                                     ATCRBS   990
      TXPNEX(JAC,NPNEJ-2)=TXPNEX(JAC,NPNEJ)-P3(I,2)                                               ATCRBS   991
      PXPNEX(JAC,NPNEJ-2)=P1POW                                                                   ATCRBS   992
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ-2)+2.E-06                                              ATCRBS   993
      PXPNEX(JAC,NPNEJ-1)=P2POW                                                                   ATCRBS   994
      GO TO 1003                                                                                  ATCRBS   995
 1053 NPNEX(JAC)=NPNEX(JAC)+6                                                                     ATCRBS   996
      NPNEJ=NPNEX(JAC)                                                                            ATCRBS   997
      TXPNEX(JAC,NPNEJ-5)=TP1                                                                     ATCRBS   998
      PXPNEX(JAC,NPNEJ-5)=P1POW                                                                   ATCRBS   999
      TXPNEX(JAC,NPNEJ-4)=TP1+2.E-06                                                              ATCRBS  1000
      PXPNEX(JAC,NPNEJ-4)=P2POW                                                                   ATCRBS  1001
      TXPNEX(JAC,NPNEJ-3)=TP3                                                                     ATCRBS  1002
      PXPNEX(JAC,NPNEJ-3)=P3POW                                                                   ATCRBS  1003
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                                                 ATCRBS  1004
      PXPNEX(JAC,NPNEJ)=P3POW                                                                     ATCRBS  1005
      TXPNEX(JAC,NPNEJ-2)=TXPNEX(JAC,NPNEJ)-P3(I,2)                                               ATCRBS  1006
      PXPNEX(JAC,NPNEJ-2)=P1POW                                                                   ATCRBS  1007
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ-2)+2.E-06                                              ATCRBS  1008
      PXPNEX(JAC,NPNEJ-1)=P2POW                                                                   ATCRBS  1009
      GO TO 1003                                                                                  ATCRBS  1010
 1096 IF (P2POW.GE.-100.) GO TO 1097                                                              ATCRBS  1011
      IF (P3POW.LT.TSNSMX(JAC)) GO TO 1003                                                        ATCRBS  1012
      AZWRTA=UPPOWR(I,JAC,3)-A(I,3)                                                               ATCRBS  1013
      IF (AZWRTA.LT.0.) AZWRTA=AZWRTA+360.                                                        ATCRBS  1014
      AZ3P1=AZWRTA+1.                                                                             ATCRBS  1015
      IAZ=AZ3P1                                                                                   ATCRBS  1016
      P3POW=P3POW+AP(IAZ)+(AP(IAZ+1)-AP(IAZ))*(AZ3P1-FLOAT(IAZ))                                  ATCRBS  1017
      IF (P3POW.LT.TSNSMX(JAC)) GO TO 1003                                                        ATCRBS  1018
      P1POW=P3POW                                                                                 ATCRBS  1019
      GO TO 1098                                                                                  ATCRBS  1020
 1097 IF (P3POW.GE.-100.) GO TO 1055                                                              ATCRBS  1021
      IF (P2POW.LT.TSNSMX(JAC)) GO TO 1003                                                        ATCRBS  1022
      P1POW=P2POW-3.                                                                              ATCRBS  1023
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1091                                                        ATCRBS  1024
 1089 TP2=TINTNW(I,1)+PROPTM(I,JAC)-P3(I,1)+2.E-06                                                ATCRBS  1025
      IF (TINTNW(I,2).GE.0.) GO TO 11031                                                          ATCRBS  1026
      IF (TP2.GE.TNEX25) GO TO 11032                                                              ATCRBS  1027
      NPULS=NPULS+2                                                                               ATCRBS  1028
      TXPNDR(NPULS-1)=TP2-2.E-06                                                                  ATCRBS  1029
      PXPNDR(NPULS-1)=P1POW                                                                       ATCRBS  1030
      TXPNDR(NPULS)=TP2                                                                           ATCRBS  1031
      PXPNDR(NPULS)=P2POW                                                                         ATCRBS  1032
      GO TO 1003                                                                                  ATCRBS  1033
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.

11032 TP1=TP2-2.E-06                                                    ATCRBS  1034
      IF (TP1.GE.INEX25) GO TO 11033                                    ATCRBS  1035
      NPULS=NPULS+1                                                     ATCRBS  1036
      TXPNDR(NPULS)=TP1                                                 ATCRBS  1037
      PXPNDR(NPULS)=P1POW                                               ATCRBS  1038
      NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS  1039
      NPNEJ=NPNEX(JAC)                                                  ATCRBS  1040
      TXPNEX(JAC,NPNEJ)=TP2                                             ATCRBS  1041
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS  1042
      GO TO 1003                                                        ATCRBS  1043
11033 NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS  1044
      NPNEJ=NPNEX(JAC)                                                  ATCRBS  1045
      TXPNEX(JAC,NPNEJ-1)=TP1                                           ATCRBS  1046
      PXPNEX(JAC,NPNEJ-1)=P1POW                                         ATCRBS  1047
      TXPNEX(JAC,NPNEJ)=TP2                                             ATCRBS  1048
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS  1049
      GO TO 1003                                                        ATCRBS  1050
11031 IF (TP2.GE.INEX25) GO TO 11034                                    ATCRBS  1051
      TP22=TINTNW(I,2)+PROPTM(I,JAC)-P3(I,2)+2.E-06                     ATCRBS  1052
      IF (TP22.GE.INEX25) GO TO 11035                                   ATCRBS  1053
      NPULS=NPULS+4                                                     ATCRBS  1054
      TXPNDR(NPULS-3)=TP2-2.E-06                                        ATCRBS  1055
      PXPNDR(NPULS-3)=P1POW                                             ATCRBS  1056
      TXPNDR(NPULS-2)=TP2                                               ATCRBS  1057
      PXPNDR(NPULS-2)=P2POW                                             ATCRBS  1058
      TXPNDR(NPULS-1)=TP22-2.E-06                                       ATCRBS  1059
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS  1060
      TXPNDR(NPULS)=TP22                                                ATCRBS  1061
      PXPNDR(NPULS)=P2POW                                               ATCRBS  1062
      GO TO 1003                                                        ATCRBS  1063
11035 TP12=TP22-2.E-06                                                  ATCRBS  1064
      IF (TP12.GE.INEX25) GO TO 11036                                   ATCRBS  1065
      NPULS=NPULS+3                                                     ATCRBS  1066
      TXPNDR(NPULS-2)=TP2-2.E-06                                        ATCRBS  1067
      PXPNDR(NPULS-2)=P1POW                                             ATCRBS  1068
      TXPNDR(NPULS-1)=TP2                                               ATCRBS  1069
      PXPNDR(NPULS-1)=P2POW                                             ATCRBS  1070
      TXPNDR(NPULS)=TP12                                                ATCRBS  1071
      PXPNDR(NPULS)=P1POW                                               ATCRBS  1072
      NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS  1073
      NPNEJ=NPNEX(JAC)                                                  ATCRBS  1074
      TXPNEX(JAC,NPNEJ)=TP22                                            ATCRBS  1075
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS  1076
      GO TO 1003                                                        ATCRBS  1077
11036 NPULS=NPULS+2                                                     ATCRBS  1078
      TXPNDR(NPULS-1)=TP2-2.E-06                                        ATCRBS  1079
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS  1080
      TXPNDR(NPULS)=TP2                                                 ATCRBS  1081
      PXPNDR(NPULS)=P2POW                                               ATCRBS  1082
      NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS  1083
      NPNEJ=NPNEX(JAC)                                                  ATCRBS  1084
      TXPNEX(JAC,NPNEJ-1)=TP12                                          ATCRBS  1085
      PXPNEX(JAC,NPNEJ-1)=P1POW                                         ATCRBS  1086
      TXPNEX(JAC,NPNEJ)=TP22                                            ATCRBS  1087
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS  1088
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                          CUC 6600 FTN V3.0-P355 OPT=1  12/07/73  11.14.19.
      GO TO 1003                                                                      ATCRBS  1089
11034 TP1=TP2-2.E-06                                                                  ATCRBS  1090
      IF (TP1.GE.INEX25) GO TO 11037                                                  ATCRBS  1091
      NPULS=NPULS+1                                                                   ATCRBS  1092
      TXPNDR(NPULS)=TP1                                                               ATCRBS  1093
      PXPNDR(NPULS)=P1POW                                                             ATCRBS  1094
      NPNEX(JAC)=NPNEX(JAC)+3                                                         ATCRBS  1095
      NPNEJ=NPNEX(JAC)                                                                ATCRBS  1096
      TXPNEX(JAC,NPNEJ-2)=TP2                                                         ATCRBS  1097
      PXPNEX(JAC,NPNEJ-2)=P2POW                                                       ATCRBS  1098
      TXPNEX(JAC,NPNEJ-1)=TINTNW(I,2)+PROPTM(I,JAC)-P3(I,2)                           ATCRBS  1099
      PXPNEX(JAC,NPNEJ-1)=P1POW                                                       ATCRBS  1100
      TXPNEX(JAC,NPNEJ)=TXPNEX(JAC,NPNEJ-1)+2.E-06                                    ATCRBS  1101
      PXPNEX(JAC,NPNEJ)=P2POW                                                         ATCRBS  1102
      GO TO 1003                                                                      ATCRBS  1103
11037 NPNEX(JAC)=NPNEX(JAC)+4                                                         ATCRBS  1104
      NPNEJ=NPNEX(JAC)                                                                ATCRBS  1105
      TXPNEX(JAC,NPNEJ-3)=TP1                                                         ATCRBS  1106
      PXPNEX(JAC,NPNEJ-3)=P1POW                                                       ATCRBS  1107
      TXPNEX(JAC,NPNEJ-2)=TP2                                                         ATCRBS  1108
      PXPNEX(JAC,NPNEJ-2)=P2POW                                                       ATCRBS  1109
      TXPNEX(JAC,NPNEJ-1)=TINTNW(I,2)+PROPTM(I,JAC)-P3(I,2)                           ATCRBS  1110
      PXPNEX(JAC,NPNEJ-1)=P1POW                                                       ATCRBS  1111
      TXPNEX(JAC,NPNEJ)=TXPNEX(JAC,NPNEJ-1)+2.E-06                                    ATCRBS  1112
      PXPNEX(JAC,NPNEJ)=P2POW                                                         ATCRBS  1113
      GO TO 1003                                                                      ATCRBS  1114
 1055 AZWRTA=UPPOWR(I,JAC,3)-A(I,3)                                                   ATCRBS  1115
      IF (AZWRTA.LT.0.) AZWRTA=AZWRTA+360.                                            ATCRBS  1116
      AZ3P1=AZWRTA+1.                                                                 ATCRBS  1117
      IAZ=AZ3P1                                                                       ATCRBS  1118
      P3POW=P3POW+AP(IAZ)+(AP(IAZ+1)-AP(IAZ))*(AZ3P1-FLOAT(IAZ))                      ATCRBS  1119
      IF (P3POW.LT.-100.) GO TO 1057                                                  ATCRBS  1120
      XA= 10.*P3POW+1031.                                                             ATCRBS  1121
      XB= 10.*(P2POW-3.)+1031.                                                        ATCRBS  1122
      IA= XA                                                                          ATCRBS  1123
      IB= XB                                                                          ATCRBS  1124
      P1POW= 10.*ALOG10(TENTOX(IA)+(XA-FLOAT(IA))*(TENTOX(IA+1)-                      ATCRBS  1125
     1TENTOX(IA))+TENTOX(IB)+(XB-FLOAT(IB))*(TENTOX(IB+1)-TENTOX(IB)))                ATCRBS  1126
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1057                                            ATCRBS  1127
      IF (P3POW.LT.TSNSMX(JAC)) GO TO 1069                                            ATCRBS  1128
      IF (P2POW.LT.TSNSMX(JAC)) GO TO 1098                                            ATCRBS  1129
      GO TO 1040                                                                      ATCRBS  1130
 1069 IF (P2POW.GE.TSNSMX(JAC)) GO TO 1089                                            ATCRBS  1131
      TP1=TINTNW(I,1)+PROPTM(I,JAC)-P3(I,1)                                           ATCRBS  1132
      IF (TINTNW(I,2).GE.0.) GO TO 1088                                               ATCRBS  1133
      IF (TP1.GE.INEX25) GO TO 11088                                                  ATCRBS  1134
      NPULS=NPULS+1                                                                   ATCRBS  1135
      TXPNDR(NPULS)=TP1                                                               ATCRBS  1136
      PXPNDR(NPULS)=P1POW                                                             ATCRBS  1137
      GO TO 1003                                                                      ATCRBS  1138
11088 NPNEX(JAC)=NPNEX(JAC)+1                                                         ATCRBS  1139
      NPNEJ=NPNEX(JAC)                                                                ATCRBS  1140
      TXPNEX(JAC,NPNEJ)=TP1                                                           ATCRBS  1141
      PXPNEX(JAC,NPNEJ)=P1POW                                                         ATCRBS  1142
      GO TO 1003                                                                      ATCRBS  1143
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                          CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  1(.14.19.
1088  IF (TP1.GE.TNEX25) GO TO 11089                                          ATCRBS  1144
      TP12=TINTNW(I,2)+PROPTM(I,JAC)-P3(I,2)                                  ATCRBS  1145
      IF (TP12.GE.TNEX25) GO TO 11090                                         ATCRBS  1146
      NPULS=NPULS+2                                                           ATCRBS  1147
      TXPNDR(NPULS-1)=TP1                                                     ATCRBS  1148
      PXPNDR(NPULS-1)=P1POW                                                   ATCRBS  1149
      TXPNDR(NPULS)=TP12                                                      ATCRBS  1150
      PXPNDR(NPULS)=P1POW                                                     ATCRBS  1151
      GO TO 1003                                                              ATCRBS  1152
11090 NPULS=NPULS+1                                                           ATCRBS  1153
      TXPNDR(NPULS)=TP1                                                       ATCRBS  1154
      PXPNDR(NPULS)=P1POW                                                     ATCRBS  1155
      NPNEX(JAC)=NPNEX(JAC)+1                                                 ATCRBS  1156
      NPNEJ=NPNEX(JAC)                                                        ATCRBS  1157
      TXPNEX(JAC,NPNEJ)=TP12                                                  ATCRBS  1158
      PXPNEX(JAC,NPNEJ)=P1POW                                                 ATCRBS  1159
      GO TO 1003                                                              ATCRBS  1160
11089 NPNEX(JAC)=NPNEX(JAC)+2                                                 ATCRBS  1161
      NPNEJ=NPNEX(JAC)                                                        ATCRBS  1162
      TXPNEX(JAC,NPNEJ-1)=TP1                                                 ATCRBS  1163
      PXPNEX(JAC,NPNEJ-1)=P1POW                                               ATCRBS  1164
      TXPNEX(JAC,NPNEJ)=TP12                                                  ATCRBS  1165
      PXPNEX(JAC,NPNEJ)=P1POW                                                 ATCRBS  1166
 1003 CONTINUE                                                                ATCRBS  1167
 1005 TPOWER(JAC)=DWNPOW-AAC4PI+AIR4PI-A(1,5)+ERPPTT(JAC)                     ATCRBS  1168
      IF(KRSLS.GT.0)TPOWOM(JAC)=DWNPOM-AAC4PI+AOM4PI-(A(1,5)+A(1,15))+        ATCRBS  1169
     1ERPPTT(JAC)                                                             ATCRBS  1170
      IF ((NPULS.LE.200).AND.(NPNEJ.LE.100)) GO TO 3                          ATCRBS  1171
      WRITE (6,1099)                                                          ATCRBS  1172
 1099 FORMAT (30HIDIMENSION EXCEEDED IN UPPROP.)                              ATCRBS  1173
      STOP                                                                    ATCRBS  1174
 3    IF (NPULS.LE.0) GO TO 7770                                              ATCRBS  1175
      NPM1=NPULS-1                                                            ATCRBS  1176
      DO 1202 L=1,NPM1                                                        ATCRBS  1177
      COMP=TXPNDR(L)                                                          ATCRBS  1178
      KS=0                                                                    ATCRBS  1179
      DO 1201 K=L,NPULS                                                       ATCRBS  1180
      IF (TXPNDR(K).GE.COMP) GO TO 1201                                       ATCRBS  1181
      KS=K                                                                    ATCRBS  1182
      COMP=TXPNDR(K)                                                          ATCRBS  1183
 1201 CONTINUE                                                                ATCRBS  1184
      IF (KS.EQ.0) GO TO 1202                                                 ATCRBS  1185
      TXPNDR(KS)=TXPNDR(L)                                                    ATCRBS  1186
      TXPNDR(L)=COMP                                                          ATCRBS  1187
      STORE=PXPNDR(KS)                                                        ATCRBS  1188
      PXPNDR(KS)=PXPNDR(L)                                                    ATCRBS  1189
      PXPNDR(L)=STORE                                                         ATCRBS  1190
 1202 CONTINUE                                                                ATCRBS  1191
      IF (NPULS.EQ.1) GO TO 8101                                              ATCRBS  1192
      DO 8000 KL1=1,NPM1                                                      ATCRBS  1193
      IF (PXPNDR(KL1).LT.TSNSMX(JAC)) GO TO 8000                              ATCRBS  1194
      KL1P1=KL1+1                                                             ATCRBS  1195
      DO 8001 KL2=KL1P1,NPULS                                                 ATCRBS  1196
      IF (PXPNDR(KL2).LT.TSNSMX(JAC)) GO TO 8001                              ATCRBS  1197
      TKL21=TXPNDR(KL2)-TXPNDR(KL1)                                           ATCRBS  1198
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                        CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      IF (TKL21.GT.21.6E-06) GO TO 8000                                    ATCRBS   1199
      IF(ABS(TKL21-2.E-06).GE.0.4E-06) GO TO 8012                          DABS       55
      NP2PLS(KL2)=0                                                        DABS       56
      NP2PLS(KL1)=0                                                        DABS       57
      IF(PXPNDR(KL2).GT.(PXPNDR(KL1)-4.5)) GO TO 8010                      DABS       58
      GO TO 8001                                                           DABS       59
 8012 IF((ABS(TKL21-6.E-06).LT.0.6E-06).OR.(ABS(TKL21-19.E-06).LT.0.6E-0   DABS       60
     16)) NP2PLS(KL2)=0                                                    DABS       61
      IF((ABS(TKL21-8.E-06).GE.0.6E-06).AND.(ABS(TKL21-21.E-06).GE.0.6E-   DABS       62
     106)) GO TO 8002                                                      DABS       63
      NP2PLS(KL2)=0                                                        DABS       64
      NP2PLS(KL1)=0                                                        DABS       65
      GO TO 8014                                                           DABS       66
 8002 IF(ABS(TKL21-12.E-06).GE.1.E-12) GO TO 8001                          DABS       67
      CRRFI(JAC)=CRRFI(JAC)+1.                                             DABS       68
      NP2PLS(KL2)=0                                                        DABS       69
      NP2PLS(KL1)=0                                                        DABS       70
      IF(ABS(UPPUMR(1,JAC,3)-A(1,3)).GE.1.25) GO TO 8014                   DABS       71
      CRRCI(JAC)=CRRCI(JAC)+1.                                             DABS       72
 8014 KNTIN2(JAC)=KNTIN2(JAC)+1                                            DABS       73
      IF(JAC.NE.1) GO TO 8001                                              DABS       74
      IDBS=PXPNDR(KL1)+101.                                                DABS       75
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8001                          DABS       76
      IDBPIN(IDBS)=IDBPIN(IDBS)+1                                          DABS       77
 8001 CONTINUE                                                             DABS       78
      GO TO 8000                                                           DABS       79
 8010 KNTSL2(JAC)=KNTSL2(JAC)+1                                            DABS       80
      IF(JAC.NE.1) GO TO 8000                                              DABS       81
      IDBS=PXPNDR(KL2).101.                                                DABS       82
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8000                          DABS       83
      IDBPSL(IDBS)=IDBPSL(IDBS)+1                                          DABS       84
 8000 CONTINUE                                                             ATCRBS   1208
 8101 IF (PXPNDR(NPULS).LT.TSNSMX(JAC)) GO TO 1203                         ATCRBS   1209
      NPNEJ=NPNEX(JAC)                                                     ATCRBS   1210
      IF(NPNEJ.EQ.0) GO TO 8020                                            DABS       85
      DO 8003 KL2=1,NPNEJ                                                  ATCRBS   1212
      IF (PXPNEX(JAC,KL2).LT.TSNSMX(JAC)) GO TO 8003                       ATCRBS   1213
      TKL21=TAPNEA(JAC,KL2)-TAPNDR(NPULS)                                  ATCRBS   1214
      IF (TKL21.GT.21.6E-06) GO TO 8003                                    ATCRBS   1215
      IF(ABS(TKL21-2.E-06).GT.0.6E-06) GO TO 8019                          DABS       86
      NP2PLS(NPULS)=0                                                      DABS       87
      IF(PXPNEX(JAC,KL2).GT.(PXPNDR(NPULS)-4.5)) GO TO 8013                DABS       88
 8019 IF((ABS(TKL21-6.E-06).LT.0.6E-06).OR.(ABS(TKL21-19.E-06).LT.0.6E-0   DABS       89
     16)) NP2PLS(NPULS)=0                                                  DABS       90
      IF((ABS(TKL21-8.E-06).GE.0.6E-06).AND.(ABS(TKL21-21.E-06).GE.0.6E-   DABS       91
     106)) GO TO 8004                                                      DABS       92
      NP2PLS(NPULS)=0                                                      DABS       93
      GO TO 8021                                                           DABS       94
 8004 IF(ABS(TKL21-12.E-06).GE.1.E-12) GO TO 8003                          DABS       95
      CRRFI(JAC)=CRRFI(JAC)+1.                                             DABS       96
      NP2PLS(NPULS)=0                                                      DABS       97
      IF(ABS(UPPUMR(1,JAC,3)-A(1,3)).GE.1.25) GO TO 8021                   DABS       98
      CRRCI(JAC)=CRRCI(JAC)+1.                                             DABS       99
 8021 KNTIN2(JAC)=KNTIN2(JAC)+1                                            DABS      100
      IF(JAC.NE.1) GO TO 8003                                              DABS      101
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TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.

      IDBS=PXPNDR(NPULS)+101.                                          DABS     102
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8003                      DABS     103
      IDBPIN(IDBS)=IDBPIN(IDBS)+1                                      DABS     104
 8003 CONTINUE                                                         DABS     105
      GO TO 8020                                                       DABS     106
 8013 KNTSLZ(JAC)=KNTSLZ(JAC)+1                                        DABS     107
      IF(JAC.NE.1) GO TO 8020                                          DABS     108
      IDBS=PXPNEX(JAC,KL2)*101.                                        DABS     109
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8020                      DABS     110
      IDBPSL(IDBS)=IDBPSL(IDBS)+1                                      DABS     111
 8020 DO 8022 I=1,NPULS                                                DABS     112
      IF(NP2PLS(I).NE.1) GO TO 8022                                    DABS     113
      KNTP2Z(JAC)=KNTP2Z(JAC)+NP2PLS(I)                                DABS     114
      IF(JAC.NE.1) GO TO 8022                                          DABS     115
      IDBS=PXPNDR(I)+101.                                              DABS     116
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8022                      DABS     117
      IDBP2P(IDBS)=IDBP2P(IDBS)+1                                      DABS     118
 8022 CONTINUE                                                         DABS     119
      DO 8023 I=1,100                                                  DABS     120
      NP2PLS(I)=1                                                      DABS     121
 8023 CONTINUE                                                         DABS     122
 1203 GO TO (1361,1372,1373,1374),IJFLAG(JAC)                          DABS     123
 1372 NPULS=NPULS+1                                                    ATCRBS   1225
      NP1=NPULS+1                                                      ATCRBS   1226
      NP2=NPULS+2                                                      ATCRBS   1227
      DO 1382 IJK=2,NPULS                                              ATCRBS   1228
      TXPNDR(NP2-IJK)=TXPNDR(NP1-IJK)                                  ATCRBS   1229
 1382 PXPNDR(NP2-IJK)=PXPNDR(NP1-IJK)                                  ATCRBS   1230
      TXPNDR(1)=TXPSAV(JAC)                                            ATCRBS   1231
      PXPNDR(1)=PXPSAV(JAC)                                            ATCRBS   1232
      I=1                                                              ATCRBS   1233
      J=2                                                              ATCRBS   1234
      GO TO 1323                                                       ATCRBS   1235
 1373 NPULS=NPULS+1                                                    ATCRBS   1236
      NP1=NPULS+1                                                      ATCRBS   1237
      NP2=NPULS+2                                                      ATCRBS   1238
      DO 1384  IJK=2,NPULS                                             ATCRBS   1239
      TXPNDR(NP2-IJK)=TXPNDR(NP1-IJK)                                  ATCRBS   1240
 1384 PXPNDR(NP2-IJK)=PXPNDR(NP1-IJK)                                  ATCRBS   1241
      TXPNDR(1)=TXPSAV(JAC)                                            ATCRBS   1242
      PXPNDR(1)=PXPSAV(JAC)                                            ATCRBS   1243
      J=1                                                              ATCRBS   1244
      I=2                                                              ATCRBS   1245
      GO TO 1388                                                       ATCRBS   1246
 1374 NPULS=NPULS+1                                                    ATCRBS   1247
      NP1=NPULS+1                                                      ATCRBS   1248
      NP2=NPULS+2                                                      ATCRBS   1249
      DO 1386 IJK=2,NPULS                                              ATCRBS   1250
      TXPNDR(NP2-IJK)=TXPNDR(NP1-IJK)                                  ATCRBS   1251
 1386 PXPNDR(NP2-IJK)=PXPNDR(NP1-IJK)                                  ATCRBS   1252
      TXPNDR(1)=TXPSAV(JAC)                                            ATCRBS   1253
      PXPNDR(1)=PXPSAV(JAC)                                            ATCRBS   1254
      J=1                                                              ATCRBS   1255
      I=2                                                              ATCRBS   1256
      GO TO 1389                                                       ATCRBS   1257
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TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
1361  I=1                                                                                  ATCRBS  1258
1301  CONTINUE                                                                             ATCRBS  1259
1321  IF (TDSNEC(JAC).LE.0.) GO TO 1331                                                    ATCRBS  1260
      TDSNEC(JAC)=TDESEC(JAC)-3.5E+06*(TXPNDR(I)-TTDSEC(JAC))                              ATCRBS  1261
      IF (TDSNEC(JAC).LT.0.) TDSNEC(JAC)=0.                                                ATCRBS  1262
1331  IF (TDSNRL(JAC).LE.RRLCU) GO TO 1343                                                 ATCRBS  1263
      TDSNRL(JAC)=60.*ALOG10(12./(12.-(12.-TDESRL(JAC))*EXP((TTDSRL(JAC)                   ATCRBS  1264
     1-TXPNDR(I))/ALTAUR(JAC))))                                                           ATCRBS  1265
1343  TSNSTV(JAC)=TSNSMX(JAC)+TDSNEC(JAC)+TDSNRL(JAC)                                      ATCRBS  1266
      IF (PXPNDR(I).GE.TSNSTV(JAC)) GO TO 1322                                             ATCRBS  1267
      PXPNDR(I)=-1000.                                                                     ATCRBS  1268
1310  I=I+1                                                                                ATCRBS  1269
      IF (I.GT.NPULS) GO TO 7771                                                           ATCRBS  1270
      GO TO 1301                                                                           ATCRBS  1271
1322  TDESEC(JAC)=PXPNDR(I)-DESDIF-TSNSMX(JAC)                                             ATCRBS  1272
      IF (TDESEC(JAC).LT.0.) TDESEC(JAC)=0.                                                ATCRBS  1273
      TDSNEC(JAC)=TDESEC(JAC)                                                              ATCRBS  1274
      TTDSEC(JAC)=TXPNDR(I)                                                                ATCRBS  1275
1311  J=I+1                                                                                ATCRBS  1276
1303  IF (J.GT.NPULS) GO TO 7772                                                           ATCRBS  1277
1323  IF (TDSNEC(JAC).LE.0.) GO TO 1333                                                    ATCRBS  1278
      TDSNEC(JAC)=TDESEC(JAC)-3.5E+06*(TXPNDR(J)-TTDSEC(JAC))                              ATCRBS  1279
      IF (TDSNEC(JAC).LT.0.) TDSNEC(JAC)=0.                                                ATCRBS  1280
1333  IF (TDSNRL(JAC).LE.RRLCU) GO TO 1344                                                 ATCRBS  1281
      TDSNRL(JAC)=60.*ALOG10(12./(12.-(12.-TDESRL(JAC))*EXP((TTDSRL(JAC)                   ATCRBS  1282
     1-TXPNDR(J))/ALTAUR(JAC))))                                                           ATCRBS  1283
1344  TSNSTV(JAC)=TSNSMX(JAC)+TDSNEC(JAC)+TDSNRL(JAC)                                      ATCRBS  1284
      IF (PXPNDR(J).GE.TSNSTV(JAC)) GO TO 1324                                             ATCRBS  1285
      PXPNDR(J)=-1000.                                                                     ATCRBS  1286
1305  J=J+1                                                                                ATCRBS  1287
      GO TO 1303                                                                           ATCRBS  1288
1324  TDESEC(JAC)=PXPNDR(J)-DESDIF-TSNSMX(JAC)                                             ATCRBS  1289
      IF (TDESEC(JAC).LT.0.) TDESEC(JAC)=0.                                                ATCRBS  1290
      TDSNEC(JAC)=TDESEC(JAC)                                                              ATCRBS  1291
      TTDSEC(JAC)=TXPNDR(J)                                                                ATCRBS  1292
      TJI=TXPNDR(J)-TXPNDR(I)                                                              ATCRBS  1293
      IF (TJI.LT.1.575E-06) GO TO 1305                                                     ATCRBS  1294
      IF (TJI.LE.2.425E-06) GO TO 1306                                                     ATCRBS  1295
1308  IF (TJI.GT.21.6E-06) GO TO 1319                                                      ATCRBS  1296
      IF(ABS(TJI-12.E-06).LE.1.E-12) GO TO 8005                                            DABS    124
      IF ((TJI.GE.20.4E-06).OR.(ABS(TJI-8.E-06).LE.0.6E-06)) GO TO 1310                    ATCRBS  1297
      J=J+1                                                                                ATCRBS  1298
      GO TO 1303                                                                           ATCRBS  1299
8005  CRRFR(JAC)=CRRFR(JAC)+1.                                                             DABS    125
      IF(ABS(UPPOWR(1,JAC,3)-A(1,3)).GE.1.25)  GO TO 1310                                  DABS    126
      CRRCR(JAC)=CRRCR(JAC)+1.                                                             DABS    127
1310  IF (IRLREP(JAC).EQ.0) GO TO 1345                                                     ATCRBS  1300
      VT=12.-(12.-TDESRL(JAC))*EXP((TTDSRL(JAC)-TXPNDR(J))/ALTAUR(JAC))                    ATCRBS  1301
      IF (VT.GE.8.5) GO TO 1341                                                            ATCRBS  1302
      IF (VT.GE.6.0) GO TO 1340                                                            ATCRBS  1303
      TDESRL(JAC)=VT-1.800*EXP((TTDSRL(JAC)-TXPNDR(J))/HFTAUR(JAC))                        ATCRBS  1304
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                                                ATCRBS  1305
      GO TO 1342                                                                           ATCRBS  1306
1340  TDESRL(JAC)=VT-1.288*EXP((TTDSRL(JAC)-TXPNDR(J))/HFTAUR(JAC))                        ATCRBS  1307
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                                                ATCRBS  1308
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TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                          CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      GO TO 1342                                                                  ATCRBS  1309
 1341 TDESRL(JAC)=V1-0./60*EXP((TTDSRL(JAC)-TXPNDR(J))/HFTAUR(JAC))               ATCRBS  1310
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                                       ATCRBS  1311
 1342 TTDSRL(JAC)=TXPNDR(J)                                                       ATCRBS  1312
      TDSNRL(JAC)=60.*ALOG10(12./TDESRL(JAC))                                     ATCRBS  1313
 1345 REPTIM=TXPNDR(J)+DELAY+PROPTM(1,JAC)-TRANP3                                 ATCRBS  1314
 1117 KNTINT(JAC)=KNTINT(JAC)+1                                                   ATCRBS  1319
      IF ((REPTIM.GT.TMAX).OR.(REPTIM.LT.TMIN)) GO TO 1399                        ATCRBS  1320
      IF((KRSLS.GT.0).AND.(TPOWER(JAC).LT.(TPOWOM(JAC)+RSLVL))) GO TO 13          ATCRBS  1321
     199                                                                          ATCRBS  1322
      XIN=(REPTIM-DELAY)/12.36E-06                                                ATCRBS  1323
      XTEST=(XIN.AND.0000777777777777777B).OR.1717000000000000000B                ATCRBS  1324
      SUBSCR=XTEST*1000.                                                          ATCRBS  1325
      L=SUBSCR                                                                    ATCRBS  1326
      XLOG=Y(L)+(Y(L+1)-Y(L))*(SUBSCR-FLOAT(L))+XL2*FLOAT(SHIFT(XIN,-48)          ATCRBS  1327
     1-975)                                                                       ATCRBS  1328
      SENSTV(2)=SENSTV(1)+REDSNS-20.*XLOG                                         ATCRBS  1329
      IF (SENSTV(2).LT.SENSTV(1)) SENSTV(2)=SENSTV(1)                             ATCRBS  1330
      IF (TPOWER(JAC).LT.SENSTV(2)) GO TO 1332                                    ATCRBS  1331
      IREPLY=IREPLY+2                                                             ATCRBS  1332
      IF (IREPLY.GE.201) GO TO 1398                                               ATCRBS  1333
      REPLY(IREPLY-1)=REPTIM                                                      ATCRBS  1334
      REPLY(IREPLY)=REPLY(IREPLY-1)+20.3E-06                                      ATCRBS  1335
      GO TO 1399                                                                  ATCRBS  1336
 1332 XIN=(REPTIM+20.3E-06-DELAY)/12.36E-06                                       ATCRBS  1337
      XTEST=(XIN.AND.0000777777777777777B).OR.1717000000000000000B                ATCRBS  1338
      SUBSCR=XTEST*1000.                                                          ATCRBS  1339
      L=SUBSCR                                                                    ATCRBS  1340
      XLOG=Y(L)+(Y(L+1)-Y(L))*(SUBSCR-FLOAT(L))+XL2*FLOAT(SHIFT(XIN,-48)          ATCRBS  1341
     1-975)                                                                       ATCRBS  1342
      SENSTV(2)=SENSTV(1)+REDSNS-20.*XLOG                                         ATCRBS  1343
      IF (SENSTV(2).LT.SENSTV(1)) SENSTV(2)=SENSTV(1)                             ATCRBS  1344
      IF (TPOWER(JAC).LT.SENSTV(2)) GO TO 1399                                    ATCRBS  1345
      IREPLY=IREPLY+1                                                             ATCRBS  1346
      IF (IREPLY.GE.201) GO TO 1398                                               ATCRBS  1347
      REPLY(IREPLY)=REPTIM+20.3E-06                                               ATCRBS  1348
 1399 I=J                                                                         ATCRBS  1349
 1318 I=I+1                                                                       ATCRBS  1350
      IF (I.GT.NPULS) GO TO 7773                                                  ATCRBS  1351
 1388 IF ((TXPNDR(I)-TXPNDR(J)).LE.DEADT(JAC)) GO TO 1318                         ATCRBS  1352
 1326 TDSNEC(JAC)=0.                                                              ATCRBS  1353
      GO TO 1331                                                                  ATCRBS  1354
 1398 PRINT 1397                                                                  ATCRBS  1355
 1397 FORMAT (25H1IREPLY GREATER THAN 200.    )                                   ATCRBS  1356
      STOP                                                                        ATCRBS  1357
 1306 IF (PXPNDR(J).GE.(PXPNDR(I)-4.5)) GO TO 1335                                ATCRBS  1358
      GO TO 1305                                                                  ATCRBS  1359
 1319 IF (IXPNDR) 1312,1312,1313                                                  ATCRBS  1360
 1312 TDSNEC(JAC)=0.                                                              ATCRBS  1361
      GO TO 1316                                                                  ATCRBS  1362
 1313 I=J                                                                         ATCRBS  1363
      GO TO 1311                                                                  ATCRBS  1364
 1335 IF (IRLSLS(JAC).EQ.0) GO TO 1353                                            ATCRBS  1365
      VT=12.-(12.*TDESRL(JAC))*EXP((TTDSRL(JAC)-TXPNDR(J))/ALTAUR(JAC))           ATCRBS  1366
      IF (VT.GE.8.5) GO TO 1351                                                   ATCRBS  1367
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TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN
                                        CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      IF (VT.GE.6.0) GO TO 1350                                        ATCRBS  1368
      TDESRL(JAC)=VT-1.800*EXP((TTDSRL(JAC)-TXPNDR(J))/HFTAUR(JAC))    ATCRBS  1369
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                            ATCRBS  1370
      GO TO 1352                                                       ATCRBS  1371
1350  TDESRL(JAC)=VT-1.288*EXP((TTDSRL(JAC)-TXPNDR(J))/HFTAUR(JAC))    ATCRBS  1372
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                            ATCRBS  1373
      GO TO 1352                                                       ATCRBS  1374
1351  TDESRL(JAC)=VT-0.760*EXP((TTDSRL(JAC)-TXPNDR(J))/HFTAUR(JAC))    ATCRBS  1375
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                            ATCRBS  1376
1352  TTDSRL(JAC)=TXPNDR(J)                                            ATCRBS  1377
      TDSNRL(JAC)=60.*ALOG10(12./TDESRL(JAC))                          ATCRBS  1378
1353  CONTINUE                                                         ATCRBS  1379
1118  KNTSLS(JAC)=KNTSLS(JAC)+1                                        ATCRBS  1388
      I=J                                                              ATCRBS  1389
1317  I=I+1                                                            ATCRBS  1390
      IF (I.GT.NPULS) GO TO 7774                                       ATCRBS  1391
1369  IF((TXPNDR(I)-TXPNDR(J)).LE.SUPPT(JAC)) GO TO 1317               ATCRBS  1392
1327  TDSNEC(JAC)=0.                                                   ATCRBS  1393
      GO TO 1331                                                       ATCRBS  1394
7771  IJFLAG(JAC)=1                                                    ATCRBS  1395
      GO TO 7                                                          ATCRBS  1396
7772  IJFLAG(JAC)=2                                                    ATCRBS  1397
      TXPSAV(JAC)=TXPNDR(I)                                            ATCRBS  1398
      PXPSAV(JAC)=PXPNDR(I)                                            ATCRBS  1399
      GO TO 7                                                          ATCRBS  1400
7773  IJFLAG(JAC)=3                                                    ATCRBS  1401
      TXPSAV(JAC)=TXPNDR(J)                                            ATCRBS  1402
      PXPSAV(JAC)=PXPNDR(J)                                            ATCRBS  1403
      GO TO 7                                                          ATCRBS  1404
7774  IJFLAG(JAC)=4                                                    ATCRBS  1405
      TXPSAV(JAC)=TXPNDR(J)                                            ATCRBS  1406
      PXPSAV(JAC)=PXPNDR(J)                                            ATCRBS  1407
      GO TO 7                                                          ATCRBS  1408
7770  IJFLAG(JAC)=1                                                    ATCRBS  1409
7     CONTINUE                                                         ATCRBS  1410
      ISWEEP=ISWEEP+1                                                  ATCRBS  1411
      IF(ISWEEP.LT.20) GO TO 1                                         ATCRBS  1412
      ISWEEP=0                                                         ATCRBS  1413
      KNT50=KNT50+1                                                    ATCRBS  1414
      FKNT50=FLOAT(KNT50)                                              ATCRBS  1415
      DO 5554 JAC=1,NACHFT                                             ATCRBS  1416
      RATINT(JAC)=FLOAT(KNTINT(JAC))/(TIME-TLUPDT)                     ATCRBS  1417
      RATSLS(JAC)=FLOAT(KNTSLS(JAC))/(TIME-TLUPDT)                     ATCRBS  1418
      IF(RATINT(JAC).GT.AMXINT(JAC)) AMXINT(JAC)=RATINT(JAC)           ATCRBS  1419
      IF(RATINT(JAC).LT.AMNINT(JAC)) AMNINT(JAC)=RATINT(JAC)           ATCRBS  1420
      IF(RATSLS(JAC).GT.AMXSLS(JAC)) AMXSLS(JAC)=RATSLS(JAC)           ATCRBS  1421
      IF(RATSLS(JAC).LT.AMNSLS(JAC)) AMNSLS(JAC)=RATSLS(JAC)           ATCRBS  1422
      TOINTR(JAC)=TOINTR(JAC)+RATINT(JAC)                              ATCRBS  1423
      TOSLSR(JAC)=TOSLSR(JAC)+RATSLS(JAC)                              ATCRBS  1424
      AVINTR(JAC)=TOINTR(JAC)/FKNT50                                   ATCRBS  1425
      AVSLSR(JAC)=TOSLSR(JAC)/FKNT50                                   ATCRBS  1426
      RATINZ(JAC)=FLOAT(KNTINZ(JAC))/(TIME-TLUPDT)                     ATCRBS  1427
      RATSLZ(JAC)=FLOAT(KNTSLZ(JAC))/(TIME-TLUPDT)                     ATCRBS  1428
      IF (RATINZ(JAC).GT.AMXINZ(JAC)) AMXINZ(JAC)=RATINZ(JAC)          ATCRBS  1429
      IF (RATINZ(JAC).LT.AMNINZ(JAC)) AMNINZ(JAC)=RATINZ(JAC)          ATCRBS  1430
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TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                        CDC 6600 FTN V3.0-P355 OPT=1   12/07/73   17.14.19.

