TG–849
AUGUST 1966
Copy No. 20

Technical Memorandum

ELECTROMAGNETIC DOPPLER SHIFT DATA FOR SATELLITES IN CIRCULAR POLAR ORBITS AT ALTITUDES BETWEEN 250 AND 1000 NAUTICAL MILES

by G. N. MATUCK and J. F. CLARK

THE JOHNS HOPKINS UNIVERSITY • APPLIED PHYSICS LABORATORY

TG–849
AUGUST 1966

Technical Memorandum

ELECTROMAGNETIC DOPPLER SHIFT DATA FOR SATELLITES IN CIRCULAR POLAR ORBITS AT ALTITUDES BETWEEN 250 AND 1000 NAUTICAL MILES

by G. N. MATUCK and J. F. CLARK

THE JOHNS HOPKINS UNIVERSITY • APPLIED PHYSICS LABORATORY
8621 Georgia Avenue, Silver Spring, Maryland 20910

Operating under Contract NOw 62-0604-c, Bureau of Naval Weapons, Department of the Navy

The Johns Hopkins University
APPLIED PHYSICS LABORATORY
Silver Spring, Maryland

ABSTRACT

A computer program has been used to generate doppler shift of an electromagnetic signal from an orbiting satellite as a function of time. The predicted doppler shift as a function of time is available in two different output formats: a continuous plot of doppler as a function of time before and after closest approach and a tabulated list of doppler as a function of time.

The computer program employs a spherical earth and a circular, polar orbit for the satellite.

The Johns Hopkins University
APPLIED PHYSICS LABORATORY
Silver Spring, Maryland

TABLE OF CONTENTS

The Johns Hopkins University
APPLIED PHYSICS LABORATORY
Silver Spring, Maryland

I. Introduction

The purpose of this report is to provide system design data in the form of doppler shift as a function of time for satellites at altitudes between 250 and 1000 nautical miles. Data concerning doppler shift variations with satellite altitude, elevation angles at closest approach and observer latitude is provided in both graphic and tabular form. Furthermore, the computer program used to generate the data, written in Fortran II, is also included.

The equations and methods are based on the simple geometry of a spherical earth and a circular, polar orbit for the satellite.

The program predicts the doppler for a non-rotating and a rotating earth, thus clearly indicating the effects of earth rotation.

The data obtained from the program was compared to data taken from specific passes of satellites and the dopplers agreed to approximately five cycles/second at a reference frequency of 150 mc/s.

II. Program Format

Inputs:

The input parameters to the program are satellite altitude above the earth, elevation angle at closest approach, time interval between doppler points, latitude of observer, and reference frequency for doppler calculation.

Outputs:

The program is designed to provide two different output formats: (1) a continuous plot of doppler as a function of time and/or (2) a tabulated list of doppler as a function of time from closest approach.

(1) The continuous plot of the doppler is for the case a non-rotating earth only, since the plots for a rotating earth and non-rotating earth do not differ greatly on the scale which was used.

(2) The tabulated output list of doppler also contains: elevation angle, slant range, and slant range rate for a non-rotating earth, andthe doppler shift in cycles/second for a non-rotating earth and rotating earth with the subtrack to the east and to the west of the navigator.

Assumptions:

The computer program assumes a spherical earth and a circular, polar orbit for the satellite.

BLANK PAGE

III. Derivations

Consider a satellite which is in a circular orbit above the earth at an altitude h (See Figure 1). When sighted by an observer, it makes an elevation angle α, with the tangent to the surface of the earth at the observer. We wish to determine β_o as a function of α (where $\beta_o = \beta$ at time of closest approach).

From figure 1 -

$$\alpha + 90^o + \beta_o + \gamma = 180^o$$

$$\alpha + \beta_o + \gamma = 90^o$$

$$\gamma = 90^o - \alpha - \beta_o$$

$$\frac{R}{\sin\gamma} = \frac{R+h}{\sin\,(90 + \alpha)}$$

$$\frac{R}{R+h} = \frac{\sin\gamma}{\sin\,(90^o + \alpha)} = \frac{\sin\,(90^o - \alpha - \beta_o)}{\cos\alpha} = \frac{-\sin\,(\alpha + \beta_o - 90^o)}{\cos\alpha}$$

$$\sin\,(\alpha + \beta_o - 90^o) = -\frac{R}{R+h}\cos\alpha$$

$$\alpha + \beta_o - \frac{\pi}{2} = -\arcsin\left[\frac{R}{R+h}\cos\alpha\right]$$

$$\beta_o = \frac{\pi}{2} - \alpha - \arcsin\left[\frac{R}{R+h}\cos\alpha\right] \qquad (1)$$

(from Reference (2))

Now consider a satellite at an orbit altitude h. We first see the satellite when it has zero elevation angle, that is at satellite rise. When the satellite has reached the point of closest approach to the receiving station, it makes an elevation angle, α_{ca}, with the horizontal. Consider Figure 2.

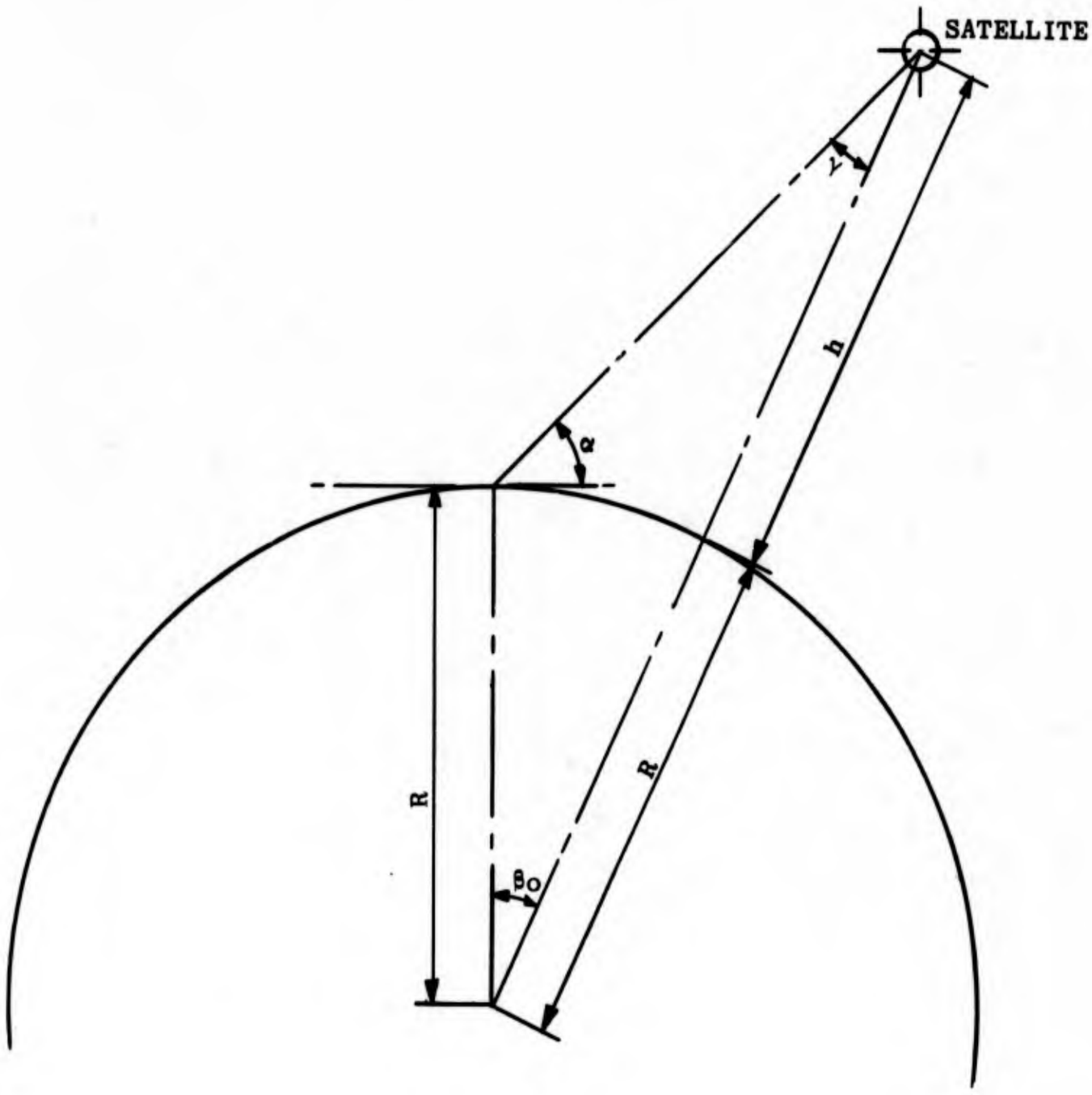


FIGURE 1

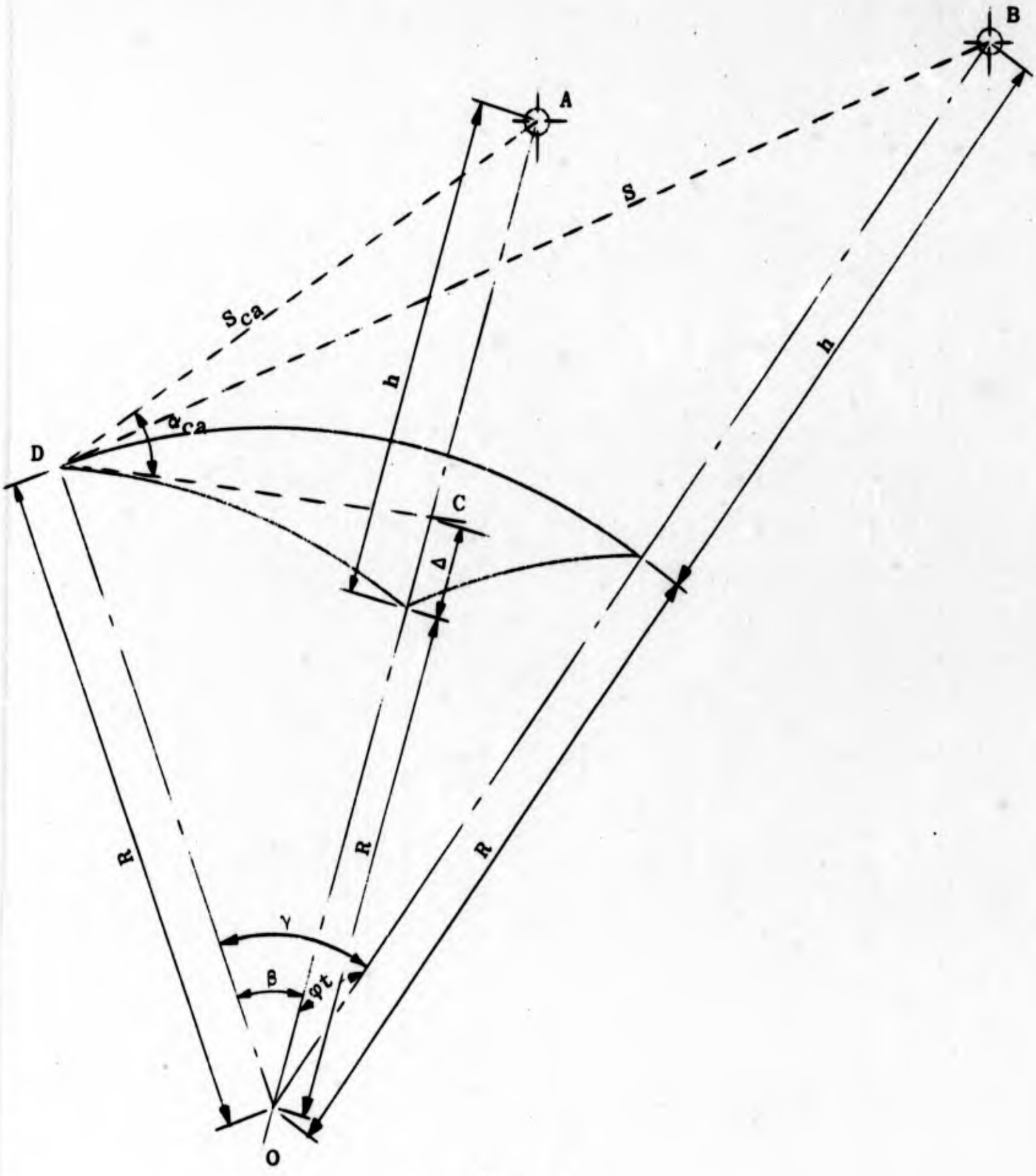


Figure 2

Now in triangle O-D-C

$$\cos\beta = \frac{R}{R+\Delta}$$

in triangle O-D-B

(B is the position of the satellite at time of rise)

$$\cos\gamma = \frac{R}{R+h}$$

then,

$$R+\Delta = \frac{R}{\cos\beta} \text{ and } R+h = \frac{R}{\cos\gamma}$$

in triangle O-C-B

$$\cos\varphi t = \frac{OC}{OB} = \frac{R+\Delta}{R+h} = \frac{\frac{R}{\cos\beta}}{\frac{R}{\cos\gamma}} = \frac{\cos\gamma}{\cos\beta}$$

or;

$$\cos\gamma = \cos\beta \cos\varphi t \qquad (2)$$

Note that $\varphi = \frac{2\pi}{T}$, since when $t = T$ (the orbital period) the satellite will have gone through 2π radians with respect to the center of the earth.