      IF (RATSLZ(JAC).GT.AMXSLZ(JAC)) AMXSLZ(JAC)=RATSLZ(JAC)                ATCRBS   1431
      IF (RATSLZ(JAC).LT.AMNSLZ(JAC)) AMNSLZ(JAC)=RATSLZ(JAC)                ATCRBS   1432
      TOINTZ(JAC)=TOINTZ(JAC)+RATINZ(JAC)                                    ATCRBS   1433
      TOSLSZ(JAC)=TOSLSZ(JAC)+RATSLZ(JAC)                                    ATCRBS   1434
      AVINTZ(JAC)=TOINTZ(JAC)/FKNT50                                         ATCRBS   1435
      AVSLSZ(JAC)=TOSLSZ(JAC)/FKNT50                                         ATCRBS   1436
      KNTINZ(JAC)=0                                                          ATCRBS   1437
      KNTSLZ(JAC)=0                                                          ATCRBS   1438
      KNTINT(JAC)=0                                                          ATCRBS   1445
      KNTSLS(JAC)=0                                                          ATCRBS   1446
      RRC(JAC)=CRRCR(JAC)/CRRCI(JAC)                                         DABS      128
      RRF(JAC)=CRRFR(JAC)/CRRFI(JAC)                                         DABS      129
 5554 CONTINUE                                                               ATCRBS   1447
      TLJPDT=TIME                                                            ATCRBS   1448
    1 GO TO 1700                                                             DABS      130
      IF (TMD(IL).NE.1HA) GO TO 1425                                         ATCRBS   1450
      IPREPA=0                                                               ATCRBS   1451
      GO TO 5                                                                ATCRBS   1452
 1425 IF (TMD(IL).NE.1HC) GO TO 1426                                         ATCRBS   1453
      IPREPC=0                                                               ATCRBS   1454
      GO TO 5                                                                ATCRBS   1455
 1426 IF (TMD(IL).NE.1H2) GO TO 1427                                         ATCRBS   1456
      IPREP2=0                                                               ATCRBS   1457
      GO TO 5                                                                ATCRBS   1458
 1427 IF (TMD(IL).NE.1H1) GO TO 5                                            ATCRBS   1459
      IPREP1=0                                                               ATCRBS   1460
      GO TO 5                                                                ATCRBS   1461
 1420 IRPM1=IREPLY-1                                                         ATCRBS   1462
      DO 1402 L=1,IRPM1                                                      ATCRBS   1463
      COMP=REPLY(L)                                                          ATCRBS   1464
      KS=0                                                                   ATCRBS   1465
      DO 1401 K=L,IREPLY                                                     ATCRBS   1466
      IF (REPLY(K).GE.COMP) GO TO 1401                                       ATCRBS   1467
      KS=K                                                                   ATCRBS   1468
      COMP=REPLY(K)                                                          ATCRBS   1469
 1401 CONTINUE                                                               ATCRBS   1470
      IF (KS.EQ.0) GO TO 1402                                                ATCRBS   1471
      REPLY(KS)=REPLY(L)                                                     ATCRBS   1472
      REPLY(L)=COMP                                                          ATCRBS   1473
 1402 CONTINUE                                                               ATCRBS   1474
      IF (TMD(IL).EQ.1HA) GO TO 1430                                         ATCRBS   1475
      IF (TMD(IL).EQ.1HC) GO TO 1450                                         ATCRBS   1476
      IF (TMD(IL).EQ.1H1) GO TO 1470                                         ATCRBS   1477
      IF (TMD(IL).EQ.1H2) GO TO 1490                                         ATCRBS   1478
      GO TO 35                                                               ATCRBS   1479
 1430 IF (IPREPA.LE.0) GO TO 1414                                            ATCRBS   1480
      INC2=0                                                                 ATCRBS   1481
      INC=1                                                                  ATCRBS   1482
      DO 1404 J=1,IREPLY                                                     ATCRBS   1483
      PSTRPA(J,2)=REPLY(J)                                                   ATCRBS   1484
 1409 DIF=REPLY(J)-PSTRPA(INC,1)                                             ATCRBS   1485
      IF (ABS(DIF).LE.DELGA(E) GO TO 1405                                    ATCRBS   1486
      IF (DIF) 1404,1406,1408                                                ATCRBS   1487
 1408 INC=INC+1                                                              ATCRBS   1488
      IF (INC.LE.IPREPA) GO TO 1409                                          ATCRBS   1489
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      GO TO 1421                                                                  ATCRBS  1490
 1405 INC2=INC2+1                                                                 ATCRBS  1491
      IF (IDFRUT.NE.0) REPLY(INC2)=REPLY(J)                                       ATCRBS  1492
 1404 CONTINUE                                                                    ATCRBS  1493
 1412 IPREPA=IREPLY                                                               ATCRBS  1494
      DO 1413 I=1,IPREPA                                                          ATCRBS  1495
 1413 PSTRPA(I,1)=PSTRPA(I,2)                                                     ATCRBS  1496
      IF (IDFRUT.NE.0) IREPLY=INC2                                                ATCRBS  1497
      NFRUTA=NFRUTA+IPREPA-INC2                                                   ATCRBS  1498
      GO TO 35                                                                    ATCRBS  1499
 1414 DO 1417 I=1,IREPLY                                                          ATCRBS  1500
 1417 PSTRPA(I,1)=REPLY(I)                                                        ATCRBS  1501
      IPREPA=IREPLY                                                               ATCRBS  1502
      NFRUTA=NFRUTA+IPREPA                                                        ATCRBS  1503
      IF (IDFRUT) 1406,35,5                                                       ATCRBS  1504
 1406 PRINT 1407                                                                  ATCRBS  1505
 1407 FORMAT (17H1ERROR IN CHRON2.)                                               ATCRBS  1506
      STOP                                                                        ATCRBS  1507
 1421 IPREPA=IREPLY                                                               ATCRBS  1508
      DO 1410 I=J,IPREPA                                                          ATCRBS  1509
 1410 PSTRPA(I,1)=REPLY(I)                                                        ATCRBS  1510
      DO 1411 I=1,J                                                               ATCRBS  1511
 1411 PSTRPA(I,1) =PSTRPA(I,2)                                                    ATCRBS  1512
      IF (IDFRUT.NE.0) IREPLY=INC2                                                ATCRBS  1513
      NFRUTA=NFRUTA+IPREPA-INC2                                                   ATCRBS  1514
      GO TO 35                                                                    ATCRBS  1515
 1450 IF (IPREPC.LE.0) GO TO 1444                                                 ATCRBS  1516
      INC2=0                                                                      ATCRBS  1517
      INC=1                                                                       ATCRBS  1518
      DO 1434 J=1,IREPLY                                                          ATCRBS  1519
      PSTRPC(J,2)=REPLY(J)                                                        ATCRBS  1520
 1439 DIF=REPLY(J)-PSTRPC(INC,1)                                                  ATCRBS  1521
      IF (ABS(DIF).LE.DEGATE) GO TO 1435                                          ATCRBS  1522
      IF (DIF) 1434,1439,1438                                                     ATCRBS  1523
 1438 INC=INC+1                                                                   ATCRBS  1524
      IF (INC.LE.IPREPC) GO TO 1439                                               ATCRBS  1525
      GO TO 1451                                                                  ATCRBS  1526
 1435 INC2=INC2+1                                                                 ATCRBS  1527
      IF (IDFRUT.NE.0) REPLY(INC2)=REPLY(J)                                       ATCRBS  1528
 1434 CONTINUE                                                                    ATCRBS  1529
 1442 IPREPC=IREPLY                                                               ATCRBS  1530
      DO 1443 I=1,IPREPC                                                          ATCRBS  1531
 1443 PSTRPC(I,1)=PSTRPC(I,2)                                                     ATCRBS  1532
      IF (IDFRUT.NE.0) IREPLY=INC2                                                ATCRBS  1533
      NFRUTC=NFRUTC+IPREPC-INC2                                                   ATCRBS  1534
      GO TO 35                                                                    ATCRBS  1535
 1444 DO 1447 I=1,IREPLY                                                          ATCRBS  1536
 1447 PSTRPC(I,1)=REPLY(I)                                                        ATCRBS  1537
      IPREPC=IREPLY                                                               ATCRBS  1538
      NFRUTC=NFRUTC+IPREPC                                                        ATCRBS  1539
      IF (IDFRUT) 1436,35,5                                                       ATCRBS  1540
 1436 PRINT 1437                                                                  ATCRBS  1541
 1437 FORMAT (17H1ERROR IN CHRON2.)                                               ATCRBS  1542
      STOP                                                                        ATCRBS  1543
 1451 IPREPC=IREPLY                                                               ATCRBS  1544
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                        CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.

      DO 1440 I=J,IPREPC                                                    ATCRBS  1545
 1440 PSTRPC(I,1)=REPLY(I)                                                  ATCRBS  1546
      DO 1441 I=1,J                                                         ATCRBS  1547
 1441 PSTRPC(I,1) =PSTRPC(I,2)                                              ATCRBS  1548
      IF (IDFRUT.NE.0) IREPLY=INC2                                          ATCRBS  1549
      NERUTC=NERUTC+IPREPC-INC2                                             ATCRBS  1550
      GO TO 35                                                              ATCRBS  1551
 1470 IF (IPREP1.LE.0) GO TO 1464                                           ATCRBS  1552
      INC2=0                                                                ATCRBS  1553
      INC=1                                                                 ATCRBS  1554
      DO 1454 J=1,IREPLY                                                    ATCRBS  1555
      PSTRP1(J,2)=REPLY(J)                                                  ATCRBS  1556
 1459 DIF=REPLY(J)-PSTRP1(INC,1)                                            ATCRBS  1557
      IF (ABS(DIF).LE.DEGATE) GO TO 1455                                    ATCRBS  1558
      IF (DIF) 1454,1459,1458                                               ATCRBS  1559
 1458 INC=INC+1                                                             ATCRBS  1560
      IF (INC.LE.IPREP1) GO TO 1459                                         ATCRBS  1561
      GO TO 1471                                                            ATCRBS  1562
 1455 INC2=INC2+1                                                           ATCRBS  1563
      IF (IDFRUT.NE.0) REPLY(INC2)=REPLY(J)                                 ATCRBS  1564
 1454 CONTINUE                                                              ATCRBS  1565
 1462 IPREP1=IREPLY                                                         ATCRBS  1566
      DO 1463 I=1,IPREP1                                                    ATCRBS  1567
 1463 PSTRP1(I,1)=PSTRP1(I,2)                                               ATCRBS  1568
      IF (IDFRUT.NE.0) IREPLY=INC2                                          ATCRBS  1569
      NERUT1=NERUT1+IPREP1-INC2                                             ATCRBS  1570
      GO TO 35                                                              ATCRBS  1571
 1464 DO 1467 I=1,IREPLY                                                    ATCRBS  1572
 1467 PSTRP1(I,1)=REPLY(I)                                                  ATCRBS  1573
      IPREP1=IREPLY                                                         ATCRBS  1574
      NERUT1=NERUT1+IPREP1                                                  ATCRBS  1575
      IF (IDFRUT) 1456,35,5                                                 ATCRBS  1576
 1456 PRINT 1457                                                            ATCRBS  1577
 1457 FORMAT (17H1ERROR IN CHRUN2.)                                         ATCRBS  1578
      STOP                                                                  ATCRBS  1579
 1471 IPREP1=IREPLY                                                         ATCRBS  1580
      DO 1460 I=J,IPREP1                                                    ATCRBS  1581
 1460 PSTRP1(I,1)=REPLY(I)                                                  ATCRBS  1582
      DO 1461 I=1,J                                                         ATCRBS  1583
 1461 PSTRP1(I,1) =PSTRP1(I,2)                                              ATCRBS  1584
      IF (IDFRUT.NE.0) IREPLY=INC2                                          ATCRBS  1585
      NERUT1=NERUT1+IPREP1-INC2                                             ATCRBS  1586
      GO TO 35                                                              ATCRBS  1587
 1490 IF (IPREP2.LE.0) GO TO 1484                                           ATCRBS  1588
      INC2=0                                                                ATCRBS  1589
      INC=1                                                                 ATCRBS  1590
      DO 1474 J=1,IREPLY                                                    ATCRBS  1591
      PSTRP2(J,2)=REPLY(J)                                                  ATCRBS  1592
 1479 DIF=REPLY(J)-PSTRP2(INC,1)                                            ATCRBS  1593
      IF (ABS(DIF).LE.DEGATE) GO TO 1475                                    ATCRBS  1594
      IF (DIF) 1474,1476,1476                                               ATCRBS  1595
 1476 INC=INC+1                                                             ATCRBS  1596
      IF (INC.LE.IPREP2) GO TO 1479                                         ATCRBS  1597
      GO TO 1491                                                            ATCRBS  1598
 1475 INC2=INC2+1                                                           ATCRBS  1599
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  1/.14.19.
      IF (IDFRUT.NE.0) REPLY(INC2)=REPLY(J)                                                  ATCRBS  1600
 1474 CONTINUE                                                                               ATCRBS  1601
 1482 IPREP2=IREPLY                                                                          ATCRBS  1602
      DO 1483 I=1,IPREP2                                                                     ATCRBS  1603
 1483 PSTRP2(I,1)=PSTRP2(I,2)                                                                ATCRBS  1604
      IF (IDFRUT.NE.0) IREPLY=INC2                                                           ATCRBS  1605
      NFRUT2=NFRUT2+IPREP2-INC2                                                              ATCRBS  1606
      GO TO 35                                                                               ATCRBS  1607
 1484 DO 1487 I=1,IREPLY                                                                     ATCRBS  1608
 1487 PSTRP2(I,1)=REPLY(I)                                                                   ATCRBS  1609
      IPREP2=IREPLY                                                                          ATCRBS  1610
      NFRUT2=NFRUT2+IPREP2                                                                   ATCRBS  1611
      IF (IDFRUT) 1476,35,5                                                                  ATCRBS  1612
 1476 PRINT 1477                                                                             ATCRBS  1613
 1477 FORMAT (17H1ERROR IN CHRON2.)                                                          ATCRBS  1614
      STOP                                                                                   ATCRBS  1615
 1491 IPREP2=IREPLY                                                                          ATCRBS  1616
      DO 1480 I=J,IPREP2                                                                     ATCRBS  1617
 1480 PSTRP2(I,1)=REPLY(I)                                                                   ATCRBS  1618
      DO 1481 I=1,J                                                                          ATCRBS  1619
 1481 PSTRP2(I,1) =PSTRP2(I,2)                                                               ATCRBS  1620
      IF (IDFRUT.NE.0) IREPLY=INC2                                                           ATCRBS  1621
      NFRUT2=NFRUT2+IPREP2-INC2                                                              ATCRBS  1622
35    IF1=1                                                                                  ATCRBS  1623
 1502 IF2=IF1+1                                                                              ATCRBS  1624
 1503 IF (IF2.GT.IREPLY) GO TO 62                                                            ATCRBS  1625
 1504 IF (ABS(REPLY(IF2)-REPLY(IF1)-20.3E-06).LE.0.1E-06) GO TO 1506                         ATCRBS  1626
      IF ((REPLY(IF2)-REPLY(IF1)).LT.20.3E-06) GO TO 1505                                    ATCRBS  1627
      IF1=IF1+1                                                                              ATCRBS  1628
      GO TO 1502                                                                             ATCRBS  1629
 1505 IF2=IF2+1                                                                              ATCRBS  1630
      GO TO 1503                                                                             ATCRBS  1631
 1506 IR=IR+1                                                                                ATCRBS  1632
      IF (IR.GT.50) GO TO 1599                                                               ATCRBS  1633
      R(IR)=C*(REPLY(IF1)-DELAY)*0.5                                                         ATCRBS  1634
      IF1=IF1+1                                                                              ATCRBS  1635
      GO TO 1502                                                                             ATCRBS  1636
 1599 PRINT 1598                                                                             ATCRBS  1637
 1598 FORMAT (20H1IR GREATER THAN 50.)                                                       ATCRBS  1638
      STOP                                                                                   ATCRBS  1639
62    IF (IR.LE.0) GO TO 5                                                                   ATCRBS  1640
      PRINT 17,TIME,A(1,3),TMD(IL)                                                           ATCRBS  1641
17    FORMAT (1X,2F8.3,1X,A1)                                                                ATCRBS  1642
      DO 13 I=1,IR                                                                           ATCRBS  1643
      JJ=20+IFIX(R(I)*100./RMAX)                                                             ATCRBS  1644
      ENCODE(3,16,FMT) JJ                                                                    ATCRBS  1645
16    FORMAT(I3)                                                                             ATCRBS  1646
      FMT= (SHIFT(FMT,-24).A.00000000777777000000B).O.IMF                                    ATCRBS  1647
      PRINT FMT,R(I)                                                                         ATCRBS  1648
13    CONTINUE                                                                               ATCRBS  1649
5     AZPLOT=AZPLOT+(TNEXT-TIME)*A(1,2)                                                      ATCRBS  1650
      IF (ICD.EQ.0) GO TO 1800                                                               ATCRBS  1651
      IF (TMD(IL).NE.1HA) GO TO 1800                                                         ATCRBS  1652
      IACP=(A(1,3)/360.)*4096.                                                               ATCRBS  1653
      ISTART=1                                                                               ATCRBS  1654
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.

      IF(IR.EQ.0) GO TO 1701                                            ATCRBS  1655
      DO 1702 IAZR=1,IR                                                 ATCRBS  1656
      RBIN=R(IAZR)*4.+1.                                                ATCRBS  1657
      IRBIN=RBIN                                                        ATCRBS  1658
      IRACCF(IRBIN)=2.*(RBIN-FLOAT(IRBIN))                              ATCRBS  1659
      ISTOP=IRBIN-1                                                     ATCRBS  1660
      IF(ISTART.GT.ISTOP) GO TO 1703                                    ATCRBS  1661
      DO 1704 I=ISTART,ISTOP                                            ATCRBS  1662
      IF(IWCNT(I).EQ.0) GO TO 1704                                      ATCRBS  1663
      IWCNT(I)=IWCNT(I)-(SHIFT(N(I),1-IWNL).AND.00000000000000000001B)  ATCRBS  1664
      N(I)=(00000000007777777777B.AND.(SHIFT(N(I),1)))                  ATCRBS  1665
      IF(IWCNT(I).GE.ITL) GO TO 1705                                    ATCRBS  1666
      IF((IWCNT(I).EQ.ITT).AND.(JLEFLG(I).EQ.1)) GO TO 1706             ATCRBS  1667
      GO TO 1704                                                        ATCRBS  1668
 1705 IF (JLEFLG(I).EQ.1) GO TO 1704                                    ATCRBS  1669
      ITST(I)=IACP                                                      ATCRBS  1670
      JLEFLG(I)=1                                                       ATCRBS  1671
      GO TO 1704                                                        ATCRBS  1672
 1706 ITSP(I)=IACP                                                      ATCRBS  1673
      ITRGT=ITRGT+1                                                     ATCRBS  1674
      IF((ITST(I).GE.2048).AND.(ITSP(I).LE.2048)) ITSP(I)=ITSP(I)+4096  ATCRBS  1675
      IAZC(I)=(ITST(I)+ITSP(I))/2-IBIAS                                 ATCRBS  1676
      IF(ITSP(I).GT.4096) ITSP(I)=ITSP(I)-4096                          ATCRBS  1677
      IF(IAZC(I).GT.4096) IAZC(I)=IAZC(I)-4096                          ATCRBS  1678
      JLEFLG(I)=0                                                       ATCRBS  1679
      ITST(I)=ITST(I)-IBIAS                                             ATCRBS  1680
      ITSP(I)=ITSP(I)-IBIAS                                             ATCRBS  1681
      IF(ITST(I).LT.0) ITST(I)=ITST(I)+4096                             ATCRBS  1682
      IF(ITSP(I).LT.0) ITSP(I)=ITSP(I)+4096                             ATCRBS  1683
      IF(IAZC(I).LT.0) IAZC(I)=IAZC(I)+4096                             ATCRBS  1684
      AZCC=FLOAT(IAZC(I))*CVAL                                          ATCRBS  1685
      TSTC=FLOAT(ITST(I))*CVAL                                          ATCRBS  1686
      TSPC=FLOAT(ITSP(I))*CVAL                                          ATCRBS  1687
      RNGNM=((FLOAT(I)-1.)/4.)*.0625+(FLOAT(IRACCF(I))*.125)            ATCRBS  1688
      PRINT 1713,1,RNGNM,ITST(I),TSTC,IAZC(I),AZCC,ITSP(I),TSPC         ATCRBS  1689
 1713 FORMAT (/20X5H*****10X*COMMON*10X*RANGE BIN*7XI10,5X*(*F9.4,* NAUT ATCRBS  1690
     1ICAL MILES )*/20X1H*3X1H*10X*DIGITIZER*7X*TARGET STARTS AT*110,5X, ATCRBS  1691
     2*(*F9.4,4X*DEGREES*5X*)*/20X1H*3X1H*10X*TARGET*10X*CENTER MARK*3X, ATCRBS  1692
     3*AT*I10,5X*(*F9.4,4X*DEGREES*5X*)*/20X5H*****10X*REPORT*10X*TARGET ATCRBS  1693
     4 STOPS  AT*110,5X*(*F9.4,4X*DEGREES*5X*)*/)                       ATCRBS  1694
 1704 CONTINUE                                                          ATCRBS  1695
 1703 I=ISTOP+1                                                         ATCRBS  1696
      IWCNT(I)=IWCNT(I)+1-(SHIFT(N(I),1-IWNL).AND.00000000000000000001B) ATCRBS  1697
      N(I)=1.OR.(00000000007777777777B.AND.(SHIFT(N(I),1)))             ATCRBS  1698
      IF(IWCNT(I).GE.ITL) GO TO 1707                                    ATCRBS  1699
      IF((IWCNT(I).EQ.ITT).AND.(JLEFLG(I).EQ.1)) GO TO 1708             ATCRBS  1700
      GO TO 1709                                                        ATCRBS  1701
 1707 IF (JLEFLG(I).EQ.1) GO TO 1709                                    ATCRBS  1702
      JLEFLG(I)=1                                                       ATCRBS  1703
      ITST(I)=IACP                                                      ATCRBS  1704
      GO TO 1709                                                        ATCRBS  1705
 1708 ITSP(I)=IACP                                                      ATCRBS  1706
      ITRGT=ITRGT+1                                                     ATCRBS  1707
      IF((ITST(I).GE.2048).AND.(ITSP(I).LE.2048)) ITSP(I)=ITSP(I)+4096  ATCRBS  1708
      IAZC(I)=(ITST(I)+ITSP(I))/2-IBIAS                                 ATCRBS  1709
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN.
                                        CDC 6600 FTN V3.0-P355 OPT=1   12/07/73   17.14.19.
      IF(ITSP(I).GT.4096) ITSP(I)=ITSP(I)-4096                                    ATCRBS   1710
      IF(IAZC(I).GT.4096) IAZC(I)=IAZC(I)-4096                                    ATCRBS   1711
      JLEFLG(I)=0                                                                 ATCRBS   1712
      ITST(I)=ITST(I)-IBIAS                                                       ATCRBS   1713
      ITSP(I)=ITSP(I)-IBIAS                                                       ATCRBS   1714
      IF(ITST(I).LT.0) ITST(I)=ITST(I)+4096                                       ATCRBS   1715
      IF(ITSP(I).LT.0) ITSP(I)=ITSP(I)+4096                                       ATCRBS   1716
      IF(IAZC(I).LT.0) IAZC(I)=IAZC(I)+4096                                       ATCRBS   1717
      AZCC=FLOAT(IAZC(I))*CVAL                                                    ATCRBS   1718
      TSTC=FLOAT(ITST(I))*CVAL                                                    ATCRBS   1719
      TSPC=FLOAT(ITSP(I))*CVAL                                                    ATCRBS   1720
      RNGNM=((FLOAT(I)-1.)/4.)*.0625+(FLOAT(IRACCF(I))*.125)                      ATCRBS   1721
      PRINT 1713,I,RNGNM,ITST(I),TSTC,IAZC(I),AZCC,ITSP(I),TSPC                   ATCRBS   1722
 1709 ISTART=I+1                                                                  ATCRBS   1723
 1702 CONTINUE                                                                    ATCRBS   1724
 1701 IF (ISTART.GT.IRBMX) GO TO 1800                                             ATCRBS   1725
      DO 1710 I=ISTART,IRBMX                                                      ATCRBS   1726
      IF(IWCNT(I).EQ.0) GO TO 1710                                                ATCRBS   1727
      IWCNT(I)=IWCNT(I)-(SHIFT(N(I),1-IWNL).AND.0000000000000000001B)             ATCRBS   1728
      N(I)=(0000000000777777777B.AND.(SHIFT(N(I),1)))                             ATCRBS   1729
      IF(IWCNT(I).GE.ITL) GO TO 1711                                              ATCRBS   1730
      IF((IWCNT(I).EQ.ITL).AND.(JLEFLG(I).EQ.1)) GO TO 1712                       ATCRBS   1731
      GO TO 1710                                                                  ATCRBS   1732
 1711 IF (JLEFLG(I).EQ.1) GO TO 1710                                              ATCRBS   1733
      JLEFLG(I)=1                                                                 ATCRBS   1734
      ITST(I)=IACP                                                                ATCRBS   1735
      GO TO 1710                                                                  ATCRBS   1736
 1712 ITSP(I)=IACP                                                                ATCRBS   1737
      ITRGT=ITRGT+1                                                               ATCRBS   1738
      IF((ITST(I).GE.2048).AND.(ITSP(I).LE.2048)) ITSP(I)=ITSP(I)+4096            ATCRBS   1739
      IAZC(I)=(ITST(I)+ITSP(I))/2-IBIAS                                           ATCRBS   1740
      IF(ITSP(I).GT.4096) ITSP(I)=ITSP(I)-4096                                    ATCRBS   1741
      IF(IAZC(I).GT.4096) IAZC(I)=IAZC(I)-4096                                    ATCRBS   1742
      JLEFLG(I)=0                                                                 ATCRBS   1743
      ITST(I)=ITST(I)-IBIAS                                                       ATCRBS   1744
      ITSP(I)=ITSP(I)-IBIAS                                                       ATCRBS   1745
      IF(ITST(I).LT.0) ITST(I)=ITST(I)+4096                                       ATCRBS   1746
      IF(ITSP(I).LT.0) ITSP(I)=ITSP(I)+4096                                       ATCRBS   1747
      IF(IAZC(I).LT.0) IAZC(I)=IAZC(I)+4096                                       ATCRBS   1748
      AZCC=FLOAT(IAZC(I))*CVAL                                                    ATCRBS   1749
      TSTC=FLOAT(ITST(I))*CVAL                                                    ATCRBS   1750
      TSPC=FLOAT(ITSP(I))*CVAL                                                    ATCRBS   1751
      RNGNM=((FLOAT(I)-1.)/4.)*.0625+(FLOAT(IRACCF(I))*.125)                      ATCRBS   1752
      PRINT 1713,I,RNGNM,ITST(I),TSTC,IAZC(I),AZCC,ITSP(I),TSPC                   ATCRBS   1753
 1710 CONTINUE                                                                    ATCRBS   1754
 1800 IF (KARTS3.LE.0) GO TO 1900                                                 ATCRBS   1755
      NDXOR3=1                                                                    ATCRBS   1756
      NDXNR3=1                                                                    ATCRBS   1757
      IR3=IR                                                                      DABS     131
      IF((IMD(IL).NE.IHA).AND.(IMD(IL).NE.IHC)) IR3=0                             DABS     132
      IACP3=(A(1,3)/360.)*4096.                                                   ATCRBS   1759
      IF (IR3.LE.30) GO TO 1801                                                   ATCRBS   1761
      IR3=30                                                                      ATCRBS   1762
      PRINT 1802,IR                                                               ATCRBS   1763
 1802 FORMAT (//I5,* HITS THIS SWEEP EXCEED THE 30 ALLOWED BY ARTS 3.  P          ATCRBS   1764
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                        CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.

      PROCESSING CONTINUES WITH FIRST 30 HITS.*//)                          ATCRBS  1765
 1801 NDXIR3=0                                                              ATCRBS  1766
 1803 NDXIR3=NDXIR3+1                                                       ATCRBS  1767
      IF (NDXOR3.LE.NOLOR3) GO TO 1806                                      ATCRBS  1768
 1805 IF (NDXIR3.GT.IR3) GO TO 1808                                         ATCRBS  1769
      IPNRW3(NDXNR3)=R(NDXIR3)*16.                                          ATCRBS  1770
      IPNHT3(NDXNR3)=1                                                      ATCRBS  1771
      IPNSW3(NDXNR3)=1                                                      ATCRBS  1772
      IPNSM3(NDXNR3)=1                                                      ATCRBS  1773
      IPNMS3(NDXNR3)=0                                                      ATCRBS  1774
      IPNIL3(NDXNR3)=0                                                      ATCRBS  1775
      NDXIR3=NDXIR3+1                                                       ATCRBS  1776
      NDXNR3=NDXNR3+1                                                       ATCRBS  1777
      IF (NDXNR3.LE.45) GO TO 1805                                          ATCRBS  1778
 1807 PRINT 1890                                                            ATCRBS  1779
 1890 FORMAT(//* NO MORE NEW RECORD SPACE, BUT PROCESSING CONTINUES.*//)    ATCRBS  1780
      GO TO 1808                                                            ATCRBS  1781
 1806 IF (NDXIR3.GT.IR3) GO TO 1810                                         ATCRBS  1782
 1841 IREPRN=R(NDXIR3)*16.                                                  ATCRBS  1783
 1807 IF (IREPRN.LT.(IPORN3(NDXOR3)-1)) GO TO 1840                          ATCRBS  1784
      IF (IREPRN.LE.(IPORN3(NDXOR3)+1)) GO TO 1812                          ATCRBS  1785
      IPOSW3(NDXOR3)=IPOSW3(NDXOR3)+1                                       ATCRBS  1786
      IPOMS3(NDXOR3)=IPOMS3(NDXOR3)+1                                       ATCRBS  1787
      IF (IPOIL3(NDXOR3).LE.0) GO TO 1815                                   ATCRBS  1788
      IF (IPOMS3(NDXOR3).LT.IMY4R3) GO TO 1816                              ATCRBS  1789
      IF (IPOSW3(NDXOR3).LT.IRMRP3) GO TO 1817                              ATCRBS  1790
      IF (IPOHT3(NDXOR3).LT.IHY4R3) GO TO 1818                              ATCRBS  1791
      IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1819                              ATCRBS  1792
 1820 PRINT 1891                                                            ATCRBS  1793
 1891 FORMAT (//* THE FOLLOWING TARGET IS A RING-AROUND TARGET WHICH IS     ATCRBS  1794
     1HEREAFTER ELIMINATED FROM THE NEW RECORD LIST.*//)                    ATCRBS  1795
      IWEAK3=1                                                              ATCRBS  1796
      IRGTG3=IRGTG3+1                                                       ATCRBS  1797
 1819 AZC3=CVAL*(FLOAT(IACP3)-ACPRSW*(FLOAT(IPOSW3(NDXOR3))-FLOAT(IPOSM3   ATCRBS  1798
     1(NDXOR3))/FLOAT(IPOHT3(NDXOR3))))                                     ATCRBS  1799
      IF(AZC3.LT.0.) AZC3=AZC3+360.                                         ATCRBS  1800
      RNG3=FLOAT(IPORN3(NDXOR3))/16.                                        ATCRBS  1801
      IF (IWEAK3.LE.0) IVDTG3=IVDTG3+1                                      ATCRBS  1802
      PRINT 1826,IPOSW3(NDXOR3),RNG3,IPOHT3(NDXOR3),AZC3,IPOSM3(NDXOR3)     ATCRBS  1803
 1826 FORMAT (/22X1H*12X*ARTS 3*10A*SWEEP COUNTER = *I5,10X*TARGET RANGE    ATCRBS  1804
     1   =*F9.4,* NAUTICAL MILES*/21X3H* *11X*TARGET*10X*HIT   COUNTER =    ATCRBS  1805
     2 *I5,10X*CENTER AZIMUTH =*F9.4,* DEGREES*/20X5H*****10X*REPORT*10X    ATCRBS  1806
     3*SUMM  COUNTER = *I5)                                                 ATCRBS  1807
      IF ((IPOHT3(NDXOR3).GE.IHYR3).AND.(IWEAK3.LE.0)) PRINT 1827           ATCRBS  1808
 1827 FORMAT (1H+82X4H*** *STRONG TARGET AZIMUTH CONFIDENCE*4H ***)         ATCRBS  1809
      PRINT 1828                                                            ATCRBS  1810
 1828 FORMAT (1H )                                                          ATCRBS  1811
      IWEAK3=0                                                              ATCRBS  1812
      GO TO 1818                                                            ATCRBS  1813
 1818 IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1817                              ATCRBS  1814
      IF (IPOHT3(NDXOR3).LT.IHY4R3) GO TO 1818                              ATCRBS  1815
      GO TO 1820                                                            ATCRBS  1816
 1815 IF (IPOMS3(NDXOR3).GE.IMY3P3) GO TO 1818                              ATCRBS  1817
 1817 IPNRN3(NDXNR3)=IPORN3(NDXOR3)                                         ATCRBS  1818
      IPNHT3(NDXNR3)=IPOHT3(NDXOR3)                                         ATCRBS  1819
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN
                                        CDC 6600 FTN V3.0-P355 OPT=1   12/07/73   11.14.19.
      IPNMS3(NDXNR3)=IPOMS3(NDXOR3)                                     ATCRBS   1820
      IPNSW3(NDXNR3)=IPOSW3(NDXOR3)                                     ATCRBS   1821
      IPNSM3(NDXNR3)=IPOSM3(NDXOR3)                                     ATCRBS   1822
      IPNTL3(NDXNR3)=IPOTL3(NDXOR3)                                     ATCRBS   1823
      NDXNR3=NDXNR3+1                                                   ATCRBS   1824
      IF(NDXNR3.GT.45) GO TO 1809                                       ATCRBS   1825
1810  NDXOR3=NDXOR3+1                                                   ATCRBS   1826
      IF (NDXOR3.GT.NOLOR3) GO TO 1805                                  ATCRBS   1827
      GO TO 1807                                                        ATCRBS   1828
1812  IPORN3(NDXOR3)=IREPRN                                             ATCRBS   1829
      IPOSW3(NDXOR3)=IPOSW3(NDXOR3)+1                                   ATCRBS   1830
      IPOSM3(NDXOR3)=IPOSM3(NDXOR3)+IPOSW3(NDXOR3)                      ATCRBS   1831
      IPOMS3(NDXOR3)=0                                                  ATCRBS   1832
      IPOHT3(NDXOR3)=IPOHT3(NDXOR3)+1                                   ATCRBS   1833
      IF (IPOTL3(NDXOR3).GE.1) GO TO 1830                               ATCRBS   1834
      IF (IPOHT3(NDXOR3).GE.IHY3P3) IPOTL3(NDXOR3)=1                    ATCRBS   1835
1831  IPNRN3(NDXNR3)=IPORN3(NDXOR3)                                     ATCRBS   1836
      IPNHT3(NDXNR3)=IPOHT3(NDXOR3)                                     ATCRBS   1837
      IPNMS3(NDXNR3)=IPOMS3(NDXOR3)                                     ATCRBS   1838
      IPNSW3(NDXNR3)=IPOSW3(NDXOR3)                                     ATCRBS   1839
      IPNSM3(NDXNR3)=IPOSM3(NDXOR3)                                     ATCRBS   1840
      IPNTL3(NDXNR3)=IPOTL3(NDXOR3)                                     ATCRBS   1841
      NDXNR3=NDXNR3+1                                                   ATCRBS   1842
      IF (NDXNR3.GT.45) GO TO 1809                                      ATCRBS   1843
      NDXOR3=NDXOR3+1                                                   ATCRBS   1844
      GO TO 1803                                                        ATCRBS   1845
1830  IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1831                          ATCRBS   1846
      PRINT 1891                                                        ATCRBS   1847
      AZC3=CVAL*(FLOAT(IACP3)-ACPRSW*(FLOAT(IPOSW3(NDXOR3))-FLOAT(IPOSM3 ATCRBS   1848
     1(NDXOR3))/FLOAT(IPOHT3(NDXOR3))))                                 ATCRBS   1849
      IF(AZC3.LT.0.) AZC3=AZC3+360.                                     ATCRBS   1850
      RNG3=FLOAT(IPORN3(NDXOR3))/16.                                    ATCRBS   1851
      IRGT03=IRGT03+1                                                   ATCRBS   1852
      PRINT 1826,IPOSW3(NDXOR3),RNG3,IPOHT3(NDXOR3),AZC3,IPOSM3(NDXOR3) ATCRBS   1853
      PRINT 1828                                                        ATCRBS   1854
      NDXOR3=NDXOR3+1                                                   ATCRBS   1855
      GO TO 1803                                                        ATCRBS   1856
1840  IPNRN3(NDXNR3)=IREPRN                                             ATCRBS   1857
      IPNHT3(NDXNR3)=1                                                  ATCRBS   1858
      IPNSW3(NDXNR3)=1                                                  ATCRBS   1859
      IPNSM3(NDXNR3)=1                                                  ATCRBS   1860
      IPNMS3(NDXNR3)=0                                                  ATCRBS   1861
      IPNTL3(NDXNR3)=0                                                  ATCRBS   1862
      NDXIR3=NDXIR3+1                                                   ATCRBS   1863
      NDXNR3=NDXNR3+1                                                   ATCRBS   1864
      IF (NDXNR3.GT.45) GO TO 1809                                      ATCRBS   1865
      IF (NDXIR3.LE.IR3) GO TO 1841                                     ATCRBS   1866
1810  IPOSW3(NDXOR3)=IPOSW3(NDXOR3)+1                                   ATCRBS   1867
      IPOMS3(NDXOR3)=IPOMS3(NDXOR3)+1                                   ATCRBS   1868
      IF (IPOTL3(NDXOR3).LE.0) GO TO 1865                               ATCRBS   1869
      IF (IPOMS3(NDXOR3).LT.IMY4R3) GO TO 1866                          ATCRBS   1870
      IF (IPOSW3(NDXOR3).LT.IRMRP3) GO TO 1867                          ATCRBS   1871
      IF (IPOHT3(NDXOR3).LT.IHY4R3) GO TO 1868                          ATCRBS   1872
      IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1869                          ATCRBS   1873
1870  PRINT 1891                                                        ATCRBS   1874
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                          CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.

      IWEAK3=1                                                                  ATCRBS  1875
      IRGTG3=IRGTG3+1                                                           ATCRBS  1876
 1869 AZC3=CVAL*(FLOAT(IACP3)-ACPRSW*(FLOAT(IPOSW3(NDXOR3))-FLOAT(IPOSM3       ATCRBS  1877
     1(NDXOR3))/FLOAT(IPOHT3(NDXOR3))))                                         ATCRBS  1878
      IF(AZC3.LT.0.) AZC3=AZC3+360.                                             ATCRBS  1879
      RNG3=FLOAT(IPORN3(NDXOR3))/16.                                            ATCRBS  1880
      IF (IWEAK3.LE.0) IVDTG3=IVDTG3+1                                          ATCRBS  1881
      PRINT 1826,IPOSW3(NDXOR3),RNG3,IPOHT3(NDXOR3),AZC3,IPOSM3(NDXOR3)         ATCRBS  1882
      IF ((IPOHT3(NDXOR3).GE.ITQYR3).AND.(IWEAK3.LE.0)) PRINT 1827              ATCRBS  1883
      PRINT 1828                                                                ATCRBS  1884
      IWEAK3=0                                                                  ATCRBS  1885
      GO TO 1868                                                                ATCRBS  1886
 1866 IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1867                                  ATCRBS  1887
      IF (IPOHT3(NDXOR3).LT.IHY4R3) GO TO 1868                                  ATCRBS  1888
      GO TO 1870                                                                ATCRBS  1889
 1865 IF (IPOMS3(NDXOR3).GE.IMY3P3) GO TO 1868                                  ATCRBS  1890
 1867 IPNRN3(NDXNR3)=IPORN3(NDXOR3)                                             ATCRBS  1891
      IPNHT3(NDXNR3)=IPOHT3(NDXOR3)                                             ATCRBS  1892
      IPNMS3(NDXNR3)=IPOMS3(NDXOR3)                                             ATCRBS  1893
      IPNSW3(NDXNR3)=IPOSW3(NDXOR3)                                             ATCRBS  1894
      IPNSM3(NDXNR3)=IPOSM3(NDXOR3)                                             ATCRBS  1895
      IPNTL3(NDXNR3)=IPOTL3(NDXOR3)                                             ATCRBS  1896
      NDXNR3=NDXNR3+1                                                           ATCRBS  1897
      IF (NDXNR3.GT.45) GO TO 1809                                              ATCRBS  1898
 1868 NDXOR3=NDXOR3+1                                                           ATCRBS  1899
      IF (NDXOR3.GT.NOLDR3) GO TO 1805                                          ATCRBS  1900
      GO TO 1810                                                                ATCRBS  1901
 1808 NOLDR3=NDXNR3-1                                                           ATCRBS  1902
      IF (NOLDR3.LE.0) GO TO 1900                                               ATCRBS  1903
      DO 1881 KK=1,NOLDR3                                                       ATCRBS  1904
      IPORN3(KK)=IPNRN3(KK)                                                     ATCRBS  1905
      IPOHT3(KK)=IPNHT3(KK)                                                     ATCRBS  1906
      IPOMS3(KK)=IPNMS3(KK)                                                     ATCRBS  1907
      IPOSW3(KK)=IPNSW3(KK)                                                     ATCRBS  1908
      IPOSM3(KK)=IPNSM3(KK)                                                     ATCRBS  1909
      IPOTL3(KK)=IPNTL3(KK)                                                     ATCRBS  1910
 1881 CONTINUE                                                                  ATCRBS  1911
 1900 IF (KTPX42.LE.0) GO TO 1700                                               ATCRBS  1912
      IACPX=(A(1,3)/360.)*4096.                                                 ATCRBS  1913
      IRX=IR                                                                    ATCRBS  1914
      NCNTUX=0                                                                  ATCRBS  1915
      NDXTUX=1                                                                  ATCRBS  1916
      IF (IRX.LE.20) GO TO 1901                                                 ATCRBS  1917
      IRX=20                                                                    ATCRBS  1918
      PRINT 1902,IR                                                             ATCRBS  1919
 1902 FORMAT (//I5,* HITS THIS SWEEP EXCEED THE 20 ALLOWED BY TPX-42 BRP        ATCRBS  1920
     1.  PROCESSING CONTINUES WITH FIRST 20 HITS.*//)                           ATCRBS  1921
 1901 NDXIRX=IRX+1                                                              ATCRBS  1922
 1903 NDXIRX=NDXIRX-1                                                           ATCRBS  1923
 1908 IF (NDXTUX.GT.NOLDTX) GO TO 1906                                          ATCRBS  1924
 1905 IF (NDXIRX.LE.0) GO TO 1930                                               ATCRBS  1925
      IREPRX=R(NDXIRX)*32.                                                      ATCRBS  1926
 1907 IF (IREPRX.GT.(ITRRNX(NPTTOX)+2)) GO TO 1940                              ATCRBS  1927
      IF (IREPRX.GE.(ITRRNX(NPTTOX)-2)) GO TO 1912                              ATCRBS  1928
      IWCNTX=ITRWCX(NPTTOX)-(SHIFT(ITRRNX(NPTTOX),1-IWNLX).AND.000000000        ATCRBS  1929
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                          CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.