From the triangle O-D-B, we can apply the law of cosines to get:

$$S^2 = R^2 + (R+h)^2 - 2R\,(R+h)\cos\gamma$$

$$S^2 = R^2 + (R+h)^2 - 2R\,(R+h)\cos\beta\cos\varphi t$$

$$S^2 = R^2 + (R+h)^2 - 2R\,(R+h)\cos\beta\cos\frac{2\pi}{T}t \qquad (3)$$

(from Reference (2))

differentiating both sides with respect to t we get:

$$2S\frac{ds}{dt} = 2R\,(R+h)\left[\frac{d\beta}{dt}\sin\beta\cos\frac{2\pi}{T}t + \frac{2\pi}{T}\sin\frac{2\pi}{T}t\cos\beta\right]$$

$$\frac{ds}{dt} = \frac{R\,(R+h)\left[\frac{d\beta}{dt}\sin\beta\cos\frac{2\pi}{T}t + \frac{2\pi}{T}\sin\frac{2\pi}{T}t\cos\beta\right]}{S} \qquad (4)$$

For a non-rotating earth, β is simply

$$\beta = \beta_o = \frac{\pi}{2} - \alpha - \arcsin \frac{R}{R+h} \cos\alpha$$

$$\frac{d\beta}{dt} = \frac{d\beta_o}{dt} = 0$$

For a rotating earth, β is

$\beta = \beta_o \pm$ effect of earth rotation

$$\beta = \beta_o \pm t \frac{2\pi}{86400} \cos\varphi$$

where:

+ is the effect for the subtrack to the west of the navigator
- is the effect for the subtrack to the east of the navigator
φ is the latitude of the observer

$$\frac{d\beta}{dt} = \frac{2\pi}{86400} \cos\varphi \qquad (5)$$

The doppler frequency, f_d, is found from the expression:

$$f_d = \frac{\frac{-ds}{dt} f_t}{c} \qquad (6)$$

(from Reference (3))

where c is speed of light = 161, 875 nm/sec

$$f_d = \frac{-ds}{dt} f_t / 161875.0$$

therefore,

$$f_d = \frac{R(R+h) \left[\frac{d\beta}{dt} \sin\beta \cos \frac{2\pi}{T} t + \frac{2\pi}{T} \sin \frac{2\pi}{T} t \cos\beta\right] f_t}{(161,875) \left[R^2 + (R+h)^2 - 2R(R+h) \cos\beta \cos \frac{2\pi}{T} t\right]^{1/2}} \qquad (7)$$

REFERENCES

(1) W. H. Guier, A Simplified Doppler Navigating System, APL/JHU Report TG-328, December 1958.

(2) J. F. Clark, Near Earth Satellite Handbook Data, APL/JHU Report TG-580, June 1964.

(3) W. H. Guier and G. C. Weiffenbach, Theoretical Analysis of Doppler Radio Signals From Earth Satellites, APL/JHU Bumblebee Series, Report No. 276, April 1958.

V. Appendices

Appendix 1 shows a flow chart for the computer program to generate doppler as a function of time, as well as a complete computer listing of the program.

Appendices 2 and 3 include tabulated lists of the doppler as a function of time and continuous plots of doppler for various elevation angles and observer latitudes. Data for satellite altitudes ranging from 250 to 1000 nautical miles above the earth is presented.

TABLE OF DATA

SATELLITE ALTITUDE (NM)	LATITUDE OF OBSERVER (DEG)	ELEVATION AT TCA (DEG)	PAGE FOR CURVES	PAGE FOR TABULATED LIST
250,600,1000	0	10	28	
250,600,1000	0	90	29	
250	0	2,10,45,70,90	30	82, 83, 85, 86, 88
250	0	2,15,45,75,90	31	82, 84, 85, 87, 88
300	0	2,10,45,70,90	32	89, 90, 92, 93, 95
300	0	2,15,45,75,90	33	89, 91, 92, 94, 95
350	0	2,10,45,70,90	34	96, 97, 99, 100, 102
350	0	2,15,45,75,90	35	96, 98, 99, 101, 102
400	0	2,10,45,70,90	36	103, 104, 106, 107, 109
400	0	2,15,45,75,90	37	103, 105, 106, 108, 109
450	0	2,10,45,70,90	38	110, 111, 113, 114, 116
450	0	2,15,45,75,90	39	110, 112, 113, 115, 116
484	0	2,10,45,70,90	40	117, 118, 120, 121, 123
484	0	2,15,45,75,90	41	117, 119, 120, 122, 123
500	0	2,10,20,30,40 50,60,90	42	124, 125, 127, 128, 129 131, 132, 135
500	0	2,10,45,70,90	43	124, 125, 130, 133, 135
500	0	2,15,45,75,90	44	124, 126, 130, 134, 135
500	30	2,10,45,70,90	45	136, 137, 139, 140, 142
500	30	2,15,45,75,90	46	136, 138, 139, 141, 142
500	60	2,10,45,70,90	47	143, 144, 146, 147, 149
500	60	2,15,45,75,90	48	143, 145, 146, 148, 149
550	0	2,10,45,70,90	49	150, 151, 153, 154, 156

TABLE OF DATA

(Continued)

SATELLITE ALTITUDE (NM)	LATITUDE OF OBSERVER (DEG)	ELEVATION AT TCA (DEG)	PAGE FOR CURVES	PAGE FOR TABULATED LIST
550	0	2,15,45,75,90	50	150, 152, 153, 155, 156
600	0	2,10,20,30,40, 50,60,90	51	157, 158, 160, 161, 162 164, 165, 168
600	0	2,10,45,70,90	52	157, 158, 163, 166, 168
600	0	2,15,45,75,90	53	157, 159, 163, 167, 168
600	30	2,10,45,70,90	54	169, 170, 172, 173, 175
600	30	2,15,45,75,90	55	169, 171, 172, 174, 175
600	60	2,10,45,70,90	56	176, 177, 179, 180, 182
600	60	2,15,45,75,90	57	176, 178, 179, 181, 182
650	0	2,10,45,70,90	58	182, 184, 186, 187, 189
650	0	2,15,45,75,90	59	183, 185, 186, 188, 189
683	0	2,10,45,70,90	60	190, 191, 193, 194, 196
683	0	2,15,45,75,90	61	190, 192, 193, 195, 196
700	0	2,10,20,30,40, 50,60,90	62	197, 198, 200, 201, 202 204, 205, 208
700	0	2,10,45,70,90	63	197, 198, 203, 206, 208
700	0	2,15,45,75,90	64	197, 199, 203, 207, 208
700	30	2,10,45,70,90	65	209, 210, 212, 213, 215
700	30	2,15,45,75,90	66	209, 211, 212, 214, 215
700	60	2,10,45,70,90	67	216, 217, 219, 220, 222
700	60	2,15,45,75,90	68	216, 218, 219, 221, 222
750	0	2,10,45,70,90	69	223, 224, 226, 227, 229
750	0	2,15,45,75,90	70	223, 225, 226, 228, 229

TABLE OF DATA

(Continued)

SATELLITE ALTITUDE (NM)	LATITUDE OF OBSERVER (DEG)	ELEVATION AT TCA (DEG)	PAGE FOR CURVES	PAGE FOR TABULATED LIST
800	0	2,10,45,70,90	71	230, 231, 233, 234, 236
800	0	2,15,45,75,90	72	230, 232, 233, 235, 236
850	0	2,10,45,70,90	73	237, 238, 240, 241, 242
850	0	2,15,45,75,90	74	237, 239, 240, 242, 243
900	0	2,10,45,70,90	75	244, 245, 247, 248, 250
900	0	2,15,45,75,90	76	244, 246, 247, 249, 250
950	0	2,10,45,70,90	77	251, 252, 254, 255, 259
950	0	2,15,45,75,90	78	251, 253, 254, 257, 259
1000	0	2,10,45,70,90	79	261, 262, 264, 266, 270
1000	0	2,15,45,75,90	80	261, 263, 264, 268, 270

Appendix 1

Flow Chart and Listing of Program

Figure A1 shows the flow chart for the computer program and a complete listing is found on the following pages.

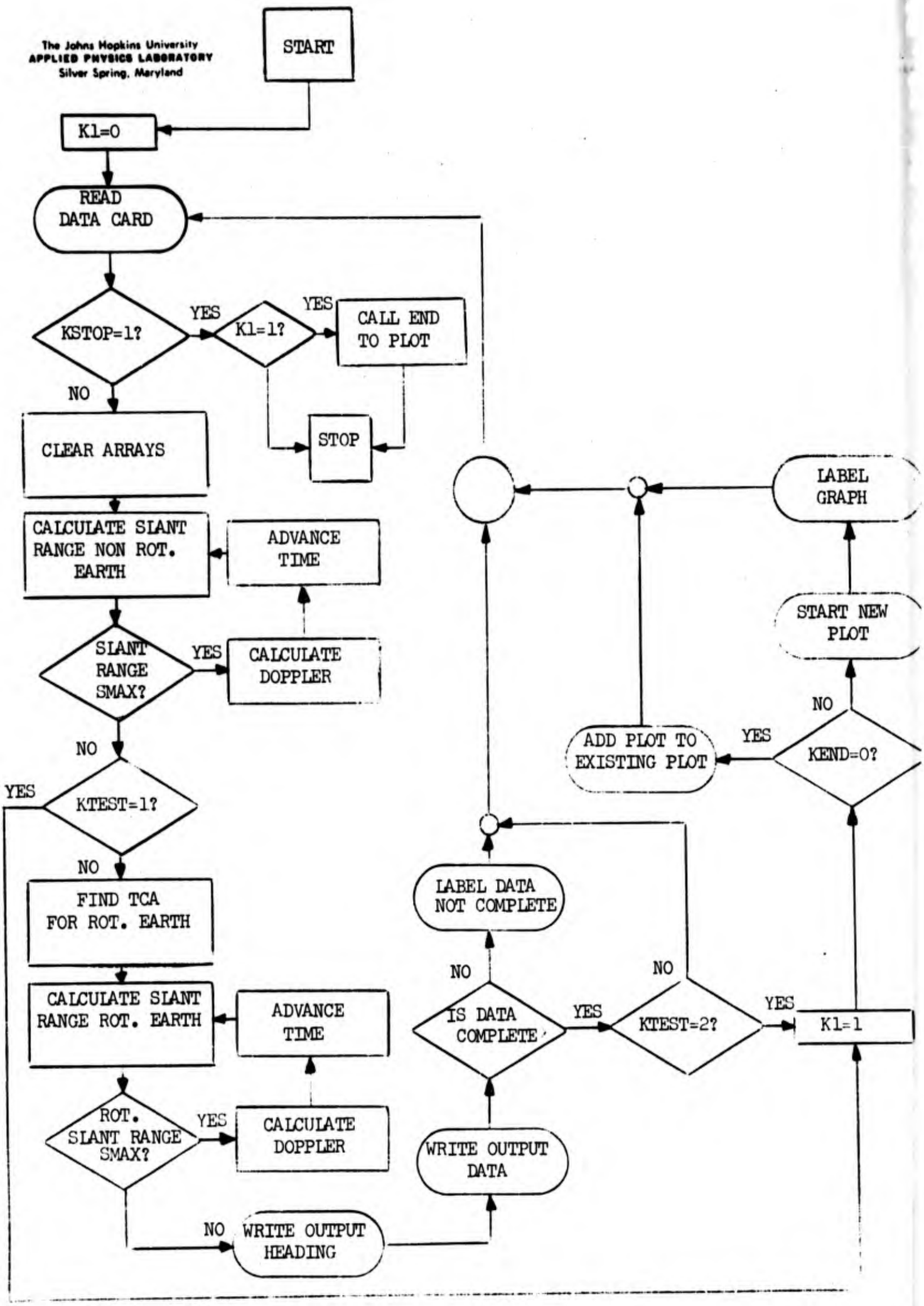

The Johns Hopkins University
APPLIED PHYSICS LABORATORY
Silver Spring, Maryland
START
K1=0
READ DATA CARD
KSTOP=1?
YES
K1=1?
YES
CALL END TO PLOT
STOP
NO
CLEAR ARRAYS
CALCULATE SLANT RANGE NON ROT. EARTH
ADVANCE TIME
SLANT RANGE SMAX?
YES
CALCULATE DOPPLER
NO
KTEST=1?
YES
NO
FIND TCA FOR ROT. EARTH
CALCULATE SLANT RANGE ROT. EARTH
ADVANCE TIME
ROT. SLANT RANGE SMAX?
YES
CALCULATE DOPPLER
NO
WRITE OUTPUT HEADING
WRITE OUTPUT DATA
NO
IS DATA COMPLETE
YES
LABEL DATA NOT COMPLETE
NO
KTEST=2?
YES
K1=1
NO
KEND=0?
YES
ADD PLOT TO EXISTING PLOT
START NEW PLOT
LABEL GRAPH

Figure A1

```
C                                                                       DOPPLR
CDOPPLR PROGRAM TO DETERMINE DOPPLER SHIFT WITH TIME AND ELEVATION ANGLEDOPPLR
C  SPHERICAL EARTH AND POLAR ORBIT ARE ASSUMED                          DOPPLR
C     DATA CARD FORMAT                                                  DOPPLR
C     COL  1- 9 SATELLITE ALTITUDE ABOVE EARTH - NAUTICAL MILES         DOPPLR
C     COL 17-22 ELEVATION ANGLE AT CLOSEST APPROACH - DEGREES           DOPPLR
C     COL 28-32 TIME INTERVAL BETWEEN DOPPLER POINTS - SECONDS          DOPPLR
C     COL 40-45 LATITUDE OF OBSERVER - DEGREES                          DOPPLR
C     COL 51-58 REFERENCE FREQUENCY FOR DOPPLER CALCULATION - MEGACYCLESDOPPLR
C     COL 62=0 FOR ONLY TABLE OF DOPPLER                                DOPPLR
C     COL 62=1 FOR ONLY GRAPHICAL PLOT OF DOPPLER                       DOPPLR
C     COL 62=2 FOR GRAPHICAL PLOT AND TABLE OF DOPPLER                  DOPPLR
C     COL 65-67=-1 FOR FIRST CALL OF EACH INDEPENDENT PICTURE           DOPPLR
C     COL 65-67= 0 FOR ADDING GRAPH OF DOPPLER TO EXISTING PICTURE      DOPPLR
C     COL 71=1 FOR END OF RUN                                           DOPPLR
C                                                                       DOPPLR
C     MODIFIED FOR DOPPLER INTERFERENCE STUDY                           DOPPLR
C                                                                       DOPPLR
C     MODIFIED FOR ROTATING EARTH                                       DOPPLR
C                                                                       DOPPLR
C     MODIFIED FOR OBSERVER AT ANY LATITUDE                             DOPPLR
C                                                                       DOPPLR
      DIMENSION DOPP(600),DOPN(600),Q(600),Y(600),ZLEV(600),ESUBP(600)  DOPPLR
      DIMENSION WSUBP(600),ESUBN(600),WSUBN(600),TP(600),TN(600)        DOPPLR
      DIMENSION STOR(600),P1(3),P2(3)                                   DOPPLR
      K1=0                                                              DOPPLR
      PI=3.1415927                                                      DOPPLR
      R=3440.184                                                        DOPPLR
      P1(1)=-700.                                                       DOPPLR
      P1(2)=-700.                                                       DOPPLR
      P1(3)=+700.                                                       DOPPLR
      P2(1)=10.                                                         DOPPLR
      P2(2)= 0.                                                         DOPPLR
      P2(3)= 0.                                                         DOPPLR
   11 READ INPUT TAPE 5,100,H,ALPHA,DTIME,PHI,FREQ,KTEST,KEND,KSTOP     DOPPLR
  100 FORMAT(F9.3,F13.3,F10.1,F13.3,F13.3,3X,I1,3X,I2,3X,I1)            DOPPLR
      IF(1-KSTOP)12,12,15                                               DOPPLR
   12 IF(1-K1)13,13,14                                                  DOPPLR
   13 CALL PL570 ( 2,0,0,0,0,0,0,0,0,0,0,0)                             DOPPLR
   14 CALL EXIT                                                         DOPPLR
   15 A=R+H                                                             DOPPLR
      PER=.025102433*A*SQRTF(A)                                         DOPPLR
      B=A*A                                                             DOPPLR
      C=(2.*PI)/PER                                                     DOPPLR
      D=R*A                                                             DOPPLR
      E=B+R*R                                                           DOPPLR
      PHIR=.0174533*PHI                                                 DOPPLR
      ER=((2.*PI)/86400.)*COSF(PHIR)                                    DOPPLR
      JTIME=DTIME                                                       DOPPLR
      X=R/A                                                             DOPPLR
      DELTAM=1.5707963-ATANF(X/SQRTF(1.-(X*X)))                         DOPPLR
      SMAX=A*SINF(DELTAM)                                               DOPPLR
      ALPHAR=ALPHA*0.0174533                                            DOPPLR
```

```
      G=COSF(ALPHAR)                                                    DOPPLR
      BETA=1.5707963-ALPHAR-ATANF((X*G)/SQRTF(1.-X*X*G*G))              DOPPLR
      F=COSF(BETA)                                                      DOPPLR
      DF=D*F                                                            DOPPLR
      DF2=2.*DF                                                         DOPPLR
      CDF=C*DF                                                          DOPPLR
C                                                                       DOPPLR
C     CLEAR ARRAYS                                                      DOPPLR
      DO 16 L=1,600                                                     DOPPLR
      TN(L)=0.0                                                         DOPPLR
      TP(L)=0.0                                                         DOPPLR
      ESUBP(L)=0.0                                                      DOPPLR
      ESUBN(L)=0.0                                                      DOPPLR
      DOPP(L)=0.0                                                       DOPPLR
      DOPN(L)=0.0                                                       DOPPLR
      WSUBP(L)=0.0                                                      DOPPLR
      WSUBN(L)=0.0                                                      DOPPLR
      Q(L)=0.0                                                          DOPPLR
      Y(L)=0.0                                                          DOPPLR
   16 ZLEV(L)=0.0                                                       DOPPLR
C                                                                       DOPPLR
C     CALCULATION OF SLANT RANGE TO SATELLITE FOR NON-ROTATING EARTH    DOPPLR
      T=0.0                                                             DOPPLR
      DO 18 I=1,600                                                     DOPPLR
      CT=C*T                                                            DOPPLR
      S=SQRTF(E-DF2*COSF(CT))                                           DOPPLR
      IF(S-SMAX)17,17,19                                                DOPPLR
C     CALCULATION OF RANGE RATE                                         DOPPLR
   17 W=CDF*SINF(CT)/S                                                  DOPPLR
C     CALCULATION OF ELEVATION ANGLE                                    DOPPLR
      QAA=(B-S*S-R*R)/(2.*R*S)                                          DOPPLR
      ELEVR=ARCTAN(QAA,SQRTF(ABSF(1.-QAA**2)))                          DOPPLR
      ELEV=57.2957795*ELEVR                                             DOPPLR
C     CALCULATION OF DOPPLER SHIFT                                      DOPPLR
      DOPPN=(FREQ*1000000.0*W)/161875.0                                 DOPPLR
      DOPN(I)=DOPPN                                                     DOPPLR
      DOPP(I)=-DOPPN                                                    DOPPLR
      Q(I)=S                                                            DOPPLR
      Y(I)=W                                                            DOPPLR
      ZLEV(I)=ELEV                                                      DOPPLR
      TP(I)=T                                                           DOPPLR
      TN(I)=-T                                                          DOPPLR
      IF(TP(I-1)-700.)118,18,18                                         DOPPLR
  118 I1=I+1                                                            DOPPLR
   18 T=T+DTIME                                                         DOPPLR
   19 IF(1-KTEST)40,44,40                                               DOPPLR
   40 CONTINUE                                                          DOPPLR
C                                                                       DOPPLR
C     CALCULATION OF TIME OF CLOSEST APPROACH FOR A ROTATING EARTH      DOPPLR
C                                                                       DOPPLR
      T=0.0                                                             DOPPLR
      DO 20 I=1,100                                                     DOPPLR
      BETA1=BETA-ER*T                                                   DOPPLR
      CT=C*T                                                            DOPPLR
      SROT1=SQRTF(E-2.*D*COSF(BETA1)*COSF(CT))                          DOPPLR
```

```
      WROT1=(D*(C*COSF(BETA1)*SINF(CT)-ER*COSF(CT)*SINF(BETA1)))/SROT1   DOPPLR
      DOPPE=(FREQ*1000000.0*WROT1)/161875.0                              DOPPLR
      IF(DOPPF)20,22,21                                                  DOPPLR
   20 T=T+1.0                                                            DOPPLR
   21 T=T-1.0                                                            DOPPLR
      BETA1=BETA-ER*T                                                    DOPPLR
      CT=C*T                                                             DOPPLR
      SROT1=SQRTF(E-2.*D*COSF(BETA1)*COSF(CT))                           DOPPLR
      WROT1=(D*(C*COSF(BETA1)*SINF(CT)-ER*COSF(CT)*SINF(BETA1)))/SROT1   DOPPLR
      DOPP1=(FREQ*1000000.0*WROT1)/161875.0                              DOPPLR
      DOPP2=DOPPE-DOPP1                                                  DOPPLR
      T=T-DOPP1/DOPP2                                                    DOPPLR
   22 T1=T                                                               DOPPLR
      T2=-T                                                              DOPPLR
C                                                                        DOPPLR
C     CALCULATION OF SLANT RANGE FOR SUBTRACK TO EAST OF NAVIGATOR       DOPPLR
   23 T=T1                                                               DOPPLR
      DO 25 J=1,600                                                      DOPPLR
      BETA1=BETA-ER*T                                                    DOPPLR
      CT=C*T                                                             DOPPLR
      SROT1=SQRTF(E-2.*D*COSF(BETA1)*COSF(CT))                           DOPPLR
      IF(SROT1-SMAX)24,24,29                                             DOPPLR
C     CALCULATION OF RANGE RATE                                          DOPPLR
   24 WROT1=(D*(C*COSF(BETA1)*SINF(CT)-ER*COSF(CT)*SINF(BETA1)))/SROT1   DOPPLR
C     CALCULATION OF DOPPLER SHIFT                                       DOPPLR
      DOPPE=(FREQ*1000000.0*WROT1)/161875.0                              DOPPLR
      WSUBN(J)=DOPPE                                                     DOPPLR
      ESUBP(J)=-DOPPE                                                    DOPPLR
   25 T=T+DTIME                                                          DOPPLR
C                                                                        DOPPLR
C     CALCULATION OF SLANT RANGE FOR SUBTRACK TO WEST OF NAVIGATOR       DOPPLR
   26 T=T2                                                               DOPPLR
      DO 28 K=1,600                                                      DOPPLR
      BETA2=BETA+ER*T                                                    DOPPLR
      CT=C*T                                                             DOPPLR
      SROT2=SQRTF(E-2.*D*COSF(BETA2)*COSF(CT))                           DOPPLR
      IF(SROT2-SMAX)27,27,33                                             DOPPLR
C     CALCULATION OF RANGE RATE                                          DOPPLR
   27 WROT2=(D*(C*COSF(BETA2)*SINF(CT)+ER*COSF(CT)*SINF(BETA2)))/SROT2   DOPPLR
C     CALCULATION OF DOPPLER SHIFT                                       DOPPLR
      DOPPW=(FREQ*1000000.0*WROT2)/161875.0                              DOPPLR
      ESUBN(K)=DOPPW                                                     DOPPLR
      WSUBP(K)=-DOPPW                                                    DOPPLR
   28 T=T+DTIME                                                          DOPPLR
      GO TO 43                                                           DOPPLR
C                                                                        DOPPLR
C     CALCULATION OF DOPPLER AT TIME OF SATELLITE SET                    DOPPLR
   29 T=T-DTIME                                                          DOPPLR
      DO 30 L=1,30                                                       DOPPLR
      T=T+(DTIME/30.0)                                                   DOPPLR
      BETA1=BETA-ER*T                                                    DOPPLR
      SROT1=SQRTF(E-2.*D*COSF(BETA1)*COSF(C*T))                          DOPPLR
      IF(SROT1-SMAX)30,32,31                                             DOPPLR
   30 CONTINUE                                                           DOPPLR
   31 T=T-(DTIME/30.0)                                                   DOPPLR
```

```
      BETA1=BETA-ER*T                                                    DOPPLR
   32 SROT3=SQRTF(E-2.*D*COSF(BETA1)*COSF(C*T))                          DOPPLR
      WROT3=(D*(C*COSF(BETA1)*SINF(C*T)-ER*COSF(C*T)*SINF(BETA1)))/SROT3DOPPLR
      DOPP3=(FREQ*1000000.0*WROT3)/161875.0                             DOPPLR
      DOPP3=-DOPP3                                                      DOPPLR
      T3=T-T1                                                           DOPPLR
      T=T3-T1                                                           DOPPLR
      BETA2=BETA+ER*T                                                   DOPPLR
      SROT2=SQRTF(E-2.*D*COSF(BETA2)*COSF(C*T))                         DOPPLR
      WROT2=(D*(C*COSF(BETA2)*SINF(C*T)+ER*COSF(C*T)*SINF(BETA2)))/SROT2DOPPLR
      DOPP2=(FREQ*1000000.0*WROT2)/161875.0                             DOPPLR
      DOPP2=-DOPP2                                                      DOPPLR
      GO TO 26                                                          DOPPLR
   33 T=T-DTIME                                                         DOPPLR
      DO 34 L=1,30                                                      DOPPLR
      T=T+(DTIME/30.0)                                                  DOPPLR
      BETA2=BETA+ER*T                                                   DOPPLR
      SROT2=SQRTF(E-2.*D*COSF(BETA2)*COSF(C*T))                         DOPPLR
      IF(SROT2-SMAX)34,36,35                                            DOPPLR
   34 CONTINUE                                                          DOPPLR