      1000000000018)                                                          ATCRBS  1930
      IF (IWCNTX.GT.ITTX) GO TO 1950                                          ATCRBS  1931
      IF (ITRLEX(NPTTOX).EQ.0) GO TO 1951                                     ATCRBS  1932
      IF (ITRCCX(NPTTOX).LT.ICONFX) GO TO 1951                                ATCRBS  1933
      IAZSPX=IACPX                                                            ATCRBS  1934
      ITRGTX=ITRGTX+1                                                         ATCRBS  1935
      IF ((ITRAZX(NPTTOX).GE.2048).AND.(IAZSPX.LE.2048)) IAZSPX=IAZSPX+4      ATCRBS  1936
     1096                                                                     ATCRBS  1937
      IAZCX=(ITRAZX(NPTTOX)+IAZSPX)/2-IBIASX                                  ATCRBS  1938
      IF (IAZCX.GT.4096) IAZCX=IAZCX-4096                                     ATCRBS  1939
      IF (IAZSPX.GT.4096) IAZSPX=IAZSPX-4096                                  ATCRBS  1940
      IAZSTX=ITRAZX(NPTTOX)-IBIASX                                            ATCRBS  1941
      IAZSPX=IAZSPX-IBIASX                                                    ATCRBS  1942
      IF (IAZSTX.LT.0) IAZSTX=IAZSTX+4096                                     ATCRBS  1943
      IF (IAZSPX.LT.0) IAZSPX=IAZSPX+4096                                     ATCRBS  1944
      IF (IAZCX.LT.0) IAZCX=IAZCX+4096                                        ATCRBS  1945
      AZCX=FLOAT(IAZCX)*CVAL                                                  ATCRBS  1946
      TSTX=FLOAT(IAZSTX)*CVAL                                                 ATCRBS  1947
      TSPX=FLOAT(IAZSPX)*CVAL                                                 ATCRBS  1948
      RNGX=FLOAT(ITRRNX(NPTTOX)/2)/16.                                        ATCRBS  1949
      PRINT 1960,RNGX,ITRCCX(NPTTOX),AZCX,IAZCX,TSTX,IAZSTX,TSPX,             ATCRBS  1950
     1IAZSPX                                                                  ATCRBS  1951
 1960 FORMAT (/21X3HX X11X*TPX-42*10X*TARGET RANGE    =*F9.4,* NAUTICAL M     ATCRBS  1952
     1ILES*6X*CONFIDENCE CHECK =*I3/22X1HX12X*TARGET*10X*CENTER AZIMUTH       ATCRBS  1953
     2=*F9.4,* DEG (*I4,* ACPS)*/21X3HX X11X*REPORT*10X*START  AZIMUTH =      ATCRBS  1954
     3*F9.4,* DEG (*I4,* ACPS)*5X*STOP AZIMUTH =*F9.4,* DEG (*I4,* ACPS)      ATCRBS  1955
     4*/)                                                                     ATCRBS  1956
      GO TO 1951                                                              ATCRBS  1957
 1950 ITRRNX(NPTTUX)=ITRRNX(NPTTOX)                                           ATCRBS  1958
      ITRAZX(NPTTUX)=ITRAZX(NPTTOX)                                           ATCRBS  1959
      ITRWNX(NPTTUX)=(0000000000777777777B.AND.(SHIFT(ITRWNX(NPTTOX),1)       ATCRBS  1960
     1))                                                                      ATCRBS  1961
      ITRWCX(NPTTUX)=IWCNTX                                                   ATCRBS  1962
      ITRLEX(NPTTUX)=ITRLEX(NPTTOX)                                           ATCRBS  1963
      ITRCCX(NPTTUX)=ITRCCX(NPTTOX)                                           ATCRBS  1964
      NCNTUX=NCNTUX+1                                                         ATCRBS  1965
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                          ATCRBS  1966
      NPTTUX=NPTTUX+1                                                         ATCRBS  1967
      IF (NPTTUX.GT.20) NPTTUX=1                                              ATCRBS  1968
 1951 NPTTOX=NPTTUX+1                                                         ATCRBS  1969
      IF (NPTTOX.GT.20) NPTTOX=1                                              ATCRBS  1970
      NDXTOX=NDXTOX+1                                                         ATCRBS  1971
      IF (NDXTOX.LE.NOLDTX) GO TO 1907                                        ATCRBS  1972
      GO TO 1936                                                              ATCRBS  1973
 1940 IF (NPTTUX.NE.NPTTOX) GO TO 1970                                        ATCRBS  1974
      PRINT 1990                                                              ATCRBS  1975
 1990 FORMAT (//* NO MORE ROOM FOR TPX-42 TARGET RECORD UPDATES, BUT PRO      ATCRBS  1976
     1CESSING CONTINUES.*//)                                                  ATCRBS  1977
      GO TO 1971                                                              ATCRBS  1978
 1970 ITRRNX(NPTTUX)=IREPRX                                                   ATCRBS  1979
      ITRAZX(NPTTUX)=IACPX                                                    ATCRBS  1980
      ITRWNX(NPTTUX)=1                                                        ATCRBS  1981
      ITRWCX(NPTTUX)=1                                                        ATCRBS  1982
      ITRLEX(NPTTUX)=0                                                        ATCRBS  1983
      IF (ITLX.EQ.1) ITRLEX(NPTTUX)=1                                         ATCRBS  1984
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                        CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      ITRCCX(NPTTUX)=0                                                    ATCRBS   1985
      IF (IMD(IL).EQ.IMA) ITRCCX(NPTTUX)=1                                ATCRBS   1986
      NCNTUX=NCNTUX+1                                                     ATCRBS   1987
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                      ATCRBS   1988
      NPTTUX=NPTTUX+1                                                     ATCRBS   1989
      IF (NPTTUX.GT.20) NPTTUX=1                                          ATCRBS   1990
 1971 NDXTRX=NDXTRX-1                                                     ATCRBS   1991
      GO TO 1905                                                          ATCRBS   1992
 1912 ITRRNX(NPTTUX)=IREPRX                                               ATCRBS   1993
      ITRWCX(NPTTUX)=ITRWCX(NPTTUX)-(SHIFT(ITRWNX(NPTTUX)+1-IWNLX).AND.0  ATCRBS   1994
     1000000000000000001B)+1                                              ATCRBS   1995
      ITRLEX(NPTTUX)=ITRLEX(NPTTUX)                                       ATCRBS   1996
      ITRWNX(NPTTUX)=(0000000000777777777B.AND.(SHIFT(ITRWNX(NPTTUX),1)   ATCRBS   1997
     1))+1                                                                ATCRBS   1998
      ITRAZX(NPTTUX)=ITRAZX(NPTTUX)                                       ATCRBS   1999
      ITRCCX(NPTTUX)=ITRCCX(NPTTUX)                                       ATCRBS   2000
      IF (IMD(IL).EQ.IMA) ITRCCX(NPTTUX)=ITRCCX(NPTTUX)+1                 ATCRBS   2001
      IF ((ITRLEX(NPTTUX).EQ.1).OR.((ITRLEX(NPTTUX).EQ.0).AND.(ITRWCX(NP  ATCRBS   2002
     1TTUX).LT.ITLX))) GO TO 1905                                         ATCRBS   2003
      ITRLEX(NPTTUX)=1                                                    ATCRBS   2004
      ITRAZX(NPTTUX)=IACPX                                                ATCRBS   2005
 1965 NCNTUX=NCNTUX+1                                                     ATCRBS   2006
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                      ATCRBS   2007
      NPTTUX=NPTTUX+1                                                     ATCRBS   2008
      IF (NPTTUX.GT.20) NPTTUX=1                                          ATCRBS   2009
      NPTTUX=NPTTUX+1                                                     ATCRBS   2010
      IF (NPTTUX.GT.20) NPTTUX=1                                          ATCRBS   2011
      NDXTUX=NDXTUX+1                                                     ATCRBS   2012
      GO TO 1903                                                          ATCRBS   2013
 1930 IWCNTX=ITRWCX(NPTTUX)-(SHIFT(ITRWNX(NPTTUX),1-IWNLX).AND.000000000  ATCRBS   2014
     100000000001B)                                                       ATCRBS   2015
      IF (IWCNTX.GT.ITTX) GO TO 1980                                      ATCRBS   2016
      IF (ITHLEX(NPTTUX).EQ.0) GO TO 1981                                 ATCRBS   2017
      IF (ITHCCX(NPTTUX).LT.ICONFX) GO TO 1981                            ATCRBS   2018
      IAZSPX=IACPX                                                        ATCRBS   2019
      ITRGTX=ITRGTX+1                                                     ATCRBS   2020
      IF ((ITRAZX(NPTTUX).GE.2048).AND.(IAZSPX.LE.2048)) IAZSPX=IAZSPX+4  ATCRBS   2021
     1096                                                                 ATCRBS   2022
      IAZCX=(ITRAZX(NPTTUX)+IAZSPX)/2-IBIASX                              ATCRBS   2023
      IF (IAZCX.GT.4096) IAZCX=IAZCX-4096                                 ATCRBS   2024
      IF (IAZSPX.GT.4096) IAZSPX=IAZSPX-4096                              ATCRBS   2025
      IAZSTX=ITRAZX(NPTTUX)-IBIASX                                        ATCRBS   2026
      IAZSPX=IAZSPX-IBIASX                                                ATCRBS   2027
      IF (IAZSTX.LT.0) IAZSTX=IAZSTX+4096                                 ATCRBS   2028
      IF (IAZSPX.LT.0) IAZSPX=IAZSPX+4096                                 ATCRBS   2029
      IF (IAZCX.LT.0) IAZCX=IAZCX+4096                                    ATCRBS   2030
      AZCX=FLOAT(IAZCX)*CVAL                                              ATCRBS   2031
      TSTX=FLOAT(IAZSTX)*CVAL                                             ATCRBS   2032
      TSPX=FLOAT(IAZSPX)*CVAL                                             ATCRBS   2033
      RNGX=FLOAT(ITRRNX(NPTTUX)/2)/16.                                    ATCRBS   2034
      PRINT 1990,RNGX,ITRCCX(NPTTUX),AZCX,IAZCX,TSTX,IAZSTX,TSPX,         ATCRBS   2035
     1IAZSPX                                                              ATCRBS   2036
      GO TO 1981                                                          ATCRBS   2037
 1980 ITRRNX(NPTTUX)=ITRRNX(NPTTUX)                                       ATCRBS   2038
      ITRAZX(NPTTUX)=ITRAZX(NPTTUX)                                       ATCRBS   2039
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                                CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
      ITRWNX(NPTTUX)=(0000000000/7777777778.AND.(SHIFT(ITRWNX(NPTTUX),1)  ATCRBS  2040
     1))
      ITRWCX(NPTTUX)=IWCNTX                                                ATCRBS  2041
      ITRLEX(NPTTUX)=ITRLEX(NPTTUX)                                        ATCRBS  2042
      ITRCCX(NPTTUX)=ITRCCX(NPTTUX)                                        ATCRBS  2043
      NCNTUX=NCNTUX+1                                                      ATCRBS  2044
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                       ATCRBS  2045
      NPTTUX=NPTTUX+1                                                      ATCRBS  2046
      IF (NPTTUX.GT.20) NPTTUX=1                                           ATCRBS  2047
 1981 NPTTUX=NPTTUX+1                                                      ATCRBS  2048
      IF (NPTTUX.GT.20) NPTTUX=1                                           ATCRBS  2049
      NDXTUX=NDXTUX+1                                                      ATCRBS  2050
      IF (NDXTUX.LE.NOLDTX) GO TO 1930                                     ATCRBS  2051
      GO TO 1934                                                           ATCRBS  2052
 1906 IF (NDXIRX.LE.0) GO TO 1934                                          ATCRBS  2053
 1930 IF (NPTTUX.EQ.NPTONX) GO TO 1933                                     ATCRBS  2054
      ITRRNX(NPTTUX)=R(NDXIRX)*32.                                         ATCRBS  2055
      ITRAZX(NPTTUX)=IALPX                                                 ATCRBS  2056
      ITRWNX(NPTTUX)=1                                                     ATCRBS  2057
      ITRWCX(NPTTUX)=1                                                     ATCRBS  2058
      ITRLEX(NPTTUX)=0                                                     ATCRBS  2059
      IF (ITLX.EQ.1) ITRLEX(NPTTUX)=1                                      ATCRBS  2060
      ITRCCX(NPTTUX)=0                                                     ATCRBS  2061
      IF (IMD(IL).EQ.1HA) ITRCCX(NPTTUX)=1                                 ATCRBS  2062
      NCNTUX=NCNTUX+1                                                      ATCRBS  2063
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                       ATCRBS  2064
      NPTTUX=NPTTUX+1                                                      ATCRBS  2065
      IF (NPTTUX.GT.20) NPTTUX=1                                           ATCRBS  2066
      NDXIRX=NDXIRX-1                                                      ATCRBS  2067
      GO TO 1906                                                           ATCRBS  2068
 1933 PRINT 1990                                                           ATCRBS  2069
 1934 NOLDTX=NCNTUX                                                        ATCRBS  2070
      NPTTUX=NPTONX                                                        ATCRBS  2071
 1700 IF (MSCAN.EQ.0) GO TO 5557                                           ATCRBS  2072
      MSCAN=0                                                              ATCRBS  2073
      ISCAN=ISCAN+1                                                        ATCRBS  2074
      PRINT 1715,ISCAN,ITRGT                                               ATCRBS  2075
 1715 FORMAT( * CU TARGET COUNT FOR SCAN NO.*I3,* IS*I7,*.* )              ATCRBS  2076
      PRINT 1814,ISCAN,IVDTG3,IRGTG3                                       ATCRBS  2077
 1814 FORMAT(* ARIS-3 VALID TARGET COUNT FOR SCAN NO.*I3,* IS*I7,*.*10X*   ATCRBS  2078
     1 RING AROUND TARGET COUNT IS *,I7,*.*)                               ATCRBS  2079
      PRINT 1915,ISCAN,IRGTA                                               ATCRBS  2080
 1915 FORMAT (* TPX-42 TARGET COUNT FOR SCAN NO.*I3,* IS*I7,*.*)           ATCRBS  2081
      NFRUITA=NFRUITA/2                                                    ATCRBS  2082
      NFRUITC=NFRUITC/2                                                    DABS    133
      NFRUIT1=NFRUIT1/2                                                    DABS    134
      NFRUIT2=NFRUIT2/2                                                    DABS    135
      NFRUIT=NFRUITA+NFRUITC+NFRUIT1+NFRUIT2                               DABS    136
      PRINT 5555 ,ISCAN,NFRUIT,NFRUTA,NFRUTC,NFRUT1,NFRUT2                 ATCRBS  2083
 5555 FORMAT (* FRUIT COUNT FOR SCAN NO.*I3,* IS*I7,*.*10X*(FRUIT BY  MO  ATCRBS  2084
     1DE,  A = *I5,*,  C = *I5,*,  1 = *I5,*,  2 = *I5,*.)*)               ATCRBS  2085
      IF (NFRUIT.GT.MAXFR) MAXFR=NFRUIT                                    ATCRBS  2086
      IF (NFRUIT.LT.MINFR) MINFR=NFRUIT                                    ATCRBS  2087
      NTOTFR=NTOTFR+NFRUIT                                                 ATCRBS  2088
      NFRUIT=0                                                             ATCRBS  2089
                                                                           ATCRBS  2090
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A) (CONT'D)

```
MAIN                                        CDC 6600 FTN V3.0-P355 OPT=1   12/07/73   17.14.19.

      NFRUTA=0                                                              ATCRBS   2091
      NFRUTC=0                                                              ATCRBS   2092
      NFRUT2=0                                                              ATCRBS   2093
      NFRUT1=0                                                              ATCRBS   2094
      ITRGI=0                                                               ATCRBS   2095
      IVJIG3=0                                                              ATCRBS   2096
      IRGI03=0                                                              ATCRBS   2097
      ITRGTX=0                                                              ATCRBS   2098
      NAVEFR=NTOTFR/ISCAN                                                   ATCRBS   2099
      PRINT 5556,ISCAN,NAVEFR,MAXFR,MINFR                                   ATCRBS   2100
 5556 FORMAT(  * AVERAGE FRUIT PER SCAN OVER*I3,* SCANS IS*I7,*,*5X,        ATCRBS   2101
     1*MAXIMUM IS*I7,*,   MINIMUM IS*I7,*,*//)                              ATCRBS   2102
      DO 5560JDBS=1,NACRFT                                                  ATCRBS   2103
      PRINT 6,ISCAN,AVINTZ(JDBS), AMXINZ(JDBS),AMNINZ(JDBS)                 ATCRBS   2104
      PRINT 8050,ISCAN,AVINTR(JDBS),AMXINT(JDBS),AMNINT(JDBS)               ATCRBS   2105
 8050 FORMAT(* AVERAGE RATE OF REPLY          PER SECOND OVER*I3,* SCANS    ATCRBS   2106
     1IS*F10.3,*,*5X,*MAXIMUM IS*F10.3,*,   MINIMUM IS*F10.3,*,*)           ATCRBS   2107
    6 FORMAT(* AVERAGE RATE OF INTERROGATION PER SECOND OVER*I3,* SCANS     ATCRBS   2108
     1IS*F10.3,*,*5X,*MAXIMUM IS*F10.3,*,   MINIMUM IS*F10.3,*,*)           ATCRBS   2109
      PRINT 8051,ISCAN,AVSLSZ(JDBS),AMXSLZ(JDBS),AMNSLZ(JDBS)               ATCRBS   2110
      PRINT   10,ISCAN,AVSLSR(JDBS),AMXSLS(JDBS),AMNSLS(JDBS)               ATCRBS   2111
 8051 FORMAT(* AVERAGE RATE OF UPLINK SLS  PER SECOND OVER*I3,* SCANS IS    ATCRBS   2112
     1*,F10.3,*,*5X,*MAXIMUM IS*F10.3,*,   MINIMUM IS*F10.3,*,*)           ATCRBS   2113
   10 FORMAT(* AVERAGE RATE OF SUPPRESSION PER SECOND OVER*I3,* SCANS IS    ATCRBS   2114
     1*,F10.3,*,*5X,*MAXIMUM IS*F10.3,*,   MINIMUM IS*F10.3,*,*)           ATCRBS   2115
      REPROB(JDBS)=AVINTR(JDBS)/AVINTZ(JDBS)                                ATCRBS   2116
      SLPROB(JDBS)=AVSLSR(JDBS)/AVSLSZ(JDBS)                                ATCRBS   2117
      PRINT 8052,REPROB(JDBS),SLPROB(JDBS)                                  ATCRBS   2118
 8052 FORMAT (//* REPLY PROBABILITY =*F6.3,*      SUPPRESSION PROBABILITY   ATCRBS   2119
     1 =*F6.3//)                                                            ATCRBS   2120
      IF (ISCAN.LE.1) PRVAVI=0.                                             ATCRBS   2121
      IF (ISCAN.LE.1) PRVAVS=0.                                             ATCRBS   2122
      PRSRTI=FLOAT(ISCAN)*(AVINTZ(1)-PRVAVI)+PRVAVI                         ATCRBS   2123
      PRSRTS=FLOAT(ISCAN)*(AVSLSZ(1)-PRVAVS)+PRVAVS                         ATCRBS   2124
      PRVAVI=AVINTZ(1)                                                      ATCRBS   2125
      PRVAVS=AVSLSZ(1)                                                      ATCRBS   2126
      PRINT 7575,PRSRTI,PRSRTS                                              ATCRBS   2127
 7575 FORMAT (* RATE OF INTERROGATION THIS SCAN = *F10.3,*                  ATCRBS   2128
     1RATE OF UPLINK SLS THIS SCAN = *F10.3)                                ATCRBS   2129
      PRINT 8006,JDBS,RRF(JDBS),RRC(JDBS)                                   DABS      137
 8006 FORMAT(* RRF(JAC),RRC(JAC) *,I5,2(F10.6,10X))                         DABS      138
      IF(IPRINT.LE.0) GO TO 5557                                            ATCRBS   2130
 5560 CONTINUE                                                              ATCRBS   2133
      DO 5558 KDBS=1,100                                                    ATCRBS   2134
      DBSPW=FLOAT(KDBS)*10.                                                 DABS      139
      PRINT 5559,DBSPW,KDBS,IDBPIN(KDBS),KDBS,IDBPSL(KDBS),KDBS,IDBP2P(K    DABS      140
     1DBS)                                                                  DABS      141
 5559 FORMAT(10X,F4.0,5X*IDBPIN (*I4,*)*,I7,10X*IDBPSL (*,I4,*)*,I10,10X    DABS      142
     1*IDBP2P (*I4,*)*,I7)                                                  DABS      143
 5558 CONTINUE                                                              DABS      144
      DO 5561 I=1,NACRFT                                                    DABS      145
      ITP2Z(I)=FLOAT(KNTP2Z(I))/TIME                                        DABS      146
      PRINT 5562,I,ITP2Z(I)                                                 DABS      147
 5562 FORMAT(* AVE SINGLE P2 RATE (JAC)*,3(I5,10X,I10))                     DABS      148
 5561 CONTINUE                                                              DABS      149
```

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A)(CONT'D)

```
AM      MAIN                                    CDC 6600 FTN V3.0-P355 OPT=1  12/07/73  17.14.19.
  5557  CONTINUE
        IF(INEXT.LT.IEND) GO TO 2                                    ATCRBS   2139
        CALL SECOND (TTT)                                            DABS      150
        PRINT 15,TTT                                                 ATCRBS   2141
        STOP                                                         ATCRBS   2142
        END                                                          ATCRBS   2143
                                                                     ATCRBS   2144
```

TABLE B-1.* SIMULATION MODEL PROGRAM LISTING (TASK A)(CONT'D)

TEND, INTF,NACHX,TRANST,ARFRTH .30010000E+03 72 2 1 1

INT. NO.	ROTATION RATE(RPM)	PRF (INT/SEC)	INITIAL INT. AZIMUTH (DEG)	P1 POWER (WATTS)	LAT. (DMS)	LONG. (DMS) (WEST)	SITE ELEV. (FT)	ANT. HT. (FT)	INT. START TIME (USEC)	P2 POWER B.R.T. P1 (DB)	MODE INTERLACE	DIR. ANT. GAIN (DB)	TISLS SWITCH (1 ON, 0 OFF)
1	15.01	395.	0.	500.	39.52.32.	75.14. 1.	9.	28.	0.	-15.0	B	21.	1
2	15.04	390.	127.	500.	40.38.11.	73.46. 3.	12.	33.	1798.	-15.0	AACAACAACAAC	21.	1
3	15.08	380.	133.	500.	40.41.43.	74.10.22.	8.	51.	1660.	-15.0	AACAACAACAAC	21.	1
4	13.07	350.	24.	500.	41.56.19.	72.41. 2.	173.	24.	328.	-15.0	AACAACAACAAC	21.	1
5	15.09	370.	144.	500.	41.16. 3.	72.59.34.	240.	14.	637.	*00.0	3332333323332	19.	0
6	20.02	275.	326.	500.	39. 7.46.	75.27.50.	98.	16.	1978.	*00.0	3332333323332	17.	0
7	15.08	200.	64.	500.	38.50. 0.	77. 0. 0.	218.	14.	1582.	*00.0	3332333323332	21.	0
8	15.08	280.	292.	500.	38.49.16.	77. 1.36.	264.	50.	2962.	-15.0	3332333323332	16.	0
9	6.04	350.	316.	1000.	38.50.53.	76.59.13.	264.	46.	2067.	*00.0	3332333323332	19.	0
10	6.03	350.	245.	1000.	38.50.53.	76.59.13.	108.	22.	172.	*00.0	3332333323332	19.	0
11	15.09	400.	158.	500.	38.51.42.	77. 2. 2.	11.	27.	2063.	-15.0	AACAACAACAAC	21.	1
12	9.08	294.	355.	500.	38. 9. 0.	76.25. 0.	90.	30.	384.	*00.0	3332333323332	19.	0
13	14.92	250.	159.	500.	39.10. 0.	76.40. 0.	94.	25.	432.	-15.0	3332333323332	21.	0
14	15.09	400.	286.	500.	39.10.44.	76.41. 3.	157.	30.	2132.	-15.0	AACAACAACAAC	21.	1
15	15.02	353.	113.	500.	38.17.24.	76.24.29.	90.	29.	293.	*00.0	3332333323332	21.	0
16	5.90	355.	270.	800.	38.51.14.	76.56.22.	285.	80.	868.	-15.0	A	21.	1
17	6.96	360.	102.	1000.	38.17.10.	76.25.50.	66.	33.	2156.	*00.0	3332333323332	28.	0
18	4.94	370.	97.	1000.	39. 6.59.	76.43.39.	257.	68.	788.	-15.0	3332333323332	21.	0
19	15.02	385.	45.	500.	38.48.44.	76.54. 2.	271.	55.	132.	-15.0	AAA2AAA2AAA2	21.	1
20	15.09	450.	318.	500.	39.28. 0.	76.10. 0.	80.	30.	968.	-15.0	3332333323332	19.	0
21	5.08	241.	284.	1000.	42. 2. 0.	70. 3.13.	144.	46.	463.	-15.0	3332333323332	21.	0
22	11.02	292.	3.	500.	42.11.40.	72.33.21.	269.	39.	405.	*00.0	3332333323332	21.	0
23	15.06	300.	86.	500.	41.39.44.	70.31.23.	193.	27.	308.	-15.0	AAA2AAA2AAA2	21.	1
24	15.03	400.	296.	500.	42. 8.52.	70.56.30.	163.	15.	1951.	*00.0	3332333323332	17.	0
25	5.92	350.	186.	1000.	42.23.21.	70.58.11.	40.	95.	2224.	-15.0	A	21.	1
26	5.02	370.	89.	1000.	42.16. 0.	71.53. 0.	1009.	30.	2221.	*00.0	3332333323332	21.	0
27	15.09	395.	86.	300.	42.21.41.	71. 0.37.	19.	30.	1648.	-15.0	AACAACAACAAC	21.	1
28	6.08	450.	335.	1000.	42.30.20.	71.14. 6.	133.	50.	1413.	-15.0	3332333323332	21.	0
29	14.98	285.	339.	500.	43. 5. 4.	70.49. 2.	83.	87.	3338.	*00.0	3332333323332	21.	0
30	20.08	400.	205.	500.	40. 1.48.	74.21. 3.	90.	17.	2806.	*00.0	3332333323332	17.	0
31	15.08	400.	120.	500.	40. 1. 8.	74.36. 1.	133.	52.	484.	*00.0	3332333323332	21.	0
32	12.00	343.	324.	500.	39.26. 8.	74.35. 2.	45.	45.	212.	-15.0	A	21.	1
33	15.10	350.	265.	500.	39.27.25.	74.34.45.	76.	30.	130.	-15.0	AACAACAACAAC	21.	1
34	6.03	360.	309.	1000.	39.35.19.	74.41.56.	119.	85.	1997.	-15.0	A	21.	1
35	13.01	380.	324.	500.	39.27.10.	74.35.32.	73.	28.	1001.	-15.0	A	21.	1
36	9.98	367.	133.	500.	40.44.13.	73.25. 9.	50.	30.	2211.	-15.0	3332333323332	19.	0
37	15.08	375.	142.	500.	44.38.54.	73.27.52.	293.	20.	433.	*00.0	3332333323332	20.	0
38	15.10	343.	34.	200.	41. 3.40.	73.42.55.	200.	41.	2703.	-15.0	A	21.	1
39	6.05	350.	286.	1000.	42.38.16.	77.39.14.	2097.	65.	792.	-15.0	A	21.	1
40	15.01	355.	52.	500.	43. 6.44.	76. 6.20.	400.	25.	2725.	-15.0	AACAACAACAAC	21.	1
41	5.97	355.	18.	1000.	40.39.45.	73.46.48.	10.	99.	2396.	-15.0	A	21.	1
42	5.08	300.	6.	1000.	43. 9. 6.	75.37. 4.	445.	50.	294.	*00.0	3332333323332	20.	0
43	10.07	375.	169.	500.	40.52. 0.	73.22.10.	50.	30.	2331.	-15.0	A	19.	0
44	14.91	380.	46.	500.	42.44.44.	73.47.56.	390.	51.	735.	-15.0	AACAACAACAAC	21.	1
45	14.92	390.	201.	500.	43. 7.14.	77.39.55.	542.	31.	2070.	-15.0	AACAACAACAAC	21.	1
46	15.08	390.	5.	500.	43.13.41.	75.25.27.	578.	41.	274.	-15.0	A	21.	1
47	14.92	395.	358.	500.	42.56.26.	78.44.11.	711.	37.	951.	-15.0	AACAACAACAAC	21.	1
48	14.95	400.	194.	200.	42.12.50.	75.58.45.	1581.	57.	2348.	-15.0	AAACAAACAAAC	21.	1
49	9.94	400.	234.	500.	40.45.29.	73.29.50.	50.	30.	2244.	-15.0	A	21.	0
50	5.99	410.	232.	1000.	44. 2.11.	75.44.25.	670.	13.	1628.	*00.0	3332333323332	20.	0
51	5.09	367.	118.	1000.	40.12.10.	75. 8.35.	349.	16.	2780.	*00.0	3332333323332	20.	0
52	15.08	300.	206.	500.	40.12.10.	75. 8.35.	349.	17.	1288.	*00.0	3332333323332	17.	0
53	15.06	350.	267.	500.	41.20. 9.	75.43.10.	1097.	47.	186.	-15.0	A	21.	1
54	4.94	360.	745.	1000.	41.21.25.	76.17.36.	2580.	68.	2001.	-15.0	A	21.	1
55	4.99	395.	154.	1000.	40. 8. 5.	74.59.14.	9.	33.	2519.	-15.0	A	21.	1

* Definitions of parameters related to above data are contained in Appendix D.

TABLE B-1.* SIMULATION MODEL PROGRAM LISTING (TASK A)(CONT'D)

```
56     5.98     370.     197.     800.    40.48.30.   71.22.40.   1200.    40.    1188.    -15.0    3332333223332    23.    0
57    15.03     390.     228.     500.    40.13.24.   76.52.39.    494.    29.     824.    -15.0    A                21.    1
58     5.93     370.       2.    1000.    41.37.30.   71.26.30.    110.    32.    1584.    *00.0    3332333223332    23.    0
59    15.05     385.     314.     500.    41.36. 8.   71.24.40.     10.    28.     720.    -15.0    A2ACA2ACA2AC     21.    1
60     5.09     339.     326.    1000.    44.46.54.   73. 3.58.   1304.    36.    1368.    -15.0    3332333223332    21.    0
61     6.04     360.     344.    1000.    44.28. 3.   73. 8.57.    332.    45.     371.    -15.0    A                21.    1
62     5.09     241.     139.    1000.    37. 8. 2.   75.57. 4.      9.    99.     711.    -15.0    AAA2AAA2AAA2     21.    1
63     6.00     350.     100.    1000.    36.49.46.   76. 2.28.     20.    50.     678.    *00.0    3332333223332    28.    0
64     5.94     367.      24.    1000.    38.30. 0.   77.18. 0.     12.    20.    2154.    *00.0    3332333223332    25.    0
65    15.07     375.     179.     500.    37. 5. 7.   76.21.35.     13.    18.    3436.    *00.0    3332333223332    20.    0
66    14.98     300.      81.     500.    36.56.14.   76.17.33.     15.     9.     896.    *00.0    3332333223332    17.    0
67    15.08     380.     347.     500.    38.57.24.   77.27.50.    295.    37.    1993.    -15.0    AACAACAACAAC     21.    1
68    14.96     390.      91.     500.    37.30.19.   77.19.28.    157.    35.     814.    -15.0    A                21.    1
69    15.09     395.     318.     500.    36.53.44.   76.11.37.     25.    55.     750.    -15.0    AACAACAACAAC     21.    1
70     4.91     360.     100.    1000.    37.31. 2.   79.30.39.   4226.    46.    2135.    -15.0    3332333223332    21.    0
71    14.99     400.     197.     500.    40.29.53.   80.14.40.   1243.    30.     823.    -15.0    AACAACAACAAC     21.    1
72     4.99     355.     232.    1000.    40.23.56.   80. 9.26.   1356.    94.    2285.    -15.0    A                21.    1
STIMF,SENSTV(1),REDSNS,RMN,RMX,KRSLS,RSLVL                0.0      -88.0     42.4      1.0     250.0    0     12.0
IXPNOP,GAC,FRPPT(1),DELAY,TSNSMX(1),TRRL(1),RESOIF,DEADT(1),SUPPT(1)
  0     0.0    54.0     3.0    -77.0    1200.0     5.0     35.0    100.0
IRIRFP(1),IRLSLS(1),RRLCO,IAARYP,IAASWCH                                0    0 0.00    1     1
TRF,PT
IDFPUT,DFGATE                                                   4.0     12.0
ICO,IWNL,ITL,ITT,RIAS,IC          0   11    6    2 1.50                1.0
KARTS3,IHY3P3,IWY3P3,IMY4R3,IRNGR3,ITGYR3,IHMRP3,IHY4R3                 0    3    2    4   31   14   21    7
KTPX42,IWNLX,ITLX,ITTX,ICONFX          0    8    2    1    4
 ISMAX            0
```

```
TARGET COUNT FOR SCAN NO.  1 IS        0.
TS=3 VALID TARGET COUNT FOR SCAN NO.  1 IS      0.          RING AROUND TARGET COUNT IS        0.
X=42 TARGET COUNT FOR SCAN NO.  1 IS      0.
IT COUNT FOR SCAN NO.  1 IS      0.          (FRUIT BY MODE,  A -     0,  C -     0,  1 -     0,  2 -     0.)
ERAGE FRUIT PER SCAN OVER  1 SCANS IS      0.      MAXIMUM IS      0.,  MINIMUM IS      0.

ERAGE RATE OF INTERROGATION PER SECOND OVER  1 SCANS IS    91.500.    MAXIMUM IS   651.750.   MINIMUM IS     0.000.
ERAGE RATE OF REPLY         PER SECOND OVER  1 SCANS IS    87.250.    MAXIMUM IS   612.250.   MINIMUM IS     0.000.
ERAGE RATE OF UPLINK SLS    PER SECOND OVER  1 SCANS IS   742.500.    MAXIMUM IS   790.000.   MINIMUM IS   395.000.
ERAGE RATE OF SUPPRESSION PER SECOND OVER  1 SCANS IS   729.000.    MAXIMUM IS   790.000.   MINIMUM IS   375.250.

PLY PROBABILITY =  .954      SUPPRESSION PROBABILITY =  .982
```

*Definitions of parameters related to above data are contained in Appendix D.

TABLE B-1.* SIMULATION MODEL PROGRAM LISTING (TASK A)(CONT'D)

```
TE OF INTERROGATION THIS SCAN =      91.500                RATE OF UPLINK SLS THIS SCAN =     742.500
F(JAC),RRC(JAC)      1  1.000000              1.000000
ERAGE RATE OF INTERROGATION PER SECOND OVER  1 SCANS IS   228.579.     MAXIMUM IS   908.500.   MINIMUM IS     0.000.
ERAGE RATE OF REPLY          PER SECOND OVER  1 SCANS IS   156.053.     MAXIMUM IS   632.000.   MINIMUM IS     0.000.
ERAGE RATE OF UPLINK SLS  PER SECOND OVER  1 SCANS IS  1826.974.     MAXIMUM IS  2133.000.   MINIMUM IS  1461.500.
ERAGE RATE OF SUPPRESSION PER SECOND OVER  1 SCANS IS  1529.013.     MAXIMUM IS  1777.500.   MINIMUM IS  1244.250.

PLY PROBABILITY =  .683      SUPPRESSION PROBABILITY =  .837

TE OF INTERROGATION THIS SCAN =      91.500                RATE OF UPLINK SLS THIS SCAN =     742.500
F(JAC),RRC(JAC)      2   .904762              .818182
```

-00.	IDBPIN (1)	0	IDBPSL (1)	0	IDBP2P (1)	0
-99.	IDBPIN (2)	0	IDBPSL (2)	0	IDBP2P (2)	0
-98.	IDBPIN (3)	0	IDBPSL (3)	0	IDBP2P (3)	0
-97.	IDBPIN (4)	0	IDBPSL (4)	0	IDBP2P (4)	0
-96.	IDBPIN (5)	0	IDBPSL (5)	0	IDBP2P (5)	0
-95.	IDBPIN (6)	0	IDBPSL (6)	0	IDBP2P (6)	0
-94.	IDBPIN (7)	0	IDBPSL (7)	0	IDBP2P (7)	0
-93.	IDBPIN (8)	0	IDBPSL (8)	0	IDBP2P (8)	0
-92.	IDBPIN (9)	0	IDBPSL (9)	0	IDBP2P (9)	0
-91.	IDBPIN (10)	0	IDBPSL (10)	0	IDBP2P (10)	0
-90.	IDBPIN (11)	0	IDBPSL (11)	0	IDBP2P (11)	0
-89.	IDBPIN (12)	0	IDBPSL (12)	0	IDBP2P (12)	0
-88.	IDBPIN (13)	0	IDBPSL (13)	0	IDBP2P (13)	0
-87.	IDBPIN (14)	0	IDBPSL (14)	0	IDBP2P (14)	0
-86.	IDBPIN (15)	0	IDBPSL (15)	0	IDBP2P (15)	0
-85.	IDBPIN (16)	0	IDBPSL (16)	0	IDBP2P (16)	0
-84.	IDBPIN (17)	0	IDBPSL (17)	0	IDBP2P (17)	0
-83.	IDBPIN (18)	0	IDBPSL (18)	0	IDBP2P (18)	0
-82.	IDBPIN (19)	0	IDBPSL (19)	0	IDBP2P (19)	0
-81.	IDBPIN (20)	0	IDBPSL (20)	0	IDBP2P (20)	0
-80.	IDBPIN (21)	0	IDBPSL (21)	0	IDBP2P (21)	0
-79.	IDBPIN (22)	0	IDBPSL (22)	0	IDBP2P (22)	0
-78.	IDBPIN (23)	0	IDBPSL (23)	0	IDBP2P (23)	0
-77.	IDBPIN (24)	0	IDBPSL (24)	0	IDBP2P (24)	0
-76.	IDBPIN (25)	0	IDBPSL (25)	0	IDBP2P (25)	0
-75.	IDBPIN (26)	0	IDBPSL (26)	0	IDBP2P (26)	0
-74.	IDBPIN (27)	0	IDBPSL (27)	0	IDBP2P (27)	0
-73.	IDBPIN (28)	0	IDBPSL (28)	0	IDBP2P (28)	0
-72.	IDBPIN (29)	0	IDBPSL (29)	0	IDBP2P (29)	0
-71.	IDBPIN (30)	0	IDBPSL (30)	0	IDBP2P (30)	0
-70.	IDBPIN (31)	0	IDBPSL (31)	0	IDBP2P (31)	0
-69.	IDBPIN (32)	22	IDBPSL (32)	1	IDBP2P (32)	20
-68.	IDBPIN (33)	39	IDBPSL (33)	0	IDBP2P (33)	5
-67.	IDBPIN (34)	45	IDBPSL (34)	0	IDBP2P (34)	10

*Definitions of parameters related to above data are contained in Appendix D.

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A)(CONT'D)

-61.	IDAPIN (40)	10	IDBPSL (40)	0	IDBP2P (40)	2
-60.	IDAPIN (41)	12	IDBPSL (41)	0	IDBP2P (41)	8
-59.	IDAPIN (42)	10	IDBPSL (42)	0	IDBP2P (42)	2
-58.	IDAPIN (43)	8	IDBPSL (43)	0	IDBP2P (43)	2
-57.	IDAPIN (44)	8	IDBPSL (44)	0	IDBP2P (44)	4
-56.	IDAPIN (45)	5	IDBPSL (45)	0	IDBP2P (45)	0
-55.	IDAPIN (46)	7	IDBPSL (46)	0	IDBP2P (46)	1
-54.	IDAPIN (47)	6	IDBPSL (47)	0	IDBP2P (47)	2
-53.	IDAPIN (48)	13	IDBPSL (48)	0	IDBP2P (48)	2
-52.	IDAPIN (49)	22	IDBPSL (49)	0	IDBP2P (49)	4
-51.	IDAPIN (50)	14	IDBPSL (50)	0	IDBP2P (50)	4
-50.	IDAPIN (51)	2	IDBPSL (51)	0	IDBP2P (51)	0
-49.	IDAPIN (52)	0	IDBPSL (52)	0	IDBP2P (52)	0
-48.	IDAPIN (53)	0	IDBPSL (53)	0	IDBP2P (53)	0
-47.	IDAPIN (54)	0	IDBPSL (54)	0	IDBP2P (54)	0
-46.	IDAPIN (55)	0	IDBPSL (55)	0	IDBP2P (55)	0
-45.	IDAPIN (56)	0	IDBPSL (56)	0	IDBP2P (56)	0
-44.	IDAPIN (57)	0	IDBPSL (57)	0	IDBP2P (57)	0
-43.	IDAPIN (58)	0	IDBPSL (58)	0	IDBP2P (58)	0
-42.	IDAPIN (59)	0	IDBPSL (59)	0	IDBP2P (59)	0
-41.	IDAPIN (60)	0	IDBPSL (60)	0	IDBP2P (60)	0
-40.	IDAPIN (61)	0	IDBPSL (61)	0	IDBP2P (61)	0
-39.	IDAPIN (62)	0	IDBPSL (62)	0	IDBP2P (62)	0
-38.	IDAPIN (63)	0	IDBPSL (63)	0	IDBP2P (63)	0
-37.	IDAPIN (64)	0	IDBPSL (64)	0	IDBP2P (64)	0
-36.	IDAPIN (65)	0	IDBPSL (65)	0	IDBP2P (65)	0
-35.	IDAPIN (66)	0	IDBPSL (66)	0	IDBP2P (66)	0
-34.	IDAPIN (67)	0	IDBPSL (67)	0	IDBP2P (67)	0
-33.	IDAPIN (68)	0	IDBPSL (68)	0	IDBP2P (68)	0
-32.	IDAPIN (69)	0	IDBPSL (69)	0	IDBP2P (69)	0
-31.	IDAPIN (70)	0	IDBPSL (70)	0	IDBP2P (70)	0
-30.	IDAPIN (71)	0	IDBPSL (71)	0	IDBP2P (71)	0
-29.	IDAPIN (72)	0	IDBPSL (72)	0	IDBP2P (72)	0
-28.	IDAPIN (73)	0	IDBPSL (73)	0	IDBP2P (73)	0
-27.	IDAPIN (74)	0	IDBPSL (74)	0	IDBP2P (74)	0
-26.	IDAPIN (75)	0	IDBPSL (75)	0	IDBP2P (75)	0
-25.	IDAPIN (76)	0	IDBPSL (76)	0	IDBP2P (76)	0
-24.	IDAPIN (77)	0	IDBPSL (77)	0	IDBP2P (77)	0
-23.	IDAPIN (78)	0	IDBPSL (78)	0	IDBP2P (78)	0
-22.	IDAPIN (79)	0	IDBPSL (79)	0	IDBP2P (79)	0
-21.	IDAPIN (80)	0	IDBPSL (80)	0	IDBP2P (80)	0
-20.	IDAPIN (81)	0	IDBPSL (81)	0	IDBP2P (81)	0
-19.	IDAPIN (82)	0	IDBPSL (82)	0	IDBP2P (82)	0
-18.	IDAPIN (83)	0	IDBPSL (83)	0	IDBP2P (83)	0
-17.	IDAPIN (84)	0	IDBPSL (84)	0	IDBP2P (84)	0
-16.	IDAPIN (85)	0	IDBPSL (85)	0	IDBP2P (85)	0
-15.	IDAPIN (86)	0	IDBPSL (86)	0	IDBP2P (86)	0
-14.	IDAPIN (87)	0	IDBPSL (87)	0	IDBP2P (87)	0
-13.	IDAPIN (88)	0	IDBPSL (88)	0	IDBP2P (88)	0
-12.	IDAPIN (89)	0	IDBPSL (89)	0	IDBP2P (89)	0
-11.	IDAPIN (90)	0	IDBPSL (90)	0	IDBP2P (90)	0
-10.	IDAPIN (91)	0	IDBPSL (91)	0	IDBP2P (91)	0
-9.	IDAPIN (92)	0	IDBPSL (92)	0	IDBP2P (92)	0

TABLE B-1. SIMULATION MODEL PROGRAM LISTING (TASK A)(CONT'D)

-8.	IDRPIN (93)	0	IDBPSL (93)	0	IDBP2P (93)	0
-7.	IDRPIN (94)	0	IDBPSL (94)	0	IDBP2P (94)	0
-6.	IDRPIN (95)	0	IDBPSL (95)	0	IDBP2P (95)	0
-5.	IDRPIN (96)	0	IDBPSL (96)	0	IDBP2P (96)	0
-4.	IDRPIN (97)	0	IDBPSL (97)	0	IDBP2P (97)	0
-3.	IDRPIN (98)	0	IDBPSL (98)	0	IDBP2P (98)	0
-2.	IDRPIN (99)	0	IDBPSL (99)	0	IDBP2P (99)	0
-1.	IDRPIN (100)	0	IDBPSL (100)	0	IDBP2P (100)	0

$WR SINGLE P2 RATE (IAC) 1 30

APPENDIX C

TASK B: SECOND-MISS STATISTICS

APPENDIX C
TASK B: SECOND-MISS STATISTICS

Table C-1 provides a program listing of the simulation model with the necessary modifications to implement Task B. (Refer to paragraph 4.2.4 and figure 4-4 for a review of these modifications.)

The entire simulation program listing is presented in Appendix C for overall continuity. This provides an opportunity for the interested reader to coordinate the transponder functions, toward which this document is primarily oriented, with the remaining simulation model functions symbolized by the functional blocks in figure 2-1.