   35 T=T-(DTIME/30.0)                                                  DOPPLR
      BETA2=BETA+ER*T                                                   DOPPLR
   36 SROT4=SQRTF(E-2.*D*COSF(BETA2)*COSF(C*T))                         DOPPLR
      WROT4=(D*(C*COSF(BETA2)*SINF(C*T)+ER*COSF(C*T)*SINF(BETA2)))/SROT4DOPPLR
      DOPP4=(FREQ*1000000.0*WROT4)/161875.0                             DOPPLR
      DOPP4=-DOPP4                                                      DOPPLR
      T4=T-T2                                                           DOPPLR
C                                                                       DOPPLR
   37 CONTINUE                                                          DOPPLR
      IF(K-J)38,39,39                                                   DOPPLR
   38 K=J                                                               DOPPLR
   39 M=K                                                               DOPPLR
      I=M-1                                                             DOPPLR
      WRITE OUTPUT TAPE 6,200                                           DOPPLR
  200 FORMAT(1H1,10X,57HDOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSESTDOPPLR
     1 APPROACH//)                                                      DOPPLR
      WRITE OUTPUT TAPE 6,300,ALPHA,H                                   DOPPLR
  300 FORMAT(1H ,5X,16HELEVATION AT TCA,1X,F6.3,1X,4HDEG.,3X,           DOPPLR
     118HSATELLITE ALTITUDE,F7.1,1X,14HNAUTICAL MILES//)                DOPPLR
      WRITE OUTPUT TAPE 6,400,PHI                                       DOPPLR
  400 FORMAT(1H ,23X,20HLATITUDE OF OBSERVER,1X,F6.3,1X,4HDEG.//)       DOPPLR
      WRITE OUTPUT TAPE 6,500                                           DOPPLR
  500 FORMAT(1H ,5X,4HTIME,6X,5HELEV.,3X,5HSLANT,5X,5HRANGE,5X,         DOPPLR
     130HDOPPLER SHIFT IN CYCLES/SECOND)                                DOPPLR
      WRITE OUTPUT TAPE 6,600,FREQ                                      DOPPLR
  600 FORMAT(1H ,5X,4HFROM,6X,5HANGLE,3X,5HRANGE,5X,4HRATE,13X,2HAT,1X, DOPPLR
     1F8.3,1X,4HMCS.)                                                   DOPPLR
      WRITE OUTPUT TAPE 6,700                                           DOPPLR
  700 FORMAT(1H ,5X,6HCA-SEC,4X,3HDEG,5X,2HNM,8X,6HNM/SEC,4X,           DOPPLR
     130HSUBTRACK    NON-ROT.    SUBTRACK)                              DOPPLR
      WRITE OUTPUT TAPE 6,800                                           DOPPLR
  800 FORMAT(1H ,15X,12H(NR)     (NR),6X,4H(NR),6X,                     DOPPLR
     129HTO EAST     EARTH       TO WEST)                               DOPPLR
      DO 41 J=2,I                                                       DOPPLR
      T=(J-M)*JTIME                                                     DOPPLR
```

```
      K=M-J+1                                                          DOPPLR
      WRITE OUTPUT TAPE 6,900,T,ZLEV(K),Q(K),Y(K),ESUBN(K),DOPN(K),    DOPPLR
     1WSUBN(K)                                                         DOPPLR
   41 CONTINUE                                                         DOPPLR
      T=0.0                                                            DOPPLR
      ESUBN(1)=ABSF(ESUBN(1))                                          DOPPLR
      DOPP(1)=ABSF(DOPP(1))                                            DOPPLR
      WSUBN(1)=ABSF(WSUBN(1))                                          DOPPLR
      WRITE OUTPUT TAPE 6,900,T,ZLEV(1),Q(1),Y(1),ESUBN(1),DOPP(1),    DOPPLR
     1WSUBN(1)                                                         DOPPLR
      DO 42 J=2,I                                                      DOPPLR
      T=(J-1)*JTIME                                                    DOPPLR
      WRITE OUTPUT TAPE 6,900,T,ZLEV(J),Q(J),Y(J),ESUBP(J),DOPP(J),    DOPPLR
     1WSUBP(J)                                                         DOPPLR
   42 CONTINUE                                                         DOPPLR
  900 FORMAT(1H ,5X,F5.0,4X,F5.2,3X,F7.1,4X,F6.3,4X,F7.0,4X,F7.0,4X,   DOPPLR
     1F7.0)                                                            DOPPLR
      WRITE OUTPUT TAPE 6,150                                          DOPPLR
  150 FORMAT(1H ,5X,72HTHE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SDOPPLR
     1ET FOR A ROTATING EARTH)                                         DOPPLR
      WRITE OUTPUT TAPE 6,250,T3,SROT3,DOPP3                           DOPPLR
  250 FORMAT(1H ,5X,F6.1,3X,21HROT SLANT RANGE(E) IS,F7.1,1X,F7.0)     DOPPLR
C                                                                      DOPPLR
      WRITE OUTPUT TAPE 6,350,T4,SROT4,DOPP4                           DOPPLR
  350 FORMAT(1H ,5X,F6.1,3X,21HROT SLANT RANGE(W) IS,F7.1,6X,2X  ,15X,F7DOPPLR
     1.0)                                                              DOPPLR
      WRITE OUTPUT TAPE 6,450,SMAX                                     DOPPLR
  450 FORMAT(1H ,14X,7HSMAX IS,F7.1)                                   DOPPLR
      IF(1-KTEST)44,44,60                                              DOPPLR
   43 WRITE OUTPUT TAPE 6,550                                          DOPPLR
  550 FORMAT(1H ,5X,46HOUTPUT FOLLOWING IS NOT COMPLETE DOPPLER TABLE//)DOPPLR
      T3=0.0                                                           DOPPLR
      T4=0.0                                                           DOPPLR
      SROT3=0.0                                                        DOPPLR
      SROT4=0.0                                                        DOPPLR
      DOPP2=0.0                                                        DOPPLR
      DOPP3=0.0                                                        DOPPLR
      DOPP4=0.0                                                        DOPPLR
      KTEST=0                                                          DOPPLR
      GO TO 37                                                         DOPPLR
C                                                                      DOPPLR
C     CALL CALCOMP TO PLOT THE DOPPLER AS A FUNCTION OF TIME           DOPPLR
C                                                                      DOPPLR
   44 IF(KEND)45,47,47                                                 DOPPLR
   45 K2=0                                                             DOPPLR
      KEND=-1                                                          DOPPLR
      IF(K1)46,48,46                                                   DOPPLR
   46 KEND=1                                                           DOPPLR
      CALL PL570 (1,0,0,0,0,0,0,0,0,0,0,0)                             DOPPLR
      KEND=-1                                                          DOPPLR
      GO TO 48                                                         DOPPLR
   47 K2=2                                                             DOPPLR
      KEND=0                                                           DOPPLR
   48 CONTINUE                                                         DOPPLR
C                                                                      DOPPLR
```

```
C       CURVE FOR NON-ROTATING EARTH                                          DOPPLR
        M=11                                                                  DOPPLR
        L=M-1                                                                 DOPPLR
        STOR(L)=5.+DOPN(L)/500.                                               DOPPLR
        CALL PL570 (KEND,6HMATUCK,K2,0,TN(L),1,-700.,200.,600.,STOR(L),1,1DOPPLR
       1)                                                                     DOPPLR
        KEND=0                                                                DOPPLR
        DO 49 J=3,L                                                           DOPPLR
        K=M-J+1                                                               DOPPLR
        STOR(K)=5.+DOPN(K)/500.                                               DOPPLR
        CALL PL570 (0,0,0,0,TN(K),1,-700.,200.,600.,STOR(K),1,1)              DOPPLR
   49 CONTINUE                                                                DOPPLR
        STOR(1)=5.+DOPP(1)/500.                                               DOPPLR
        CALL PL570 (0,0,0,0,TN(1),1,-700.,200.,600.,STOR(1),1,1)              DOPPLR
        DO 50 J=2,L                                                           DOPPLR
        STOR(J)=5.+DOPP(J)/500.                                               DOPPLR
        CALL PL570 (0,0,0,0,TP(J),1,-700.,200.,600.,STOR(J),1,1)              DOPPLR
   50 CONTINUE                                                                DOPPLR
        IF(K1-0)152,151,152                                                   DOPPLR
  151 WRITE OUTPUT TAPE 6,650                                                 DOPPLR
  650 FORMAT(1H1,10X,42HCALCOMP PLOT HAS BEEN PLOTTED FOR THIS JOB)           DOPPLR
  152 K1=1                                                                    DOPPLR
        IF(K2-1)51,51,52                                                      DOPPLR
   51 CONTINUE                                                                DOPPLR
C                                                                             DOPPLR
C       TITLE BLOCK OF THE GRAPH SHALL BE                                     DOPPLR
        CALL PL570 (0,0,-4,57,-580.,1,-700.,200.,600.,10.1,1,57HDOPPLER SHDOPPLR
       1IFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH)                      DOPPLR
        CALL PL570 (0,0,-4,17, 10.0,1,-700.,200.,600., 9.0,1,17HSAT ALTITUDOPPLR
       1DE (NM))                                                              DOPPLR
        Z=FPBCDF(H)                                                           DOPPLR
        CALL PLALP (-4, 6,340.,9.0,Z)                                         DOPPLR
        ALT=H                                                                 DOPPLR
        SOR1=340.                                                             DOPPLR
        CALL PL570 (0,0,-4,21, 10.0,1,-700.,200.,600., 8.6,1,21HLAT OF OBSDOPPLR
       1ERVER (DEG))                                                          DOPPLR
        Z=FPBC2F(PHI)                                                         DOPPLR
        CALL PLALP (-4, 6,420.,8.6,Z)                                         DOPPLR
        SLAT=PHI                                                              DOPPLR
        SOR2=420.                                                             DOPPLR
        CALL PL570 (0,0,-4,17, 10.0,1,-700.,200.,600., 8.2,1,17HELEV AT TCDOPPLR
       1A (DEG))                                                              DOPPLR
        Z=FPBC2F(ALPHA)                                                       DOPPLR
        CALL PLALP (-4, 6,330.,8.2,Z)                                         DOPPLR
        ELEVA=ALPHA                                                           DOPPLR
        SOR3=340.                                                             DOPPLR
        SOR4=8.2                                                              DOPPLR
        CALL PL570 (0,0,-4,31,-620.,1,-700.,200.,600.,1.45,1,31HDOPPLER REDOPPLR
       1FERENCED TO       MCS)                                               DOPPLR
        Z=FPBC1F(FREQ)                                                        DOPPLR
        CALL PLALP (-4, 6,-200.,1.45,Z)                                       DOPPLR
C                                                                             DOPPLR
C       LABEL THE Y AXIS                                                      DOPPLR
        CALL PL570 (0,0,-4, 4,-800.,1,-700.,200.,600.,8.95,1, 4H+2KC)         DOPPLR
        CALL PL570 (0,0,-4, 4,-800.,1,-700.,200.,600.,6.95,1, 4H+1KC)         DOPPLR
```

```
      CALL PL570 (0,0,-4, 4,-800.,1,-700.,200.,600.,4.95,1, 4H 0KC)      DOPPLR
      CALL PL570 (0,0,-4, 4,-800.,1,-700.,200.,600.,2.95,1, 4H-1KC)      DOPPLR
      CALL PL570 (0,0,-4, 4,-800.,1,-700.,200.,600.,0.95,1, 4H-2KC)      DOPPLR
C                                                                        DOPPLR
C     LABEL THE X AXIS                                                   DOPPLR
      CALL PL570 (0,0,-4,64,-640.,1,-700.,200.,600.,-.15,1,64H-600       DOPPLR
     1                        0                          600)            DOPPLR
      CALL PL570 (0,0,-4,24,-240.,1,-700.,200.,600.,-.40,1,24HTIME FROM  DOPPLR
     1TCA IN SECONDS)                                                    DOPPLR
      CALL PL570 (0,0,+2,0,P1(1),1,-700.,200.,600.,P2(1),1,1)            DOPPLR
      CALL PL570 (0,0, 0,0,P1(2),1,-700.,200.,600.,P2(2),1,1)            DOPPLR
      CALL PL570 (0,0, 0,0,P1(3),1,-700.,200.,600.,P2(3),1,1)            DOPPLR
      GO TO 11                                                           DOPPLR
   52 IF(ALT-H)53,54,53                                                  DOPPLR
   53 SOR1=SOR1+120.                                                     DOPPLR
      CALL PL570 (0,0,-4, 1, SOR1,1,-700.,200.,600.,9.0,1,1H,)           DOPPLR
      SOR1=SOR1+10.                                                      DOPPLR
      Z=FPBCDF(H)                                                        DOPPLR
      CALL PLALP (-4, 6,SOR1,9.0,Z)                                      DOPPLR
   54 IF(SLAT-PHI)55,56,55                                               DOPPLR
   55 SOR2=SOR2+120.                                                     DOPPLR
      CALL PL570 (0,0,-4, 1, SOR2,1,-700.,200.,600.,8.6,1,1H,)           DOPPLR
      SOR2=SOR2+10.                                                      DOPPLR
      Z=FPBC2F(PHI)                                                      DOPPLR
      CALL PLALP (-4, 6,SOR2,8.6,Z)                                      DOPPLR
   56 IF(ELEVA-ALPHA)57,60,57                                            DOPPLR
   57 SOR3=SOR3+120.                                                     DOPPLR
      CALL PL570 (0,0,-4, 1, SOR3,1,-700.,200.,600.,SOR4,1,1H,)          DOPPLR
      SOR3=SOR3+10.                                                      DOPPLR
      IF(600.-SOR3)58,59,59                                              DOPPLR
   58 SOR3=340.                                                          DOPPLR
      SOR4=SOR4-0.4                                                      DOPPLR
   59 Z=FPBC2F(ALPHA)                                                    DOPPLR
      CALL PLALP (-4, 6,SOR3,SOR4,Z)                                     DOPPLR
   60 GO TO 11                                                           DOPPLR
      END
```