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B)

```
      PROGRAM MAIN (UPANIN, OUTPUT,TAPE5=UPANIN,TAPE6=OUTPUT,TAPE10)
C THIS CARD IS TO MAKE THE NUMBERING OF ATCRBS AND ATCRBSMODE CORRESPON
      DIMENSION A(75,17),PRP(75),TINTNW(75,2),TLASTI(75),P3(75,2),
     1P3IN(75,12),GIR(75),ILACE(75),IISIS(75),XLAT(75,3),XLON(75,3),
     3HORANG(75),REARTH(75)
      DIMENSION S(1,13,3),TPOWER(1),IDAC(1,3),PXPNEX(1,400),TXPNEX(1,400
     1),NPNEX(1),ERPPTT(1),TPOWOM(1),TSNSMX(1),TDESEC(1),TTDSEC(1),TDESR
     2L(1),DEADT(1),TSNSTV(1),TDSNEC(1),TDSNRL(1),SUPPT(1),IJFLAG(1),TXP
     3SAV(1),PXPSAV(1),ALTAUR(1),HFTAUR(1),IRLSLS(1),TRIREP(1),TRRL(1),T
     4TDSRL(1)
      DIMENSION KNTINT(1),KNTSLS(1),RATINT(1),RATSLS(1),AMXINT(1),AMNINT
     1(1),AMXSLS(1),AMNSLS(1),TOINTR(1),TOSLSR(1),AVINTR(1),AVSLSR(1)
      DIMENSION KNTINZ(1),KNTSLZ(1),RATINZ(1),RATSLZ(1),AMXINZ(1),AMNINZ
     1(1),AMXSLZ(1),AMNSLZ(1),TOINTZ(1),TOSLSZ(1),AVINTZ(1),AVSLSZ(1),RF
     2PROB(1),SLP OB(1)
      DIMENSION CRRFI(1),CRRFR(1),CRRCI(1),CRRCR(1),RRC(1),RRF(1),ITPDZ(
     21)
      DIMENSION PROPTM(75,1),UPPOWR(75,1,3)
      DIMENSION KNTPDZ(100),NPDPLS(100),IDBPDP(100),IDBPIN(100),IDBPSI(1
     200)
      DIMENSION SS(3),PXPNDR(800),TXPNDR(800),SENSTV(2),REPLY(200)
      DIMENSION PXPND2(800),TXPND2(800)
      DIMENSION R(50)
      DIMENSION EPAC(11),EAAC(11)
      DIMENSION EPIRV(92)
      DIMENSION EPSLS(182)
      DIMENSION PSTRP1(200,2),PSTRP2(200,2),PSTRPA(200,2),PSTRPC(200,2)
      DIMENSION AP(362)
      DIMENSION SINEX(902),COSEX(902)
      DIMENSION Y(1000)
      DIMENSION TBLATN(2000)
      DIMENSION TENTOX (1031)
      DIMENSION FMT(2)
      DIMENSION TMODES(7,2)
      DIMENSION N(1024),IWCNT(1024),JLEFLG(1024),ITST(1024),ITSP(1024)
      DIMENSION IAZC(1024),IRACCF(1024)
      DIMENSION TMD(12)
      DIMENSION IPNRN3(45),IPNHT3(45),IPNMS3(45),IPNSW3(45),IPNSM3(45),
     1IPNTL3(45),IPORN3(45),IPOHT3(45),IPOMS3(45),IPOSW3(45),IPOSM3(45),
     2IPOTL3(45)
      DIMENSION ITRRNX(20),ITRAZX(20),ITRWNX(20),ITRWEX(20),ITRLEX(20),
     1ITRCCX(20)
      DIMENSION TX2(800),PX2(800)
      DIMENSION DBMIS2(1801)
      DATA EPAC/-15.,-15.,-10.,-4.,-.5,-0.,-.5,-7.,-15.,-11.,-15./
      DATA EAAC/90.,30.,15.,-15.,-30.,-38.,-45.,-59.,-60.,-75.,-90./
      DATA EPIRV/-28.7,-28.,-27.2,-26.3,-25.4,-24.5,-23.7,-22.8,-22.1,-
     Z21.3
     1,-20.4,-19.7,-18.9,-18.2,-17.4,-16.8,-16.2,-15.5,-14.8,-14.2,-13.4
     2,-12.7,-12.1,-11.3,-10.5,-9.8,-9.1,-8.4,-7.6,-6.9,-6.3,-5.6,-5.1,
     3-4.5,-4.,-3.5,-3.1,-2.6,-2.2,-1.8,-1.4,-1.1,-.9,-.7,-.4,-.3,
     4              -.2,-.1,30.,-.1,-.2,-.3,-.4,-.6,-.8,-1.2,-1.6,-2.,
     5-2.4,-2.8,-3.4,-4.1,-4.6,-5.3,-6.1,-6.8,-7.7,-8.6,-9.4,-10.4,-11.5
     6,-12.7,-14.1,-15.4,-16.9,-18.4,-20.4,-22.4,-24.4,-26.8,-29.8,
     79* -30.3 /
      DATA EPSLS/-31.,-30.15,-29.3,-28.45,-27.6,-26.75,-25.9,-25.05,-24
     Z.2,
     1-23.35,-22.5,-21.5,-20.5,-19.75,-19.,-18.5,-18.,-17.65,-17.3,-17.,
     2-16.7,-16.55,-16.4,-16.25,-16.1,-16.15,-16.2,-16.35,-16.5,-16.65,
     3-16.8,-17.25,-17.7,-18.1,-18.5,-19.25,-20.,-21.,-22.,-23.,-24.,-25
     4.4,-26.8,-28.2,-29.6,-31.,-29.2,-27.4,-25.6,-23.8,-22.,-20.75,
     5-19.5,-18.25,-17.,-16.,-15.,-14.5,-14.,-13.35,-12.7,-12.15,-11.6,
     6-11.,-10.5,-10.,-9.5,-9.,-8.5,-8.,-7.5,-7.,-6.5,-6.1,-5.6,-5.1,
     7-4.7,-4.4,-4.,-3.6,-3.2,-2.8,-2.6,-2.4,-2.1,-1.7,-1.5,-1.2,-1.,
     8-.8,-.7,-.5,2* -.4 ,-.3,-.2,-.1,
     94* 0. ,-.1,2* -.2 ,-.3,-.4,2* -.5 ,-.6,-.7,-.8,-1.,-1.2,-1.3,-1.5,
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
A-1.7,-2.,-2.2,-2.4,-2.6,-2.8,-3.1,-3.4,-3.8,-4.2,-4.4,-4.8,-5.2.   ATCRBS   63
B-5.7,-6.2,-6.6,-7.,-7.8,-8.5,-9.,-9.7,-10.5,                       ATCRBS   64
C-11.25,-12.,-12.85,-13.7,                                          ATCRBS   65
D-14.85,-16.,-17.5,-19.,-20.5,-22.,-24.,-26.,-28.5,-31.,-30.4,-29.8 ATCRBS   66
E,-29.2,-28.6,-28.,-27.24,-26.48,-25.72,-24.96,-24.20,-24.,         ATCRBS   67
F-23.8,-23.6,-23.4,-23.5,-24.,-24.5,-25.,-25.5,-26.,-26.5,-27.,-27. ATCRBS   68
G5,-28.,-28.5,-29.,-29.5,-30.,-30.5,-31.,-31./                      ATCRBS   69
 DATA(AP(I),I=1,180)/                                               ATCRBS   70
1        0.,-2.,-10.,-20.,-26.,-32.,-28.,-33.,-38.,-36.,-28.,-30.,  ATCRBS   71
1-30.,-38.,-32.,-35.,-32.,-34.,-37.,-36.,-33.,-34.,-34.5 ,-35.,-35. ATCRBS   72
2,-35.,-35.,-35.5 ,-36.5 ,-37.,-38.,-38.5 ,-39.5 ,-40.,-39.5 ,-39., ATCRBS   73
3-38.,-37.,-36.,-38.,-40.,-38.,-34.,-32.,-33.5 ,-32.,-31.5 ,-31.,-3 ATCRBS   74
42.,-34.,-36.,-38.,-40.,-37.,-32.,-33.,-34.,-35.,-34.,-34.5 ,-35.5  ATCRBS   75
5,-38.,-40.,-37.,-35.,-38.,-40.,-42.,-40.,-39.5 ,-38.,-40.,-40.,-40 ATCRBS   76
6,-39.,-36.5 ,-37.,-39.,-40.,-41.5 ,-41.5 ,-41.5 ,-41.5 ,-41.5 ,-4  ATCRBS   77
70.,-40.5 ,-41.,-42.,-42.5 ,-43.,-44.,-42.,-39., 40.,-42.5 ,-42.5 , ATCRBS   78
8-42.5 ,-42.,-41.,-40.,-39.,-38.,-39.,-38.5 ,-38.,-38.,-37.5 ,-37., ATCRBS   79
8-37.,-37.,                                                         ATCRBS   80
9-36.,-36.,-35.,-34.5 ,-34.,-35.,-36.,-36.,-36.5 ,-36.,-35.5 ,-34., ATCRBS   81
1-36.5 ,-36.5 ,-37.,-39.,-40.5 ,-42.,-41.,-40.,-39.,-38.5 ,-37.5 ,- ATCRBS   82
237.,-34.5 ,-36.5 ,-36.,-35.5 ,-38.,-37.,-36.,-36.,-35.5 ,-35.,-34. ATCRBS   83
35 ,-34.5 ,-34.,-35.,-37.,-40.,-39.,-38.,-37.,-36.,-31.5 ,-32.,-34. ATCRBS   84
4,-36.,-37.,-38.,-40.,-38.,-35.,-34.,-34.,-30.,-31.,-32.,-30.,-30., ATCRBS   85
5-30.,-30.,-30.,-30.,-30.,-30.,-30.,-30.,-30.,-32./                 ATCRBS   86
 DATA(AP(I),I=181,362)/                                             ATCRBS   87
1     -30.,-30.,-32.,-33.5 ,-36.,-37.5 ,-38.,-37.,-36.,-38.,-41.,-41 ATCRBS   88
2        .,-41.,-40.,-38.,-37.,-35.,-37.,-38.,-38.5 ,-38.,-38.,-3    ATCRBS   89
17.5 ,-36.5 ,-35.,-37.5 ,-37.,-36.5 ,-38.,-40.,-38.,-36.,-38.,-39., ATCRBS   90
2-40.,-36.,-36.,-35.5 ,-34.5 ,-34.,-30.,-28.,-30.,-31.,-32.,-34.,-3 ATCRBS   91
39.,-40.5 ,-40.,-38.,-36.5 ,-36.,-35.,-34.,-34.,-34.5 ,-35.,-38.,-3 ATCRBS   92
49.,-40.,-41.,-43.,-44.,-42.5 ,-39.,-35.5 ,-36.,-37.,-38.,-39.,-41. ATCRBS   93
5,-40.5 ,-40.,-40.,-40.,-41.5 ,-40.5 ,-40.,-41.,-40.5 ,-40.,-40.5 , ATCRBS   94
6-41.,-41.5 ,-42.,-42.,-41.,-40.5 ,-40.,-40.5 ,-40.,-40.5 ,-42.,-40 ATCRBS   95
7.5 ,-39.,-38.,-36.,-35.,-34.,-38.,-40.,-39.,-38.,-36.,-34.,-30.5 , ATCRBS   96
8-32.,-35.,-36.,-35.5 ,-34.,-34.5 ,-36.,-35.,-34.,-35.,-35.5 ,-34., ATCRBS   97
9-35.,-34.,-32.,-33.,-34.,-32.,-28.,-29.,-30.,-31.,-32.,-33.,-35.,- ATCRBS   98
136.,-37.5 ,-38.,-40.,-39.,-36.,-31.,-32.,-34.,-35.,-36.,-36.,-36   ATCRBS   99
2.,-28.,-29.,-34.,-32.,-28.,-32.,-36.,-33.,-30.,-28.,-26.,-28.,-30. ATCRBS  100
3,-30.5 ,-28.,-28.,-30.5 ,-29.,-27.,-33.5 ,-32.,-33.5 ,-30.,-33.,-3 ATCRBS  101
48.,-34.,-36.,-34.,-36.,-20.,-10.,-2.,0.,0./                        ATCRBS  102
 DATA R/50*0./                                                      ATCRBS  103
 DATA XLASTM/-1.E+20/                                               ATCRBS  104
 DATA IPREP1,IPREP2,IPREPA,IPREPC/400/                              ATCRBS  105
 DATA TMOBES/1H1,1H2,1H3,1HA,1HB,1HC,1HD,3.E-06,5.E-06,8.E-06,8.E-0 ATCRBS  106
16,1.999E-06,21.E-06,25.E-06/,BLANK/1H /                            DABS     1
 DATA TMF/10H(1H+    XF5/,FMT(2)/10H,1)        /                    ATCRBS  108
 DATA IRACCF/1024*0/                                                ATCRBS  109
 DATA IWCNT/1024*0/                                                 ATCRBS  110
 DATA JLEFLG/1024*0/                                                ATCRBS  111
 DATA N/1024*0/                                                     ATCRBS  112
 DATA NFRUIT,NTOTFR,ISCAN/3*0/,MSCAN,MAXFR,MINFR/2*0,10000000/      ATCRBS  113
 DATA NFRUTA,NFRUTC,NFRUT1,NFRUT2/4*0/                              ATCRBS  114
 DATA ISWEEP,KNTS0/2*0/                                             ATCRBS  115
 DATA NOLDR3,IWEAK3/2*0/                                            ATCRBS  116
 DATA IVDTG3,IRGT03/2*0/                                            ATCRBS  117
 DATA NOLDTX,NPTTOX,ITRGTX/3*0/,NPTTUX/1/                           ATCRBS  118
 DATA KNTINT,KNTSLS/2*0/,TLUPDT/0./,TOINTR,TOSLSR/2*0./             SECMS    20
 DATA AMXINT,AMXSLS/2*0./,AMNINT,AMNSLS/2*10000000./                SECMS    21
 DATA AVINTR,AVSLSR,RATINT,RATSLS/4*0./                             SECMS    22
 DATA KNTINZ,KNTSLZ/2*0/,RATINZ,RATSLZ,AVINTZ,AVSLSZ,AMXINZ,AMXSLZ, SECMS    23
2TOINTZ,TOSLSZ/8*0./,AMNINZ,AMNSLZ/2*10000000./                     SECMS    24
 DATA CRRFI,CRRFR,CRRCI,CRRCR,RRC,RRF/6*0./                         SECMS    25
 DATA NP2PLS/100*1/,ITP2Z,IDBP2P,KNTP2Z,IDBPIN,IDBPSL/401*0/        SECMS    26
 DATA IDBPIN,IDBPSL/200*0/                                          ATCRBS  121
 DATA DBMISS2/1801*0./,RANMS2/0./                                   SECMS    27
 ITRGT=0                                                            ATCRBS  126
```

```
      ILOOP=0                                                           SECMS     28
      DBWIT=0.                                                          SECMS     29
      DRWIST=0.                                                         SECMS     30
      TDABSM=.00261664                                                  SECMS     31
      PDABSM=-56.72522376                                               SECMS     32
      NXLSTM=-1000000                                                   DABS       2
      ONE38H=1./38.                                                     DABS       3
      ONE76H=1./76.                                                     DABS       4
      TMF= TMF.A.7777777700000077777778                                 ATCRBS   127
      READ(5,14) TEND                                                   ATCRBS   128
      PRINT 70,TEND                                                     ATCRBS   129
70    FORMAT (*TEND*,T53,E20.8)                                         ATCRBS   130
14    FORMAT (E20.8)                                                    ATCRBS   131
      PI=3.14159265358979                                               ATCRBS   132
      DTR=PI/180.                                                       ATCRBS   133
      RTD=180./PI                                                       ATCRBS   134
      C=161875.0                                                        ATCRBS   135
      DELANG=.5                                                         ATCRBS   136
      XANG=-90.0                                                        ATCRBS   137
      DO 50 I=1,902                                                     ATCRBS   138
      SINEX(I)=SIN(XANG*DTR)                                            ATCRBS   139
      COSEX(I)=COS(XANG*DTR)                                            ATCRBS   140
      XANG=XANG+DELANG                                                  ATCRBS   141
   50 CONTINUE                                                          ATCRBS   142
      XL2=ALOG10(2.)                                                    ATCRBS   143
      X=.5                                                              ATCRBS   144
      XINC=.001                                                         ATCRBS   145
      DO 11 I=500,1000                                                  ATCRBS   146
      XI(I)=ALOG10(X)                                                   ATCRBS   147
      X=X+XINC                                                          ATCRBS   148
   11 CONTINUE                                                          ATCRBS   149
      XVAL=0.                                                           ATCRBS   150
      DO 1601 I=1,700                                                   ATCRBS   151
      TBLATN(I)=ATAN(XVAL)*RTD                                          ATCRBS   152
      XVAL=XVAL+.01                                                     ATCRBS   153
 1601 CONTINUE                                                          ATCRBS   154
      DO1603 I=701,1730                                                 ATCRBS   155
      TBLATN(I)=ATAN(XVAL)*RTD                                          ATCRBS   156
      XVAL=XVAL+.1                                                      ATCRBS   157
 1603 CONTINUE                                                          ATCRBS   158
      DO 1605 I=1731,1919                                               ATCRBS   159
      TBLATN(I)=ATAN(XVAL)*RTD                                          ATCRBS   160
      XVAL=XVAL+10.                                                     ATCRBS   161
 1605 CONTINUE                                                          ATCRBS   162
      DO 1607 I=1920,2000                                               ATCRBS   163
      TBLATN(I)=ATAN(XVAL)*RTD                                          ATCRBS   164
      XVAL=XVAL+1000.                                                   ATCRBS   165
 1607 CONTINUE                                                          ATCRBS   166
      DO 22 I= 1,1031                                                   ATCRBS   167
22    TENTOX(I)= 10.**((FLOAT(I)-1031.)/100.)                           ATCRBS   168
      READ(5,103) INTS,NACMX,IRANRT,IRERTH                              DABS       5
  103 FORMAT(4I5)                                                       DABS       6
      PRINT71,INTS,NACMX,IRANRT,IRERTH                                  DABS       7
   71 FORMAT(* INTS,NACMX,IRANRT,IRERTH *,4IX,4(I10,5X))                DABS       8
      DO  8025 I=1,2693                                                 DABS       9
      XDUM=RANF(DUM)                                                    DABS      10
 8025 CONTINUE                                                          DABS      11
      DO 72 I=1,INTS                                                    ATCRBS   173
      ILACE(I)=RANF(DUM)*12.                                            ATCRBS   174
   72 READ (5,73) A(I,1),A(I,2),A(I,4),A(I,5),(XLAT(I,J),J=1,3),(XLON(I, ATCRBS   175
     1K),K=1,3),A(I,16),A(I,17),A(I,14),A(I,15),(P3IN(I,J),J=1,12),GIR(I ATCRBS   176
     2),IISLS(I)                                                        ATCRBS   177
   73 FORMAT (4F5.0,2X,6F3.0,F5.0,F2.0,F5.0,2X,E5.2,2X,I2A1,F4.0,1X,I1) ATCRBS   178
      PRINT 74                                                          ATCRBS   179
   74 FORMAT (//1X,4HINT.,2X,8HROTATION,6X,3HPRF,5X,7HINITIAL,5X,2HP1,6X ATCRBS   180
     1,4HLAT.,6X,5HLONG.,6X,4HSITE,3X,4HANT.,6X,4HINT.,4X,2HP2,10X,4HMOD ATCRBS   181
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      2E,7X,4HDIR.,5X,5HIISLS)                                          ATCRBS   182
       PRINT 75                                                         ATCRBS   183
   75  FORMAT (1X,3HNO.,3X,9HRATE(RPM),2X,9H(INT/SEC),3X,4HINT.,5X,5HPOWE ATCRBS   184
      1R,4X,5H(DMS),6X,5H(DMS),6X,5HELEV.,3X,3HHT.,5X,5HSTART,5X,5HPOWER, ATCRBS   185
      26X,9HINTERLACE,4X,4HANT.,5X,6HSWITCH)                            ATCRBS   186
       PRINT 76                                                         ATCRBS   187
   76  FORMAT (29X,7HAZIMUTH,2X,7H(WATTS),14X,6H(WEST),4X,4H(FT),3X,4H(FT ATCRBS   188
      1),5X,4HTIME,6X,6HW.R.T.,18X,4HGAIN,5X,6H(I ON.)                  ATCRBS   189
       PRINT 77                                                         ATCRBS   190
   77  FORMAT (30X,5H(DEG),51X,6H(USEC),4X,7HP1 (DB),17X,4H(DB),5X,6HO OF ATCRBS   191
      1F)/)                                                             ATCRBS   192
       DO 86 I=1,INTS                                                   ATCRBS   193
       A(I,1)=A(I,1)+((RANF(DUM)-0.5)*0.5)*FLOAT(IRANRT)                DABS      12
       A(I,14)=RANF(DUM)/A(I,2)*1.E+06                                  ATCRBS   196
       A(1,4)=0.                                                        ATCRBS   197
       A(1,14)=0.                                                       ATCRBS   198
   86  PRINT 80,I,A(I,1),A(I,2),A(I,4),A(I,5),(XLAT(I,J),J=1,3),(XLON(I,K ATCRBS   199
      1),K=1,3),A(I,16),A(I,17),A(I,14),A(I,15),(P3IN(I,J),J=1,12),GTR(I) ATCRBS   200
      2,IISLS(I)                                                        ATCRBS   201
   80  FORMAT (1X,I3,4X,F5.2,7X,F5.0,5X,E5.0,4X,E5.0,3X,3F3.0,1X,F4.0,2F3 ATCRBS   202
      1.0,2X,F6.0,4X,F3.0,4X,F5.0,5X,F5.1,6X,12A1,1X,F5.0,6X,I1)        ATCRBS   203
       DO 109 I=1,INTS                                                  ATCRBS   204
       A(I,13)=A(I,16)+A(I,17)                                          ATCRBS   205
       A(I,9)=XLAT(I,1)+(60.+XLAT(I,2)+XLAT(I,3))/3600.                 ATCRBS   206
  109  A(I,11)=-XLON(I,1)-(60.*XLON(I,2)+XLON(I,3))/3600.               ATCRBS   207
       Q=A(1,11)                                                        ATCRBS   208
       DO 110 I=1,INTS                                                  ATCRBS   209
       DO 115 III=1,15                                                  ATCRBS   210
       DO 113 II=1,7                                                    ATCRBS   211
       IF (P3IN(I,III).EQ.TMODES(II,1)) GO TO 117                       ATCRBS   212
  113  CONTINUE                                                         ATCRBS   213
       IF (III.NE.2) GO TO 119                                          ATCRBS   214
       IF (P3IN(I,2).EQ.BLANK) GO TO 118                                ATCRBS   215
  119  PRINT 116,I,P3IN(I,III)                                          ATCRBS   216
  116  FORMAT (*1INTERROGATOR*,I3,* HAS AN ILLEGAL MODE INPUT (*,A1,*).*) ATCRBS   217
       STOP                                                             ATCRBS   218
  117  P3IN(I,III)=TMODES(II,2)                                         ATCRBS   219
       IF (I.NE.1) GO TO 115                                            ATCRBS   220
       TMD(III)=TMODES(II,1)                                            ATCRBS   221
       IF(TMD(III).EQ.1H3) TMD(III)=1HA                                 ATCRBS   222
  115  CONTINUE                                                         ATCRBS   223
       GO TO 130                                                        ATCRBS   224
  118  P3(I,1)=P3IN(I,1)                                                ATCRBS   225
       P3(I,2)=P3IN(I,1)                                                ATCRBS   226
       ILACE(I)=15                                                      ATCRBS   227
  130  TLASTI(I)=A(I,14)*1.E-06                                         ATCRBS   228
       A(I,1)=A(I,1)/60.                                                ATCRBS   229
       PRP(I)=1.E0/A(I,2)                                               ATCRBS   230
       A(I,2)=A(I,1)*360.                                               ATCRBS   231
       A(I,3)=A(I,4)                                                    ATCRBS   232
       A(I,8)=10.*ALOG10(A(I,5))+30.-3.+GTR(I)                          ATCRBS   233
       A(I,10)=COS(A(I,9)*DTR)                                          ATCRBS   234
       A(I,9)=SIN(A(I,9)*DTR)                                           ATCRBS   235
       A(I,12)=COS((A(I,11)-Q)*DTR)                                     ATCRBS   236
       A(I,11)=SIN((A(I,11)-Q)*DTR)                                     ATCRBS   237
       A(I,13)=A(I,13)/6076.103+3437.747+(3437.747/3.*FLOAT(IREARTH))   DABS       13
       REARTH(I)=3437.747+(3437.747/3.*FLOAT(IREARTH))+A(I,16)/6076.103 DABS       14
       HORANG(I)=-ASIN((SQRT(A(I,13)**2-REARTH(I)**2))/A(I,13))*RTD     ATCRBS   240
       A(I,6)=A(I,13)*A(I,10)*A(I,11)                                   ATCRBS   241
       A(I,7)=A(I,13)*(A(I,9)*A(1,10)-A(I,10)*A(I,9)*A(I,12))           ATCRBS   242
       A(I,8)=-A(1,13)*A(I,13)*(A(I,9)*A(I,9)+A(I,10)*A(I,10)*A(I,12))  ATCRBS   243
  110  CONTINUE                                                         ATCRBS   244
       AZPLOT=A(1,4)                                                    ATCRBS   245
       READ (5,106) STIME,SENSTV(1),REDSNS,RMN,RMX,KRSLS,RSLVL          ATCRBS   246
  106  FORMAT (5F10.1,I5,F10.1)                                         ATCRBS   247
       PRINT 82,STIME,SENSTV(1),REDSNS,RMN,RMX,KRSLS,RSLVL              ATCRBS   248
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
   82 FORMAT(* STIME,SENSTV(1),REDSNS,RMN,RMX,KRSLS,RSIVL*,T53,5F10.1,I5 ATCRBS   249
     1,F10.1)                                                            ATCRBS   250
      TNEXT=STIME                                                        ATCRBS   251
      DO 1111 IJJ=1,INTS                                                 ATCRBS   252
      A(IJJ,3)=AMOD((A(IJJ,3)+STIME*A(IJJ,2)),360.)                      DABS      15
 1111 TLASTI(IJJ)=STIME+TLASTI(IJJ)                                      ATCRBS   254
  112 READ (5,104) IXPNDR,GAC,ERPPTT(1),DELAY,TSNSMX(1),TRRL(1),DESDIF,  ATCRBS   255
     1DEADT(1),SUPPT(1)                                                  ATCRBS   256
  104 FORMAT (I5,8F9.1)                                                  ATCRBS   257
      PRINT 83,IXPNDR,GAC,ERPPTT(1),DELAY,TSNSMX(1),TRRL(1),DESDIF,      ATCRBS   258
     1DEADT(1),SUPPT(1)                                                  ATCRBS   259
   83 FORMAT (* IXPNDR,GAC,ERPPTT(1),DELAY,TSNSMX(1),TRRL(1),DESDIF,DEAD ATCRBS   260
     1T(1),SUPPT(1)*,/I5,8F9.1)                                          ATCRBS   261
      READ(5,107) IRLREP(1),IRLSLS(1),RRLCO,IAABYP,IAASWCH               DABS      16
  107 FORMAT(2I5,F5.2,2X,2I2)                                            DABS      17
      PRINT 108,IRLREP(1),IRLSLS(1),RRLCO,IAABYP,IAASWCH                 DABS      18
  108 FORMAT(* IRLREP(1),IRLSLS(1),RRLCO,IAABYP,IAASWCH *,20X,2I5,F5.2,3 DABS      19
     1X,2(I2,5X))                                                        DABS      20
      DEADT(1)=(DEADT(1)+3.+20.3+0.45)*1.E-06                            DABS      21
      SUPPT(1)=SUPPT(1)*1.E-06                                           ATCRBS   267
      DELAY=DELAY*1.E-06                                                 ATCRBS   268
      IF(NACMX.EQ.1) GO TO 123                                           SECMS     33
      DO 121 I=2,NACMX                                                   ATCRBS   269
      ERPPTT(I)=ERPPTT(1)                                                ATCRBS   270
      TRRL(I)=TRRL(1)                                                    ATCRBS   271
      DEADT(I)=DEADT(1)                                                  ATCRBS   272
      SUPPT(I)=SUPPT(1)                                                  ATCRBS   273
      IRLREP(I)=IRLREP(1)                                                ATCRBS   274
      IRLSLS(I)=IRLSLS(1)                                                ATCRBS   275
  121 TSNSMX(I)=TSNSMX(1)                                                ATCRBS   276
  123 DO 122 I=1,NACMX                                                   SECMS     34
      NPNEX(I)=0                                                         ATCRBS   278
      TDESEC(I)=0.                                                       ATCRBS   279
      TTDSEC(I)=-1.E+50                                                  ATCRBS   280
      TDESRL(I)=0.                                                       ATCRBS   281
      TTDSRL(I)=-1.E+50                                                  ATCRBS   282
      TDSNEC(I)=0.                                                       ATCRBS   283
      TDSNRL(I)=0.                                                       ATCRBS   284
      TPOWOM(I)=0.                                                       ATCRBS   285
  122 CONTINUE                                                           ATCRBS   286
      READ(5,105) TBF,PT                                                 ATCRBS   287
      PRINT 84,TBF,PT                                                    ATCRBS   288
   84 FORMAT(* TBF,PT*,T53,2F10.1)                                       ATCRBS   289
  105 FORMAT (8F10.1)                                                    ATCRBS   290
      READ (5,114) IDFRUT,DFGATE                                         ATCRBS   291
  114 FORMAT (I1,F5.1)                                                   ATCRBS   292
      PRINT 85,IDFRUT,DFGATE                                             ATCRBS   293
   85 FORMAT (* IDFRUT,DFGATE *,T53,I1,7X,F5.1)                          ATCRBS   294
      DFGATE=DFGATE*1.E-06                                               ATCRBS   295
      READ (5,89) ICD,IWNL,ITL,ITT,BIASIC                                ATCRBS   296
   89 FORMAT (4I5,F5.2)                                                  ATCRBS   297
      PRINT 90,ICD,IWNL,ITL,ITT,BIASIC                                   ATCRBS   298
   90 FORMAT (* ICD,IWNL,ITL,ITT,BIASIC*,5X4I5,F5.2)                     ATCRBS   299
      READ (5,4)KARTS3,IHY3P3,IMY3P3,IMY4R3,IRNGR3,ITQYR3,IRMRP3,IHY4R3  ATCRBS   300
    4 FORMAT(8I5)                                                        ATCRBS   301
      PRINT 12,KARTS3,IHY3P3,IMY3P3,IMY4R3,IRNGR3,ITQYR3,IRMRP3,IHY4R3   ATCRBS   302
   12 FORMAT(* KARTS3,IHY3P3,IMY3P3,IMY4R3,IRNGR3,ITQYR3,IRMRP3,IHY4R3*, ATCRBS   303
     15X,8I5)                                                            ATCRBS   304
      READ (5,4) KTPX42,IWNLX,ITLX,ITTX,ICONFX                           ATCRBS   305
      PRINT 1916,KTPX42,IWNLX,ITLX,ITTX,ICONFX                           ATCRBS   306
 1916 FORMAT (* KTPX42,IWNLX,ITLX,ITTX,ICONFX*5X5I5)                     ATCRBS   307
      BIASX=(ITLX-ITTX+IWNLX-1)/2                                        ATCRBS   308
      IBIASX=BIASX*PRP(1)*A(1,2)*4096./360.                              ATCRBS   309
      IRGMX=RMX*4.+1.                                                    ATCRBS   310
C     BAISIC IS A POSITTIVE NUMBER USED IN THE CD TO ADJUST THE COMPUTE  DABS      22
C  CENTER AZIMUTH OF THE TARGET DUE TO IT ELONGATION BY THE SLIDING WIND DABS      23
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
C  FOR MODE A ONLY  BIASIC SHOULD BE SET TO 1. - FOR MODE AA2 IT SHOULD   DABS      24
C  SET TO 1.5 - FOR MODE ACA2 OR ACAC, IT SHOULD BE SET TO 2.0            DABS      25
      BIAS=FLOAT((ITL-ITT+IWNL-1)/2)*BIASIC                               ATCRBS    311
      IBIAS=BIAS*PRP(1)*A(1,2)*4096./360.                                 ATCRBS    312
      ACPRSW=PRP(1)*A(1,2)*4096./360.                                     ATCRBS    313
      CVAL=360./4096.                                                     ATCRBS    314
      AIR4PI=GIR(1)+20.*ALOG10(C/(1.09E09*4.*PI))                         ATCRBS    315
      AAC4PI=GAC+20.*ALOG10(C/(1.03E09*4.*PI))                            ATCRBS    316
      AOM4PI=20.*ALOG10(C/(1.09E09*4.*PI))+4.                             ATCRBS    317
      RMIN=RMN                                                            ATCRBS    318
      RMAX=RMX                                                            ATCRBS    319
      TMIN=2.*RMIN/C+DELAY                                                ATCRBS    320
      TMAX=2.*RMAX/C+DELAY                                                ATCRBS    321
      READ (5,114) IPRINT                                                 ATCRBS    322
      DO 120 I=1,NACMX                                                    ATCRBS    323
      IJFLAG(I)=1                                                         ATCRBS    324
      HFTAUR(I)=0.5/TRRL(I)                                               ATCRBS    325
      ALTAUR(I)=12.2/TRRL(I)                                              ATCRBS    326
120   TSNSTV(I)=TSNSMX(I)                                                 ATCRBS    327
      READ(5,87) ISMAX                                                    DABS       26
   87 FORMAT(I5)                                                          DABS       27
      PRINT 81,ISMAX                                                      DABS       28
   81 FORMAT(1X* ISMAX*10X,I5)                                            DABS       29
      IS=ISMAX                                                            ATCRBS    332
      READ(5,8) LASTTM,NAC                                                ATCRBS    333
      READ(5,88) (IDAC(I,2),(S(I,J,2),J=5,7),(S(I,K,2),K=11,13),I=1,NAC)  ATCRBS    334
8     FORMAT (2I5)                                                        ATCRBS    335
88    FORMAT (   (I2,6F13.8))                                             ATCRBS    336
   20 TNEXT=0.                                                            SECMS      35
      DO 990 I=1,INTS                                                     SECMS      36
      A(I,3)=RANF(DUM)*360.                                               SECMS      37
      ILACE(I)=RANF(DUM)*12.                                              SECMS      38
      TLASTI(I)=RANF(DUM)*PRP(I)                                          SECMS      39
  990 CONTINUE                                                            SECMS      40
      TLASTI(1)=0.                                                        SECMS      41
      DO 992 I=1,NACMX                                                    SECMS      42
      NPNEX(I)=0                                                          SECMS      43
      TDESEC(I)=0.                                                        SECMS      44
      TTDSEC(I)=-1.E+50                                                   SECMS      45
      TDESRL(I)=0.                                                        SECMS      46
      TTDSRL(I)=-1.E+50                                                   SECMS      47
      TDSNEC(I)=0.                                                        SECMS      48
      TDSNRL(I)=0.                                                        SECMS      49
      TSNSTV(I)=TSNSMX(I)                                                 SECMS      50
  992 IJFLAG(I)=1                                                         SECMS      51
      MISTFL=1                                                            SECMS      52
      MISSFL=0                                                            SECMS      53
      ICK=0                                                               SECMS      54
      MIS2FL=0                                                            SECMS      55
      IRNTFL=0                                                            SECMS      56
   15 FORMAT (1H1,E20.8)                                                  ATCRBS    339
      GO TO 19                                                            ATCRBS    340
    2 DO 201 J=1,INTS                                                     ATCRBS    341
      A(J,3)=A(J,3)+(TNEXT-TIME)*A(J,2)                                   ATCRBS    342
      IF (A(J,3).LT.360.) GO TO 201                                       ATCRBS    343
      IF(J.EQ.1)MSCAN=1                                                   ATCRBS    344
      A(J,3)=A(J,3)-360.                                                  ATCRBS    345
  201 CONTINUE                                                            ATCRBS    346
      ITDABS=0                                                            SECMS      57
   19 TIME=TNEXT                                                          ATCRBS    347
      TNEXT=TNEXT+PRP(1)                                                  ATCRBS    348
      TNEX25=TNEXT-25.E-06                                                ATCRBS    349
      IREPLY=0                                                            ATCRBS    350
      IR=0                                                                ATCRBS    351
      IF (IS) 9,397,398                                                   ATCRBS    352
897   IS=-1                                                               ATCRBS    353
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      GO TO 399
998   IS=IS+1                                                          ATCRBS   354
      IF (IS.LE.ISMAX) GO TO 9                                         ATCRBS   355
      IS=1                                                             ATCRBS   356
  399 IF (TIME.LE.XLASTM) GO TO 301                                    ATCRBS   357
      DO 330 I=1,NAC                                                   ATCRBS   358
      IDAC(I,1)=IDAC(I,2)                                              ATCRBS   359
      S(I,5,1)=S(I,5,2)                                                ATCRBS   360
      S(I,6,1)=S(I,6,2)                                                ATCRBS   361
      S(I,7,1)=S(I,7,2)                                                ATCRBS   362
      S(I,11,1)=S(I,11,2)                                              ATCRBS   363
      S(I,12,1)=S(I,12,2)                                              ATCRBS   364
  330 S(I,13,1)=S(I,13,2)                                              ATCRBS   365
      IF(IS.GT.0) GO TO 1006                                           ATCRBS   366
      NACP1=NAC                                                        DABS      30
      GO TO 1000                                                       DABS      31
 1006 NXLSTM=LASTIM                                                    DABS      32
      READ (5,8 ) LASTIM,NACP1                                         DABS      33
      READ(5,88) (IDAC(I,2),(S(I,J,2),J=5,7),(S(I,K,2),K=11,13),I=1,NAC  ATCRBS   368
     1P1)                                                              ATCRBS   369
 1000 XLASTM=LASTIM                                                    ATCRBS   370
      NACRFT=0                                                         ATCRBS   371
      DO 304 I=1,NAC                                                   ATCRBS   373
      DO 303 J=1,NACP1                                                 ATCRBS   374
      IF (IDAC(I,1).EQ.IDAC(J,2)) GO TO 325                            ATCRBS   375
  303 CONTINUE                                                         ATCRBS   376
      GO TO 304                                                        ATCRBS   377
  325 NACRFT=NACRFT+1                                                  ATCRBS   378
      S(NACRFT, 2,1)=S(I, 5,1)                                         ATCRBS   379
      S(NACRFT, 3,1)=S(I, 6,1)                                         ATCRBS   380
      S(NACRFT, 4,1)=S(I, 7,1)                                         ATCRBS   381
      S(NACRFT,8,1)=S(I,11,1)                                          ATCRBS   382
      S(NACRFT,9,1)=S(I,12,1)                                          ATCRBS   383
      S(NACRFT,10,1)=S(I,13,1)                                         ATCRBS   384
      S(NACRFT, 2,2)=S(J, 5,2)                                         ATCRBS   385
      S(NACRFT, 3,2)=S(J, 6,2)                                         ATCRBS   386
      S(NACRFT, 4,2)=S(J, 7,2)                                         ATCRBS   387
      S(NACRFT,8,2)=S(J,11,2)                                          ATCRBS   388
      S(NACRFT,9,2)=S(J,12,2)                                          ATCRBS   389
      S(NACRFT,10,2)=S(J,13,2)                                         ATCRBS   390
      IDAC(NACRFT,3)=IDAC(I,1)                                         ATCRBS   391
      S(NACRFT,9,3)=S(NACRFT,9,1)                                      ATCRBS   392
  304 CONTINUE                                                         ATCRBS   393
      NAC=NACP1                                                        ATCRBS   394
      GO TO 399                                                        ATCRBS   395
  301 TERPOL=1.-(XLASTM-TIME)/(XLASTM-(FLOAT(NXLSTM)))                 ATCRBS   396
      DO 322 JAC=1,NACRFT                                              DABS      34
      S(JAC,2,3)=S(JAC,2,1)+(S(JAC,2,2)-S(JAC,2,1))*TERPOL             ATCRBS   398
      S(JAC,3,3)=S(JAC,3,1)+(S(JAC,3,2)-S(JAC,3,1))*TERPOL             ATCRBS   399
      S(JAC,4,3)=S(JAC,4,1)+(S(JAC,4,2)-S(JAC,4,1))*TERPOL             ATCRBS   400
      S(JAC,8,3)=S(JAC,8,1)+(S(JAC,8,2)-S(JAC,8,1))*TERPOL             ATCRBS   401
      S21=S(JAC,10,2)-S(JAC,10,1)                                      ATCRBS   402
      IF (ABS(S21).LT.180.) GO TO 318                                  ATCRBS   403
      IF (S21) 310,318,311                                             ATCRBS   404
  310 S(JAC,10,2)=S(JAC,10,2)+360.                                     ATCRBS   405
      GO TO 318                                                        ATCRBS   406
  311 S(JAC,10,1)=S(JAC,10,1)+360.                                     ATCRBS   407
  318 S(JAC,10,3)=S(JAC,10,1)+(S(JAC,10,2)-S(JAC,10,1))*TERPOL         ATCRBS   408
      IF (S(JAC,10,3).GT.360.)    S(JAC,10,3)=S(JAC,10,3)-360.         ATCRBS   409
      DO 320 INO=1,INTS                                                ATCRBS   410
      PROPTM(INO,JAC)=SQRT((S(JAC,2,3)-A(INO,6))**2+(S(JAC,3,3)-A(INO,7)  ATCRBS   411
     1)**2+(S(JAC,4,3)-A(INO,8))**2)/C                                 ATCRBS   412
      SS(1)=-A(INO,11)*(A(1,10)*(A(1,13)+S(JAC,4,3))-S(JAC,3,3)*A(1,9))  ATCRBS   413
     1+S(JAC,2,3)*A(INO,12)                                            ATCRBS   414
      SS(2)=-A(1,13)*(A(1,10)*A(INO,9)*A(INO,12)-A(1,9)*A(INO,10))-    ATCRBS   415
     1S(JAC,2,3)*A(INO,9)*A(INO,11)+S(JAC,3,3)*(A(1,10)*A(INO,10)+     ATCRBS   416
                                                                       ATCRBS   417
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
     2A(1,9)*A(INO,9)*A(INO,12))-S(JAC,4,3)*(A(INO,9)*A(1,10)*A(INO,12)   ATCRBS   418
     3-A(1,9)*A(INO,10))                                                 ATCRBS   419
      SS(3)=-A(INO,13)+A(1,13)*(A(1,9)*A(INO,9)+A(1,10)*A(INO,10)*       ATCRBS   420
     1A(INO,12))+S(JAC,2,3)*A(INO,10)*A(INO,11)-S(JAC,3,3)*(A(1,9)*      ATCRBS   421
     2A(INO,10)*A(INO,12)-A(1,10)*A(INO,9))+S(JAC,4,3)*(A(1,9)*A(INO,9)+ ATCRBS   422
     3A(1,10)*A(INO,10)*A(INO,12))                                       ATCRBS   423
      SS12=SS(1)*SS(1)+SS(2)*SS(2)                                       ATCRBS   424
      Y1=SS(2)                                                           ATCRBS   425
      X1=SS(1)                                                           ATCRBS   426
      IF(X1.EQ.0.)X1=1.E-200                                             ATCRBS   427
      AT1=Y1/X1                                                          ATCRBS   428
      AT=ABS(AT1)                                                        ATCRBS   429
      IF(AT.LT.7.0)GO TO 1614                                            ATCRBS   430
      IF(AT.LT.110.0)GO TO 1610                                          ATCRBS   431
      IF(AT.LT.2000.0)GO TO 1611                                         ATCRBS   432
      IF(AT.LT.82000.0)GO TO 1612                                        ATCRBS   433
      ATIP=90.                                                           ATCRBS   434
      GO TO 1613                                                         ATCRBS   435
 1610 ATP=AT*10.+631.                                                    ATCRBS   436
      GO TO 1618                                                         ATCRBS   437
 1611 ATP=AT*.1+1720.                                                    ATCRBS   438
      GO TO 1618                                                         ATCRBS   439
 1612 ATP=AT*.001+1918.                                                  ATCRBS   440
      GO TO 1618                                                         ATCRBS   441
 1614 ATP=AT*100.+1.                                                     ATCRBS   442
 1618 IAT=ATP                                                            ATCRBS   443
      ATIP=TBLATN(IAT)+(TBLATN(IAT+1)-TBLATN(IAT))*(ATP-FLOAT(IAT))      ATCRBS   444
 1613 IF(AT1.LT.0.)GO TO 1620                                            ATCRBS   445
      IF(X1.LT.0.)ATIP=ATIP-180.                                         ATCRBS   446
      GO TO 1625                                                         ATCRBS   447
 1620 IF (X1.LT.0.) ATIP=ATIP+180.                                       ATCRBS   448
      ATIP=-ATIP                                                         ATCRBS   449
 1625 UPPOWR(INO,JAC,3)=90.-ATIP                                         ATCRBS   450
      Y1=SS(3)                                                           ATCRBS   451
      X1=SQRT(SS12)                                                      ATCRBS   452
      IF(X1.EQ.0.)X1=1.E-200                                             ATCRBS   453
      AT1=Y1/X1                                                          ATCRBS   454
      AT=ABS(AT1)                                                        ATCRBS   455
      IF(AT.LT.7.0)GO TO 1634                                            ATCRBS   456
      IF(AT.LT.110.0)GO TO 1630                                          ATCRBS   457
      IF(AT.LT.2000.0)GO TO 1631                                         ATCRBS   458
      IF(AT.LT.82000.0)GO TO 1632                                        ATCRBS   459
      ATIP=90.                                                           ATCRBS   460
      GO TO 1633                                                         ATCRBS   461
 1630 ATP=AT*10.+631.                                                    ATCRBS   462
      GO TO 1628                                                         ATCRBS   463
 1631 ATP=AT*.1+1720.                                                    ATCRBS   464
      GO TO 1628                                                         ATCRBS   465
 1632 ATP=AT*.001+1918.                                                  ATCRBS   466
      GO TO 1628                                                         ATCRBS   467
 1634 ATP=AT*100.+1.                                                     ATCRBS   468
 1628 IAT=ATP                                                            ATCRBS   469
      ATIP=TBLATN(IAT)+(TBLATN(IAT+1)-TBLATN(IAT))*(ATP-FLOAT(IAT))      ATCRBS   470
 1633 IF(AT1.LT.0.)GO TO 1640                                            ATCRBS   471
      IF(X1.LT.0.)ATIP=ATIP-180.                                         ATCRBS   472
      GO TO 1650                                                         ATCRBS   473
 1640 IF(X1.LT.0.)ATIP=ATIP-180.                                         ATCRBS   474
      ATIP=-ATIP                                                         ATCRBS   475
 1650 ELWRTA=ATIP                                                        ATCRBS   476
      XIN=SS12+SS(3)*SS(3)                                               ATCRBS   477
      XTEST=(XIN.AND.0000777777777777777778).OR.1717000000000000000008   ATCRBS   478
      SUBSCR=XTEST*1000.                                                 ATCRBS   479
      L=SUBSCR                                                           ATCRBS   480
      XLOG=Y(L)+(Y(L+1)-Y(L))*(SUBSCR-FLOAT(L))+XL2*FLOAT(SHIFT(XIN,-48) ATCRBS   481
     1-975)                                                              ATCRBS   482
      UPPOWR(INO,JAC,1)=A(INO,5)+AAC4PI_10.*XLOG                         ATCRBS   483
      THTP1=S(JAC+10,3)*2.+181.                                          ATCRBS   484
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      ITHP1=THTP1                                                       ATCRBS   485
      SH=SINEX(ITHP1)+(SINEX(ITHP1+1)-SINEX(ITHP1))*(THTP1-FLOAT(ITHP1))  ATCRBS   486
      CH=COSEX(ITHP1)+(COSEX(ITHP1+1)-COSEX(ITHP1))*(THTP1-FLOAT(ITHP1))  ATCRBS   487
      THTP2=S(JAC,9,3)*2.+181.                                          ATCRBS   488
      ITHP2=THTP2                                                       ATCRBS   489
      SP=SINEX(ITHP2)+(SINEX(ITHP2+1)-SINEX(ITHP2))*(THTP2-FLOAT(ITHP2))  ATCRBS   490
      CP=COSEX(ITHP2)+(COSEX(ITHP2+1)-COSEX(ITHP2))*(THTP2-FLOAT(ITHP2))  ATCRBS   491
      THTP3=S(JAC,8,3)*2.+181.                                          ATCRBS   492
      ITHP3=THTP3                                                       ATCRBS   493
      SR=SINEX(ITHP3)+(SINEX(ITHP3+1)-SINEX(ITHP3))*(THTP3-FLOAT(ITHP3))  ATCRBS   494
      CR=COSEX(ITHP3)+(COSEX(ITHP3+1)-COSEX(ITHP3))*(THTP3-FLOAT(ITHP3))  ATCRBS   495
      ARG1=-CH*SS(1)+SH*SS(2)                                           ATCRBS   496
      ARG2=-SH*SS(1)-CH*SS(2)                                           ATCRBS   497
      E=CR*ARG1+SR*(SP*ARG2+CP*SS(3))                                   ATCRBS   498
      F=-CP*(SH*SS(1)+CH*SS(2))-SP*SS(3)                                ATCRBS   499
      G=SR*ARG1-CR*(SP*ARG2+CP*SS(3))                                   ATCRBS   500
      Y1=F                                                              ATCRBS   501
      X1=E                                                              ATCRBS   502
      IF(X1.EQ.0.)X1=1.E-200                                            ATCRBS   503
      AT1=Y1/X1                                                         ATCRBS   504
      AT=ABS(AT1)                                                       ATCRBS   505
      IF(AT.LT.7.0)GO TO 1664                                           ATCRBS   506
      IF(AT.LT.110.0)GO TO 1660                                         ATCRBS   507
      IF(AT.LT.2000.0)GO TO 1661                                        ATCRBS   508
      IF(AT.LT.82000.0)GO TO 1662                                       ATCRBS   509
      ATIP=90.                                                          ATCRBS   510
      GO TO 1673                                                        ATCRBS   511
1660  ATP=AT*10.+631.                                                   ATCRBS   512
      GO TO 1668                                                        ATCRBS   513
1661  ATP=AT*.1+1720.                                                   ATCRBS   514
      GO TO 1668                                                        ATCRBS   515
1662  ATP=AT*.001+1918.                                                 ATCRBS   516
      GO TO 1668                                                        ATCRBS   517
1664  ATP=AT*100.+1.                                                    ATCRBS   518
1668  IAT=ATP                                                           ATCRBS   519
      ATIP=TBLATN(IAT)+(TBLATN(IAT+1)-TBLATN(IAT))*(ATP-FLOAT(IAT))     ATCRBS   520
1673  IF(AT1.LT.0.)GO TO 1670                                           ATCRBS   521
      IF(X1.LT.0.)ATIP=ATIP-180.                                        ATCRBS   522
      GO TO 1675                                                        ATCRBS   523
1670  IF(X1.LT.0.)ATIP=ATIP-180.                                        ATCRBS   524
      ATIP=-ATIP                                                        ATCRBS   525
1675  AZ=90.-ATIP                                                       ATCRBS   526
      Y1=G                                                              ATCRBS   527
      X1=SQRT(E*E+F*F)                                                  ATCRBS   528
      IF(X1.EQ.0.)X1=1.E-200                                            ATCRBS   529
      AT1=Y1/X1                                                         ATCRBS   530
      AT=ABS(AT1)                                                       ATCRBS   531
      IF(AT.LT.7.0)GO TO 1684                                           ATCRBS   532
      IF(AT.LT.110.0)GO TO 1680                                         ATCRBS   533
      IF(AT.LT.2000.0)GO TO 1681                                        ATCRBS   534
      IF(AT.LT.82000.0)GO TO 1682                                       ATCRBS   535
      ATIP=90.                                                          ATCRBS   536
      GO TO 1693                                                        ATCRBS   537
1680  ATP=AT*10.+631.                                                   ATCRBS   538
      GO TO 1688                                                        ATCRBS   539
1681  ATP=AT*.1+1720.                                                   ATCRBS   540
      GO TO 1688                                                        ATCRBS   541
1682  ATP=AT*.001+1918.                                                 ATCRBS   542
      GO TO 1688                                                        ATCRBS   543
1684  ATP=AT*100.+1.                                                    ATCRBS   544
1688  IAT=ATP                                                           ATCRBS   545
      ATIP=TBLATN(IAT)+(TBLATN(IAT+1)-TBLATN(IAT))*(ATP-FLOAT(IAT))     ATCRBS   546
1693  IF(AT1.LT.0.)GO TO 1691                                           ATCRBS   547
      IF(X1.LT.0.)ATIP=ATIP-180.                                        ATCRBS   548
      GO TO 1690                                                        ATCRBS   549
1691  IF(X1.LT.0.)ATIP=ATIP-180.                                        ATCRBS   550
      ATIP=-ATIP                                                        ATCRBS   551
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
1690 EL=ATIP                                                          ATCRBS   552
 505 IF(IAABYP.EQ.1) GO TO 401
     IF(AZ.GT.180.) GO TO 502                                         DABS      35
 507 IF (AZ.LT.-180.) GO TO 506                                       ATCRBS   554
 501 AAZ=ABS(AZ)                                                      ATCRBS   555
     IF ((AAZ.GE.158.).AND.(AAZ.LE.178.).AND.(EL.GE.-50.).AND.(EL.LE.3.  ATCRBS   556
    1)) GO TO 535                                                     ATCRBS   557
     IF (EL.LE.-10.) GO TO 503                                        ATCRBS   558
     IF ((AAZ.LE.52.).AND.(EL.GE.0.).AND.(EL.LE.23.)) GO TO 535       ATCRBS   559
     IF ((AAZ.GT.117.6).AND.(EL.LE.15.)) GO TO 520                    ATCRBS   560
 503 DO 530 I=2,11                                                    ATCRBS   561
     IF (EL.GE.EAAC(I)) GO TO 531                                     ATCRBS   562
 530 CONTINUE                                                         ATCRBS   563
     WRITE(6,504)                                                     ATCRBS   564
 504 FORMAT (26H1SOMETHING WRONG IN ANTAC.  )                         ATCRBS   565
     STOP                                                             ATCRBS   566