BLANK PAGE

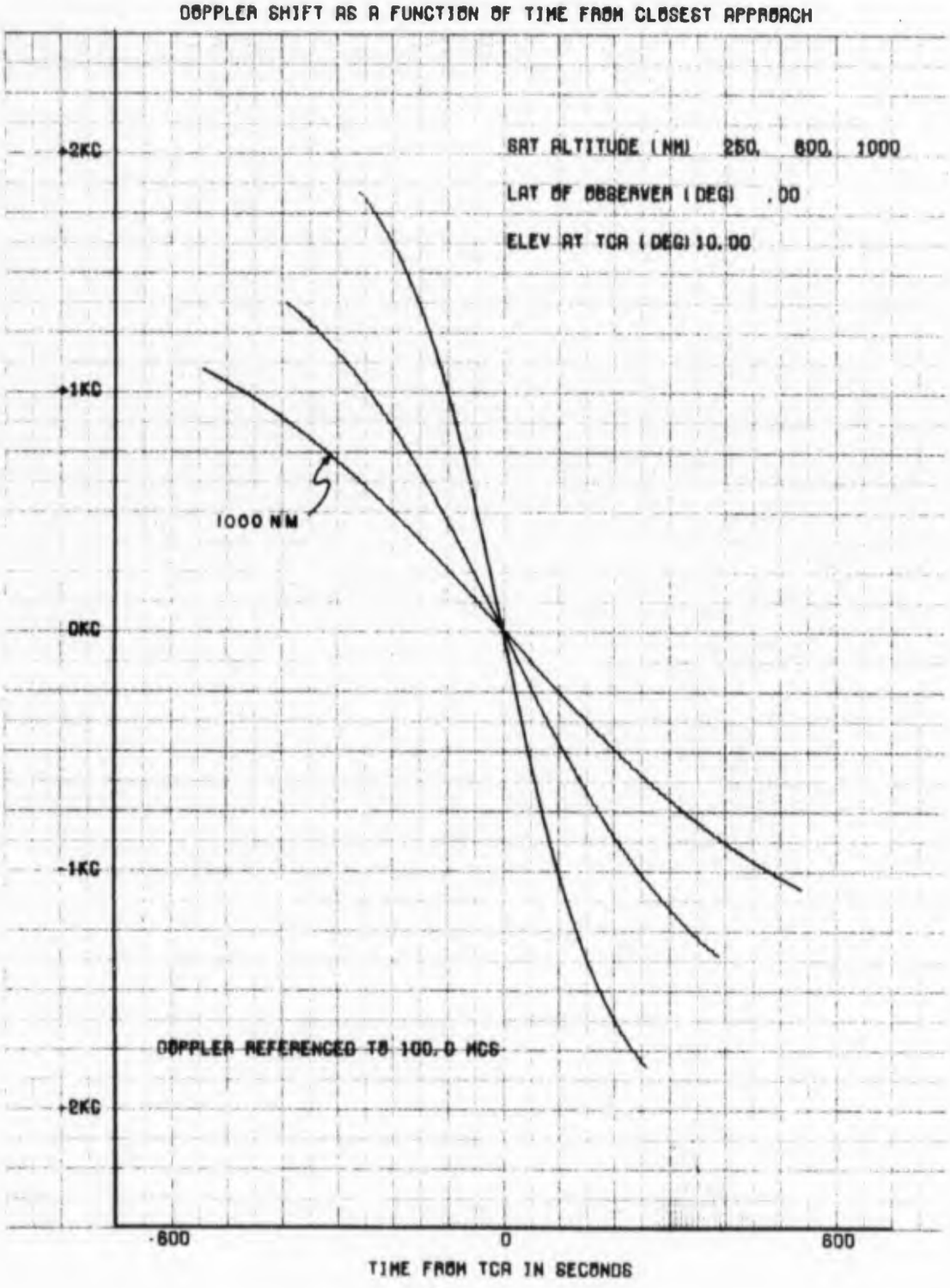
Appendix 2

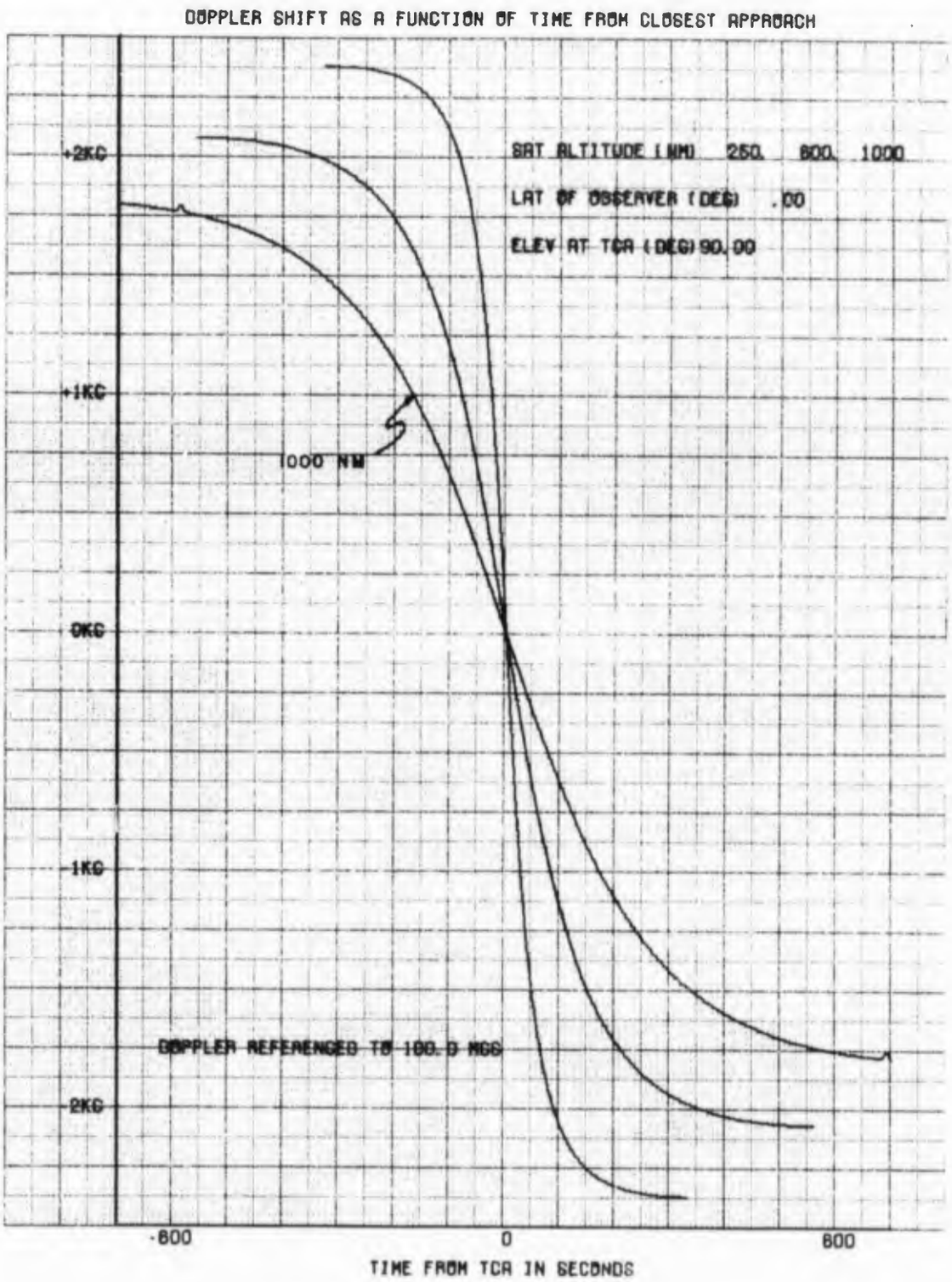
Continuous Plots of Doppler as a Function of Time