 531 UPPOWR(INO,JAC,1)=UPPOWR(INO,JAC,I)+EPAC(I-1)+(EL-EAAC(I-1))/    ATCRBS   567
    1(EAAC(I)-EAAC(I-1))*(EPAC(I)-EPAC(I-1))                          ATCRBS   568
     GO TO 401                                                        ATCRBS   569
 520 UPPOWR(INO,JAC,1)=UPPOWR(INO,JAC,I)-10.                          ATCRBS   570
     GO TO 401                                                        ATCRBS   571
 535 UPPOWR(INO,JAC,1)=UPPOWR(INO,JAC,I)-20.                          ATCRBS   572
     GO TO 401                                                        ATCRBS   573
 502 AZ=AZ-360.                                                       ATCRBS   574
     GO TO 505                                                        ATCRBS   575
 506 AZ=AZ+360.                                                       ATCRBS   576
     GO TO 507                                                        ATCRBS   577
 401 UPPOWR(INO,JAC,2)=UPPOWR(INO,JAC,I)+A(INO,15)                    ATCRBS   578
     IF(INO.NE.1) GO TO 708                                           ATCRBS   579
     SAVPOW=UPPOWR(1,1,1)                                             SECMS     58
     GO TO 320                                                        SECMS     59
 708 IF(ELWRTA.LT.HORANG(INO)) GO TO 710                              SECMS     60
 709 ELD2P=ELWRTA/2.+46.                                              SECMS     61
     IEL=ELD2P                                                        ATCRBS   581
     UPPOWR(INO,JAC,1)=UPPOWR(INO,JAC,I)+EPIRV(IEL)+(EPIRV(IEL+1)-EPIRV  ATCRBS   582
    1(IEL))*(ELD2P-FLOAT(IEL))                                        ATCRBS   583
     ELP91=ELWRTA+91.                                                 ATCRBS   584
     IEL=ELP91                                                        ATCRBS   585
     UPPOWR(INO,JAC,2)=UPPOWR(INO,JAC,5)+EPSLS(IEL)+(EPSLS(IEL+1)-    ATCRBS   586
    1EPSLS(IEL))*(ELP91-FLOAT(IEL))                                   ATCRBS   587
     GO TO 320                                                        ATCRBS   588
 710 IF ((PROPTM(INO,JAC)*C).GT.(SQRT((A(INO,13))**2-RPARTH(INO)**2)))  ATCRBS   589
    1GO TO 807                                                        ATCRBS   590
     GO TO 709                                                        ATCRBS   591
 807 UPPOWR(INO,JAC,2)=-1.E+27                                        ATCRBS   592
     UPPOWR(INO,JAC,1)=-1.E+25                                        ATCRBS   593
 320 CONTINUE                                                         ATCRBS   594
 322 CONTINUE                                                         ATCRBS   595
9    TINTNW(1,1)=TIME                                                 ATCRBS   596
     IF (ILACE(1)-12) 922,923,926                                     ATCRBS   597
923  ILACE(1)=1                                                       ATCRBS   598
     P3(1,1)=P3IN(1,1)                                                ATCRBS   599
     GO TO 926                                                        ATCRBS   600
922  ILACE(1)=ILACE(1)+1                                              ATCRBS   601
     IL=ILACE(1)                                                      ATCRBS   602
     P3(1,1)=P3IN(1,IL)                                               ATCRBS   603
 926 IF (INTS.LE.1) GO TO 904                                         ATCRBS   604
     DO 901 I=2,INTS                                                  ATCRBS   605
     TINTNW(I,1)=-10000.                                              ATCRBS   606
     TINTNW(I,2)=-10000.                                              ATCRBS   607
     IF (TLASTI(I).GE.TNEXT) GO TO 901                                ATCRBS   608
     TINTNW(I,1)=TLASTI(I)                                            ATCRBS   609
     IF (ILACE(I)-12) 902,903,906                                     ATCRBS   610
903  ILACE(I)=1                                                       ATCRBS   611
                                                                      ATCRBS   612
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      P3(I,1)=P3IN(I,1)                                                 ATCRBS   613
      GO TO 906                                                         ATCRBS   614
  902 ILACE(I)=ILACE(I)+1                                               ATCRBS   615
      IL=ILACE(I)                                                       ATCRBS   616
      P3(I,1)=P3IN(I,IL)                                                ATCRBS   617
  906 TLASTI(I)=TLASTI(I)+PRP(I)                                        ATCRBS   618
      IF (TLASTI(I).GE.TNEXT) GO TO 901                                 ATCRBS   619
      TINTNW(I,2)=TLASTI(I)                                             ATCRBS   620
      IF (ILACE(I)-12) 912,913,916                                      ATCRBS   621
  913 ILACE(I)=1                                                        ATCRBS   622
      P3(I,2)=P3IN(I,1)                                                 ATCRBS   623
      GO TO 916                                                         ATCRBS   624
  912 ILACE(I)=ILACE(I)+1                                               ATCRBS   625
      IL=ILACE(I)                                                       ATCRBS   626
      P3(I,2)=P3IN(I,IL)                                                ATCRBS   627
  916 TLASTI(I)=TLASTI(I)+PRP(I)                                        ATCRBS   628
  901 CONTINUE                                                          ATCRBS   629
  904 TRANP3=TIME                                                       ATCRBS   630
      IL=ILACE(1)                                                       ATCRBS   631
      IF (IL.GT.12) IL=1                                                ATCRBS   632
      JAC=1                                                             SECMS     62
      NPULS=0                                                           ATCRBS   634
      NPNEJ=0                                                           ATCRBS   635
      IF (NPNEX(JAC).EQ.0) GO TO 1002                                   ATCRBS   636
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   637
      DO 1001 I=1,NPNEJ                                                 ATCRBS   638
      TXPNDR(I)=TXPNEX(JAC,I)                                           ATCRBS   639
 1001 PXPNDR(I)=PXPNEX(JAC,I)                                           ATCRBS   640
      NPULS=NPNEJ                                                       ATCRBS   641
      NPNEX(JAC)=0                                                      ATCRBS   642
 1002 AZWRTA=UPPOWR(1,JAC,3)-A(1,3)                                     ATCRBS   643
      P3POW=UPPOWR(1,JAC,1)                                             ATCRBS   644
      GO TO 1007                                                        SECMS     63
      IF (AZWRTA.LT.0.) AZWRTA=AZWRTA+360.                              ATCRBS   645
      AZ3P1=AZWRTA+1.                                                   ATCRBS   646
      IAZ=AZ3P1                                                         ATCRBS   647
      P3POW=P3POW+AP(IAZ)+(AP(IAZ+1)-AP(IAZ))*(AZ3P1-FLOAT(IAZ))        ATCRBS   648
 1007 DWNPOW=P3POW                                                      SECMS     64
      P1POW=P3POW                                                       ATCRBS   650
      P2POW=UPPOWR(1,JAC,2)                                             ATCRBS   651
      DWNPOM=P2POW                                                      ATCRBS   652
      IF (IISLS(1).GT.0) GO TO 1075                                     ATCRBS   653
      IF (P2POW.GE.TSNSMX(JAC)) GO TO 1070                              ATCRBS   654
 1076 IF (P1POW.LT.TSNSMX(JAC)) GO TO 1004                              ATCRBS   655
 1081 TP3=TIME+PROPTM(1,JAC)                                            ATCRBS   656
      NPULS=NPULS+2                                                     ATCRBS   657
      TXPNDR(NPULS-1)=TP3-P3(1,1)                                       ATCRBS   658
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   659
      TXPNDR(NPULS)=TP3                                                 ATCRBS   660
      PXPNDR(NPULS)=P3POW                                               ATCRBS   661
      GO TO 1004                                                        ATCRBS   662
 1070 IF (P1POW.LT.TSNSMX(JAC)) GO TO 1080                              ATCRBS   663
 1082 TP3=TIME+PROPTM(1,JAC)                                            ATCRBS   664
      NPULS=NPULS+3                                                     ATCRBS   665
      TXPNDR(NPULS-2)=TP3-P3(1,1)                                       ATCRBS   666
      PXPNDR(NPULS-2)=P1POW                                             ATCRBS   667
      TXPNDR(NPULS-1)=TXPNDR(NPULS-2)+2.E-06                            ATCRBS   668
      PXPNDR(NPULS-1)=P2POW                                             ATCRBS   669
      TXPNDR(NPULS)=TP3                                                 ATCRBS   670
      PXPNDR(NPULS)=P3POW                                               ATCRBS   671
      GO TO 1004                                                        ATCRBS   672
 1075 IF (P2POW.LT.-100.) GO TO 1076                                    ATCRBS   673
      IF (P1POW.LT.-100.) GO TO 1077                                    ATCRBS   674
      XA=10.*P3POW+1031.                                                ATCRBS   675
      XB=10.*(P2POW-3.)+1031.                                           ATCRBS   676
      IA=XA                                                             ATCRBS   677
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      IB= XB                                                            ATCRBS   678
      P1POW= 10.*ALOG10(TENTOX(IA)+(XA-FLOAT(IA))*(TENTOX(IA+1)-        ATCRBS   679
     1TENTOX(IA))+TENTOX(IB)+(XB-FLOAT(IB))*(TENTOX(IB+1)-TENTOX(IB)))  ATCRBS   680
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1078                              ATCRBS   681
      IF (P3POW.LT.TSNSMX(JAC)) GO TO 1079                              ATCRBS   682
      IF (P2POW.LT.TSNSMX(JAC)) GO TO 1081                              ATCRBS   683
      GO TO 1082                                                        ATCRBS   684
1077  IF (P2POW.LT.TSNSMX(JAC)) GO TO 1004                              ATCRBS   685
      P1POW=P2POW=3.                                                    ATCRBS   686
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1080                              ATCRBS   687
1083  NPULS=NPULS+2                                                     ATCRBS   688
      TXPNDR(NPULS-1)=TIME+PROPTM(1,JAC)-P3(1,1)                        ATCRBS   689
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   690
      TXPNDR(NPULS)=TXPNDR(NPULS-1)+2.E-06                              ATCRBS   691
      PXPNDR(NPULS)=P2POW                                               ATCRBS   692
      GO TO 1004                                                        ATCRBS   693
1079  IF (P2POW.GE.TSNSMX(JAC)) GO TO 1083                              ATCRBS   694
      NPULS=NPULS+1                                                     ATCRBS   695
      TXPNDR(NPULS)=TIME+PROPTM(1,JAC)-P3(1,1)                          ATCRBS   696
      PXPNDR(NPULS)=P1POW                                               ATCRBS   697
      GO TO 1004                                                        ATCRBS   698
1078  IF (P2POW.LT.TSNSMX(JAC)) GO TO 1004                              ATCRBS   699
1080  NPULS=NPULS+1                                                     ATCRBS   700
      TXPNDR(NPULS)=TIME+PROPTM(1,JAC)-P3(1,1)+2.E-06                   ATCRBS   701
      PXPNDR(NPULS)=P2POW                                               ATCRBS   702
 1004 IF (INTS.LE.1) GO TO 1005                                         ATCRBS   703
      DO 1003 I=2,INTS                                                  ATCRBS   704
      IF (TINTNW(I,1).LT.0.) GO TO 1003                                 ATCRBS   705
      P3POW=UPPOWR(I,JAC,1)                                             ATCRBS   706
      P2POW=UPPOWR(I,JAC,2)                                             ATCRBS   707
      IF (IIGLS(I).GT.0) GO TO 1096                                     ATCRBS   708
      IF (P3POW.GE.TSNSMX(JAC)) GO TO 1090                              ATCRBS   709
1057  IF (P2POW.GE.TSNSMX(JAC)) GO TO 1091                              ATCRBS   710
      GO TO 1003                                                        ATCRBS   711
1090  AZWRTA=UPPOWR(I,JAC,3)-A(I,3)                                     ATCRBS   712
      IF (AZWRTA.LT.0.) AZWRTA=AZWRTA+360.                              ATCRBS   713
      AZ3P1=AZWRTA+1.                                                   ATCRBS   714
      IAZ=AZ3P1                                                         ATCRBS   715
      P3POW=P3POW+AP(IAZ)+(AP(IAZ+1)-AP(IAZ))*(AZ3P1-FLOAT(IAZ))        ATCRBS   716
      P1POW=P3POW                                                       ATCRBS   717
      IF (P2POW.GE.TSNSMX(JAC)) GO TO 1030                              ATCRBS   718
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1003                              ATCRBS   719
1098  TP3=TINTNW(I,1)+PROPTM(I,JAC)                                     ATCRBS   720
      IF (TINTNW(I,2).GE.0.) GO TO 1031                                 ATCRBS   721
      IF (TP3.GE.TNEX25) GO TO 1032                                     ATCRBS   722
      NPULS=NPULS+2                                                     ATCRBS   723
      TXPNDR(NPULS-1)=TP3-P3(I,1)                                       ATCRBS   724
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   725
      TXPNDR(NPULS)=TP3                                                 ATCRBS   726
      PXPNDR(NPULS)=P3POW                                               ATCRBS   727
      GO TO 1003                                                        ATCRBS   728
1032  TP1=TP3-P3(I,1)                                                   ATCRBS   729
      IF (TP1.GE.TNEX25) GO TO 1033                                     ATCRBS   730
      NPULS=NPULS+1                                                     ATCRBS   731
      TXPNDR(NPULS)=TP1                                                 ATCRBS   732
      PXPNDR(NPULS)=P1POW                                               ATCRBS   733
      NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS   734
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   735
      TXPNEX(JAC,NPNEJ)=TP3                                             ATCRBS   736
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   737
      GO TO 1003                                                        ATCRBS   738
1033  NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS   739
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   740
      TXPNEX(JAC,NPNEJ-1)=TP1                                           ATCRBS   741
      PXPNEX(JAC,NPNEJ-1)=P1POW                                         ATCRBS   742
      TXPNEX(JAC,NPNEJ)=TP3                                             ATCRBS   743
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   744
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      GO TO 1003                                                        ATCRBS   745
1031  IF (TP3.GE.TNEX25) GO TO 1034                                     ATCRBS   746
      TP32=TINTNW(I,2)+PROPTM(I,JAC)                                    ATCRBS   747
      IF (TP32.GE.TNEX25) GO TO 1035                                    ATCRBS   748
      NPULS=NPULS+4                                                     ATCRBS   749
      TXPNDR(NPULS-3)=TP3-P3(I,1)                                       ATCRBS   750
      PXPNDR(NPULS-3)=P1POW                                             ATCRBS   751
      TXPNDR(NPULS-2)=TP3                                               ATCRBS   752
      PXPNDR(NPULS-2)=P3POW                                             ATCRBS   753
      TXPNDR(NPULS-1)=TP32-P3(I,2)                                      ATCRBS   754
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   755
      TXPNDR(NPULS)=TP32                                                ATCRBS   756
      PXPNDR(NPULS)=P3POW                                               ATCRBS   757
      GO TO 1003                                                        ATCRBS   758
1035  TP12=TP32-P3(I,2)                                                 ATCRBS   759
      IF (TP12.GE.TNEX25) GO TO 1036                                    ATCRBS   760
      NPULS=NPULS+3                                                     ATCRBS   761
      TXPNDR(NPULS-2)=TP3-P3(I,1)                                       ATCRBS   762
      PXPNDR(NPULS-2)=P1POW                                             ATCRBS   763
      TXPNDR(NPULS-1)=TP3                                               ATCRBS   764
      PXPNDR(NPULS-1)=P3POW                                             ATCRBS   765
      TXPNDR(NPULS)=TP12                                                ATCRBS   766
      PXPNDR(NPULS)=P1POW                                               ATCRBS   767
      NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS   768
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   769
      TXPNEX(JAC,NPNEJ)=TP32                                            ATCRBS   770
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   771
      GO TO 1003                                                        ATCRBS   772
1036  NPULS=NPULS+2                                                     ATCRBS   773
      TXPNDR(NPULS-1)=TP3-P3(I,1)                                       ATCRBS   774
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   775
      TXPNDR(NPULS)=TP3                                                 ATCRBS   776
      PXPNDR(NPULS)=P3POW                                               ATCRBS   777
      NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS   778
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   779
      TXPNEX(JAC,NPNEJ-1)=TP12                                          ATCRBS   780
      PXPNEX(JAC,NPNEJ-1)=P1POW                                         ATCRBS   781
      TXPNEX(JAC,NPNEJ)=TP32                                            ATCRBS   782
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   783
      GO TO 1003                                                        ATCRBS   784
1034  TP1=TP3-P3(I,1)                                                   ATCRBS   785
      IF (TP1.GE.TNEX25) GO TO 1037                                     ATCRBS   786
      NPULS=NPULS+1                                                     ATCRBS   787
      TXPNDR(NPULS)=TP1                                                 ATCRBS   788
      PXPNDR(NPULS)=P1POW                                               ATCRBS   789
      NPNEX(JAC)=NPNEX(JAC)+3                                           ATCRBS   790
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   791
      TXPNEX(JAC,NPNEJ-2)=TP3                                           ATCRBS   792
      PXPNEX(JAC,NPNEJ-2)=P3POW                                         ATCRBS   793
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                       ATCRBS   794
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   795
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ)-P3(I,2)                     ATCRBS   796
      PXPNEX(JAC,NPNEJ-1)=P1POW                                         ATCRBS   797
      GO TO 1003                                                        ATCRBS   798
1037  NPNEX(JAC)=NPNEX(JAC)+4                                           ATCRBS   799
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   800
      TXPNEX(JAC,NPNEJ-3)=TP1                                           ATCRBS   801
      PXPNEX(JAC,NPNEJ-3)=P1POW                                         ATCRBS   802
      TXPNEX(JAC,NPNEJ-2)=TP3                                           ATCRBS   803
      PXPNEX(JAC,NPNEJ-2)=P3POW                                         ATCRBS   804
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                       ATCRBS   805
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   806
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ)-P3(I,2)                     ATCRBS   807
      PXPNEX(JAC,NPNEJ-1)=P1POW                                         ATCRBS   808
      GO TO 1003                                                        ATCRBS   809
1030  IF (P1POW.GE.TSNSMX(JAC)) GO TO 1040                              ATCRBS   810
1091  TP2=TINTNW(I,1)+PROPTM(I,JAC)-P3(I,1)+2.E-06                      ATCRBS   811
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      IF (TINTNW(I,2).GE.0.) GO TO 1041                                 ATCRBS   812
      IF (TP2.GE.TNEX25) GO TO 1042                                     ATCRBS   813
      NPULS=NPULS+1                                                     ATCRBS   814
      TXPNDR(NPULS)=TP2                                                 ATCRBS   815
      PXPNDR(NPULS)=P2POW                                               ATCRBS   816
      GO TO 1003                                                        ATCRBS   817
1042  NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS   818
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   819
      TXPNEX(JAC,NPNEJ)=TP2                                             ATCRBS   820
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS   821
      GO TO 1003                                                        ATCRBS   822
1041  IF (TP2.GE.TNEX25) GO TO 1043                                     ATCRBS   823
      TP22=TINTNW(I,2)+PROPTM(I,JAC)-P3(I,2)+2.E-06                     ATCRBS   824
      IF (TP22.GE.TNEX25) GO TO 1044                                    ATCRBS   825
      NPULS=NPULS+2                                                     ATCRBS   826
      TXPNDR(NPULS-1)=TP2                                               ATCRBS   827
      PXPNDR(NPULS-1)=P2POW                                             ATCRBS   828
      TXPNDR(NPULS)=TP22                                                ATCRBS   829
      PXPNDR(NPULS)=P2POW                                               ATCRBS   830
      GO TO 1003                                                        ATCRBS   831
1044  NPULS=NPULS+1                                                     ATCRBS   832
      TXPNDR(NPULS)=TP2                                                 ATCRBS   833
      PXPNDR(NPULS)=P2POW                                               ATCRBS   834
      NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS   835
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   836
      TXPNEX(JAC,NPNEJ)=TP22                                            ATCRBS   837
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS   838
      GO TO 1003                                                        ATCRBS   839
1043  NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS   840
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   841
      TXPNEX(JAC,NPNEJ-1)=TP2                                           ATCRBS   842
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   843
      TXPNEX(JAC,NPNEJ)=TP22                                            ATCRBS   844
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS   845
      GO TO 1003                                                        ATCRBS   846
1040  TP3=TINTNW(I,1)+PROPTM(I,JAC)                                     ATCRBS   847
      IF (TINTNW(I,2).GE.0.) GO TO 1045                                 ATCRBS   848
      IF (TP3.GE.TNEX25) GO TO 1046                                     ATCRBS   849
      NPULS=NPULS+3                                                     ATCRBS   850
      TXPNDR(NPULS-2)=TP3-P3(I,1)                                       ATCRBS   851
      PXPNDR(NPULS-2)=P1POW                                             ATCRBS   852
      TXPNDR(NPULS-1)=TXPNDR(NPULS-2)+2.E-06                            ATCRBS   853
      PXPNDR(NPULS-1)=P2POW                                             ATCRBS   854
      TXPNDR(NPULS)=TP3                                                 ATCRBS   855
      PXPNDR(NPULS)=P3POW                                               ATCRBS   856
      GO TO 1003                                                        ATCRBS   857
1046  TP1=TP3-P3(I,1)                                                   ATCRBS   858
      IF (TP1.GE.TNEX25) GO TO 1047                                     ATCRBS   859
      TP2=TP1+2.E-06                                                    ATCRBS   860
      IF (TP2.GE.TNEX25) GO TO 1048                                     ATCRBS   861
      NPULS=NPULS+2                                                     ATCRBS   862
      TXPNDR(NPULS-1)=TP1                                               ATCRBS   863
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   864
      TXPNDR(NPULS)=TP2                                                 ATCRBS   865
      PXPNDR(NPULS)=P2POW                                               ATCRBS   866
      NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS   867
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   868
      TXPNEX(JAC,NPNEJ)=TP3                                             ATCRBS   869
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   870
      GO TO 1003                                                        ATCRBS   871
1048  NPULS=NPULS+1                                                     ATCRBS   872
      TXPNDR(NPULS)=TP1                                                 ATCRBS   873
      PXPNDR(NPULS)=P1POW                                               ATCRBS   874
      NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS   875
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   876
      TXPNEX(JAC,NPNEJ-1)=TP2                                           ATCRBS   877
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   878
      TXPNEX(JAC,NPNEJ)=TP3                                             ATCRBS   879
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   880
      GO TO 1003                                                        ATCRBS   881
1047  NPNEX(JAC)=NPNEX(JAC)+3                                           ATCRBS   882
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   883
      TXPNEX(JAC,NPNEJ-2)=TP1                                           ATCRBS   884
      PXPNEX(JAC,NPNEJ-2)=P1POW                                         ATCRBS   885
      TXPNEX(JAC,NPNEJ-1)=TP1+2.E-06                                    ATCRBS   886
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   887
      TXPNEX(JAC,NPNEJ)=TP3                                             ATCRBS   888
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   889
      GO TO 1003                                                        ATCRBS   890
1045  IF (TP3.GE.TNEX25) GO TO 1049                                     ATCRBS   891
      TP32=TINTNW(I,2)+PROPTM(I,JAC)                                    ATCRBS   892
      IF (TP32.GE.TNEX25) GO TO 1050                                    ATCRBS   893
      NPULS=NPULS+6                                                     ATCRBS   894
      TXPNDR(NPULS-5)=TP3-P3(I,1)                                       ATCRBS   895
      PXPNDR(NPULS-5)=P1POW                                             ATCRBS   896
      TXPNDR(NPULS-4)=TXPNDR(NPULS-5)+2.E-06                            ATCRBS   897
      PXPNDR(NPULS-4)=P2POW                                             ATCRBS   898
      TXPNDR(NPULS-3)=TP3                                               ATCRBS   899
      PXPNDR(NPULS-3)=P3POW                                             ATCRBS   900
      TXPNDR(NPULS-2)=TP32-P3(I,2)                                      ATCRBS   901
      PXPNDR(NPULS-2)=P1POW                                             ATCRBS   902
      TXPNDR(NPULS-1)=TXPNDR(NPULS-2)+2.E-06                            ATCRBS   903
      PXPNDR(NPULS-1)=P2POW                                             ATCRBS   904
      TXPNDR(NPULS)=TP32                                                ATCRBS   905
      PXPNDR(NPULS)=P3POW                                               ATCRBS   906
      GO TO 1003                                                        ATCRBS   907
1050  TP12=TP32-P3(I,2)                                                 ATCRBS   908
      IF (TP12.GE.TNEX25) GO TO 1051                                    ATCRBS   909
      TP22=TP12+2.E-06                                                  ATCRBS   910
      IF (TP22.GE.TNEX25) GO TO 1052                                    ATCRBS   911
      NPULS=NPULS+5                                                     ATCRBS   912
      TXPNDR(NPULS-4)=TP3-P3(I,1)                                       ATCRBS   913
      PXPNDR(NPULS-4)=P1POW                                             ATCRBS   914
      TXPNDR(NPULS-3)=TXPNDR(NPULS-4)+2.E-06                            ATCRBS   915
      PXPNDR(NPULS-3)=P2POW                                             ATCRBS   916
      TXPNDR(NPULS-2)=TP3                                               ATCRBS   917
      PXPNDR(NPULS-2)=P3POW                                             ATCRBS   918
      TXPNDR(NPULS-1)=TP12                                              ATCRBS   919
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   920
      TXPNDR(NPULS)=TP22                                                ATCRBS   921
      PXPNDR(NPULS)=P2POW                                               ATCRBS   922
      NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS   923
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   924
      TXPNEX(JAC,NPNEJ)=TP32                                            ATCRBS   925
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   926
      GO TO 1003                                                        ATCRBS   927
1052  NPULS=NPULS+4                                                     ATCRBS   928
      TXPNDR(NPULS-3)=TP3-P3(I,1)                                       ATCRBS   929
      PXPNDR(NPULS-3)=P1POW                                             ATCRBS   930
      TXPNDR(NPULS-2)=TXPNDR(NPULS-3)+2.E-06                            ATCRBS   931
      PXPNDR(NPULS-2)=P2POW                                             ATCRBS   932
      TXPNDR(NPULS-1)=TP3                                               ATCRBS   933
      PXPNDR(NPULS-1)=P3POW                                             ATCRBS   934
      TXPNDR(NPULS)=TP12                                                ATCRBS   935
      PXPNDR(NPULS)=P1POW                                               ATCRBS   936
      NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS   937
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   938
      TXPNEX(JAC,NPNEJ-1)=TP22                                          ATCRBS   939
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   940
      TXPNEX(JAC,NPNEJ)=TP32                                            ATCRBS   941
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   942
      GO TO 1003                                                        ATCRBS   943
1051  NPULS=NPULS+3                                                     ATCRBS   944
      TXPNDR(NPULS-2)=TP3-P3(I,1)                                       ATCRBS   945
      PXPNDR(NPULS-2)=P1POW                                             ATCRBS   946
      TXPNDR(NPULS-1)=TXPNDR(NPULS-2)+2.E-06                            ATCRBS   947
      PXPNDR(NPULS-1)=P2POW                                             ATCRBS   948
      TXPNDR(NPULS)=TP3                                                 ATCRBS   949
      PXPNDR(NPULS)=P3POW                                               ATCRBS   950
      NPNEX(JAC)=NPNEX(JAC)+3                                           ATCRBS   951
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   952
      TXPNEX(JAC,NPNEJ-2)=TP12                                          ATCRBS   953
      PXPNEX(JAC,NPNEJ-2)=P1POW                                         ATCRBS   954
      TXPNEX(JAC,NPNEJ-1)=TP12+2.E-06                                   ATCRBS   955
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   956
      TXPNEX(JAC,NPNEJ)=TP32                                            ATCRBS   957
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   958
      GO TO 1003                                                        ATCRBS   959
1049  TP1=TP3-P3(I,1)                                                   ATCRBS   960
      IF (TP1.GE.TNEX25) GO TO 1053                                     ATCRBS   961
      TP2=TP1+2.E-06                                                    ATCRBS   962
      IF (TP2.GE.TNEX25) GO TO 1054                                     ATCRBS   963
      NPULS=NPULS+2                                                     ATCRBS   964
      TXPNDR(NPULS-1)=TP1                                               ATCRBS   965
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS   966
      TXPNDR(NPULS)=TP2                                                 ATCRBS   967
      PXPNDR(NPULS)=P2POW                                               ATCRBS   968
      NPNEX(JAC)=NPNEX(JAC)+4                                           ATCRBS   969
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   970
      TXPNEX(JAC,NPNEJ-3)=TP3                                           ATCRBS   971
      PXPNEX(JAC,NPNEJ-3)=P3POW                                         ATCRBS   972
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                       ATCRBS   973
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   974
      TXPNEX(JAC,NPNEJ-2)=TXPNEX(JAC,NPNEJ)-P3(I,2)                     ATCRBS   975
      PXPNEX(JAC,NPNEJ-2)=P1POW                                         ATCRBS   976
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ-2)+2.E-06                    ATCRBS   977
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   978
      GO TO 1003                                                        ATCRBS   979
1054  NPULS=NPULS+1                                                     ATCRBS   980
      TXPNDR(NPULS)=TP1                                                 ATCRBS   981
      PXPNDR(NPULS)=P1POW                                               ATCRBS   982
      NPNEX(JAC)=NPNEX(JAC)+5                                           ATCRBS   983
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   984
      TXPNEX(JAC,NPNEJ-4)=TP2                                           ATCRBS   985
      PXPNEX(JAC,NPNEJ-4)=P2POW                                         ATCRBS   986
      TXPNEX(JAC,NPNEJ-3)=TP3                                           ATCRBS   987
      PXPNEX(JAC,NPNEJ-3)=P3POW                                         ATCRBS   988
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                       ATCRBS   989
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS   990
      TXPNEX(JAC,NPNEJ-2)=TXPNEX(JAC,NPNEJ)-P3(I,2)                     ATCRBS   991
      PXPNEX(JAC,NPNEJ-2)=P1POW                                         ATCRBS   992
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ-2)+2.E-06                    ATCRBS   993
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS   994
      GO TO 1003                                                        ATCRBS   995
1053  NPNEX(JAC)=NPNEX(JAC)+6                                           ATCRBS   996
      NPNEJ=NPNEX(JAC)                                                  ATCRBS   997
      TXPNEX(JAC,NPNEJ-5)=TP1                                           ATCRBS   998
      PXPNEX(JAC,NPNEJ-5)=P1POW                                         ATCRBS   999
      TXPNEX(JAC,NPNEJ-4)=TP1+2.E-06                                    ATCRBS  1000
      PXPNEX(JAC,NPNEJ-4)=P2POW                                         ATCRBS  1001
      TXPNEX(JAC,NPNEJ-3)=TP3                                           ATCRBS  1002
      PXPNEX(JAC,NPNEJ-3)=P3POW                                         ATCRBS  1003
      TXPNEX(JAC,NPNEJ)=TINTNW(I,2)+PROPTM(I,JAC)                       ATCRBS  1004
      PXPNEX(JAC,NPNEJ)=P3POW                                           ATCRBS  1005
      TXPNEX(JAC,NPNEJ-2)=TXPNEX(JAC,NPNEJ)-P3(I,2)                     ATCRBS  1006
      PXPNEX(JAC,NPNEJ-2)=P1POW                                         ATCRBS  1007
      TXPNEX(JAC,NPNEJ-1)=TXPNEX(JAC,NPNEJ-2)+2.E-06                    ATCRBS  1008
      PXPNEX(JAC,NPNEJ-1)=P2POW                                         ATCRBS  1009
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TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      GO TO 1003
1096  IF (P2POW.GE.-100.) GO TO 1097
      IF (P3POW.LT.TSNSMX(JAC)) GO TO 1003
      AZWRTA=UPPOWR(I,JAC,3)-A(I,3)
      IF (AZWRTA.LT.0.) AZWRTA=AZWRTA+360.
      AZ3P1=AZWRTA*1.
      IAZ=AZ3P1
      P3POW=P3POW+AP(IAZ)+(AP(IAZ+1)-AP(IAZ))*(AZ3P1-FLOAT(IAZ))
      IF (P3POW.LT.TSNSMX(JAC)) GO TO 1003
      P1POW=P3POW
      GO TO 1098
1097  IF (P3POW.GE.-100.) GO TO 1055
      IF (P2POW.LT.TSNSMX(JAC)) GO TO 1003
      P1POW=P2POW-3.
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1091
1089  TP2=TINTNW(I,1)+PROPTM(I,JAC)-P3(I,1)+2.E-06
      IF (TINTNW(I,2).GE.0.) GO TO 11031
      IF (TP2.GE.TNEX25) GO TO 11032
      NPULS=NPULS+2
      TXPNDR(NPULS-1)=TP2-2.E-06
      PXPNDR(NPULS-1)=P1POW
      TXPNDR(NPULS)=TP2
      PXPNDR(NPULS)=P2POW
      GO TO 1003
11032 TP1=TP2-2.E-06
      IF (TP1.GE.TNEX25) GO TO 11033
      NPULS=NPULS+1
      TXPNDR(NPULS)=TP1
      PXPNDR(NPULS)=P1POW
      NPNEX(JAC)=NPNEX(JAC)+1
      NPNEJ=NPNEX(JAC)
      TXPNEX(JAC,NPNEJ)=TP2
      PXPNEX(JAC,NPNEJ)=P2POW
      GO TO 1003
11033 NPNEX(JAC)=NPNEX(JAC)+2
      NPNEJ=NPNEX(JAC)
      TXPNEX(JAC,NPNEJ-1)=TP1
      PXPNEX(JAC,NPNEJ-1)=P1POW
      TXPNEX(JAC,NPNEJ)=TP2
      PXPNEX(JAC,NPNEJ)=P2POW
      GO TO 1003
11031 IF (TP2.GE.TNEX25) GO TO 11034
      TP22=TINTNW(I,2)+PROPTM(I,JAC)-P3(I,2)+2.E-06
      IF (TP22.GE.TNEX25) GO TO 11035
      NPULS=NPULS+4
      TXPNDR(NPULS-3)=TP2-2.E-06
      PXPNDR(NPULS-3)=P1POW
      TXPNDR(NPULS-2)=TP2
      PXPNDR(NPULS-2)=P2POW
      TXPNDR(NPULS-1)=TP22-2.E-06
      PXPNDR(NPULS-1)=P1POW
      TXPNDR(NPULS)=TP22
      PXPNDR(NPULS)=P2POW
      GO TO 1003
11035 TP12=TP22-2.E-06
      IF (TP12.GE.TNEX25) GO TO 11036
      NPULS=NPULS+3
      TXPNDR(NPULS-2)=TP2-2.E-06
      PXPNDR(NPULS-2)=P1POW
      TXPNDR(NPULS-1)=TP2
      PXPNDR(NPULS-1)=P2POW
      TXPNDR(NPULS)=TP12
      PXPNDR(NPULS)=P1POW
      NPNEX(JAC)=NPNEX(JAC)+1
      NPNEJ=NPNEX(JAC)
      TXPNEX(JAC,NPNEJ)=TP22
      PXPNEX(JAC,NPNEJ)=P2POW
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      GO TO 1003                                                        ATCRBS  1077
11036 NPULS=NPULS+2                                                     ATCRBS  1078
      TXPNDR(NPULS-1)=TP2-2.E-06                                        ATCRBS  1079
      PXPNDR(NPULS-1)=P1POW                                             ATCRBS  1080
      TXPNDR(NPULS)=TP2                                                 ATCRBS  1081
      PXPNDR(NPULS)=P2POW                                               ATCRBS  1082
      NPNEX(JAC)=NPNEX(JAC)+2                                           ATCRBS  1083
      NPNEJ=NPNEX(JAC)                                                  ATCRBS  1084
      TXPNEX(JAC,NPNEJ-1)=TP12                                          ATCRBS  1085
      PXPNEX(JAC,NPNEJ-1)=P1POW                                         ATCRBS  1086
      TXPNEX(JAC,NPNEJ)=TP22                                            ATCRBS  1087
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS  1088
      GO TO 1003                                                        ATCRBS  1089
11034 TP1=TP2-2.E-06                                                    ATCRBS  1090
      IF (TP1.GE.TNEX25) GO TO 11037                                    ATCRBS  1091
      NPULS=NPULS+1                                                     ATCRBS  1092
      TXPNDR(NPULS)=TP1                                                 ATCRBS  1093
      PXPNDR(NPULS)=P1POW                                               ATCRBS  1094
      NPNEX(JAC)=NPNEX(JAC)+3                                           ATCRBS  1095
      NPNEJ=NPNEX(JAC)                                                  ATCRBS  1096
      TXPNEX(JAC,NPNEJ-2)=TP2                                           ATCRBS  1097
      PXPNEX(JAC,NPNEJ-2)=P2POW                                         ATCRBS  1098
      TXPNEX(JAC,NPNEJ-1)=TINTNW(I,2)+PROPTM(I,JAC)-P3(I,2)             ATCRBS  1099
      PXPNEX(JAC,NPNEJ-1)=P1POW                                         ATCRBS  1100
      TXPNEX(JAC,NPNEJ)=TXPNEX(JAC,NPNEJ-1)+2.E-06                      ATCRBS  1101
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS  1102
      GO TO 1003                                                        ATCRBS  1103
11037 NPNEX(JAC)=NPNEX(JAC)+4                                           ATCRBS  1104
      NPNEJ=NPNEX(JAC)                                                  ATCRBS  1105
      TXPNEX(JAC,NPNEJ-3)=TP1                                           ATCRBS  1106
      PXPNEX(JAC,NPNEJ-3)=P1POW                                         ATCRBS  1107
      TXPNEX(JAC,NPNEJ-2)=TP2                                           ATCRBS  1108
      PXPNEX(JAC,NPNEJ-2)=P2POW                                         ATCRBS  1109
      TXPNEX(JAC,NPNEJ-1)=TINTNW(I,2)+PROPTM(I,JAC)-P3(I,2)             ATCRBS  1110
      PXPNEX(JAC,NPNEJ-1)=P1POW                                         ATCRBS  1111
      TXPNEX(JAC,NPNEJ)=TXPNEX(JAC,NPNEJ-1)+2.E-06                      ATCRBS  1112
      PXPNEX(JAC,NPNEJ)=P2POW                                           ATCRBS  1113
      GO TO 1003                                                        ATCRBS  1114
1055  AZWRTA= PPOWR(I,JAC,3)-A(I,3)                                     ATCRBS  1115
      IF (AZWRTA.LT.0.) AZWRTA=AZWRTA+360.                              ATCRBS  1116
      AZ3P1=AZWRTA+1.                                                   ATCRBS  1117
      IAZ=AZ3P1                                                         ATCRBS  1118
      P3POW=P3POW+AP(IAZ)+(AP(IAZ+1)-AP(IAZ))*(AZ3P1-FLOAT(IAZ))        ATCRBS  1119
      IF (P3POW.LT.-100.) GO TO 1057                                    ATCRBS  1120
      XA= 10.*P3POW+1031.                                               ATCRBS  1121
      XB= 10.*(P2POW-3.)+1031.                                          ATCRBS  1122
      IA= XA                                                            ATCRBS  1123
      IB= XB                                                            ATCRBS  1124
      P1POW= 10.*ALOG10(TENTOX(IA)+(XA-FLOAT(IA))*(TENTOX(IA+1)-        ATCRBS  1125
     1TENTOX(IA))+TENTOX(IB)+(XB-FLOAT(IB))*(TENTOX(IB+1)-TENTOX(IB)))  ATCRBS  1126
      IF (P1POW.LT.TSNSMX(JAC)) GO TO 1057                              ATCRBS  1127
      IF (P3POW.LT.TSNSMX(JAC)) GO TO 1069                              ATCRBS  1128
      IF (P2POW.LT.TSNSMX(JAC)) GO TO 1098                              ATCRBS  1129
      GO TO 1040                                                        ATCRBS  1130
1069  IF (P2POW.GE.TSNSMX(JAC)) GO TO 1089                              ATCRBS  1131
      TP1=TINTNW(I,1)+PROPTM(I,JAC)-P3(I,1)                             ATCRBS  1132
      IF (TINTNW(I,2).GE.0.) GO TO 1088                                 ATCRBS  1133
      IF (TP1.GE.TNEX25) GO TO 11088                                    ATCRBS  1134
      NPULS=NPULS+1                                                     ATCRBS  1135
      TXPNDR(NPULS)=TP1                                                 ATCRBS  1136
      PXPNDR(NPULS)=P1POW                                               ATCRBS  1137
      GO TO 1003                                                        ATCRBS  1138
11088 NPNEX(JAC)=NPNEX(JAC)+1                                           ATCRBS  1139
      NPNEJ=NPNEX(JAC)                                                  ATCRBS  1140
      TXPNEX(JAC,NPNEJ)=TP1                                             ATCRBS  1141
      PXPNEX(JAC,NPNEJ)=P1POW                                           ATCRBS  1142
      GO TO 1003                                                        ATCRBS  1143
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
1088  IF (TP1.GE.TNEX25) GO TO 11089                                  ATCRBS   1144
      TP12=TINTNW(I,2)+PROPTM(I,JAC)-P3(I,2)                          ATCRBS   1145
      IF (TP12.GE.TNEX25) GO TO 11090                                 ATCRBS   1146
      NPULS=NPULS+2                                                   ATCRBS   1147
      TXPNDR(NPULS-1)=TP1                                             ATCRBS   1148
      PXPNDR(NPULS-1)=P1POW                                           ATCRBS   1149
      TXPNDR(NPULS)=TP12                                              ATCRBS   1150
      PXPNDR(NPULS)=P1POW                                             ATCRBS   1151
      GO TO 1003                                                      ATCRBS   1152
11090 NPULS=NPULS+1                                                   ATCRBS   1153
      TXPNDR(NPULS)=TP1                                               ATCRBS   1154
      PXPNDR(NPULS)=P1POW                                             ATCRBS   1155
      NPNEX(JAC)=NPNEX(JAC)+1                                         ATCRBS   1156
      NPNEJ=NPNEX(JAC)                                                ATCRBS   1157
      TXPNEX(JAC,NPNEJ)=TP12                                          ATCRBS   1158
      PXPNEX(JAC,NPNEJ)=P1POW                                         ATCRBS   1159
      GO TO 1003                                                      ATCRBS   1160
11089 NPNEX(JAC)=NPNEX(JAC)+2                                         ATCRBS   1161
      NPNEJ=NPNEX(JAC)                                                ATCRBS   1162
      TXPNEX(JAC,NPNEJ-1)=TP1                                         ATCRBS   1163
      PXPNEX(JAC,NPNEJ-1)=P1POW                                       ATCRBS   1164
      TXPNEX(JAC,NPNEJ)=TP12                                          ATCRBS   1165
      PXPNEX(JAC,NPNEJ)=P1POW                                         ATCRBS   1166
 1003 CONTINUE                                                        ATCRBS   1167
 1005 TPOWBR(JAC)=DWNPOW-AAC4PI+AIR4PI-A(1,5)+ERPPTT(JAC)             ATCRBS   1168
      IF(KRSLS.GT.0)TPOWOM(JAC)=DWNPOM-AAC4PI+AOM4PI-(A(1,5)+A(1,15))+ ATCRBS   1169
     1ERPPTT(JAC)                                                     ATCRBS   1170
      IF((NPULS.LE.800).AND.(NPNEJ.LE.400)) GO TO 3                   SECMS      65
      WRITE (6,1099)                                                  ATCRBS   1172
 1099 FORMAT (30HIDIMENSION EXCEEDED IN UPPROP.)                      ATCRBS   1173
      STOP                                                            ATCRBS   1174
3     IF (NPULS.LE.0) GO TO 7770                                      ATCRBS   1175
      NPM1=NPULS-1                                                    ATCRBS   1176
      DO 1202 L=1,NPM1                                                ATCRBS   1177
      COMP=TXPNDR(L)                                                  ATCRBS   1178
      KS=0                                                            ATCRBS   1179
      DO 1201 K=L,NPULS                                               ATCRBS   1180
      IF (TXPNDR(K).GE.COMP) GO TO 1201                               ATCRBS   1181
      KS=K                                                            ATCRBS   1182
      COMP=TXPNDR(K)                                                  ATCRBS   1183
1201  CONTINUE                                                        ATCRBS   1184
      IF (KS.EQ.0) GO TO 1202                                         ATCRBS   1185
      TXPNDR(KS)=TXPNDR(L)                                            ATCRBS   1186
      TXPNDR(L)=COMP                                                  ATCRBS   1187
      STORE=PXPNDR(KS)                                                ATCRBS   1188
      PXPNDR(KS)=PXPNDR(L)                                            ATCRBS   1189
      PXPNDR(L)=STORE                                                 ATCRBS   1190
1202  CONTINUE                                                        ATCRBS   1191
      IF(MISSFL.EQ.1) GO TO 49                                        SECMS      66
      GO TO 1203                                                      SECMS      67
      IF (NPULS.EQ.1) GO TO 8101                                      ATCRBS   1192
      DO 8000 KL1=1,NPM1                                              ATCRBS   1193
      IF (PXPNDR(KL1).LT.TSNSMX(JAC)) GO TO 8000                      ATCRBS   1194
      KL1P1=KL1+1                                                     ATCRBS   1195
      DO 8001 KL2=KL1P1,NPULS                                         ATCRBS   1196
      IF (PXPNDR(KL2).LT.TSNSMX(JAC)) GO TO 8001                      ATCRBS   1197
      TKL21=TXPNDR(KL2)-TXPNDR(KL1)                                   ATCRBS   1198
      IF (TKL21.GT.2.6E-06) GO TO 8000                                ATCRBS   1199
      IF(ABS(TKL21-2.E-06).GE.0.425E-06) GO TO 8012                   DABS       36
      NP2PLS(KL2)=0                                                   DABS       37
      NP2PLS(KL1)=0                                                   DABS       38
      IF(PXPNDR(KL2).GT.(PXPNDR(KL1)-4.E)) GO TO 8010                 DABS       39
      GO TO 8001                                                      DABS       40
8012  IF((ABS(TKL21-6.E-06).LT.0.6E-06).OR.(ABS(TKL21-10.E-06).LT.0.6E-0 DABS     41
     16)) NP2PLS(KL2)=0                                               DABS       42
      IF((ABS(TKL21-8.E-06).GE.0.6E-06).AND.(ABS(TKL21-9.E-06).GE.0.6E- DABS     43
     106)) GO TO 8002                                                 DABS       44
```