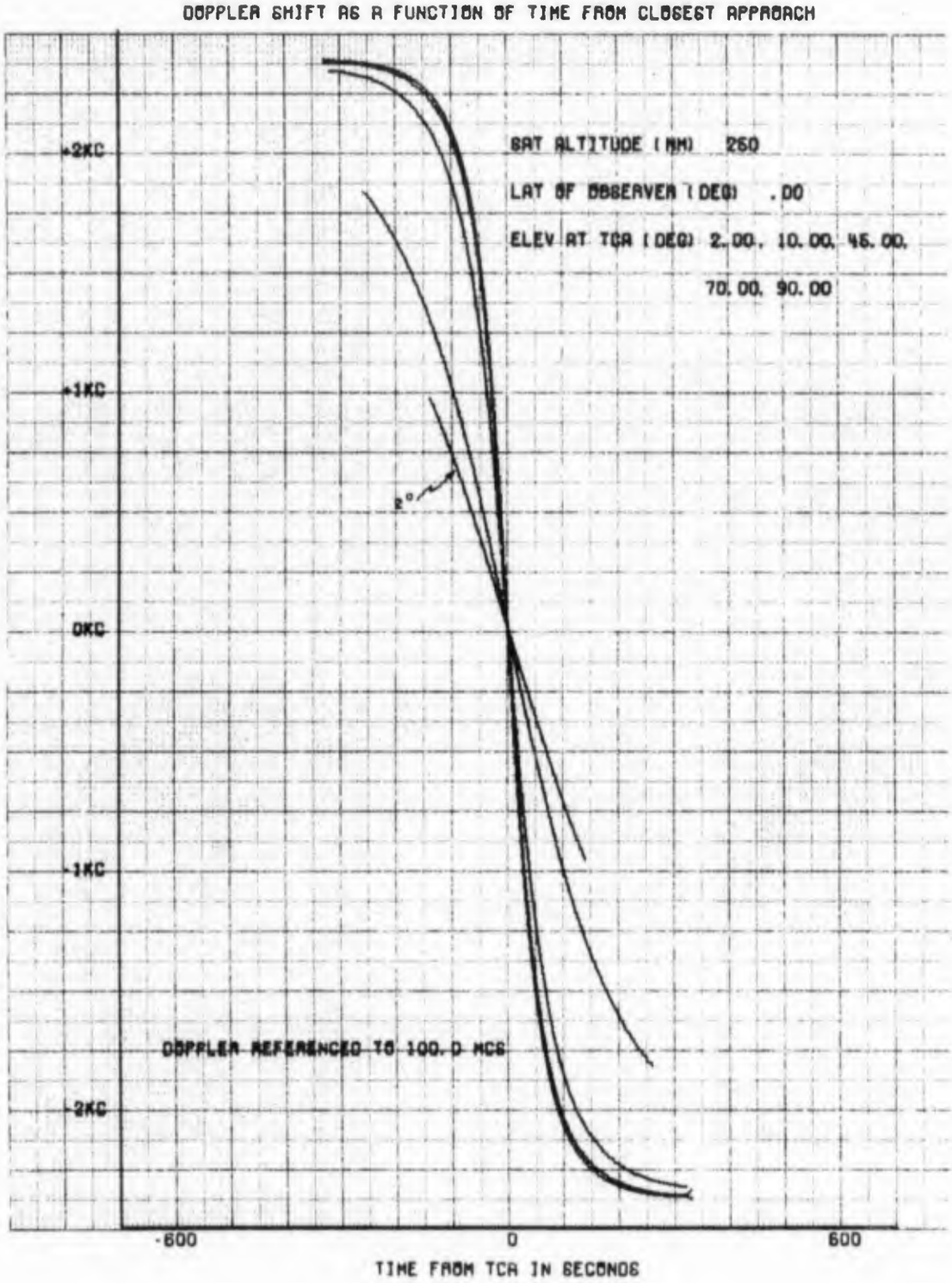
The following plots show the doppler shift as a function of time from closest approach for several elevation angles, latitudes of observer, and orbit altitudes.

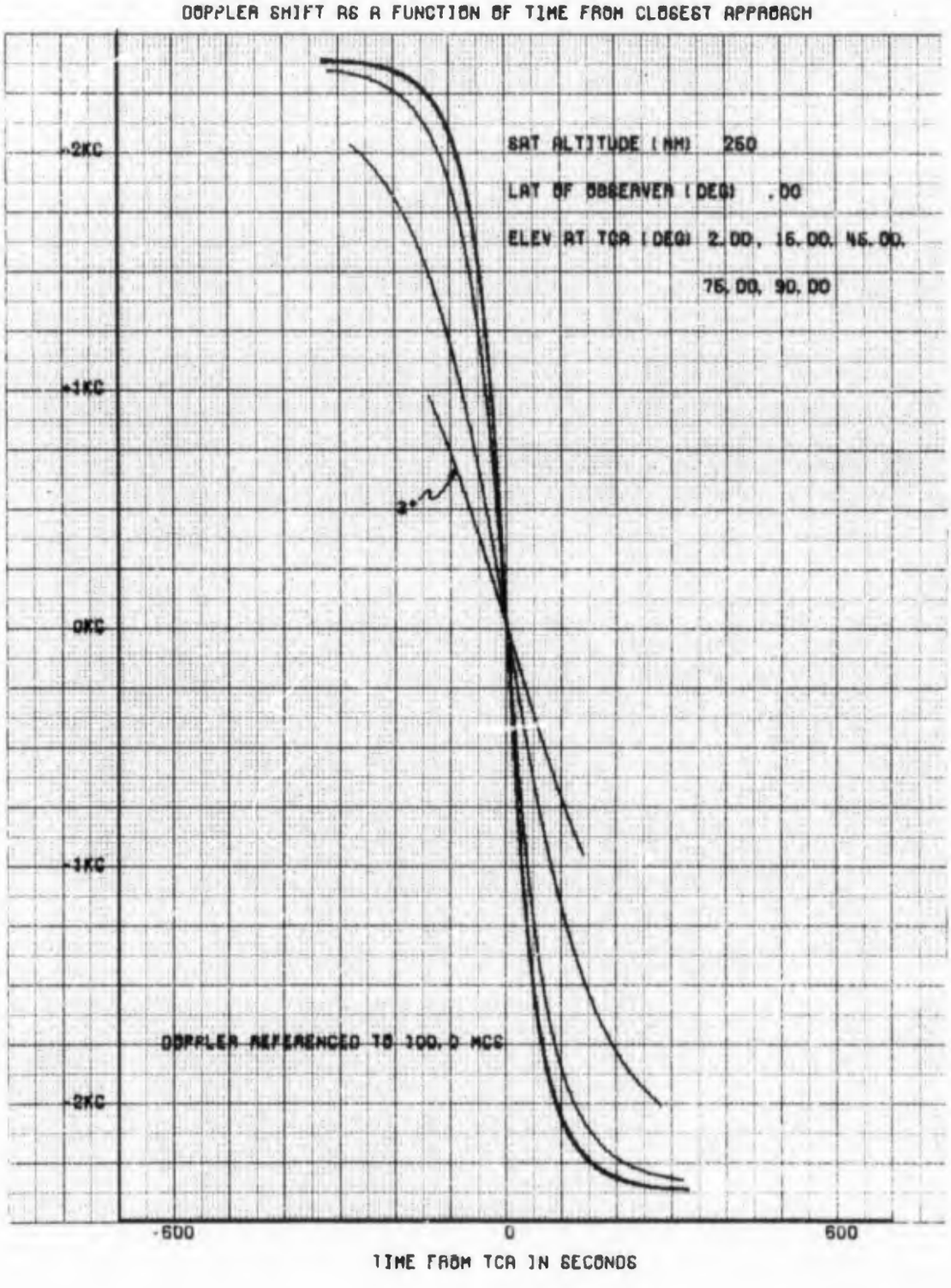
The AN/SRN-9 Navigation Equipment considers passes having elevation angles at closest approach between 10^{o} and 70^{o} useful for navigation; therefore, plots were made within these elevation angle limits to show the expected doppler shift.

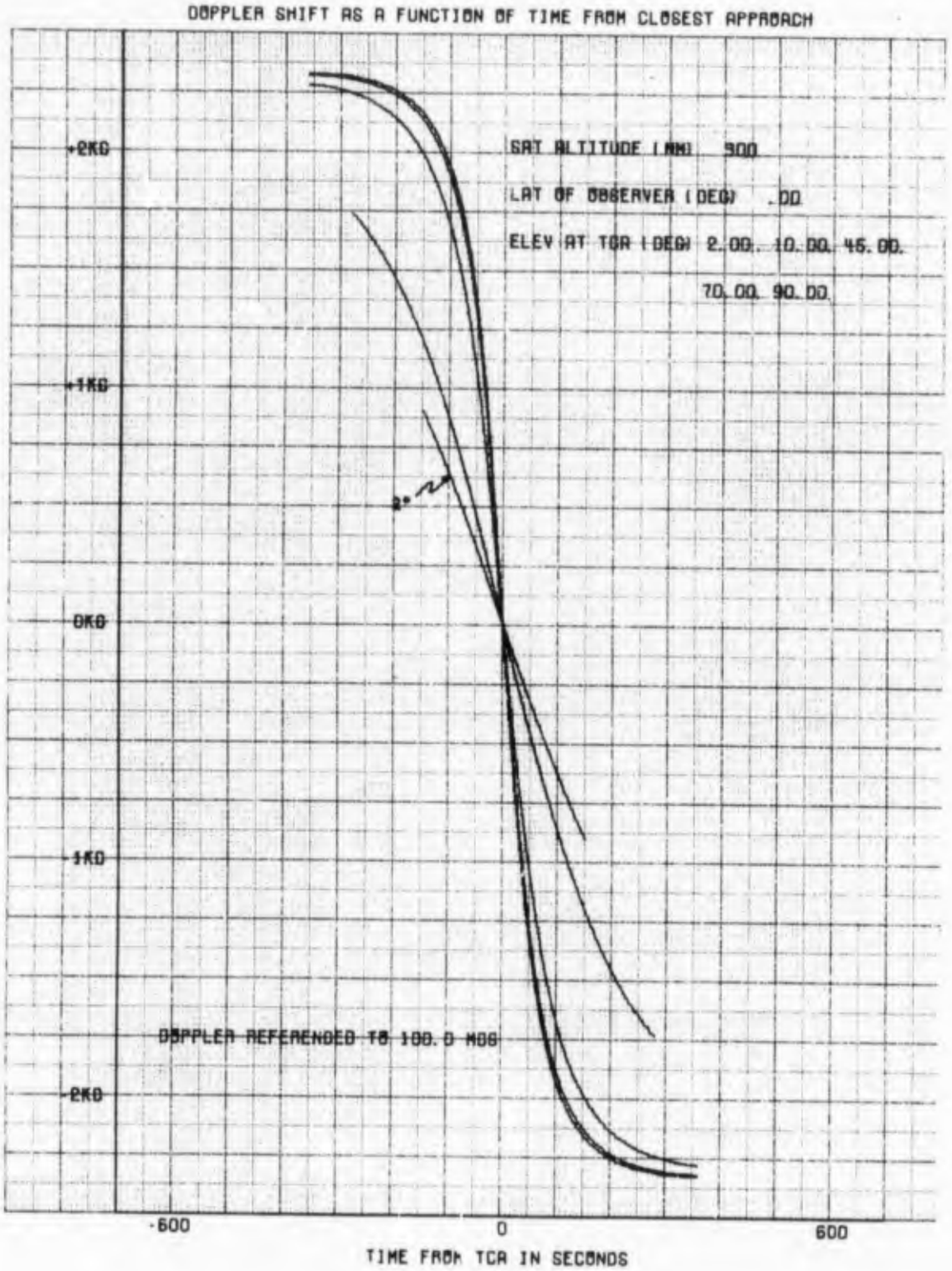
For the AN/BRN-3 Navigation Equipment, the limiting elevation angles are 15^{o} and 75^{o}; therefore, a set of doppler curves within this band of elevation angles are included.

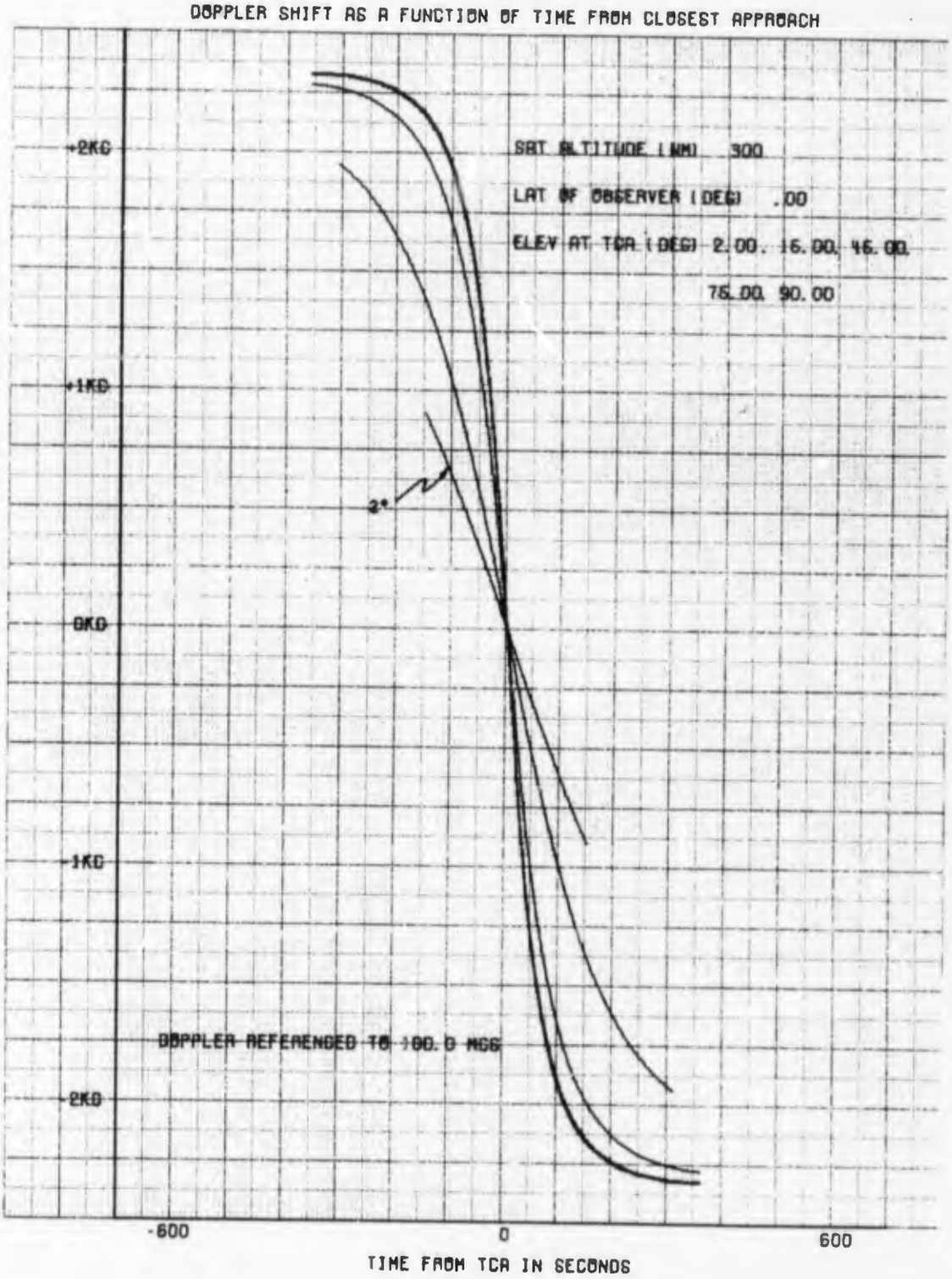

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 250. 600. 1000
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 10.00
+2KC
+1KC
0KC
-1KC
-2KC
1000 NM
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