TABLE C-1. SIMULATION MODEL PROGRAM LSITING (TASK B) (CONT'D)

```
      NP2PLS(KL2)=0                                                     DABS      45
      NP2PLS(KL1)=0                                                     DABS      46
      GO TO 8014                                                        DABS      47
 8002 IF(ABS(TKL21-12.E-06).GE.1.E-12) GO TO 8001                       DABS      48
      CRRFI(JAC)=CRRFI(JAC)+1.                                          DABS      49
      NP2PLS(KL2)=0                                                     DABS      50
      NP2PLS(KL1)=0                                                     DABS      51
      IF(ABS( UPPOWR(1,JAC,3)-A(1,3)).GF.1.25) GO TO 8014               DABS      52
      CRRCI(JAC)=CRRCI(JAC)+1.                                          DABS      53
 8014 KNTINZ(JAC)=KNTINZ(JAC)+1                                         DABS      54
      IF(JAC.NE.1) GO TO 8001                                           DABS      55
      IDBS=PXPNDR(KL1)+101.                                             DABS      56
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8001                       DABS      57
      IDBPIN(IDBS)=IDBPIN(IDBS)+1                                       DABS      58
 8001 CONTINUE                                                          DABS      59
      GO TO 8000                                                        DABS      60
 8010 KNTSLZ(JAC)=KNTSLZ(JAC)+1                                         DABS      61
      IF(JAC.NE.1) GO TO 8000                                           DABS      62
      IDBS=PXPNDR(KL2)+101.                                             DABS      63
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8000                       DABS      64
      IDBPSL(IDBS)=IDBPSL(IDBS)+1                                       DABS      65
 8000 CONTINUE                                                          DABS      66
 8101 IF (PXPNDR(NPULS).LT.TSNSMX(JAC)) GO TO 1203                      ATCRBS  1208
      NPNEJ=NPNEX(JAC)                                                  ATCRBS  1209
      IF(NPNEJ.EQ.0) GO TO 8020                                         ATCRBS  1210
      DO 8003 KL2=1,NPNEJ                                               DABS      67
      IF (PXPNEX(JAC,KL2).LT.TSNSMX(JAC)) GO TO 8003                    ATCRBS  1212
      TKL21=TXPNEX(JAC,KL2)-TXPNDR(NPULS)                               ATCRBS  1213
      IF (TKL21.GT.21.6E-06) GO TO 8003                                 ATCRBS  1214
      IF(ABS(TKL21-2.E-06).GT.0.6E-06) GO TO 8019                       ATCRBS  1215
      NP2PLS(NPULS)=0                                                   DABS      68
      IF(PXPNEX(JAC,KL2).GT.(PXPNDR(NPULS)-4.5)) GO TO 8013             DABS      69
 8019 IF((ABS(TKL21-6.E-06).LT.0.6E-06).OR.(ABS(TKL21-10.E-06).LT.0.6E-0 DABS      70
     16)) NP2PLS(NPULS)=0                                               DABS      71
      IF((ABS(TKL21-8.E-06).GE.0.6E-06).AND.(ABS(TKL21-21.E-06).GE.0.6E- DABS      72
     10_6)) GO TO 8004                                                  DABS      73
      NP2PLS(NPULS)=0                                                   DABS      74
      GO TO 8021                                                        DABS      75
 8004 IF(ABS(TKL21-12.E-06).GE.1.E-12) GO TO 8003                       DABS      76
      CRRFI(JAC)=CRRFI(JAC)+1.                                          DABS      77
      NP2PLS(NPULS)=0                                                   DABS      78
      IF(ABS( UPPOWR(1,JAC,3)-A(1,3)).GF.1.25)  GO TO 8021              DABS      79
      CRRCI(JAC)=CRRCI(JAC)+1.                                          DABS      80
 8021 KNTINZ(JAC)=KNTINZ(JAC)+1                                         DABS      81
      IF(JAC.NE.1) GO TO 8003                                           DABS      82
      IDBS=PXPNDR(NPULS)+101.                                           DABS      83
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8003                       DABS      84
      IDBPIN(IDBS)=IDBPIN(IDBS)+1                                       DABS      85
 8003 CONTINUE                                                          DABS      86
      GO TO 8020                                                        DABS      87
 8013 KNTSLZ(JAC)=KNTSLZ(JAC)+1                                         DABS      88
      IF(JAC.NE.1) GO TO 8020                                           DABS      89
      IDBS=PXPNEX(JAC,KL2)+101.                                         DABS      90
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8020                       DABS      91
      IDBPSL(IDBS)=IDBPSL(IDBS)+1                                       DABS      92
 8020 DO 8022 I=1,NPULS                                                 DABS      93
      IF(NP2PLS(I).NE.1) GO TO 8022                                     DABS      94
      KNTP2Z(JAC)=KNTP2Z(JAC)+NP2PLS(I)                                 DABS      95
      IF(JAC.NE.1) GO TO 8022                                           DABS      96
      IDBS=PXPNDR(I)+101.                                               DABS      97
      IF((IDBS.GT.100).OR.(IDBS.LT.1)) GO TO 8022                       DABS      98
      IDBP2P(IDBS)=IDBP2P(IDBS)+1                                       DABS      99
 8022 CONTINUE                                                          DABS     100
      DO 8023 I=1,100                                                   DABS     101
      NP2PLS(I)=1                                                       DABS     102
 8023 CONTINUE                                                          DABS     103
 1203 GO TO (1361,1372,1373,1374),IJFLAG(JAC)                           DABS     104
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
1372  NPULS=NPULS+1                                                    ATCRBS  1225
      NP1=NPULS+1                                                      ATCRBS  1226
      NP2=NPULS+2                                                      ATCRBS  1227
      DO 1382 IJK=2,NPULS                                              ATCRBS  1228
      TXPNDR(NP2-IJK)=TXPNDR(NP1-IJK)                                  ATCRBS  1229
1382  PXPNDR(NP2-IJK)=PXPNDR(NP1-IJK)                                  ATCRBS  1230
      TXPNDR(1)=TXPSAV(JAC)                                            ATCRBS  1231
      PXPNDR(1)=PXPSAV(JAC)                                            ATCRBS  1232
      I=1                                                              ATCRBS  1233
      J=2                                                              ATCRBS  1234
      GO TO 1323                                                       ATCRBS  1235
1373  NPULS=NPULS+1                                                    ATCRBS  1236
      NP1=NPULS+1                                                      ATCRBS  1237
      NP2=NPULS+2                                                      ATCRBS  1238
      DO 1384  IJK=2,NPULS                                             ATCRBS  1239
      TXPNDR(NP2-IJK)=TXPNDR(NP1-IJK)                                  ATCRBS  1240
1384  PXPNDR(NP2-IJK)=PXPNDR(NP1-IJK)                                  ATCRBS  1241
      TXPNDR(1)=TXPSAV(JAC)                                            ATCRBS  1242
      PXPNDR(1)=PXPSAV(JAC)                                            ATCRBS  1243
      J=1                                                              ATCRBS  1244
      I=2                                                              ATCRBS  1245
      GO TO 1388                                                       ATCRBS  1246
1374  NPULS=NPULS+1                                                    ATCRBS  1247
      NP1=NPULS+1                                                      ATCRBS  1248
      NP2=NPULS+2                                                      ATCRBS  1249
      DO 1386 IJK=2,NPULS                                              ATCRBS  1250
      TXPNDR(NP2-IJK)=TXPNDR(NP1-IJK)                                  ATCRBS  1251
1386  PXPNDR(NP2-IJK)=PXPNDR(NP1-IJK)                                  ATCRBS  1252
      TXPNDR(1)=TXPSAV(JAC)                                            ATCRBS  1253
      PXPNDR(1)=PXPSAV(JAC)                                            ATCRBS  1254
      J=1                                                              ATCRBS  1255
      I=2                                                              ATCRBS  1256
      GO TO 1389                                                       ATCRBS  1257
1361  I=1                                                              ATCRBS  1258
1301  CONTINUE                                                         ATCRBS  1259
1321  IF (TDSNEC(JAC).LE.0.) GO TO 1331                                ATCRBS  1260
      TDSNEC(JAC)=TDESEC(JAC)-3.5E+06*(TXPNDR(I)-TTDSFC(JAC))          ATCRBS  1261
      IF (TDSNEC(JAC).LT.0.) TDSNEC(JAC)=0.                            ATCRBS  1262
1331  IF (TDSNRL(JAC).LE.RRLCO) GO TO 1343                             ATCRBS  1263
      TDSNRL(JAC)=60.*ALOGTO(12./(12.-(12.-TDESRL(JAC))*EXP((TTDSRL(JAC) ATCRBS  1264
     1-TXPNDR(I))/ALTAUR(JAC))))                                       ATCRBS  1265
1343  TSNSTV(JAC)=TSNSMX(JAC)+TDSNEC(JAC)+TDSNRL(JAC)                  ATCRBS  1266
      IF (PXPNDR(I).GE.TSNSTV(JAC)) GO TO 1322                         ATCRBS  1267
      PXPNDR(I)=-1000.                                                 ATCRBS  1268
1316  I=I+1                                                            ATCRBS  1269
      IF (I.GT.NPULS) GO TO 7771                                       ATCRBS  1270
      GO TO 1301                                                       ATCRBS  1271
1322  TDESEC(JAC)=PXPNDR(I)-DESDIF-TSNSMX(JAC)                         ATCRBS  1272
      IF (TDESEC(JAC).LT.0.) TDESEC(JAC)=0.                            ATCRBS  1273
      TDSNEC(JAC)=TDESEC(JAC)                                          ATCRBS  1274
      TTDSEC(JAC)=TXPNDR(I)                                            ATCRBS  1275
1311  J=I+1                                                            ATCRBS  1276
1303  IF (J.GT.NPULS) GO TO 7772                                       ATCRBS  1277
1323  IF (TDSNEC(JAC).LE.0.) GO TO 1333                                ATCRBS  1278
      TDSNEC(JAC)=TDESEC(JAC)-3.5E+06*(TXPNDR(J)-TTDSFC(JAC))          ATCRBS  1279
      IF (TDSNEC(JAC).LT.0.) TDSNEC(JAC)=0.                            ATCRBS  1280
1333  IF (TDSNRL(JAC).LE.RRLCO) GO TO 1344                             ATCRBS  1281
      TDSNRL(JAC)=60.*ALOGTO(12./(12.-(12.-TDESRL(JAC))*EXP((TTDSRL(JAC) ATCRBS  1282
     1-TXPNDR(J))/ALTAUR(JAC))))                                       ATCRBS  1283
1344  TSNSTV(JAC)=TSNSMX(JAC)+TDSNEC(JAC)+TDSNRL(JAC)                  ATCRBS  1284
      IF (PXPNDR(J).GE.TSNSTV(JAC)) GO TO 1324                         ATCRBS  1285
      PXPNDR(J)=-1000.                                                 ATCRBS  1286
1305  J=J+1                                                            ATCRBS  1287
      GO TO 1303                                                       ATCRBS  1288
1324  TDESEC(JAC)=PXPNDR(J)-DESDIF-TSNSMX(JAC)                         ATCRBS  1289
      IF (TDESEC(JAC).LT.0.) TDESEC(JAC)=0.                            ATCRBS  1290
      TDSNEC(JAC)=TDESEC(JAC)                                          ATCRBS  1291
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      TTDSEC(JAC)=TXPNDR(J)                                             ATCRBS   1292
      TJI=TXPNDR(J)-TXPNDR(I)                                           ATCRBS   1293
      IF((ABS(TJI-1.999E-06).GE.1.E-12).OR.(PXPNDR(J).NE.PXPNDR(I)))GO T SECMS     68
     10 1354                                                            SECMS     69
      K=J                                                               SECMS     70
 1356 K=K+1                                                             SECMS     71
      IF(K.GT.NPULS) GO TO 1355                                         SECMS     72
      TKI=TXPNDR(K)-TXPNDR(I)                                           SECMS     73
      IF(TKI.LT.3.5E-06) GO TO 1356                                     SECMS     74
      IF(TKI.GT.28.5E-06) GO TO 1355                                    SECMS     75
      IF(PXPNDR(K).LT.PXPNDR(I)) GO TO 1356                             SECMS     76
      I=J                                                               SECMS     77
      GO TO 1316                                                        SECMS     78
 1355 ITDABS=1                                                          SECMS     79
 1354 IF(TJI.LT.1.575E-06) GO TO 1305                                   SECMS     80
      IF (TJI.LE.2.425E-06) GO TO 1306                                  ATCRBS   1295
 1308 IF (TJI.GT.21.6E-06) GO TO 1319                                   ATCRBS   1296
      IF ((TJI.GE.20.4E-06).OR.(ABS(TJI-8.E-06).LE.0.6E-06)) GO TO 1310 ATCRBS   1297
      J=J+1                                                             ATCRBS   1298
      GO TO 1303                                                        ATCRBS   1299
 1310 IF (IHLREP(JAC).EQ.0) GO TO 1345                                  ATCRBS   1300
      VT=12.-(12.-TDESRL(JAC))*EXP((TTDSRL(JAC)-TXPNDR(J))/ALTAUR(JAC)) ATCRBS   1301
      IF (VT.GE.8.5) GO TO 1341                                         ATCRBS   1302
      IF (VT.GE.6.0) GO TO 1340                                         ATCRBS   1303
      TDESRL(JAC)=VT-1.800*EXP((TTDSRL(JAC)-TXPNDR(J))/WFTAUR(JAC))     ATCRBS   1304
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                             ATCRBS   1305
      GO TO 1342                                                        ATCRBS   1306
 1340 TDESRL(JAC)=VT-1.288*EXP((TTDSRL(JAC)-TXPNDR(J))/WFTAUR(JAC))     ATCRBS   1307
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                             ATCRBS   1308
      GO TO 1342                                                        ATCRBS   1309
 1341 TDESRL(JAC)=VT-0.760*EXP((TTDSRL(JAC)-TXPNDR(J))/WFTAUR(JAC))     ATCRBS   1310
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                             ATCRBS   1311
 1342 TTDSRL(JAC)=TXPNDR(J)                                             ATCRBS   1312
      TDSNRL(JAC)=60.*ALOG10(12./TDESRL(JAC))                           ATCRBS   1313
 1345 REPTIM=TXPNDR(J)+DELAY+PROPTM(1,JAC)-TRANP3                       ATCRBS   1314
 1117 KNTINT(JAC)=KNTINT(JAC)+1                                         ATCRBS   1319
      IF ((REPTIM.GT.TMAX).OR.(REPTIM.LT.TMIN)) GO TO 1399              ATCRBS   1320
      IF((KRSLS.GT.0).AND.(TPOWER(JAC).LT.(TPOWOM(JAC)+RSLVL))) GO TO 13 ATCRBS  1321
     199                                                                ATCRBS   1322
      XIN=(REPTIM-DELAY)/12.36E-06                                      ATCRBS   1323
      XTEST=(XIN.AND.0000777777777777777B).OR.1717000000000000000B      ATCRBS   1324
      SUBSCR=XTEST*1000.                                                ATCRBS   1325
      L=SUBSCR                                                          ATCRBS   1326
      XLOG=Y(L)+(Y(L+1)-Y(L))*(SUBSCR-FIOAT(L))+XL2*FLOAT(SHIFT(XIN,-48) ATCRBS  1327
     1-975)                                                             ATCRBS   1328
      SENSTV(2)=SENSTV(1)+REDSNS-20.*XLOG                               ATCRBS   1329
      IF (SENSTV(2).LT.SENSTV(1)) SENSTV(2)=SENSTV(1)                   ATCRBS   1330
      IF (TPOWER(JAC).LT.SENSTV(2)) GO TO 1332                          ATCRBS   1331
      IREPLY=IREPLY+2                                                   ATCRBS   1332
      IF (IREPLY.GE.201) GO TO 1398                                     ATCRBS   1333
      REPLY(IREPLY-1)=REPTIM                                            ATCRBS   1334
      REPLY(IREPLY)=REPLY(IREPLY-1)+20.3E-06                            ATCRBS   1335
      GO TO 1399                                                        ATCRBS   1336
 1332 XIN=(REPTIM+20.3E-06-DELAY)/12.36E-06                             ATCRBS   1337
      XTEST=(XIN.AND.0000777777777777777B).OR.1717000000000000000B      ATCRBS   1338
      SUBSCR=XTEST*1000.                                                ATCRBS   1339
      L=SUBSCR                                                          ATCRBS   1340
      XLOG=Y(L)+(Y(L+1)-Y(L))*(SUBSCR-FIOAT(L))+XL2*FLOAT(SHIFT(XIN,-48) ATCRBS  1341
     1-975)                                                             ATCRBS   1342
      SENSTV(2)=SENSTV(1)+REDSNS-20.*XLOG                               ATCRBS   1343
      IF (SENSTV(2).LT.SENSTV(1)) SENSTV(2)=SENSTV(1)                   ATCRBS   1344
      IF (TPOWER(JAC).LT.SENSTV(2)) GO TO 1399                          ATCRBS   1345
      IREPLY=IREPLY+1                                                   ATCRBS   1346
      IF (IREPLY.GE.201) GO TO 1398                                     ATCRBS   1347
      REPLY(IREPLY)=REPTIM+20.3E-06                                     ATCRBS   1348
 1399 I=J                                                               ATCRBS   1349
 1318 I=I+1                                                             ATCRBS   1350
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      IF (I.GT.NPULS) GO TO 7773
 1388 IF((TXPNDR(I)-TXPNDR(J)).GT.DEADT(JAC)) GO TO 1324      ATCRBS  1351
      IF((TXPNDR(I)-TXPNDR(J)).LE.(DEADT(JAC)-35.E-06)) GO TO 1318   SECMS    81
      IF(PXPNDR(I).LT.TSNSMX(JAC)) GO TO 1318                   SECMS    82
      M=I+1                                                     SECMS    83
 1328 IF(M.GT.NPULS) GO TO 1318                                 SECMS    84
      TMI=TXPNDR(M)-TXPNDR(I)                                   SECMS    85
      IF(TMI.GE. 1.999001E-06) GO TO 1318                       SECMS    86
      IF(TMI.GT. 1.998999E-06) GO TO 1329                       SECMS    87
      M=M+1                                                     SECMS    88
      GO TO 1328                                                SECMS    89
 1329 IF(PXPNDR(M).NE.PXPNDR(I)) GO TO 1318                     SECMS    90
      K=M                                                       SECMS    91
 1390 K=K+1                                                     SECMS    92
      IF(K.GT.NPULS) GO TO 1330                                 SECMS    93
      TKI=TXPNDR(K)-TXPNDR(I)                                   SECMS    94
      IF(TKI.LT. 3.5E-06) GO TO 1390                            SECMS    95
      IF(TKI.GT. 28.5E-06) GO TO 1330                           SECMS    96
      IF(PXPNDR(K).LT.PXPNDR(I)) GO TO 1390                     SECMS    97
      GO TO 1318                                                SECMS    98
 1330 ITDABS=1                                                  SECMS    99
      GO TO 1318                                                SECMS   100
 1326 TDSNEC(JAC)=0.                                            SECMS   101
      GO TO 1331                                                ATCRBS  1353
 1398 PRINT 1397                                                ATCRBS  1354
 1397 FORMAT (25H1IREPLY GREATER THAN 200.    )                 ATCRBS  1355
      STOP                                                      ATCRBS  1356
 1306 IF (PXPNDR(J).GE.(PXPNDR(I)-4.5)) GO TO 1335              ATCRBS  1357
      GO TO 1305                                                ATCRBS  1358
 1319 IF (IXPNDR) 1312,1312,1313                                ATCRBS  1359
 1312 TDSNEC(JAC)=0.                                            ATCRBS  1360
      GO TO 1316                                                ATCRBS  1361
 1313 I=J                                                       ATCRBS  1362
      GO TO 1311                                                ATCRBS  1363
 1335 IF (IRLSLS(JAC).EQ.0) GO TO 1353                          ATCRBS  1364
      VT=12.-(12.-TDESRL(JAC))*EXP((TTDSRL(JAC)-TXPNDR(I))/ALTAUR(JAC))   ATCRBS  1365
      IF (VT.GE.8.5) GO TO 1351                                 ATCRBS  1366
      IF (VT.GE.6.0) GO TO 1350                                 ATCRBS  1367
      TDESRL(JAC)=VT-1.800*EXP((TTDSRL(JAC)-TXPNDR(J))/WFTAUR(JAC))   ATCRBS  1368
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                     ATCRBS  1369
      GO TO 1352                                                ATCRBS  1370
 1350 TDESRL(JAC)=VT-1.288*EXP((TTDSRL(JAC)-TXPNDR(J))/WFTAUR(JAC))   ATCRBS  1371
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                     ATCRBS  1372
      GO TO 1352                                                ATCRBS  1373
 1351 TDESRL(JAC)=VT-0.760*EXP((TTDSRL(JAC)-TXPNDR(J))/WFTAUR(JAC))   ATCRBS  1374
      IF (TDESRL(JAC).LT.3.) TDESRL(JAC)=3.                     ATCRBS  1375
 1352 TTDSRL(JAC)=TXPNDR(J)                                     ATCRBS  1376
      TDSNRL(JAC)=60.*ALOG10(12./TDESRL(JAC))                   ATCRBS  1377
 1353 CONTINUE                                                  ATCRBS  1378
 1118 KNTSLS(JAC)=KNTSLS(JAC)+1                                 ATCRBS  1379
      I=J                                                       ATCRBS  1388
 1317 I=I+1                                                     ATCRBS  1389
      IF (I.GT.NPULS) GO TO 7774                                ATCRBS  1390
 1389 IF((TXPNDR(I)-TXPNDR(J)).GT.SUPPT(JAC)) GO TO 1327        ATCRBS  1391
      IF(PXPNDR(I).LT.TSNSMX(JAC)) GO TO 1317                   SECMS   102
      M=I+1                                                     SECMS   103
 1391 IF(M.GT.NPULS) GO TO 1317                                 SECMS   104
      TMI=TXPNDR(M)-TXPNDR(I)                                   SECMS   105
      IF(TMI.GE. 1.999001E-06) GO TO 1317                       SECMS   106
      IF(TMI.GT. 1.998999E-06) GO TO 1392                       SECMS   107
      M=M+1                                                     SECMS   108
      GO TO 1391                                                SECMS   109
 1392 IF(PXPNDR(M).NE.PXPNDR(I)) GO TO 1317                     SECMS   110
      K=M                                                       SECMS   111
 1393 K=K+1                                                     SECMS   112
      IF(K.GT.NPULS) GO TO 1395                                 SECMS   113
      TKI=TXPNDR(K)-TXPNDR(I)                                   SECMS   114
                                                                SECMS   115
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      IF(TKI.LT. 3.5E-06) GO TO 1393                                    SECMS    116
      IF(TKI.GT. 28.5E-06) GO TO 1395                                   SECMS    117
      IF(PXPNDR(K).LT.PXPNDR(I)) GO TO 1393                             SECMS    118
      GO TO 1317                                                        SECMS    119
 1395 ITDABS=1                                                          SECMS    120
      GO TO 1317                                                        SECMS    121
 1327 TDSNEC(JAC)=0.                                                    ATCRBS   1393
      GO TO 1331                                                        ATCRBS   1394
 7771 IJFLAG(JAC)=1                                                     ATCRBS   1395
      GO TO 7                                                           ATCRBS   1396
 7772 IJFLAG(JAC)=2                                                     ATCRBS   1397
      TXPSAV(JAC)=TXPNDR(I)                                             ATCRBS   1398
      PXPSAV(JAC)=PXPNDR(I)                                             ATCRBS   1399
      GO TO 7                                                           ATCRBS   1400
 7773 IJFLAG(JAC)=3                                                     ATCRBS   1401
      TXPSAV(JAC)=TXPNDR(J)                                             ATCRBS   1402
      PXPSAV(JAC)=PXPNDR(J)                                             ATCRBS   1403
      GO TO 7                                                           ATCRBS   1404
 7774 IJFLAG(JAC)=4                                                     ATCRBS   1405
      TXPSAV(JAC)=TXPNDR(J)                                             ATCRBS   1406
      PXPSAV(JAC)=PXPNDR(J)                                             ATCRBS   1407
      GO TO 7                                                           ATCRBS   1408
 7770 IJFLAG(JAC)=1                                                     ATCRBS   1409
 7    CONTINUE                                                          ATCRBS   1410
      GO TO 49                                                          SECMS     122
      ISWEEP=ISWEEP+1                                                   ATCRBS   1411
      GO TO 1                                                           SECMS     123
      ISWEEP=0                                                          ATCRBS   1413
      KNT50=KNT50+1                                                     ATCRBS   1414
      FKNT50=FLOAT(KNT50)                                               ATCRBS   1415
      DO 5554 JAC=1,NACRFT                                              ATCRBS   1416
      RATINT(JAC)=FLOAT(KNTINT(JAC))/(TIME-TLUPDT)                      ATCRBS   1417
      RATSLS(JAC)=FLOAT(KNTSLS(JAC))/(TIME-TLUPDT)                      ATCRBS   1418
      IF(RATINT(JAC).GT.AMXINT(JAC)) AMXINT(JAC)=RATINT(JAC)            ATCRBS   1419
      IF(RATINT(JAC).LT.AMNINT(JAC)) AMNINT(JAC)=RATINT(JAC)            ATCRBS   1420
      IF(RATSLS(JAC).GT.AMXSLS(JAC)) AMXSLS(JAC)=RATSLS(JAC)            ATCRBS   1421
      IF(RATSLS(JAC).LT.AMNSLS(JAC)) AMNSLS(JAC)=RATSLS(JAC)            ATCRBS   1422
      TOINTR(JAC)=TOINTR(JAC)+RATINT(JAC)                               ATCRBS   1423
      TOSLSR(JAC)=TOSLSR(JAC)+RATSLS(JAC)                               ATCRBS   1424
      AVINTR(JAC)=TOINTR(JAC)/FKNT50                                    ATCRBS   1425
      AVSLSR(JAC)=TOSLSR(JAC)/FKNT50                                    ATCRBS   1426
      RATINZ(JAC)=FLOAT(KNTINZ(JAC))/(TIME-TLUPDT)                      ATCRBS   1427
      RATSLZ(JAC)=FLOAT(KNTSLZ(JAC))/(TIME-TLUPDT)                      ATCRBS   1428
      IF (RATINZ(JAC).GT.AMXINZ(JAC)) AMXINZ(JAC)=RATINZ(JAC)           ATCRBS   1429
      IF (RATINZ(JAC).LT.AMNINZ(JAC)) AMNINZ(JAC)=RATINZ(JAC)           ATCRBS   1430
      IF (RATSLZ(JAC).GT.AMXSLZ(JAC)) AMXSLZ(JAC)=RATSLZ(JAC)           ATCRBS   1431
      IF (RATSLZ(JAC).LT.AMNSLZ(JAC)) AMNSLZ(JAC)=RATSLZ(JAC)           ATCRBS   1432
      TOINTZ(JAC)=TOINTZ(JAC)+RATINZ(JAC)                               ATCRBS   1433
      TOSLSZ(JAC)=TOSLSZ(JAC)+RATSLZ(JAC)                               ATCRBS   1434
      AVINTZ(JAC)=TOINTZ(JAC)/FKNT50                                    ATCRBS   1435
      AVSLSZ(JAC)=TOSLSZ(JAC)/FKNT50                                    ATCRBS   1436
      KNTINZ(JAC)=0                                                     ATCRBS   1437
      KNTSLZ(JAC)=0                                                     ATCRBS   1438
      KNTINT(JAC)=0                                                     ATCRBS   1445
      KNTSLS(JAC)=0                                                     ATCRBS   1446
      RRC(JAC)=CRRCR(JAC)/CRRCI(JAC)                                    DABS      105
      RRF(JAC)=CRRFR(JAC)/CRRFI(JAC)                                    DABS      106
 5554 CONTINUE                                                          ATCRBS   1447
      TLUPDT=TIME                                                       ATCRBS   1448
 1    IF(IREPLY.GT.01 GO TO 1420                                        ATCRBS   1449
      IF(TMD(IL).NE.1HA) GO TO 1425                                     ATCRBS   1450
      IPREPA=0                                                          ATCRBS   1451
      GO TO 5                                                           ATCRBS   1452
 1425 IF (TMD(IL).NE.1HC) GO TO 1426                                    ATCRBS   1453
      IPREPC=0                                                          ATCRBS   1454
      GO TO 5                                                           ATCRBS   1455
 1426 IF (TMD(IL).NE.1H2) GO TO 1427                                    ATCRBS   1456
      IPREP2=0                                                          ATCRBS   1457
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      GO TO 5                                                           ATCRBS  1458
 1427 IF (TMD(IL).NE.1H1) GO TO 5                                       ATCRBS  1459
      IPREP1=0                                                          ATCRBS  1460
      GO TO 5                                                           ATCRBS  1461
 1420 IRPM1=IREPLY-1                                                    ATCRBS  1462
      DO 1402 L=1,IRPM1                                                 ATCRBS  1463
      COMP=REPLY(L)                                                     ATCRBS  1464
      KS=0                                                              ATCRBS  1465
      DO 1401 K=L,IREPLY                                                ATCRBS  1466
      IF (REPLY(K).GT.COMP) GO TO 1401                                  ATCRBS  1467
      KS=K                                                              ATCRBS  1468
      COMP=REPLY(K)                                                     ATCRBS  1469
 1401 CONTINUE                                                          ATCRBS  1470
      IF (KS.EQ.0) GO TO 1402                                           ATCRBS  1471
      REPLY(KS)=REPLY(L)                                                ATCRBS  1472
      REPLY(L)=COMP                                                     ATCRBS  1473
 1402 CONTINUE                                                          ATCRBS  1474
      IF (TMD(IL).EQ.1HA) GO TO 1430                                    ATCRBS  1475
      IF (TMD(IL).EQ.1HC) GO TO 1450                                    ATCRBS  1476
      IF (TMD(IL).EQ.1H1) GO TO 1470                                    ATCRBS  1477
      IF (TMD(IL).EQ.1H2) GO TO 1490                                    ATCRBS  1478
      GO TO 35                                                          ATCRBS  1479
 1430 IF (IPREPA.LE.0) GO TO 1414                                       ATCRBS  1480
      INC2=0                                                            ATCRBS  1481
      INC=1                                                             ATCRBS  1482
      DO 1404 J=1,IREPLY                                                ATCRBS  1483
      PSTRPA(J,2)=REPLY(J)                                              ATCRBS  1484
 1409 DIF=REPLY(J)-PSTRPA(INC,1)                                        ATCRBS  1485
      IF (ABS(DIF).LE.DFGATE) GO TO 1405                                ATCRBS  1486
      IF (DIF) 1404,1406,1408                                           ATCRBS  1487
 1408 INC=INC+1                                                         ATCRBS  1488
      IF (INC.LE.IPREPA) GO TO 1409                                     ATCRBS  1489
      GO TO 1421                                                        ATCRBS  1490
 1405 INC2=INC2+1                                                       ATCRBS  1491
      IF (IDFRUT.NE.0) REPLY(INC2)=REPLY(J)                             ATCRBS  1492
 1404 CONTINUE                                                          ATCRBS  1493
 1412 IPREPA=IREPLY                                                     ATCRBS  1494
      DO 1413 I=1,IPREPA                                                ATCRBS  1495
 1413 PSTRPA(I,1)=PSTRPA(I,2)                                           ATCRBS  1496
      IF (IDFRUT.NE.0) IREPLY=INC2                                      ATCRBS  1497
      NFRUTA=NFRUTA+IPREPA-INC2                                         ATCRBS  1498
      GO TO 35                                                          ATCRBS  1499
 1414 DO 1417 I=1,IREPLY                                                ATCRBS  1500
 1417 PSTRPA(I,1)=REPLY(I)                                              ATCRBS  1501
      IPREPA=IREPLY                                                     ATCRBS  1502
      NFRUTA=NFRUTA+IPREPA                                              ATCRBS  1503
      IF (IDFRUT) 1406,35,5                                             ATCRBS  1504
 1406 PRINT 1407                                                        ATCRBS  1505
 1407 FORMAT (17H1ERROR IN CHRON2.)                                     ATCRBS  1506
      STOP                                                              ATCRBS  1507
 1421 IPREPA=IREPLY                                                     ATCRBS  1508
      DO 1410 I=J,IPREPA                                                ATCRBS  1509
 1410 PSTRPA(I,1)=REPLY(I)                                              ATCRBS  1510
      DO 1411 I=1,J                                                     ATCRBS  1511
 1411 PSTRPA(I,1) =PSTRPA(I,2)                                          ATCRBS  1512
      IF (IDFRUT.NE.0) IREPLY=INC2                                      ATCRBS  1513
      NFRUTA=NFRUTA+IPREPA-INC2                                         ATCRBS  1514
      GO TO 35                                                          ATCRBS  1515
 1450 IF (IPREPC.LE.0) GO TO 1444                                       ATCRBS  1516
      INC2=0                                                            ATCRBS  1517
      INC=1                                                             ATCRBS  1518
      DO 1434 J=1,IREPLY                                                ATCRBS  1519
      PSTRPC(J,2)=REPLY(J)                                              ATCRBS  1520
 1439 DIF=REPLY(J)-PSTRPC(INC,1)                                        ATCRBS  1521
      IF (ABS(DIF).LE.DFGATE) GO TO 1435                                ATCRBS  1522
      IF (DIF) 1434,1436,1438                                           ATCRBS  1523
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
1438 INC=INC+1                                                          ATCRBS  1524
     IF (INC.LE.IPREPC) GO TO 1439                                      ATCRBS  1525
     GO TO 1481                                                         ATCRBS  1526
1435 INC2=INC2+1                                                        ATCRBS  1527
     IF (IDFRUT.NE.0) REPLY(INC2)=REPLY(J)                              ATCRBS  1528
1434 CONTINUE                                                           ATCRBS  1529
1442 IPREPC=IREPLY                                                      ATCRBS  1530
     DO 1443 I=1,IPREPC                                                 ATCRBS  1531
1443 PSTRPC(I,1)=PSTRPC(I,2)                                            ATCRBS  1532
     IF (IDFRUT.NE.0) IREPLY=INC2                                       ATCRBS  1533
     NFRUTC=NFRUTC+IPREPC-INC2                                          ATCRBS  1534
     GO TO 35                                                           ATCRBS  1535
1444 DO 1447 I=1,IREPLY                                                 ATCRBS  1536
1447 PSTRPC(I,1)=REPLY(I)                                               ATCRBS  1537
     IPREPC=IREPLY                                                      ATCRBS  1538
     NFRUTC=NFRUTC+IPREPC                                               ATCRBS  1539
     IF (IDFRUT) 1436,35,5                                              ATCRBS  1540
1436 PRINT 1437                                                         ATCRBS  1541
1437 FORMAT (17H1ERROR IN CHRON2.)                                      ATCRBS  1542
     STOP                                                               ATCRBS  1543
1451 IPREPC=IREPLY                                                      ATCRBS  1544
     DO 1440 I=J,IPREPC                                                 ATCRBS  1545
1440 PSTRPC(I,1)=REPLY(I)                                               ATCRBS  1546
     DO 1441 I=1,J                                                      ATCRBS  1547
1441 PSTRPC(I,1) =PSTRPC(I,2)                                           ATCRBS  1548
     IF (IDFRUT.NE.0) IREPLY=INC2                                       ATCRBS  1549
     NFRUTC=NFRUTC+IPREPC-INC2                                          ATCRBS  1550
     GO TO 35                                                           ATCRBS  1551
1470 IF (IPREP1.LE.0) GO TO 1464                                        ATCRBS  1552
     INC2=0                                                             ATCRBS  1553
     INC=1                                                              ATCRBS  1554
     DO 1454 J=1,IREPLY                                                 ATCRBS  1555
     PSTRP1(J,2)=REPLY(J)                                               ATCRBS  1556
1459 DIF=REPLY(J)-PSTRP1(INC,1)                                         ATCRBS  1557
     IF (ABS(DIF).LE.DFGATE) GO TO 1458                                 ATCRBS  1558
     IF (DIF) 1454,1456,1458                                            ATCRBS  1559
1458 INC=INC+1                                                          ATCRBS  1560
     IF (INC.LE.IPREP1) GO TO 1459                                      ATCRBS  1561
     GO TO 1471                                                         ATCRBS  1562
1455 INC2=INC2+1                                                        ATCRBS  1563
     IF (IDFRUT.NE.0) REPLY(INC2)=REPLY(J)                              ATCRBS  1564
1454 CONTINUE                                                           ATCRBS  1565
1462 IPREP1=IREPLY                                                      ATCRBS  1566
     DO 1463 I=1,IPREP1                                                 ATCRBS  1567
1463 PSTRP1(I,1)=PSTRP1(I,2)                                            ATCRBS  1568
     IF (IDFRUT.NE.0) IREPLY=INC2                                       ATCRBS  1569
     NFRUT1=NFRUT1+IPREP1-INC2                                          ATCRBS  1570
     GO TO 35                                                           ATCRBS  1571
1464 DO 1467 I=1,IREPLY                                                 ATCRBS  1572
1467 PSTRP1(I,1)=REPLY(I)                                               ATCRBS  1573
     IPREP1=IREPLY                                                      ATCRBS  1574
     NFRUT1=NFRUT1+IPREP1                                               ATCRBS  1575
     IF (IDFRUT) 1456,35,5                                              ATCRBS  1576
1456 PRINT 1457                                                         ATCRBS  1577
1457 FORMAT (17H1ERROR IN CHRON2.)                                      ATCRBS  1578
     STOP                                                               ATCRBS  1579
1471 IPREP1=IREPLY                                                      ATCRBS  1580
     DO 1460 I=J,IPREP1                                                 ATCRBS  1581
1460 PSTRP1(I,1)=REPLY(I)                                               ATCRBS  1582
     DO 1461 I=1,J                                                      ATCRBS  1583
1461 PSTRP1(I,1) =PSTRP1(I,2)                                           ATCRBS  1584
     IF (IDFRUT.NE.0) IREPLY=INC2                                       ATCRBS  1585
     NFRUT1=NFRUT1+IPREP1-INC2                                          ATCRBS  1586
     GO TO 35                                                           ATCRBS  1587
1490 IF (IPREP2.LE.0) GO TO 1484                                        ATCRBS  1588
     INC2=0                                                             ATCRBS  1589
     INC=1                                                              ATCRBS  1590
```

```
      DO 1474 J=1,IREPLY                                                ATCRBS  1591
      PSTRP2(J,2)=REPLY(J)                                              ATCRBS  1592
 1479 DIF=REPLY(J)-PSTRP2(INC,1)                                        ATCRBS  1593
      IF (ABS(DIF).LE.DFGATE) GO TO 1478                                ATCRBS  1594
      IF (DIF) 14 4,1476,1478                                           ATCRBS  1595
 1478 INC=INC+1                                                         ATCRBS  1596
      IF (INC.LE.IPREP2) GO TO 1479                                     ATCRBS  1597
      GO TO 1491                                                        ATCRBS  1598
 1475 INC2=INC2+1                                                       ATCRBS  1599
      IF (IDFRUT.NE.0) REPLY(INC2)=REPLY(J)                             ATCRBS  1600
 1474 CONTINUE                                                          ATCRBS  1601
 1482 IPREP2=IREPLY                                                     ATCRBS  1602
      DO 1483 I=1,IPREP2                                                ATCRBS  1603
 1483 PSTRP2(I,1)=PSTRP2(I,2)                                           ATCRBS  1604
      IF (IDFRUT.NE.0) IREPLY=INC2                                      ATCRBS  1605
      NFRUT2=NFRUT2+IPREP2-INC2                                         ATCRBS  1606
      GO TO 35                                                          ATCRBS  1607
 1484 DO 1487 I=1,IREPLY                                                ATCRBS  1608
 1487 PSTRP2(I,1)=REPLY(I)                                              ATCRBS  1609
      IPREP2=IREPLY                                                     ATCRBS  1610
      NFRUT2=NFRUT2+IPREP2                                              ATCRBS  1611
      IF (IDFRUT) 1476,35,5                                             ATCRBS  1612
 1476 PRINT 1477                                                        ATCRBS  1613
 1477 FORMAT (17H1ERROR IN CHRON2.)                                     ATCRBS  1614
      STOP                                                              ATCRBS  1615
 1491 IPREP2=IREPLY                                                     ATCRBS  1616
      DO 1480 I=J,IPREP2                                                ATCRBS  1617
 1480 PSTRP2(I,1)=REPLY(I)                                              ATCRBS  1618
      DO 1481 I=1,J                                                     ATCRBS  1619
 1481 PSTRP2(I,1) =PSTRP2(I,2)                                          ATCRBS  1620
      IF (IDFRUT.NE.0) IREPLY=INC2                                      ATCRBS  1621
      NFRUT2=NFRUT2+IPREP2-INC2                                         ATCRBS  1622
35    IF1=1                                                             ATCRBS  1623
1502  IF2=IF1+1                                                         ATCRBS  1624
1503  IF (IF2.GT.IREPLY) GO TO 62                                       ATCRBS  1625
1504  IF (ABS(REPLY(IF2)-REPLY(IF1)-20.3E-06).LE.0.1E-06) GO TO 1506    ATCRBS  1626
      IF ((REPLY(IF2)-REPLY(IF1)).LT.20.3E-06) GO TO 1505               ATCRBS  1627
      IF1=IF1+1                                                         ATCRBS  1628
      GO TO 1502                                                        ATCRBS  1629
1505  IF2=IF2+1                                                         ATCRBS  1630
      GO TO 1503                                                        ATCRBS  1631
1506  IR=IR+1                                                           ATCRBS  1632
      IF (IR.GT.50) GO TO 1599                                          ATCRBS  1633
      R(IR)=C*(REPLY(IF1)-DELAY)*0.5                                    ATCRBS  1634
      IF1=IF1+1                                                         ATCRBS  1635
      GO TO 1502                                                        ATCRBS  1636
1599  PRINT 1598                                                        ATCRBS  1637
1598  FORMAT (20H1IR GREATER THAN 50.)                                  ATCRBS  1638
      STOP                                                              ATCRBS  1639
62    IF (IR.LE.0) GO TO 5                                              ATCRBS  1640
      PRINT 17,TIME,A(1,3),TMD(IL)                                      ATCRBS  1641
17    FORMAT (1X,2F8.3,1X,A1)                                           ATCRBS  1642
      DO 13 I=1,IR                                                      ATCRBS  1643
      JJ=20+IFIX(R(I)*100./RMAX)                                        ATCRBS  1644
      ENCODE(3,16,FMT) JJ                                               ATCRBS  1645
16    FORMAT(I3)                                                        ATCRBS  1646
      FMT= (SHIFT(FMT,-24).A.00000000777777000000B).O.TMF               ATCRBS  1647
      PRINT FMT,R(I)                                                    ATCRBS  1648
13    CONTINUE                                                          ATCRBS  1649
5     AZPLOT=AZPLOT+(TNEXT-TIME)*A(1,2)                                 ATCRBS  1650
      IF (ICD.EQ.0) GO TO 1800                                          ATCRBS  1651
      IF (TMD(IL).NE.1HA) GO TO 1800                                    ATCRBS  1652
      IACP=(A(1,3)/360.)*4096.                                          ATCRBS  1653
      ISTART=1                                                          ATCRBS  1654
      IF(IR.EQ.0) GO TO 1701                                            ATCRBS  1655
      DO 1702 IAZR=1,IR                                                 ATCRBS  1656
      RBIN=R(IAZR)*4.+1.                                                ATCRBS  1657
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      IRBIN=RBIN                                                        ATCRBS  1658
      IRACCF(IRBIN)=5.*(RBIN-FLOAT(IRBIN))                              ATCRBS  1659
      ISTOP=IRBIN-1                                                     ATCRBS  1660
      IF(ISTART.GT.ISTOP) GO TO 1703                                    ATCRBS  1661
      DO 1704 I=ISTART,ISTOP                                            ATCRBS  1662
      IF(IWCNT(I).EQ.0) GO TO 1704                                      ATCRBS  1663
      IWCNT(I)=IWCNT(I)-(SHIFT(N(I),1-IWNL).AND.0000000000000000001B)   ATCRBS  1664
      N(I)=(0000000007777777777B.AND.(SHIFT(N(I),1)))                   ATCRBS  1665
      IF(IWCNT(I).GE.ITL) GO TO 1705                                    ATCRBS  1666
      IF((IWCNT(I).EQ.ITT).AND.(JLEFLG(I).EQ.1)) GO TO 1706             ATCRBS  1667
      GO TO 1704                                                        ATCRBS  1668
 1705 IF (JLEFLG(I).EQ.1) GO TO 1704                                    ATCRBS  1669
      ITST(I)=IACP                                                      ATCRBS  1670
      JLEFLG(I)=1                                                       ATCRBS  1671
      GO TO 1704                                                        ATCRBS  1672
 1706 ITSP(I)=IACP                                                      ATCRBS  1673
      ITRGT=ITRGT+1                                                     ATCRBS  1674
      IF((ITST(I).GE.2048).AND.(ITSP(I).LE.2048)) ITSP(I)=ITSP(I)+4096  ATCRBS  1675
      IAZC(I)=(ITST(I)+ITSP(I))/2-IBIAS                                 ATCRBS  1676
      IF(ITSP(I).GT.4096) ITSP(I)=ITSP(I)-4096                          ATCRBS  1677
      IF(IAZC(I).GT.4096) IAZC(I)=IAZC(I)-4096                          ATCRBS  1678
      JLEFLG(I)=0                                                       ATCRBS  1679
      ITST(I)=ITST(I)-IBIAS                                             ATCRBS  1680
      ITSP(I)=ITSP(I)-IBIAS                                             ATCRBS  1681
      IF(ITST(I).LT.0) ITST(I)=ITST(I)+4096                             ATCRBS  1682
      IF(ITSP(I).LT.0) ITSP(I)=ITSP(I)+4096                             ATCRBS  1683
      IF(IAZC(I).LT.0) IAZC(I)=IAZC(I)+4096                             ATCRBS  1684
      AZCC=FLOAT(IAZC(I))*CVAL                                          ATCRBS  1685
      TSTC=FLOAT(ITST(I))*CVAL                                          ATCRBS  1686
      TSPC=FLOAT(ITSP(I))*CVAL                                          ATCRBS  1687
      RNGNM=((FLOAT(I)-1.)/4.)+.0625*(FLOAT(IRACCF(I))*.125)            ATCRBS  1688
      PRINT 1713,I,RNGNM,ITST(I),TSTC,IAZC(I),AZCC,ITSP(I),TSPC         ATCRBS  1689
 1713 FORMAT (/20X5H*****10X*COMMON*10X*RANGE BIN*7X*10.5X*(*F9.4,* NAUT ATCRBS  1690
     1ICAL MILES )*/20X1H*3X1H*10X*DIGITIZER*7X*TARGET STARTS AT*I10,5X, ATCRBS  1691
     2*(*F9.4,4X*DEGREES*5X*)*/20X1H*3X1H*10X*TARGET*10X*CENTER MARK*3X, ATCRBS  1692
     3*AT*I10,8X*(*F9.4,4X*DEGREES*5X*)*/20X5H*****10X**REPORT*10X*TARGET ATCRBS  1693
     4 STOPS  AT*I10,5X*(*F9.4,4X*DEGREES*5X*)*/)                       ATCRBS  1694
 1704 CONTINUE                                                          ATCRBS  1695
 1703 I=ISTOP+1                                                         ATCRBS  1696
      IWCNT(I)=IWCNT(I)+1-(SHIFT(N(I),1-IWNL).AND.0000000000000000001B) ATCRBS  1697
      N(I)=1.OR.(0000000007777777777B.AND.(SHIFT(N(I),1)))              ATCRBS  1698
      IF(IWCNT(I).GE.ITL) GO TO 1707                                    ATCRBS  1699
      IF((IWCNT(I).EQ.ITT).AND.(JLEFLG(I).EQ.1)) GO TO 1708             ATCRBS  1700
      GO TO 1709                                                        ATCRBS  1701
 1707 IF (JLEFLG(I).EQ.1) GO TO 1709                                    ATCRBS  1702
      JLEFLG(I)=1                                                       ATCRBS  1703
      ITST(I)=IACP                                                      ATCRBS  1704
      GO TO 1709                                                        ATCRBS  1705
 1708 ITSP(I)=IACP                                                      ATCRBS  1706
      ITRGT=ITRGT+1                                                     ATCRBS  1707
      IF((ITST(I).GE.2048).AND.(ITSP(I).LE.2048)) ITSP(I)=ITSP(I)+4096  ATCRBS  1708
      IAZC(I)=(ITST(I)+ITSP(I))/2-IBIAS                                 ATCRBS  1709
      IF(ITSP(I).GT.4096) ITSP(I)=ITSP(I)-4096                          ATCRBS  1710
      IF(IAZC(I).GT.4096) IAZC(I)=IAZC(I)-4096                          ATCRBS  1711
      JLEFLG(I)=0                                                       ATCRBS  1712
      ITST(I)=ITST(I)-IBIAS                                             ATCRBS  1713
      ITSP(I)=ITSP(I)-IBIAS                                             ATCRBS  1714
      IF(ITST(I).LT.0) ITST(I)=ITST(I)+4096                             ATCRBS  1715
      IF(ITSP(I).LT.0) ITSP(I)=ITSP(I)+4096                             ATCRBS  1716
      IF(IAZC(I).LT.0) IAZC(I)=IAZC(I)+4096                             ATCRBS  1717
      AZCC=FLOAT(IAZC(I))*CVAL                                          ATCRBS  1718
      TSTC=FLOAT(ITST(I))*CVAL                                          ATCRBS  1719
      TSPC=FLOAT(ITSP(I))*CVAL                                          ATCRBS  1720
      RNGNM=((FLOAT(I)-1.)/4.)+.0625*(FLOAT(IRACCF(I))*.125)            ATCRBS  1721
      PRINT 1713,I,RNGNM,ITST(I),TSTC,IAZC(I),AZCC,ITSP(I),TSPC         ATCRBS  1722
 1709 ISTART=I+1                                                        ATCRBS  1723
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
 1702 CONTINUE                                                          ATCRBS   1724
1701  IF (ISTART.GT.IRBMX) GO TO 1800                                   ATCRBS   1725
      DO 1710 I=ISTART,IRBMX                                            ATCRBS   1726
      IF(IWCNT(I).EQ.0) GO TO 1710                                      ATCRBS   1727
      IWCNT(I)=IWCNT(I)-(SHIFT(N(I),1-IWNL).AND.00000000000000000001B)  ATCRBS   1728
      N(I)=(00000000007/77777777B.AND.(SHIFT(N(I),1)))                  ATCRBS   1729
      IF(IWCNT(I).GE.ITL) GO TO 1711                                    ATCRBS   1730
      IF((IWCNT(I).EQ.ITT).AND.(JLEFLG(I).EQ.1)) GO TO 1712             ATCRBS   1731
      GO TO 1710                                                        ATCRBS   1732
1711  IF (JLEFLG(I).EQ.1) GO TO 1710                                    ATCRBS   1733
      JLEFLG(I)=1                                                       ATCRBS   1734
      ITST(I)=IACP                                                      ATCRBS   1735
      GO TO 1710                                                        ATCRBS   1736
 1712 ITSP(I)=IACP                                                      ATCRBS   1737
      ITRGT=ITRGT+1                                                     ATCRBS   1738
      IF((ITST(I).GE.2048).AND.(ITSP(I).LE.2048)) ITSP(I)=ITSP(I)+4096  ATCRBS   1739
      IAZC(I)=(ITST(I)+ITSP(I))/2-IBIAS                                 ATCRBS   1740
      IF(ITSP(I).GT.4096) ITSP(I)=ITSP(I)-4096                          ATCRBS   1741
      IF(IAZC(I).GT.4096) IAZC(I)=IAZC(I)-4096                          ATCRBS   1742
      JLEFLG(I)=0                                                       ATCRBS   1743
      ITST(I)=ITST(I)-IBIAS                                             ATCRBS   1744
      ITSP(I)=ITSP(I)-IBIAS                                             ATCRBS   1745
      IF(ITST(I).LT.0) ITST(I)=ITST(I)+4096                             ATCRBS   1746
      IF(ITSP(I).LT.0) ITSP(I)=ITSP(I)+4096                             ATCRBS   1747
      IF(IAZC(I).LT.0) IAZC(I)=IAZC(I)+4096                             ATCRBS   1748
      AZCC=FLOAT(IAZC(I))*CVAL                                          ATCRBS   1749
      TSTC=FLOAT(ITST(I))*CVAL                                          ATCRBS   1750
      TSPC=FLOAT(ITSP(I))*CVAL                                          ATCRBS   1751
      RNGNM=((FLOAT(I)-1.)/4.)+.0625+(FLOAT(IRACCF(I))*.125)            ATCRBS   1752
      PRINT 1713,I,RNGNM,ITST(I),TSTC,IAZC(I),AZCC,ITSP(I),TSPC         ATCRBS   1753
 1710 CONTINUE                                                          ATCRBS   1754
1800  IF (KARTS3.LE.0) GO TO 1900                                       ATCRBS   1755
      NDXOR3=1                                                          ATCRBS   1756
      NDXNR3=1                                                          ATCRBS   1757
      IR3=IR                                                            DABS      107
      IF((TMD(IL).NE.1HA).AND.(TMD(IL).NE.1HC)) IR3=0                   DABS      108
      IACP3=(A(1,3)/360.)*4096.                                         ATCRBS   1759
      IF (IR3.LE.30) GO TO 1801                                         ATCRBS   1761
      IR3=30                                                            ATCRBS   1762
      PRINT 1802,IR                                                     ATCRBS   1763
1802  FORMAT (//I5,* HITS THIS SWEEP EXCEED THE 30 ALLOWED BY ARTS 3.  P ATCRBS   1764
     1ROCESSING CONTINUES WITH FIRST 30 HITS.*//)                       ATCRBS   1765
1801  NDXIR3=0                                                          ATCRBS   1766
1803  NDXIR3=NDXIR3+1                                                   ATCRBS   1767
      IF (NDXOR3.LE.NOLDR3) GO TO 1806                                  ATCRBS   1768
1805  IF (NDXIR3.GT.IR3) GO TO 1808                                     ATCRBS   1769
      IPNRN3(NDXNR3)=R(NDXIR3)*16.                                      ATCRBS   1770
      IPNHT3(NDXNR3)=1                                                  ATCRBS   1771
      IPNSW3(NDXNR3)=1                                                  ATCRBS   1772
      IPNSM3(NDXNR3)=1                                                  ATCRBS   1773
      IPNMS3(NDXNR3)=0                                                  ATCRBS   1774
      IPNTL3(NDXNR3)=0                                                  ATCRBS   1775
      NDXIR3=NDXIR3+1                                                   ATCRBS   1776
      NDXNR3=NDXNR3+1                                                   ATCRBS   1777
      IF (NDXNR3.LE.45) GO TO 1805                                      ATCRBS   1778
1809  PRINT 1890                                                        ATCRBS   1779
1890  FORMAT(//* NO MORE NEW RECORD SPACE, BUT PROCESSING CONTINUES.*//) ATCRBS   1780
      GO TO 1 0R                                                        ATCRBS   1781
1806  IF (NDXIR3.GT.IR3) GO TO 1810                                     ATCRBS   1782
1841  IREPRN=R(NDXIR3)*16.                                              ATCRBS   1783
1807  IF (IREPRN.LT.(IPORN3(NDXOR3)-1)) GO TO 1840                      ATCRBS   1784
      IF (IREPRN.LE.(IPORN3(NDXOR3)+1)) GO TO 1812                      ATCRBS   1785
      IPOSW3(NDXOR3)=IPOSW3(NDXOR3)+1                                   ATCRBS   1786
      IPOMS3(NDXOR3)=IPOMS3(NDXOR3)+1                                   ATCRBS   1787
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      IF (IPOTL3(NDXOR3).LE.0) GO TO 1815                                ATCRBS  1788
      IF (IPOMS3(NDXOR3).LT.IMY4R3) GO TO 1816                           ATCRBS  1789
      IF (IPOSW3(NDXOR3).LT.IRMRP3) GO TO 1817                           ATCRBS  1790
      IF (IPOHT3(NDXOR3).LT.IHY4R3) GO TO 1818                           ATCRBS  1791
      IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1819                           ATCRBS  1792
1820  PRINT 1891                                                         ATCRBS  1793
1891  FORMAT (//* THE FOLLOWING TARGET IS A RING-AROUND TARGET WHICH IS  ATCRBS  1794
     1HEREAFTER ELIMINATED FROM THE NEW RECORD LIST.*//)                 ATCRBS  1795
      IWEAK3=1                                                           ATCRBS  1796
      IRGTG3=IRGTG3+1                                                    ATCRBS  1797
1819  AZC3=CVAL*(FLOAT(IACP3)-ACPRSW*(FLOAT(IPOSW3(NDXOR3))-FLOAT(IPOSM3 ATCRBS  1798
     1(NDXOR3))/FLOAT(IPOHT3(NDXOR3))))                                  ATCRBS  1799
      IF(AZC3.LT.0.) AZC3=AZC3+360.                                      ATCRBS  1800
      RNG3=FLOAT(IPORN3(NDXOR3))/16.                                     ATCRBS  1801
      IF (IWEAK3.LE.0) IVDTG3=IVDTG3+1                                   ATCRBS  1802
      PRINT 1826,IPOSW3(NDXOR3),RNG3,IPOHT3(NDXOR3),AZC3,IPOSM3(NDXOR3)  ATCRBS  1803
1826  FORMAT (/22X1H*12X*ARTS 3*10X*SWEEP COUNTER = *I5,10X*TARGET RANGE ATCRBS  1804
     1   =*F9.4,* NAUTICAL MILES*/21X3H* *11X*TARGET*10X*HIT   COUNTER = ATCRBS  1805
     2 *I5,10X*CENTER AZIMUTH =*F9.4,* DEGREES*/20X5H*****10X*REPORT*10X ATCRBS  1806
     3*SUMM  COUNTER = *I5)                                              ATCRBS  1807
      IF ((IPOHT3(NDXOR3).GE.ITQYR3).AND.(IWEAK3.LE.0)) PRINT 1827       ATCRBS  1808
1827  FORMAT (1H+82X4H*** *STRONG TARGET AZIMUTH CONFIDENCE*4H ***)      ATCRBS  1809
      PRINT 1828                                                         ATCRBS  1810
 1828 FORMAT (1H )                                                       ATCRBS  1811
      IWEAK3=0                                                           ATCRBS  1812
      GO TO 1818                                                         ATCRBS  1813
1816  IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1817                           ATCRBS  1814
      IF (IPOHT3(NDXOR3).LT.IHY4R3) GO TO 1818                           ATCRBS  1815
      GO TO 1820                                                         ATCRBS  1816
1815  IF (IPOMS3(NDXOR3).GE.IMY3P3) GO TO 1818                           ATCRBS  1817
1817  IPNRN3(NDXNR3)=IPORN3(NDXOR3)                                      ATCRBS  1818
      IPNHT3(NDXNR3)=IPOHT3(NDXOR3)                                      ATCRBS  1819
      IPNMS3(NDXNR3)=IPOMS3(NDXOR3)                                      ATCRBS  1820
      IPNSW3(NDXNR3)=IPOSW3(NDXOR3)                                      ATCRBS  1821
      IPNSM3(NDXNR3)=IPOSM3(NDXOR3)                                      ATCRBS  1822
      IPNTL3(NDXNR3)=IPOTL3(NDXOR3)                                      ATCRBS  1823
      NDXNR3=NDXNR3+1                                                    ATCRBS  1824
      IF(NDXNR3.GT.40) GO TO 1809                                        ATCRBS  1825
1818  NDXOR3=NDXOR3+1                                                    ATCRBS  1826
      IF (NDXOR3.GT.NOLDR3) GO TO 1805                                   ATCRBS  1827
      GO TO 1807                                                         ATCRBS  1828
1812  IPORN3(NDXOR3)=IREPRN                                              ATCRBS  1829
      IPOSW3(NDXOR3)=IPOSW3(NDXOR3)+1                                    ATCRBS  1830
      IPOSM3(NDXOR3)=IPOSM3(NDXOR3)+IPOSW3(NDXOR3)                       ATCRBS  1831
      IPOMS3(NDXOR3)=0                                                   ATCRBS  1832
      IPOHT3(NDXOR3)=IPOHT3(NDXOR3)+1                                    ATCRBS  1833
      IF (IPOTL3(NDXOR3).GE.1) GO TO 1830                                ATCRBS  1834
      IF (IPOHT3(NDXOR3).GE.IHY3P3) IPOTL3(NDXOR3)=1                     ATCRBS  1835
1831  IPNRN3(NDXNR3)=IPORN3(NDXOR3)                                      ATCRBS  1836
      IPNHT3(NDXNR3)=IPOHT3(NDXOR3)                                      ATCRBS  1837
      IPNMS3(NDXNR3)=IPOMS3(NDXOR3)                                      ATCRBS  1838
      IPNSW3(NDXNR3)=IPOSW3(NDXOR3)                                      ATCRBS  1839
      IPNSM3(NDXNR3)=IPOSM3(NDXOR3)                                      ATCRBS  1840
      IPNTL3(NDXNR3)=IPOTL3(NDXOR3)                                      ATCRBS  1841
      NDXNR3=NDXNR3+1                                                    ATCRBS  1842
      IF (NDXNR3.GT.45) GO TO 1809                                       ATCRBS  1843
      NDXOR3=NDXOR3+1                                                    ATCRBS  1844
      GO TO 1803                                                         ATCRBS  1845
1830  IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1831                           ATCRBS  1846
      PRINT 1891                                                         ATCRBS  1847
      AZC3=CVAL*(FLOAT(IACP3)-ACPRSW*(FLOAT(IPOSW3(NDXOR3))-FLOAT(IPOSM3 ATCRBS  1848
     1(NDXOR3))/FLOAT(IPOHT3(NDXOR3))))                                  ATCRBS  1849
      IF(AZC3.LT.0.) AZC3=AZC3+360.                                      ATCRBS  1850
      RNG3=FLOAT(IPORN3(NDXOR3))/16.                                     ATCRBS  1851
      IRGTG3=IRGTG3+1                                                    ATCRBS  1852
      PRINT 1826,IPOSW3(NDXOR3),RNG3,IPOHT3(NDXOR3),AZC3,IPOSM3(NDXOR3)  ATCRBS  1853
      PRINT 1828                                                         ATCRBS  1854
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      NDXOR3=NDXOR3+1                                                   ATCRBS  1855
      GO TO 1883                                                        ATCRBS  1856
1840  IPNRN3(NDXNR3)=IREPRN                                             ATCRBS  1857
      IPNHT3(NDXNR3)=1                                                  ATCRBS  1858
      IPNSW3(NDXNR3)=1                                                  ATCRBS  1859
      IPNSM3(NDXNR3)=1                                                  ATCRBS  1860
      IPNMS3(NDXNR3)=0                                                  ATCRBS  1861
      IPNTL3(NDXNR3)=0                                                  ATCRBS  1862
      NDXIR3=NDXIR3+1                                                   ATCRBS  1863
      NDXNR3=NDXNR3+1                                                   ATCRBS  1864
      IF (NDXNR3.GT.45) GO TO 1809                                      ATCRBS  1865
      IF (NDXIR3.LE.IR3) GO TO 1841                                     ATCRBS  1866
1810  IPOSW3(NDXOR3)=IPOSW3(NDXOR3)+1                                   ATCRBS  1867
      IPOMS3(NDXOR3)=IPOMS3(NDXOR3)+1                                   ATCRBS  1868
      IF (IPOTL3(NDXOR3).LE.0) GO TO 1865                               ATCRBS  1869
      IF (IPOMS3(NDXOR3).LT.IMY4R3) GO TO 1866                          ATCRBS  1870
      IF (IPOSW3(NDXOR3).LT.IRMRP3) GO TO 1867                          ATCRBS  1871
      IF (IPOHT3(NDXOR3).LT.IHY4R3) GO TO 1868                          ATCRBS  1872
      IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1869                          ATCRBS  1873
1870  PRINT 1891                                                        ATCRBS  1874
      IWEAK3=1                                                          ATCRBS  1875
      IRGTG3=IRGTG3+1                                                   ATCRBS  1876
1869  AZC3=CVAL*(FLOAT(IACP3)-ACPRSW*(FLOAT(IPOSW3(NDXOR3))-FLOAT(IPOSM3 ATCRBS  1877
     1(NDXOR3))/FLOAT(IPOHT3(NDXOR3))))                                 ATCRBS  1878
      IF(AZC3.LT.0.) AZC3=AZC3+360.                                     ATCRBS  1879
      RNG3=FLOAT(IPORN3(NDXOR3))/16.                                    ATCRBS  1880
      IF (IWEAK3.LE.0) IVDTG3=IVDTG3+1                                  ATCRBS  1881
      PRINT 1826,IPOSW3(NDXOR3),RNG3,IPOHT3(NDXOR3),AZC3,IPOSM3(NDXOR3) ATCRBS  1882
      IF ((IPOHT3(NDXOR3).GE.ITQYR3).AND.(IWEAK3.LE.0)) PRINT 1827      ATCRBS  1883
      PRINT 1828                                                        ATCRBS  1884
      IWEAK3=0                                                          ATCRBS  1885
      GO TO 1868                                                        ATCRBS  1886
1866  IF (IPOSW3(NDXOR3).LT.IRNGR3) GO TO 1867                          ATCRBS  1887
      IF (IPOHT3(NDXOR3).LT.IHY4R3) GO TO 1868                          ATCRBS  1888
      GO TO 1870                                                        ATCRBS  1889
1865  IF (IPOMS3(NDXOR3).GE.IMY3P3) GO TO 1868                          ATCRBS  1890
1867  IPNRN3(NDXNR3)=IPORN3(NDXOR3)                                     ATCRBS  1891
      IPNHT3(NDXNR3)=IPOHT3(NDXOR3)                                     ATCRBS  1892
      IPNMS3(NDXNR3)=IPOMS3(NDXOR3)                                     ATCRBS  1893
      IPNSW3(NDXNR3)=IPOSW3(NDXOR3)                                     ATCRBS  1894
      IPNSM3(NDXNR3)=IPOSM3(NDXOR3)                                     ATCRBS  1895
      IPNTL3(NDXNR3)=IPOTL3(NDXOR3)                                     ATCRBS  1896
      NDXNR3=NDXNR3+1                                                   ATCRBS  1897
      IF (NDXNR3.GT.45) GO TO 1809                                      ATCRBS  1898
1868  NDXOR3=NDXOR3+1                                                   ATCRBS  1899
      IF (NDXOR3.GT.NOLDR3) GO TO 1805                                  ATCRBS  1900
      GO TO 1810                                                        ATCRBS  1901
1808  NOLDR3=NDXNR3-1                                                   ATCRBS  1902
      IF (NOLDR3.LE.0) GO TO 1900                                       ATCRBS  1903
      DO 1881 KK=1,NOLDR3                                               ATCRBS  1904
      IPORN3(KK)=IPNRN3(KK)                                             ATCRBS  1905
      IPOHT3(KK)=IPNHT3(KK)                                             ATCRBS  1906
      IPOMS3(KK)=IPNMS3(KK)                                             ATCRBS  1907
      IPOSW3(KK)=IPNSW3(KK)                                             ATCRBS  1908
      IPOSM3(KK)=IPNSM3(KK)                                             ATCRBS  1909
      IPOTL3(KK)=IPNTL3(KK)                                             ATCRBS  1910
1881  CONTINUE                                                          ATCRBS  1911
1900  IF (KTPX42.LE.0) GO TO 1700                                       ATCRBS  1912
      IACPX=(A(1,3)/360.)*4096.                                         ATCRBS  1913
      IRX=IR                                                            ATCRBS  1914
      NCNTUX=0                                                          ATCRBS  1915
      NDXTOX=1                                                          ATCRBS  1916
      IF (IBX.LE.20) GO TO 1901                                         ATCRBS  1917
      IRX=20                                                            ATCRBS  1918
      PRINT 1902,IR                                                     ATCRBS  1919
1902  FORMAT (/I5,* HITS THIS SWEEP EXCEED THE 20 ALLOWED BY TPX=42 ARP ATCRBS  1920
     1. PROCESSING CONTINUES WITH FIRST 20 HITS.*//)                    ATCRBS  1921
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
 1901 NDXIRX=IBX+1                                                      ATCRBS  1922
 1903 NDXIRX=NDXIRX-1                                                   ATCRBS  1923
 1908 IF (NDXTOX.GT.NOLDTX) GO TO 1906                                  ATCRBS  1924
 1905 IF (NDXIRX.LE.0) GO TO 1930                                       ATCRBS  1925
      IREPRX=R(NDXIRX)*32.                                              ATCRBS  1926
 1907 IF (IREPRX.GT.(ITRRNX(NPTTOX)+2)) GO TO 1940                      ATCRBS  1927
      IF (IREPRX.GE.(ITRRNX(NPTTOX)-2)) GO TO 1912                      ATCRBS  1928
      IWCNTX=ITRWCX(NPTTOX)-(SHIFT(ITRWNX(NPTTOX),1-IWNIX).AND.000000000 ATCRBS  1929
     100000000001B)                                                     ATCRBS  1930
      IF (IWCNTX.GT.ITTX) GO TO 1950                                    ATCRBS  1931
      IF (ITRLEX(NPTTOX).EQ.0) GO TO 1951                               ATCRBS  1932
      IF (ITRCCX(NPTTOX).LT.ICONFX) GO TO 1951                          ATCRBS  1933
      IAZSPX=IACPX                                                      ATCRBS  1934
      ITRGTX=ITRGTX+1                                                   ATCRBS  1935
      IF ((ITRAZX(NPTTOX).GE.2048).AND.(IAZSPX.LE.2048)) IAZSPX=IAZSPX+4 ATCRBS  1936
     1096                                                               ATCRBS  1937
      IAZCX=(ITRAZX(NPTTOX)+IAZSPX)/2-IBIASX                            ATCRBS  1938
      IF (IAZCX.GT.4096) IAZCX=IAZCX-4096                               ATCRBS  1939
      IF (IAZSPX.GT.4096) IAZSPX=IAZSPX-4096                            ATCRBS  1940
      IAZSTX=ITRAZX(NPTTOX)-IBIASX                                      ATCRBS  1941
      IAZSPX=IAZSPX-IBIASX                                              ATCRBS  1942
      IF (IAZSTX.LT.0) IAZSTX=IAZSTX+4096                               ATCRBS  1943
      IF (IAZSPX.LT.0) IAZSPX=IAZSPX+4096                               ATCRBS  1944
      IF (IAZCX.LT.0) IAZCX=IAZCX+4096                                  ATCRBS  1945
      AZCX=FLOAT(IAZCX)*CVAL                                            ATCRBS  1946
      TSTX=FLOAT(IAZSTX)*CVAL                                           ATCRBS  1947
      TSPX=FLOAT(IAZSPX)*CVAL                                           ATCRBS  1948
      RNGX=FLOAT(ITRRNX(NPTTOX)/2)/16.                                  ATCRBS  1949
      PRINT 1960,RNGX,ITRCCX(NPTTOX),AZCX,IAZCX,TSTX,IAZSTX,TSPX,       ATCRBS  1950
     1IAZSPX                                                            ATCRBS  1951
 1960 FORMAT (/21X3HX X11X*TPX-42*10X*TARGET RANGE   =*F9.4,* NAUTICAL M ATCRBS  1952
     1ILES*6X*CONFIDENCE CHECK =*I3/22X3HX12X*TARGET*10X*CENTER AZIMUTH  ATCRBS  1953
     2=*F9.4,* DEG (*I4,* ACPS)*/21X3HX X11X*REPORT*10X*START AZIMUTH =  ATCRBS  1954
     3*F9.4,* DEG (*I4,* ACPS)*5X*STOP AZIMUTH =*F9.4,* DEG (*I4,* ACPS) ATCRBS  1955
     4*/)                                                               ATCRBS  1956
      GO TO 1951                                                        ATCRBS  1957
 1950 ITRRNX(NPTTUX)=ITRRNX(NPTTOX)                                     ATCRBS  1958
      ITRAZX(NPTTUX)=ITRAZX(NPTTOX)                                     ATCRBS  1959
      ITRWNX(NPTTUX)=(000000000077777777777B.AND.(SHIFT(ITRWNX(NPTTOX),1) ATCRBS  1960
     1))                                                                ATCRBS  1961
      ITRWCX(NPTTUX)=IWCNTX                                             ATCRBS  1962
      ITRLEX(NPTTUX)=ITRLEX(NPTTOX)                                     ATCRBS  1963
      ITRCCX(NPTTUX)=ITRCCX(NPTTOX)                                     ATCRBS  1964
      NCNTUX=NCNTUX+1                                                   ATCRBS  1965
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                    ATCRBS  1966
      NPTTUX=NPTTUX+1                                                   ATCRBS  1967
      IF (NPTTUX.GT.20) NPTTUX=1                                        ATCRBS  1968
 1951 NPTTOX=NPTTOX+1                                                   ATCRBS  1969
      IF (NPTTOX.GT.20) NPTTOX=1                                        ATCRBS  1970
      NDXTOX=NDXTOX+1                                                   ATCRBS  1971
      IF (NDXTOX.LE.NOLDTX) GO TO 1907                                  ATCRBS  1972
      GO TO 1936                                                        ATCRBS  1973
 1940 IF (NPTTOX.NE.NPTTOX) GO TO 1970                                  ATCRBS  1974
      PRINT 1990                                                        ATCRBS  1975
 1990 FORMAT (/* NO MORE ROOM FOR TPX-42 TARGET RECORD UPDATES, BUT PRO ATCRBS  1976
     1CESSING CONTINUES.*//)                                            ATCRBS  1977
      GO TO 1971                                                        ATCRBS  1978
 1970 ITRRNX(NPTTUX)=IREPRX                                             ATCRBS  1979
      ITRAZX(NPTTUX)=IACPX                                              ATCRBS  1980
      ITRWNX(NPTTUX)=1                                                  ATCRBS  1981
      ITRWCX(NPTTUX)=1                                                  ATCRBS  1982
      ITRLEX(NPTTUX)=0                                                  ATCRBS  1983
      IF (ITLX.EQ.1) ITRLEX(NPTTUX)=1                                   ATCRBS  1984
      ITRCCX(NPTTUX)=0                                                  ATCRBS  1985
      IF (TMO(IL).EQ.IHA) ITRCCX(NPTTUX)=1                              ATCRBS  1986
      NCNTUX=NCNTUX+1                                                   ATCRBS  1987
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                    ATCRBS  1988
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      NPTTUX=NPTTUX+1                                                   ATCRBS  1989
      IF (NPTTUX.GT.20) NPTTUX=1                                        ATCRBS  1990
1971  NDXIRX=NDXIRX-1                                                   ATCRBS  1991
      GO TO 1905                                                        ATCRBS  1992
1912  ITRRNX(NPTTUX)=IREPRX                                             ATCRBS  1993
      ITRWCX(NPTTUX)=ITRWCX(NPTTOX)-(SHIFT(ITRWNX(NPTTOX),1-IWNLX).AND.0 ATCRBS  1994
     1000000000000000001B)+1                                            ATCRBS  1995
      ITRLEX(NPTTUX)=ITRLEX(NPTTOX)                                     ATCRBS  1996
      ITRWNX(NPTTUX)=(00000000007777777777B.AND.(SHIFT(ITRWNX(NPTTOX),1) ATCRBS  1997
     1))+1                                                              ATCRBS  1998
      ITRAZX(NPTTUX)=ITRAZX(NPTTOX)                                     ATCRBS  1999
      ITRCCX(NPTTUX)=ITRCCX(NPTTOX)                                     ATCRBS  2000
      IF (TMD(IL).EQ.1HA) ITRCCX(NPTTUX)=ITRCCX(NPTTUX)+1               ATCRBS  2001
      IF ((ITRLEX(NPTTUX).EQ.1).OR.((ITRLEX(NPTTUX).EQ.0).AND.(ITRWCX(NP ATCRBS  2002
     1TTUX).LT.ITLX))) GO TO 1965                                       ATCRBS  2003
      ITRLEX(NPTTUX)=1                                                  ATCRBS  2004
      ITRAZX(NPTTUX)=IACPX                                              ATCRBS  2005
1965  NCNTUX=NCNTUX+1                                                   ATCRBS  2006
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                    ATCRBS  2007
      NPTTUX=NPTTUX+1                                                   ATCRBS  2008
      IF (NPTTUX.GT.20) NPTTUX=1                                        ATCRBS  2009
      NPTTOX=NPTTOX+1                                                   ATCRBS  2010
      IF (NPTTOX.GT.20) NPTTOX=1                                        ATCRBS  2011
      NDXTOX=NDXTOX+1                                                   ATCRBS  2012
      GO TO 1903                                                        ATCRBS  2013
1930  IWCNTX=ITRWCX(NPTTOX)-(SHIFT(ITRWNX(NPTTOX),1-IWNLX).AND.000000000 ATCRBS  2014
     100000000001B)                                                     ATCRBS  2015
      IF (IWCNTX.GT.ITTX) GO TO 1980                                    ATCRBS  2016
      IF (ITRLEX(NPTTOX).EQ.0) GO TO 1981                               ATCRBS  2017
      IF (ITRCCX(NPTTOX).LT.ICONFX) GO TO 1981                          ATCRBS  2018
      IAZSPX=IACPX                                                      ATCRBS  2019
      ITRGTX=ITRGTX+1                                                   ATCRBS  2020
      IF ((ITRAZX(NPTTOX).GE.2048).AND.(IAZSPX.LE.2048)) IAZSPX=IAZSPX+4 ATCRBS  2021
     1096                                                               ATCRBS  2022
      IAZCX=(ITRAZX(NPTTOX)+IAZSPX)/2-IBIASX                            ATCRBS  2023
      IF (IAZCX.GT.4096) IAZCX=IAZCX-4096                               ATCRBS  2024
      IF (IAZSPX.GT.4096) IAZSPX=IAZSPX-4096                            ATCRBS  2025
      IAZSTX=ITRAZX(NPTTOX)-IBIASX                                      ATCRBS  2026
      IAZSPX=IAZSPX-IBIASX                                              ATCRBS  2027
      IF (IAZSTX.LT.0) IAZSTX=IAZSTX+4096                               ATCRBS  2028
      IF (IAZSPX.LT.0) IAZSPX=IAZSPX+4096                               ATCRBS  2029
      IF (IAZCX.LT.0) IAZCX=IAZCX+4096                                  ATCRBS  2030
      AZCX=FLOAT(IAZCX)*CVAL                                            ATCRBS  2031
      TSTX=FLOAT(IAZSTX)*CVAL                                           ATCRBS  2032
      TSPX=FLOAT(IAZSPX)*CVAL                                           ATCRBS  2033
      RNGX=FLOAT(ITRRNX(NPTTOX)/2)/16.                                  ATCRBS  2034
      PRINT 1980,RNGX,ITRCCX(NPTTOX),AZCX,IAZCX,TSTX,IAZSTX,TSPX,       ATCRBS  2035
     1IAZSPX                                                            ATCRBS  2036
      GO TO 1981                                                        ATCRBS  2037
1980  ITRRNX(NPTTUX)=ITRRNX(NPTTOX)                                     ATCRBS  2038
      ITRAZX(NPTTUX)=ITRAZX(NPTTOX)                                     ATCRBS  2039
      ITRWNX(NPTTUX)=(00000000007777777777B.AND.(SHIFT(ITRWNX(NPTTOX),1) ATCRBS  2040
     1))                                                                ATCRBS  2041
      ITRWCX(NPTTUX)=IWCNTX                                             ATCRBS  2042
      ITRLEX(NPTTUX)=ITRLEX(NPTTOX)                                     ATCRBS  2043
      ITRCCX(NPTTUX)=ITRCCX(NPTTOX)                                     ATCRBS  2044
      NCNTUX=NCNTUX+1                                                   ATCRBS  2045
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                    ATCRBS  2046
      NPTTUX=NPTTUX+1                                                   ATCRBS  2047
      IF (NPTTUX.GT.20) NPTTUX=1                                        ATCRBS  2048
1981  NPTTOX=NPTTOX+1                                                   ATCRBS  2049
      IF (NPTTOX.GT.20) NPTTOX=1                                        ATCRBS  2050
      NDXTOX=NDXTOX+1                                                   ATCRBS  2051
      IF (NDXTOX.LE.NOLDTX) GO TO 1930                                  ATCRBS  2052
      GO TO 1934                                                        ATCRBS  2053
1906  IF (NDXIRX.LE.0) GO TO 1934                                       ATCRBS  2054
1936  IF (NPTTUX.EQ.NPTONX) GO TO 1933                                  ATCRBS  2055
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      ITRRNX(NPTTUX)=R(NDXIRX)*32.                                      ATCRBS   2056
      ITRAZX(NPTTUX)=IACPX                                              ATCRBS   2057
      ITRWNX(NPTTUX)=1                                                  ATCRBS   2058
      ITRWCX(NPTTUX)=1                                                  ATCRBS   2059
      ITRLEX(NPTTUX)=0                                                  ATCRBS   2060
      IF (ITLX.EQ.1) ITRLEX(NPTTUX)=1                                   ATCRBS   2061
      ITRCCX(NPTTUX)=0                                                  ATCRBS   2062
      IF (TMD(IL).EQ.1HA) ITRCCX(NPTTUX)=1                              ATCRBS   2063
      NCNTUX=NCNTUX+1                                                   ATCRBS   2064
      IF (NCNTUX.EQ.1) NPTONX=NPTTUX                                    ATCRBS   2065
      NPTTUX=NPTTUX+1                                                   ATCRBS   2066
      IF (NPTTUX.GT.20) NPTTUX=1                                        ATCRBS   2067
      NDXIRX=NDXIRX-1                                                   ATCRBS   2068
      GO TO 1906                                                        ATCRBS   2069
 1933 PRINT 1990                                                        ATCRBS   2070
 1934 NOLDTX=NCNTUX                                                     ATCRBS   2071
      NPTTOX=NPTONX                                                     ATCRBS   2072
 1700 IF (MSCAN.EQ.0) GO TO 5557                                        ATCRBS   2073
      MSCAN=0                                                           ATCRBS   2074
      ISCAN=ISCAN+1                                                     ATCRBS   2075
      PRINT 1715,ISCAN,ITRGT                                            ATCRBS   2076
 1715 FORMAT( * CD TARGET COUNT FOR SCAN NO.*I3,* IS*I7.*.* )           ATCRBS   2077
      PRINT 1814,ISCAN,IVDTG3,IRGTG3                                    ATCRBS   2078
 1814 FORMAT(* ARTS-3 VALID TARGET COUNT FOR SCAN NO.*I3,* IS*I7,*.*10X* ATCRBS   2079
     1 RING AROUND TARGET COUNT IS *,I7.*.*)                            ATCRBS   2080
      PRINT 1915,ISCAN,ITRGTX                                           ATCRBS   2081
 1915 FORMAT (* TPX-42 TARGET COUNT FOR SCAN NO.*I3,* IS*I7,*.*)        ATCRBS   2082
      NFRUITA=NFRUITA/2                                                 DABS      109
      NFRUITC=NFRUITC/2                                                 DABS      110
      NFRUIT1=NFRUIT1/2                                                 DABS      111
      NFRUIT2=NFRUIT2/2                                                 DABS      112
      NFRUIT=NFRUTA+NFRUTC+NFRUT1+NFRUT2                                ATCRBS   2083
      PRINT 5555 ,ISCAN,NFRUIT,NFRUTA,NFRUTC,NFRUT1,NFRUT2              ATCRBS   2084
 5555 FORMAT (* FRUIT COUNT FOR SCAN NO.*I3,* IS*I7,*.*5X*(FRUIT BY  MO ATCRBS   2085
     1DE,  A = *I5,*,  C = *I5,*,  1 = *I5,*,  2 = *I5,*.)*)            ATCRBS   2086
      IF (NFRUIT.GT.MAXFR) MAXFR=NFRUIT                                 ATCRBS   2087
      IF (NFRUIT.LT.MINFR) MINFR=NFRUIT                                 ATCRBS   2088
      NTOTFR=NTOTFR+NFRUIT                                              ATCRBS   2089
      NFRUIT=0                                                          ATCRBS   2090
      NFRUTA=0                                                          ATCRBS   2091
      NFRUTC=0                                                          ATCRBS   2092
      NFRUT2=0                                                          ATCRBS   2093
      NFRUT1=0                                                          ATCRBS   2094
      ITRGT=0                                                           ATCRBS   2095
      IVDTG3=0                                                          ATCRBS   2096
      IRGTG3=0                                                          ATCRBS   2097
      ITRGTX=0                                                          ATCRBS   2098
      NAVEFR=NTOTFR/ISCAN                                               ATCRBS   2099
      PRINT 5556,ISCAN,NAVEFR,MAXFR,MINFR                               ATCRBS   2100
 5556 FORMAT(  * AVERAGE FRUIT PER SCAN OVER*I3,* SCANS IS*I7,*.*5X,    ATCRBS   2101
     1*MAXIMUM IS*I7,*,   MINIMUM IS*I7.*.*//)                          ATCRBS   2102
      DO 5560JDBS=1,NACRFT                                              ATCRBS   2103
      PRINT 6,ISCAN,AVINTZ(JDBS),AMXINZ(JDBS),AMNINZ(JDBS)              ATCRBS   2104
      PRINT 8050,ISCAN,AVINTR(JDBS),AMXINT(JDBS),AMNINT(JDBS)           ATCRBS   2105
 8050 FORMAT(* AVERAGE RATE OF REPLY          PER SECOND OVER*I3,* SCANS ATCRBS   2106
     1IS*F10.3,*.*5X,*MAXIMUM IS*F10.3,*,   MINIMUM IS*F10.3,*.*)       ATCRBS   2107
 6    FORMAT(* AVERAGE RATE OF INTERROGATION PER SECOND OVER*I3,* SCANS ATCRBS   2108
     1IS*F10.3,*.*5X,*MAXIMUM IS*F10.3,*,   MINIMUM IS*F10.3,*.*)       ATCRBS   2109
      PRINT 8051,ISCAN,AVSLSZ(JDBS),AMXSLZ(JDBS),AMNSLZ(JDBS)           ATCRBS   2110
      PRINT   10,ISCAN,AVSLSR(JDBS),AMXSLS(JDBS),AMNSLS(JDBS)           ATCRBS   2111
 8051 FORMAT(* AVERAGE RATE OF UPLINK SLS  PER SECOND OVER*I3,* SCANS IS ATCRBS   2112
     1*,F10.3,*.*5X,*MAXIMUM IS*F10.3,*,   MINIMUM IS*F10.3,*.*)        ATCRBS   2113
 10   FORMAT(* AVERAGE RATE OF SUPPRESSION PER SECOND OVER*I3,* SCANS IS ATCRBS   2114
     1*,F10.3,*.*5X,*MAXIMUM IS*F10.3,*,   MINIMUM IS*F10.3,*.*)        ATCRBS   2115
      REPROB(JDBS)=AVINTR(JDBS)/AVINTZ(JDBS)                            ATCRBS   2116
      SLPROB(JDBS)=AVSLSR(JDBS)/AVSLSZ(JDBS)                            ATCRBS   2117
      PRINT 8052,REPROB(JDBS),SLPROB(JDBS)                              ATCRBS   2118
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
8052  FORMAT (//* REPLY PROBABILITY =*F6.3,*      SUPPRESSION PROBABILITY ATCRBS   2119
     1 =*F6.3//)
      IF (ISCAN.LE.1) PRVAVI=0.                                            ATCRBS   2120
      IF (ISCAN.LE.1) PRVAVS=0.                                            ATCRBS   2121
      PRSRTI=FLOAT(ISCAN)*(AVINTZ(1)-PRVAVI)+PRVAVI                        ATCRBS   2122
      PRSRTS=FLOAT(ISCAN)*(AVSLSZ(1)-PRVAVS)+PRVAVS                        ATCRBS   2123
      PRVAVI=AVINTZ(1)                                                     ATCRBS   2124
      PRVAVS=AVSLSZ(1)                                                     ATCRBS   2125
      PRINT 7575,PRSRTI,PRSRTS                                             ATCRBS   2126
7575  FORMAT (* RATE OF INTERROGATION THIS SCAN = *F10.7,*                ATCRBS   2127
     1RATE OF UPLINK SLS THIS SCAN = *F10.3)                               ATCRBS   2128
      PRINT 8006,JDBS,RRF(JDBS),RRC(JDBS)                                  ATCRBS   2129
 8006 FORMAT(* RRF(JAC),RRC(JAC) *,I5,2(F10.6,10X))                        DABS     113
      IF(IPRINT.LE.0) GO TO 5557                                           DABS     114
5560  CONTINUE                                                             ATCRBS   2130
      DO 5558 KDBS=1,100                                                   ATCRBS   2133
      DBSPW=FLOAT(KDBS)-101.                                               ATCRBS   2134
      PRINT 5559,DBSPW,KDBS,IDBPIN(KDBS),KDBS,IDBPSL(KDBS),KDBS,IDBP2P(K   DABS     115
     1DBS)                                                                 DABS     116
 5559 FORMAT(10X,F4.0,5X*IDBPIN (*I4,*)*,I7,10X*IDBPSL (*,I4,*)*,I10,10X   DABS     117
     1*IDBP2P (*I4,*)*,I7)                                                 DABS     118
 5558 CONTINUE                                                             DABS     119
      DO 5561 I=1,NACRFT                                                   DABS     120
      ITP2Z(I)=FLOAT(KNTP2Z(I))/TIME                                       DABS     121
      PRINT 5562,I,ITP2Z(I)                                                DABS     122
 5562 FORMAT(* AVE SINGLE P2 RATE (JAC)*,3(I5,10X,I10))                    DABS     123
 5561 CONTINUE                                                             DABS     124
5557  CONTINUE                                                             DABS     125
   49 CONTINUE                                                             ATCRBS   2139
      IF(MIS2FL.EQ.0) GO TO 48                                             SECMS    124
      IF(IRNTFL.EQ.1) GO TO 53                                             SECMS    125
      IF(ITDABS.EQ.1) GO TO 40                                             SECMS    126
      ITAU=TAU*200000.-198.99                                              SECMS    127
      DBMIS2(ITAU)=DBMIS2(ITAU)+1.                                         SECMS    128
      GO TO 40                                                             SECMS    129
   53 IF(ITDABS.EQ.0) RANMS2=RANMS2+1.                                     SECMS    130
      GO TO 54                                                             SECMS    131
   48 IF(MISTFL.NE.1) GO TO 27                                             SECMS    132
      MISTFL=0                                                             SECMS    133
      ILOOP=ILOOP+1                                                        SECMS    134
      IF(RANMS2.EQ.5.) GO TO 59                                            SECMS    135
      GO TO 2                                                              SECMS    136
   27 IF(MISSFL.NE.0) GO TO 30                                             SECMS    137
      IF(ITDABS.EQ.1) GO TO 28                                             SECMS    138
      DBMIS1=DBMIS1+1.                                                     SECMS    139
      MISSFL=1                                                             SECMS    140
      NPLS2=0                                                              SECMS    141
      UPPOWR(1,1,1)=-1000.                                                 SECMS    142
   30 ICK=ICK+1                                                            SECMS    143
      DO 29 MJ=1,NPULS                                                     SECMS    144
      TXPND2(NPLS2+MJ)=TXPNDR(MJ)                                          SECMS    145
      PXPND2(NPLS2+MJ)=PXPNDR(MJ)                                          SECMS    146
   29 CONTINUE                                                             SECMS    147
      NPLS2=NPLS2+NPULS                                                    SECMS    148
      IF(ICK.LE.4) GO TO 2                                                 SECMS    149
      UPPOWR(1,1,1)=SAVPOW                                                 SECMS    150
      NPLS2M=NPLS2-1                                                       SECMS    151
      KNPT=0                                                               SECMS    152
      DO 36 NIXON=1,NPLS2M                                                 SECMS    153
      IF((PXPND2(NIXON).LT.-500.).OR.(TXPND2(NIXON).EQ.TXPND2(NIXON+1)))   SECMS    154
     1 GO TO 36                                                            SECMS    155
      IF(TXPND2(NIXON).LT.TXPND2(NIXON+1)) GO TO 37                        SECMS    156
      PRINT 38                                                             SECMS    157
   38 FORMAT(* SECOND MISS ARRAY ERROR*)                                   SECMS    158
      STOP                                                                 SECMS    159
   37 KNPT=KNPT+1                                                          SECMS    160
                                                                           SECMS    161
```

TABLE C-1. SIMULATION MODEL PROGRAM LISTING (TASK B) (CONT'D)

```
      TXPND2(KNPT)=TXPND2(NIXON)                                        SECMS   162
      PXPND2(KNPT)=PXPND2(NIXON)                                        SECMS   163
   36 CONTINUE                                                          SECMS   164
      TXPND2(KNPT+1)=TXPND2(NPLS2)                                      SECMS   165
      PXPND2(KNPT+1)=PXPND2(NPLS2)                                      SECMS   166
      NPLS2=KNPT+1                                                      SECMS   167
      HIS2FL=1                                                          SECMS   168
      TAU=.000995                                                       SECMS   169
      ICNT=0                                                            SECMS   170
   40 TAU=TAU+.000005                                                   SECMS   171
      ICNT=ICNT+1                                                       SECMS   172
      IF(TAU.GT..010) GO TO 46                                          SECMS   173
   52 TNDABS=TDABSM+TAU                                                 SECMS   174
      KNPT=0                                                            SECMS   175
      IPLS2=0                                                           SECMS   176
      DO 41 NIXON=1,NPLS2                                               SECMS   177
   44 IF(TNDABS.GT.TXPND2(NIXON)) GO TO 42                              SECMS   178
      KNPT=KNPT+1                                                       SECMS   179
      TX2(KNPT)=TNDABS                                                  SECMS   180
      PX2(KNPT)=PDABSM                                                  SECMS   181
      IF(IPLS2.EQ.1) GO TO 43                                           SECMS   182
      TNDABS=TNDABS+1.999E-06                                           SECMS   183
      IPLS2=1                                                           SECMS   184
      GO TO 44                                                          SECMS   185
   43 TNDABS=1.E20                                                      SECMS   186
   42 KNPT=KNPT+1                                                       SECMS   187
      TX2(KNPT)=TXPND2(NIXON)                                           SECMS   188
      PX2(KNPT)=PXPND2(NIXON)                                           SECMS   189
      IF(TX2(KNPT).GT.(TDABSM+TAU+28.5E-06)) GO TO 45                   SECMS   190
   41 CONTINUE                                                          SECMS   191
   45 NPULS=KNPT                                                        SECMS   192
      DO 47 MJ=1,NPULS                                                  SECMS   193
      TXPNDR(MJ)=TX2(MJ)                                                SECMS   194
      PXPNDR(MJ)=PX2(MJ)                                                SECMS   195
   47 CONTINUE                                                          SECMS   196
      IF(ICNT.GT.100) ICNT=ICNT-100                                     SECMS   197
      JAC=1                                                             SECMS   198
      ITDABS=0                                                          SECMS   199
      TDSNEC(1)=0.                                                      SECMS   200
      GO TO 1361                                                        SECMS   201
   46 IRNTFL=1                                                          SECMS   202
      TAU=RANF(DUM)*.009+.001                                           SECMS   203
      GO TO 52                                                          SECMS   204
54    CONTINUE                                                          SECMS   205
      GO TO 20                                                          SECMS   206
   28 DBHIT=DBHIT+1.                                                    SECMS   207
      ITDABS=0                                                          SECMS   208
      IF(MOD(ILOOP,1000).NE.0) GO TO 20                                 SECMS   209
      PFM=DBHIS1/FLOAT(ILOOP)                                           SECMS   210
      PRINT 57, ILOOP,DBHIT,DBMIS1,RANMS2,PFM                           SECMS   211
      PRINT 58, (DBMIS2(I),I=1,1801)                                    SECMS   212
      GO TO 20                                                          SECMS   213
57    FORMAT   (*1ATTEMPT NUMBER*I6,10X,F6.0,1X* HITS*10X,F6.0,1X* MISSE SECMS   214
     15*20X,F6.0,1X* SECOND MISSES WITH RANDOM TAU*/1X,*6.3,1X* PROBABIL SECMS   215
     2ITY OF FIRST MISS*)                                               SECMS   216
58    FORMAT(//50X* SECOND MISS STATISTICS*//70(1X,26F5.0/))            SECMS   217
 59   PFM=DBMIS1/FLOAT(ILOOP)                                           SECMS   218
      PRINT 57, ILOOP,DBHIT,DBMIS1,RANMS2,PFM                           SECMS   219
      PRINT 58, (DBMIS2(I),I=1,1801)                                    SECMS   220
      STOP                                                              SECMS   221
      CALL SECOND (TTT)                                                 ATCRBS  2141
      PRINT 15,TTT                                                      ATCRBS  2142
      STOP                                                              ATCRBS  2143
      END                                                               ATCRBS  2144
```