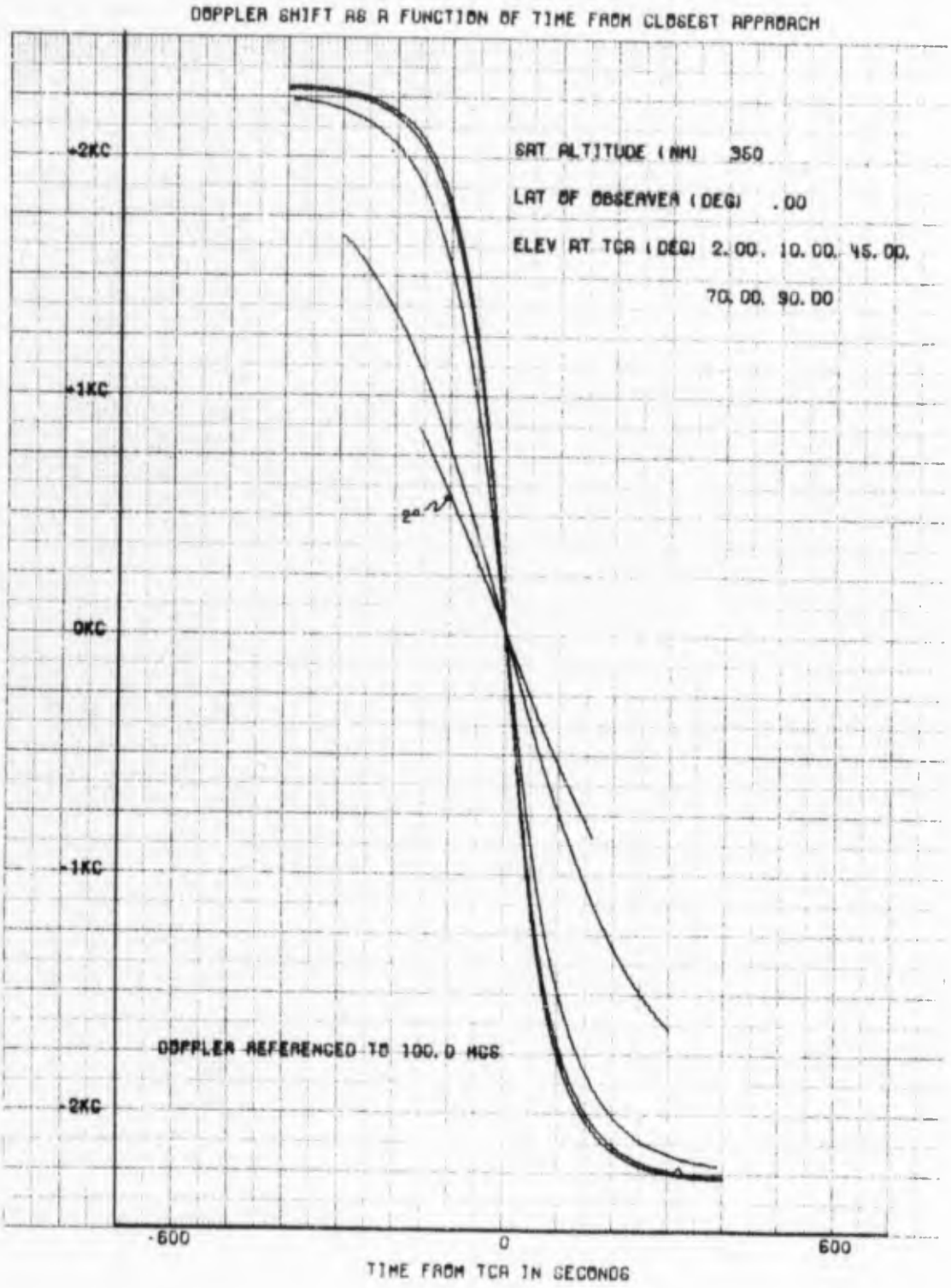

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 250. 600. 1000
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 90.00
+2KC
+1KC
0KC
-1KC
-2KC
1000 NM
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

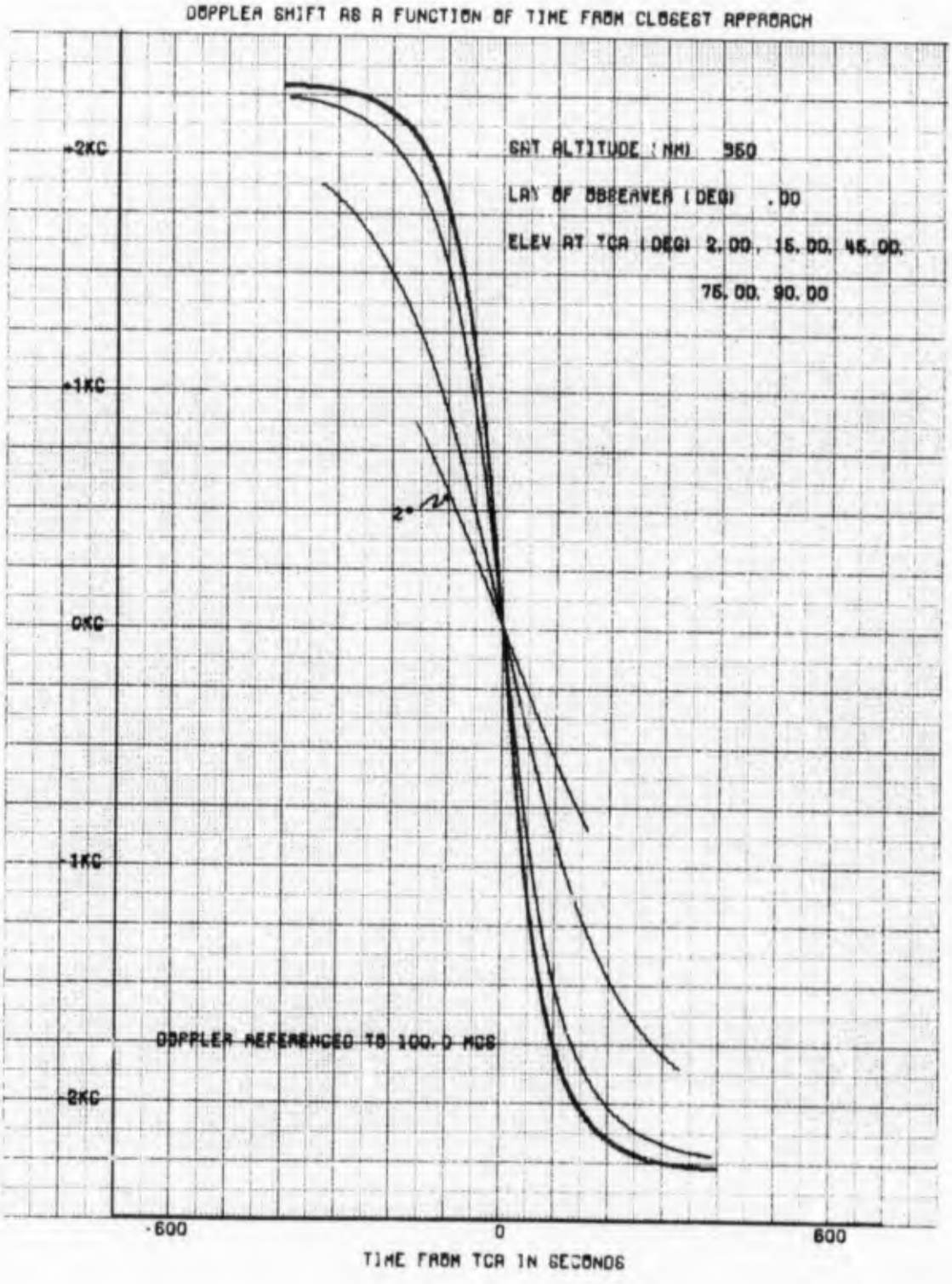

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 250
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

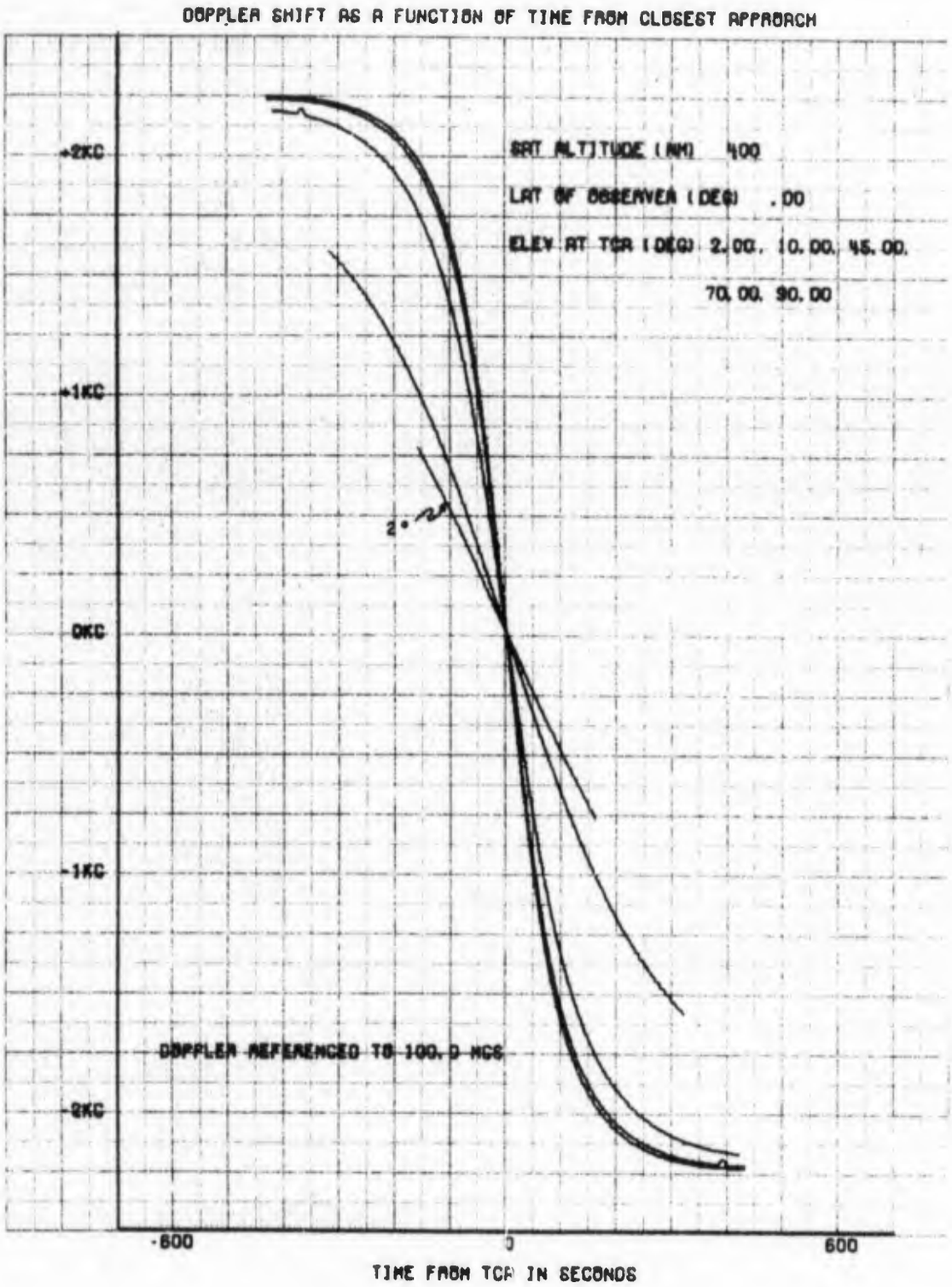

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 250
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
2°
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