TABLE C-1.* SIMULATION MODEL PROGRAM LISTING
(TASK B) (CONT'D)

INTS,NACMX,IRANRT,IRERTH

INT. NO.	ROTATION RATE (RPM)	PRF (INT/SEC)	INITIAL IN. AZIMUTH (DEG)	P1 POWER (WATTS)	LAT. (DMS)	LONG. (DMS) (WEST)	SITE ELEV. (FT)	ANT. HT. (FT)	INT. START TIME (USEC)	P2 POWER W.R.T. P1 (DB)	MODE INTERLACE	DIR. ANT. GAIN (DB)	ITS SKIT (1 OR 0 OR
1	15.01	400.	0.	100.	39.52.32.	76.14. 1.	9.	28.	0.	*00.0	BBBBBBBBBBBB	20.	0
2	*15.09	390.	127.	500.	40.38.11.	73.46. 3.	12.	33.	1695.	-15.0	AACAACAACAAC	21.	1
3	14.96	380.	133.	500.	40.41.42.	75.10.22.	8.	51.	2230.	-15.0	AACAACAACAAC	21.	1
4	12.91	350.	24.	500.	41.56.19.	72.41. 2.	173.	24.	2807.	-15.0	AACAACAACAAC	21.	1
5	15.00	370.	144.	500.	41.15. 3.	75.59.34.	250.	74.	1050.	*00.0	3323233323332	19.	0
6	20.05	275.	326.	500.	39. 7.46.	75.27.58.	28.	16.	1220.	*00.0	3323233323332	17.	0
7	15.04	200.	64.	500.	38.50. 0.	77. 0. 0.	218.	14.	2753.	*00.0	3323233323332	21.	0
8	15.07	280.	292.	500.	38.49.16.	77. 1.36.	204.	50.	757.	-15.0	3323233323332	16.	0
9	6.03	350.	316.	1000.	38.50.53.	76.59.13.	204.	46.	2555.	*00.0	3323233323332	19.	0
10	6.07	350.	245.	1000.	38.50.53.	76.59.13.	198.	22.	26.	*00.0	3323233323332	19.	0
11	14.94	400.	158.	500.	38.51.42.	77. 2. 2.	11.	27.	868.	-15.0	AACAACAACAAC	21.	1
12	10.06	294.	355.	500.	39. 9. 0.	76.25. 0.	30.	30.	567.	*00.0	3323233323332	19.	0
13	15.06	250.	15.	500.	39.10. 0.	76.40. 0.	24.	25.	167.	-15.0	3323233323332	21.	0
14	14.92	375.	280.	500.	39.10.44.	76.41. 3.	157.	50.	1907.	-15.0	AACAACAACAAC	21.	1
15	15.06	353.	113.	500.	38.17.24.	76.24.29.	20.	29.	2567.	*00.0	3323233323332	21.	0
16	6.04	355.	270.	800.	38.51.14.	76.56.22.	285.	80.	2425.	-15.0	AAAAAAAAAAAA	21.	1
17	6.95	360.	102.	1000.	38.17.10.	76.25.50.	66.	33.	103.	*00.0	3323233323332	28.	0
18	4.99	370.	97.	1000.	39. 6.59.	76.43.39.	257.	60.	1695.	-15.0	3323233323332	21.	0
19	15.01	385.	45.	500.	38.45.44.	76.54. 2.	271.	55.	1651.	-15.0	AAAAAAAAAAAA	21.	1
20	14.94	450.	318.	500.	39.28. 0.	76.10. 0.	50.	30.	937.	-15.0	3323233323332	19.	0
21	5.03	241.	284.	1000.	42. 2. 0.	70. 3.13.	164.	75.	3021.	-15.0	3323233323332	21.	0
22	12.07	292.	3.	500.	42.11.40.	73.33.21.	299.	39.	2167.	*00.0	3323233323332	21.	0
23	14.94	300.	86.	500.	41.39.44.	75.31.23.	123.	27.	3040.	-15.0	AAAAAAAAAAAA	21.	1
24	14.97	300.	296.	500.	42. 8.52.	70.56.30.	163.	15.	997.	*00.0	3323233323332	17.	0
25	5.03	350.	186.	1000.	42.23.21.	70.56.11.	63.	85.	1347.	-15.0	AAAAAAAAAAAA	21.	1
26	4.96	370.	89.	1000.	42.18. 0.	71.53. 0.	1009.	30.	49.	*00.0	3323233323332	21.	0
27	14.93	395.	85.	500.	42.21.41.	71. 0.37.	19.	30.	1261.	-15.0	AACAACAACAAC	21.	1
28	5.04	450.	335.	1000.	42.30.20.	71.14. 0.	133.	50.	615.	-15.0	3323233323332	21.	0
29	14.01	285.	330.	500.	43. 5. 4.	70.49. 2.	83.	87.	415.	*00.0	3323233323332	21.	0
30	19.97	300.	205.	500.	40. 1.48.	74.21. 3.	90.	17.	404.	*00.0	3323233323332	17.	0
31	15.08	300.	120.	500.	40.14.8.	74.36.11.	133.	52.	158.	*00.0	3323233323332	21.	0
32	12.00	343.	324.	500.	39.24.8.	74.35. 2.	65.	45.	1793.	-15.0	AAAAAAAAAAAA	21.	1
33	14.99	350.	255.	500.	39.27.25.	74.34.45.	76.	40.	1166.	-15.0	AACAACAACAAC	21.	1
34	5.92	360.	309.	1000.	39.35.19.	74.41.55.	119.	85.	210.	-15.0	AAAAAAAAAAAA	21.	1
35	13.06	300.	324.	500.	39.27.10.	74.35.32.	73.	28.	253.	-15.0	AAAAAAAAAAAA	21.	1
36	9.94	267.	133.	500.	40.44.13.	73.25. 9.	50.	30.	353.	-15.0	3323233323332	19.	0
37	14.92	275.	142.	500.	44.38.54.	73.27.52.	203.	50.	1299.	*00.0	3323233323332	20.	0
38	14.97	343.	34.	200.	41. 3.40.	73.42.55.	200.	41.	1147.	-15.0	AAAAAAAAAAAA	21.	1
39	6.07	350.	206.	1000.	42.36.15.	73.39.14.	2027.	65.	701.	-15.0	AAAAAAAAAAAA	21.	1

*Definitions of parameters related to above data are contained in Appendix D.

TABLE C-1.* SIMULATION MODEL PROGRAM LISTING
(TASK B) (CONT'D)

```
40    15.09    355.    52.    500.    43.-6.44.    76.-6.20.    400.    25.    1452.    -15.0    AACAACAACAAC    21.    1
41     5.95    355.    18.   1000.    40.39.45.    73.46.43.     10.    99.    1498.    -15.0    AAAAAAAAAAAA    21.    1
42     5.01    360.     6.   1000.    43. 9. 6.    75.37. 4.    445.    50.     300.    *00.0    3332333233332    20.    0
43     9.91    375.   169.    500.    40.52. 0.    73.22.10.     50.    30.    1011.    -15.0    AAAAAAAAAAAA    19.    0
44    15.02    380.    46.    500.    42.44.44.    73.47.56.    320.    51.    1038.    -15.0    AACAACAACAAC    21.    1
45    14.99    390.   201.    500.    43. 7.14.    77.39.55.    542.    31.     915.    -15.0    AACAACAACAAC    21.    1
46    15.07    390.     5.    500.    43.13.41.    75.25.27.    570.    31.    1409.    -15.0    AAAAAAAAAAAA    21.    1
47    15.05    395.   358.    500.    42.56.26.    70.44.11.    711.    37.    1132.    -15.0    AACAACAACAAC    21.    1
48    14.95    400.   104.    200.    42.12.50.    75.50.45.   1581.    57.     363.    -15.0    AAACAAACAAAC    21.    1
49    10.07    400.   234.    500.    40.45.29.    73.29.50.     50.    30.    1580.    -15.0    AAAAAAAAAAAA    21.    0
50     6.04    410.   232.   1000.    44. 2.11.    75.44.25.    670.    53.    1855.    *00.0    3332333233332    20.    0
51     4.90    267.   118.   1000.    40.12.10.    75. 8.35.    369.    16.     493.    *00.0    3332333233332    20.    0
52    14.94    300.   206.    500.    40.12.10.    75. 8.35.    369.    17.    3196.    *00.0    3332333233332    17.    0
53    14.97    350.   267.    500.    41.20. 9.    75.43.10.   1037.    47.    2256.    -15.0    AAAAAAAAAAAA    21.    1
54     6.38    360.   245.   1000.    41.[illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
55     4.78    365.   198.   1000.    40. 8. 5.    74.37.14.    [illegible]    [illegible]    [illegible]    -15.0    [illegible]    [illegible]
56     5.97    370.   197.    800.    40.48.30.    77.52.40.   1200.    40.    2423.    -15.0    3332333233332    23.    0
57    14.91    390.   220.    500.    40.13.24.    76.52.30.    495.    59.    1208.    -15.0    AAAAAAAAAAAA    21.    1
58     6.06    370.     2.   1000.    41.37.30.    71.26.30.    110.    32.     644.    *00.0    3332333233332    23.    0
59    15.08    385.   314.    500.    41.36. 8.    71.24.40.     10.    98.    1781.    -15.0    AACAACAACAAC    21.    1
60     5.02    239.   326.   1000.    44.46.54.    73. 3.58.   1204.    36.    1628.    -15.0    3332333233332    21.    0
61     5.97    360.   344.   1000.    44.28. 3.    73. 8.57.    332.    46.     483.    -15.0    AAAAAAAAAAAA    21.    1
62     4.92    241.   139.   1000.    37. 8. 2.    75.57. 4.      0.    99.    1822.    -15.0    AAAAAAAAAAAA    21.    1
63     6.09    250.   100.   1000.    36.49.45.    76. 2.28.     20.    50.    2831.    *00.0    3332333233332    28.    0
64     5.93    247.    24.   1000.    38.30. 0.    77.18. 0.     12.    20.    1429.    *00.0    3332333233332    23.    0
65    15.09    275.   179.    500.    37. 5. 7.    76.21.35.     13.    18.     686.    *00.0    3332333233332    20.    0
66    15.07    300.    81.    500.    36.56.14.    76.17.33.     15.     9.     954.    *00.0    3332333233332    17.    0
67    14.96    380.   347.    500.    38.57.24.    77.27.50.    205.    37.     871.    -15.0    AACAACAACAAC    21.    1
68    15.09    390.    91.    500.    37.30.19.    77.19.23.    157.    35.    2024.    -15.0    AAAAAAAAAAAA    21.    1
69    15.09    395.   338.    500.    35.53.41.    74.11.37.     25.    55.    1262.    -15.0    AACAACAACAAC    21.    1
70     5.00    360.   100.   1000.    37.31.[illegible]    79.39.[illegible]    4226.    46.    2130.    -15.0    3332333233332    21.    0
71    14.90    400.   197.    500.    40.29.53.    80.14.40.   1243.    30.    1045.    -15.0    AACAACAACAAC    21.    1
72     5.02    355.   232.   1000.    40.23.56.    80. 9.26.   1356.    54.    2088.    -15.0    AAAAAAAAAAAA    21.    1
STIME,SENSTV(I),REDSNS,RMN,RMX,KRSLS,RSLVL          0.0    -80.0    45.4    1.0    1.0    0    12.0
IXPNDR,GAC,RPPTT(I),DELAY,TSNEMX(I),TRKL(I),DESDIF,DEADT(I),SUPPT(I)
  0    0.0    54.0    3.0    -77.0    1200.0    5.0    35.0    35.0
IRDEFT(I),IRLSLS(I),RRLCO,IAADY,IAASWCN          0    0    0.00    1    1
IBF,PT                                  4.0    12.0
IDEBUG,DEGATE                                1
ICD,IWNL,IT,ITT,3IASIC          0    11    6    -2    1.50    1.0
(ARTS3,IHY3P3,IMY3P3,IMY4P3,IRNGR3,ITQYR3,IRMRP3,IHY4R3          0    3    9    4    31    14    21    7
(TPX42,IWNLX,ATLX,ITTX,ICONFX          0    8    2    1    4
-ISMAX          0
```

*Definitions of parameters related to above data are contained in Appendix D.

TABLE C-1. SIMULATION MODEL PROGRAM LISTING
(TASK B) (CONT'D)

ATTEMPT NUMBER 74200 72112. HITS 1888. MISSES 40. SECOND MISSES WITH RANDOM TAU
.026 PROBABILITY OF FIRST MISS

SECOND MISS STATISTICS *

32.	36.	42.	38.	39.	40.	43.	45.	45.	38.	46.	39.	37.	43.	38.	41.	36.	32.	39.	41.	39.	50.	52.	53.	52.	55.
34.	34.	35.	44.	42.	52.	36.	43.	49.	35.	41.	35.	38.	35.	32.	45.	42.	42.	47.	37.	41.	40.	35.	30.	49.	43.
41.	44.	33.	34.	39.	34.	49.	48.	52.	56.	51.	54.	47.	35.	34.	50.	39.	41.	44.	42.	45.	40.	50.	54.	50.	53.
49.	51.	49.	44.	44.	49.	48.	33.	40.	42.	35.	34.	49.	34.	35.	43.	46.	46.	49.	51.	40.	47.	48.	46.	53.	47.
31.	44.	36.	34.	43.	39.	38.	43.	45.	42.	46.	43.	43.	47.	43.	38.	40.	41.	49.	39.	44.	54.	49.	41.	45.	51.
45.	37.	29.	35.	31.	32.	34.	25.	34.	33.	33.	39.	49.	35.	33.	37.	42.	38.	42.	49.	50.	54.	45.	55.	46.	50.
42.	43.	41.	37.	41.	32.	39.	41.	36.	39.	36.	31	39.	38.	43.	37.	36.	40.	46.	53.	43.	47.	57.	42.	43.	47.
40.	51.	45.	56.	51.	54.	43.	51.	41.	48.	42.	50.	41.	42.	42.	46.	41.	44.	44.	44.	40.	37.	39.	39.	39.	39.
39.	52.	43.	52.	52.	55.	56.	43.	41.	41.	41.	41.	53.	51.	53.	47.	42.	35.	37.	34.	34.	39.	33.	23.	26.	39.
35.	33.	35.	46.	45.	39.	44.	52.	40.	41.	36.	43.	50.	44.	41.	43.	37.	35.	37.	35.	35.	50.	44.	39.	44.	32.
33.	45.	31.	39.	37.	40.	39.	41.	43.	47.	45.	44.	43.	39.	41.	33.	34.	43.	41.	39.	54.	46.	47.	47.	45.	35.
39.	49.	37.	34.	51.	35.	42.	49.	49.	51.	51.	57.	64.	54.	59.	68.	69.	65.	62.	56.	55.	54.	69.	77.	77.	73.
87.	98.	89.	95.	84.	92.	81.	77.	75.	68.	81.	95.	89.	101.	141.	107.	94.	122.	112.	81.	82.	77.	63.	66.	55.	57.
57.	59.	63.	54.	80.	119.	244.	359.	497.	610.	720.	597.	502.	350.	244.	137.	87.	85.	92.	82.	73.	76.	69.	72.	71.	72.
63.	77.	75.	66.	79.	81.	85.	123.	86.	82.	140.	72.	60.	58.	47.	62.	69.	63.	73.	122.	60.	53.	67.	57.	38.	47.
49.	51.	44.	59.	40.	43.	46.	44.	49.	42.	40.	42.	39.	40.	41.	46.	42.	50.	46.	48.	43.	57.	47.	34.	44.	41.
39.	34.	32.	45.	43.	39.	43.	52.	55.	47.	41.	49.	45.	49.	54.	52.	50.	46.	41.	38.	40.	40.	39.	41.	39.	35.
41.	43.	39.	41.	47.	41.	45.	42.	44.	43.	34.	34.	36.	31.	43.	50.	42.	53.	59.	60.	64.	64.	89.	86.	92.	84.
84.	77.	73.	62.	64.	53.	56.	47.	48.	34.	37.	44.	42.	45.	43.	43.	37.	35.	39.	46.	44.	44.	44.	51.	39.	49.
49.	44.	47.	56.	59.	49.	52.	55.	54.	39.	34.	38.	35.	37.	32.	42.	41.	40.	42.	42.	49.	43.	43.	46.	42.	47.
52.	42.	35.	42.	34.	45.	39.	39.	40.	45.	49.	44.	34.	34.	39.	36.	34.	40.	37.	46.	51.	46.	42.	43.	53.	46.
48.	53.	60.	56.	53.	57.	54.	62.	54.	53.	50.	46.	42.	46.	31.	32.	37.	43.	34.	36.	29.	49.	37.	34.	46.	37.
49.	47.	33.	39.	39.	37.	41.	45.	35.	45.	45.	39.	39.	49.	34.	38.	39.	51.	46.	43.	38.	41.	44.	37.	38.	44.
39.	42.	47.	45.	4.	39.	42.	46.	51.	45.	47.	54.	49.	50.	48.	47.	47.	35.	39.	35.	36.	33.	34.	36.	37.	41.
46.	33.	43.	50.	44.	50.	41.	41.	43.	43.	41.	39.	49.	47.	46.	41.	41.	41.	39.	39.	44.	36.	45.	37.	44.	42.
39.	39.	36.	47.	37.	35.	47.	41.	37.	43.	39.	43.	44.	43.	42.	43.	48.	44.	50.	49.	49.	52.	47.	53.	49.	52.
39.	55.	46.	54.	48.	49.	49.	33.	45.	48.	39.	47.	39.	47.	50.	45.	39.	35.	45.	35.	35.	42.	49.	48.	53.	49.
50.	48.	46.	48.	41.	41.	42.	42.	34.	49.	46.	42.	40.	45.	44.	47.	39.	52.	46.	40.	34.	42.	43.	41.	43.	49.
44.	33.	35.	35.	38.	42.	43.	42.	44.	54.	47.	53.	43.	39.	47.	43.	52.	44.	40.	46.	42.	40.	39.	46.	43.	45.
42.	47.	42.	45.	52.	39.	42.	46.	40.	45.	39.	41.	35.	34.	44.	39.	32.	32.	37.	42.	36.	44.	40.	42.	44.	39.
49.	42.	35.	36.	42.	43.	42.	43.	42.	42.	44.	39.	43.	53.	47.	53.	49.	65.	69.	71.	72.	69.	69.	59.	59.	45.
40.	44.	36.	35.	38.	32.	40.	36.	34.	31.	50.	43.	40.	55.	60.	54.	59.	126.	74.	72.	195.	81.	79.	82.	57.	72.
74.	53.	58.	43.	45.	42.	43.	53.	61.	54.	57.	49.	60.	56.	60.	63.	69.	82.	135.	100.	91.	145.	99.	95.	106.	72.
65.	51.	60.	53.	51.	54.	59.	57.	56.	59.	46.	48.	37.	44.	45.	46.	39.	41.	49.	42.	49.	58.	51.	61.	69.	48.
35.	43.	32.	36.	34.	40.	48.	113.	245.	345.	498.	598.	698.	578.	450.	334.	215.	104.	44.	45.	39.	36.	43.	47.	52.	52.
73.	125.	39.	71.	53.	55.	53.	50.	45.	46.	62.	54.	54.	61.	59.	56.	56.	57.	85.	55.	55.	65.	62.	52.	47.	51.
45.	55.	60.	72.	81.	77.	89.	99.	91.	102.	91.	51.	71.	46.	59.	35.	38.	43.	42.	34.	55.	46.	45.	53.	52.	54.
63.	51.	71.	71.	81.	58.	57.	63.	71.	63.	54.	55.	56.	49.	54.	55.	43.	36.	48.	43.	54.	36.	39.	46.	48.	42.
32.	46.	47.	41.	43.	42.	46.	48.	35.	40.	37.	45.	39.	33.	48.	37.	43.	41.	36.	38.	39.	39.	41.	29.	29.	39.

*Numbers of second misses occurring at 5-μsec intervals for a period of 10 milliseconds after a first miss

TABLE C-1. SIMULATION MODEL PROGRAM
LISTING (TASK B) (CONT'D)

40.	34.	32.	36.	45.	31.	40.	45.	39.	39.	37.	32.	39.	42.	42.	44.	48.	44.	38.	45.	[illegible]	35.	32.	43.	47.	37.
42.	34.	41.	45.	51.	53.	61.	53.	53.	45.	44.	33.	35.	35.	32.	31.	39.	42.	41.	42.	[illegible]	42.	31.	41.	39.	40.
40.	48.	36.	35.	48.	34.	41.	48.	43.	44.	49.	49.	41.	52.	43.	48.	46.	44.	44.	[illegible]	[illegible]	37.	44.	42.	39.	47.
37.	32.	43.	38.	34.	43.	45.	51.	50.	47.	47.	47.	[illegible]	39.	43.	36.	43.	47.	40.	35.	[illegible]	45.	42.	36.	41.	44.
48.	48.	55.	42.	43.	44.	35.	44.	54.	59.	62.	65.	70.	75.	73.	79.	75.	73.	77.	69.	[illegible]	63.	57.	49.	55.	32.
39.	41.	46.	45.	41.	43.	53.	53.	47.	42.	50.	52.	52.	55.	48.	48.	47.	40.	41.	39.	44.	34.	40.	47.	41.	43.
45.	35.	55.	42.	41.	41.	49.	44.	43.	54.	39.	32.	43.	38.	32.	35.	34.	31.	31.	35.	37.	38.	41.	36.	39.	39.
40.	41.	39.	44.	40.	33.	34.	43.	37.	48.	44.	51.	50.	49.	51.	43.	38.	46.	51.	32.	35.	40.	35.	35.	40.	43.
43.	47.	52.	51.	58.	54.	51.	45.	39.	34.	36.	35.	42.	33.	35.	36.	35.	46.	43.	37.	44.	41.	39.	46.	39.	47.
46.	43.	48.	44.	45.	43.	34.	32.	41.	28.	32.	39.	42.	35.	55.	51.	53.	45.	45.	49.	47.	35.	42.	41.	50.	54.
41.	39.	46.	37.	40.	34.	35.	33.	35.	44.	44.	39.	47.	45.	39.	47.	37.	48.	43.	49.	54.	53.	59.	64.	60.	74.
73.	74.	65.	58.	53.	52.	43.	44.	42.	35.	43.	33.	48.	41.	40.	30.	39.	39.	30.	41.	42.	35.	50.	44.	45.	55.
43.	50.	59.	49.	51.	47.	44.	57.	54.	76.	90.	85.	102.	81.	60.	85.	48.	58.	49.	54.	51.	52.	44.	41.	42.	45.
29.	47.	44.	39.	45.	49.	61.	48.	51.	47.	50.	44.	47.	44.	55.	46.	57.	47.	43.	54.	45.	49.	55.	76.	99.	74.
81.	99.	96.	84.	86.	76.	71.	68.	57.	59.	56.	47.	34.	45.	40.	44.	34.	39.	51.	44.	56.	54.	67.	61.	52.	61.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
57.	52.	61.	55.	51.	72.	52.	64.	85.	63.	56.	53.	45.	37.	34.	52.	54.	44.	57.	50.	59.	51.	56.	52.	43.	51.
55.	62.	74.	79.	83.	90.	104.	85.	71.	91.	91.	57.	55.	51.	44.	40.	45.	57.	41.	43.	43.	32.	34.	32.	31.	47.
35.	39.	31.	44.	39.	43.	44.	44.	45.	41.	42.	49.	52.	69.	59.	77.	6[illegible]	38.	61.	50.	44.	34.	35.	40.	39.	[illegible]
37.	33.	38.	37.	39.	31.	34.	40.	32.	37.	35.	39.	40.	45.	41.	40.	49.	48.	48.	51.	42.	50.	47.	38.	37.	39.
41.	36.	35.	34.	45.	36.	44.	51.	52.	54.	48.	50.	53.	41.	41.	43.	45.	49.	42.	52.	50.	47.	51.	53.	50.	43.
56.	54.	50.	53.	47.	56.	45.	41.	45.	40.	37.	47.	38.	49.	41.	39.	44.	44.	35.	43.	42.	43.	43.	47.	43.	41.
41.	44.	50.	39.	30.	48.	45.	38.	45.	44.	42.	48.	44.	33.	34.	40.	30.	34.	35.	34.	40.	33.	41.	42.	35.	43.
41.	36.	44.	44.	41.	43.	49.	47.	47.	54.	57.	48.	55.	55.	45.	48.	41.	38.	49.	39.	45.	48.	39.	46.	50.	43.
45.	53.	52.	42.	56.	53.	53.	62.	55.	51.	44.	57.	49.	42.	50.	44.	47.	39.	42.	37.	[illegible]	[illegible]	22.	41.	35.	37.
35.	48.	41.	44.	44.	41.	51.	52.	48.	53.	48.	41.	43.	34.	42.	36.	43.	42.	45.	46.	35.	47.	48.	43.	47.	53.
48.	43.	52.	47.	41.	35.	43.	38.	38.	44.	37.	39.	41.	40.	43.	40.	36.	47.	38.	42.	52.	34.	39.	46.	39.	33.
35.	50.	41.	33.	43.	44.	39.	43.	44.	37.	48.	40.	39.	42.	36.	41.	38.	43.	34.	35.	43.	46.	44.	54.	52.	52.
82.	78.	82.	79.	88.	94.	92.																			

APPENDIX D
LEGEND FOR DATA-RELATED PARAMETERS
(TABLE B-1 AND TABLE C-1)

APPENDIX D
LEGEND FOR DATA-RELATED PARAMETERS
(TABLE B-1 AND TABLE C-1)

Appendix D provides the definitions of parameters for table B-1 and table C-1.

APPENDIX D. LEGEND FOR DATA-RELATED PARAMETERS (TABLE B-1 AND TABLE C-1)

TEND	Time end - length of simulation time before logical stop (seconds)
INTS	Number of interrogators
NACMX	Maximum number of aircraft
IRANRT	Random rotation switch 1 = randomness 0 = no randomness
IRERTH	4/3 earth radius switch 1 = 4/3 earth radius 0 = earth radius
INT. NO.	Interrogator number
ROTATION RATE (RPM)	Rotation rate of interrogator (revolutions/min)
PRF (INT/SEC)	Pulse repetition frequency (interrogations/second)
INITIAL INT. AZIMUTH (DEG)	Initial interrogator azimuth (degrees)
P_1 POWER (WATTS)	P_1 pulse power (watts)

APPENDIX D. LEGEND FOR DATA-RELATED PARAMETERS (TABLE B-1 AND TABLE C-1) (CONT'D)

LAT. (DMS)	Latitude (degrees, minutes, seconds)
LONG. (DMS) (WEST)	Longitude (degrees, minutes, seconds) (west)
SITE ELEV. (FT)	Interrogator site elevation above sea level (feet)
ANT. HT. (FT)	Antenna height (feet)
INT. START TIME (USEC)	Initial interrogation start time (microseconds)
P2 POWER W.R.T. P1 (DB)	P_2 power with respect to P_1 (dB)
MODE INTERLACE	Mode interlace of interrogator
DIR. ANT. GAIN (DB)	Directional antenna gain (dB)
IISLS SWITCH (1 ON, 0 OFF)	Improved interrogator side lobe suppression switch (1 denotes ON, 0 denotes OFF)

APPENDIX D. LEGEND FOR DATA-RELATED PARAMETERS (TABLE B-1 AND TABLE C-1) (CONT'D)

STIME	Number of PRPs (pulse repetition periods) to skip for initialization
SENSTV	Ground receiver sensitivity (dBm) (maximum)
REDSNS	Initial sensitivity reduction (dB)
RMN	Minimum display range (nmi), nominally 1
RMX	Maximum display range (nmi)
KRSLS	Receiver side-lobe suppression switch
RSLVL	Receiver side-lobe suppression level setting at the ground receiver
IXPNDR	1 = active transponder
	0 = passive transponder
GAC	Gain of aircraft antenna (dB)
ERPPTT	Effective radiated peak power of transponder transmitter
DELAY	Transponder delay (usec)
TSNSMX	Transponder sensitivity (maximum)
TRRL	Reply rate limit
DESDIF	Difference between echo suppression pulse level and desensitization level
DEADT	Transponder reply dead time (usec), nominally 35 usec
SUPPT	Suppression time

APPENDIX D. LEGEND FOR DATA-RELATED PARAMETERS (TABLE B-1 AND TABLE C-1) (CONT'D)

IRLREP	A parameter which indicates whether a transponder reply rate limit control circuit is activated by an interrogation
IRLSLS	A parameter which indicates whether a transponder reply rate limit control circuit is activated by suppressions
RRLCO	Reply rate limit cutoff
IAABYP	Aircraft antenna bypass switch: 1 denotes ON 0 denotes OFF
IAASWCH	Antenna aircraft switch: Contact 1 = 0-dB gain 2 = Top antenna only 3 = Bottom antenna only 4 = Hartlobe antenna (takes the better coverage value, top or bottom) 5 = Top/bottom antenna (switchover between the two at 38-Hz rate)
TBF	Time between frames
PT	Persistence time
IDFRUT	Defruiter switch: 1 denotes ON 0 denotes OFF
DFGATE	Defruiter gate
ICD	Common digitizer switch: 1 denotes ON 0 denotes OFF

APPENDIX D. LEGEND FOR DATA-RELATED PARAMETERS (TABLE B-1 AND TABLE C-1) (CONT'D)

IWNL	Sliding window length
ITL	Leading edge criterion for target detection
ITT	Trailing edge criterion for target detection
BIASIC	Bias necessary to correct target positioning due to elongation of target by sliding window type detection
KARTS3	ARTS-3 switch: 1 denotes ON 0 denotes OFF
IHY3P3 IMY3P3	Parameters used in ARTS-3 mode to determine if leading edge flag should be set, i.e., when a specified number (IHY3P3) of hits, nominally three, occurs before another specified number (IMY3P3) of consecutive misses, nominally two.
IMY4P3	Parameter used in ARTS-3 mode to determine status of old target; i.e., detection of a specified number (IMY4P3), nominally four, with the leading-edge flag not set, causes an old target to be discarded as interference.
IRNGR3	Parameter used in ARTS-3 mode to indicate a ring-around target. If, after a hit update, sweep counter exceeds specified number (IRNGR3), nominally 31, the ARTS-3 can issue a ring-around target report.
ITQYR3	A target quality criterion, nominally 14, used in ARTS-3 to establish strong confidence in the computed azimuth of a valid target.

APPENDIX D. LEGEND FOR DATA-RELATED PARAMETERS (TABLE B-1 AND TABLE C-1) (CONT'D)

IRMRP3 IHY4P3	ARTS-3 parameters used to establish target validity. They represent a minimum sweep counter value, or run length (IRMRP3), nominally 21, which must be met, and a hit counter minimum hit criterion (IHY4P3), nominally seven, which must also be met for target validity.
KTPX-42	TPX-42 switch: 1 denotes ON 0 denotes OFF
IWNLX	Window length of TPX-42
ITLX	Target leading edge criterion of TPX-42
ITTX	Target trailing edge criterion of TPX-42
ICONFX	Confidence level for TPX-42
ISMAX	Number of loops passed through prior to update of aircraft position