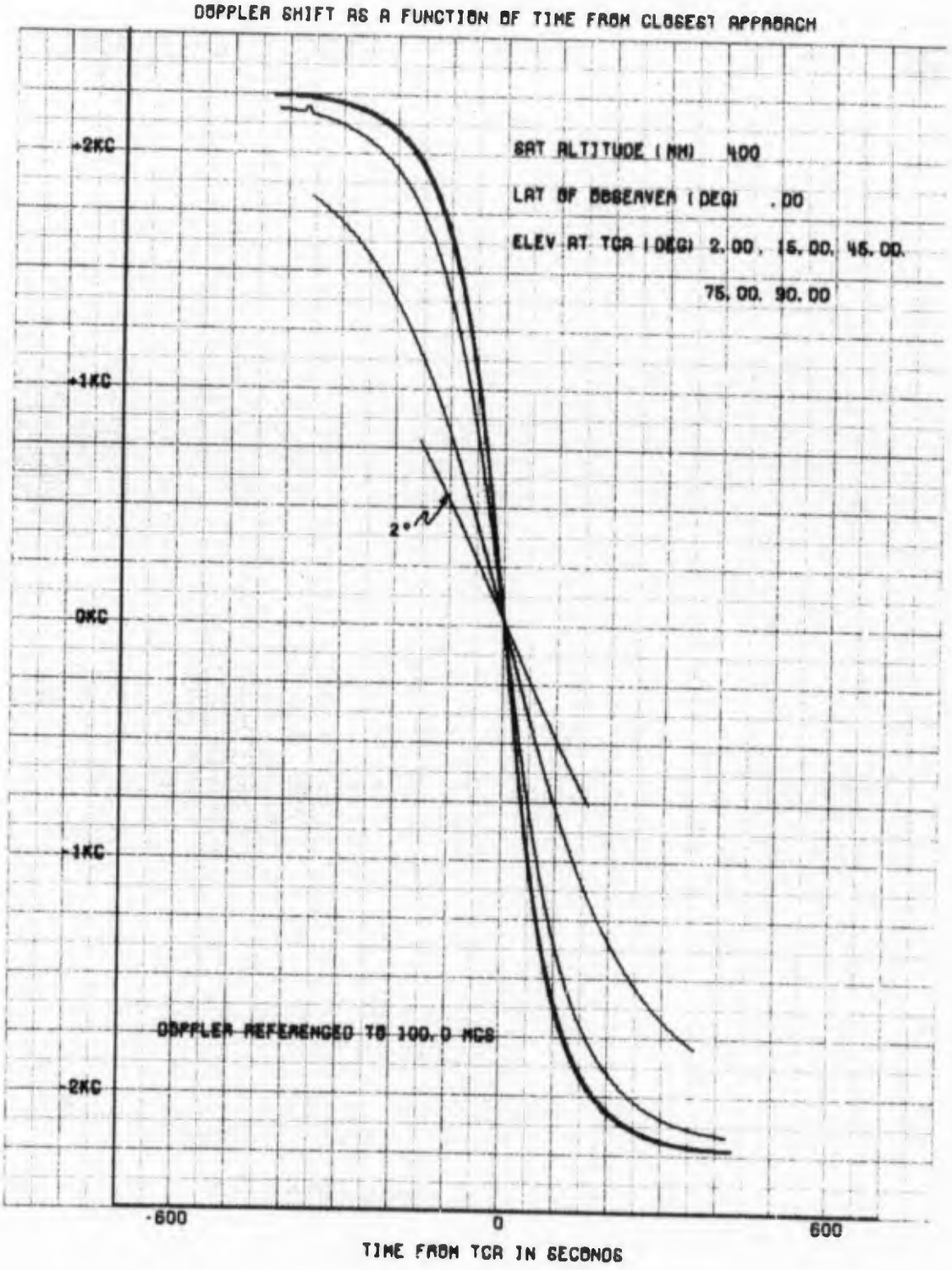

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 300
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MHz
-600
0
600
TIME FROM TCA IN SECONDS

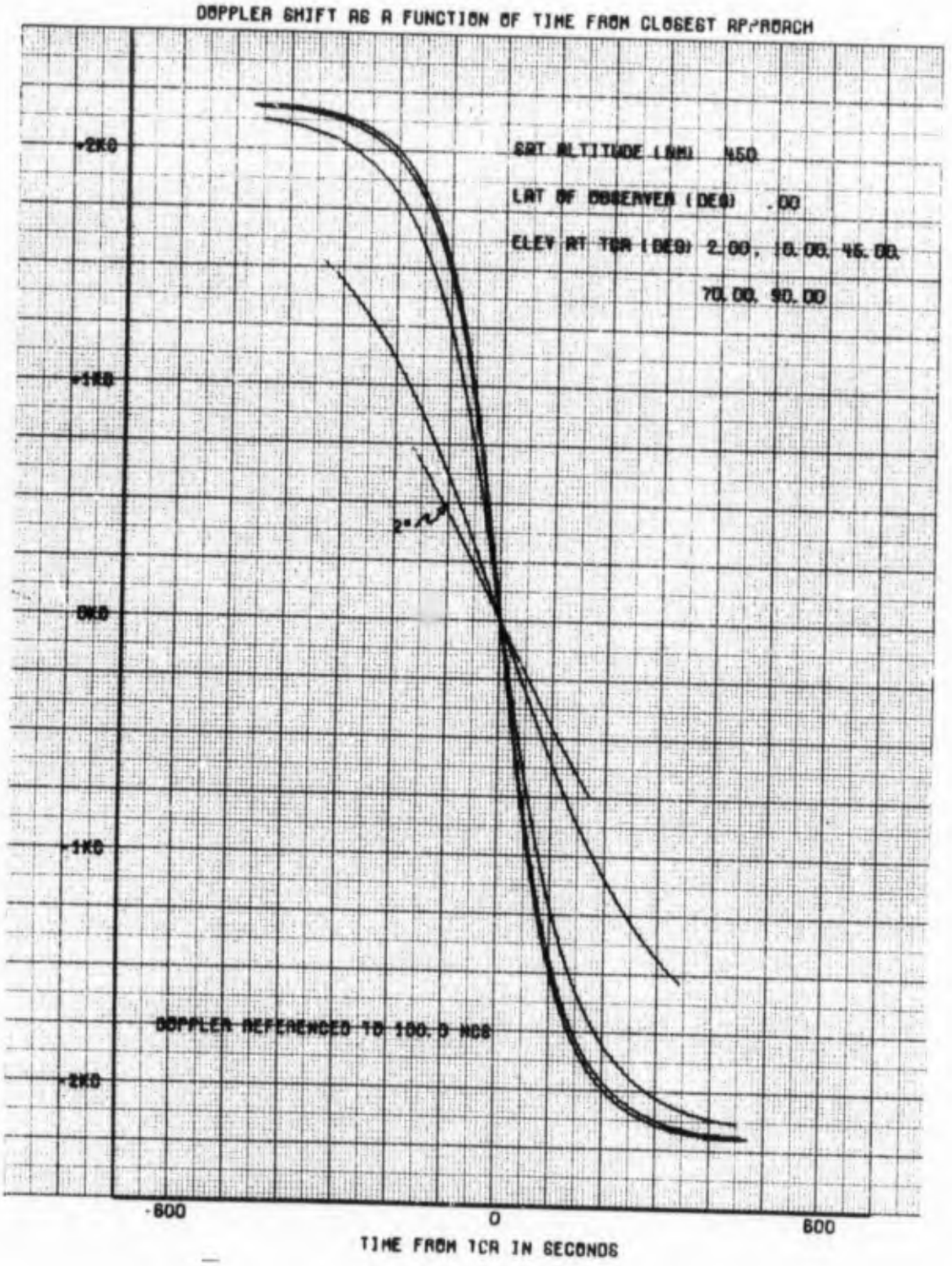

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 300
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 16.00, 46.00
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

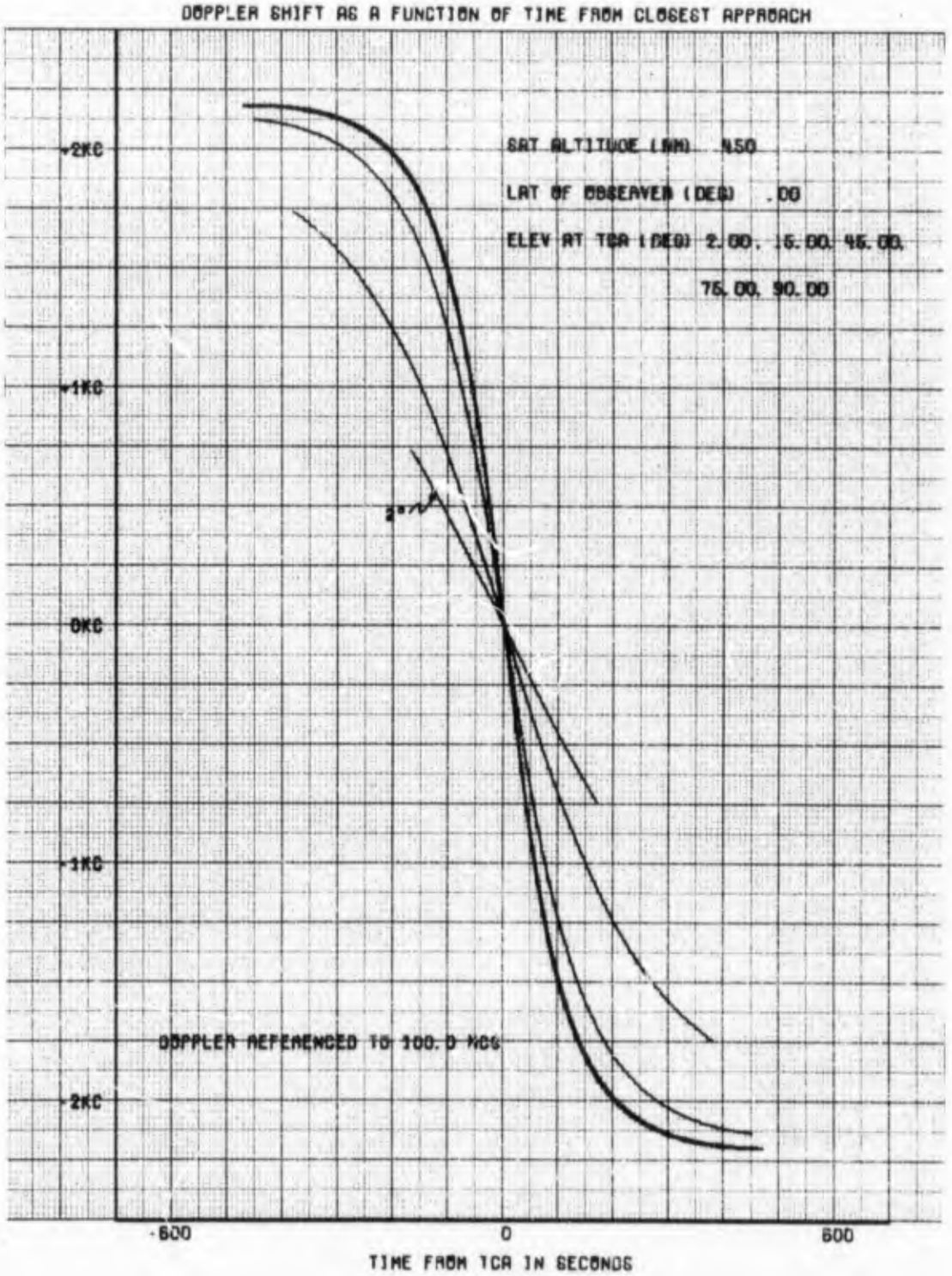

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 350
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

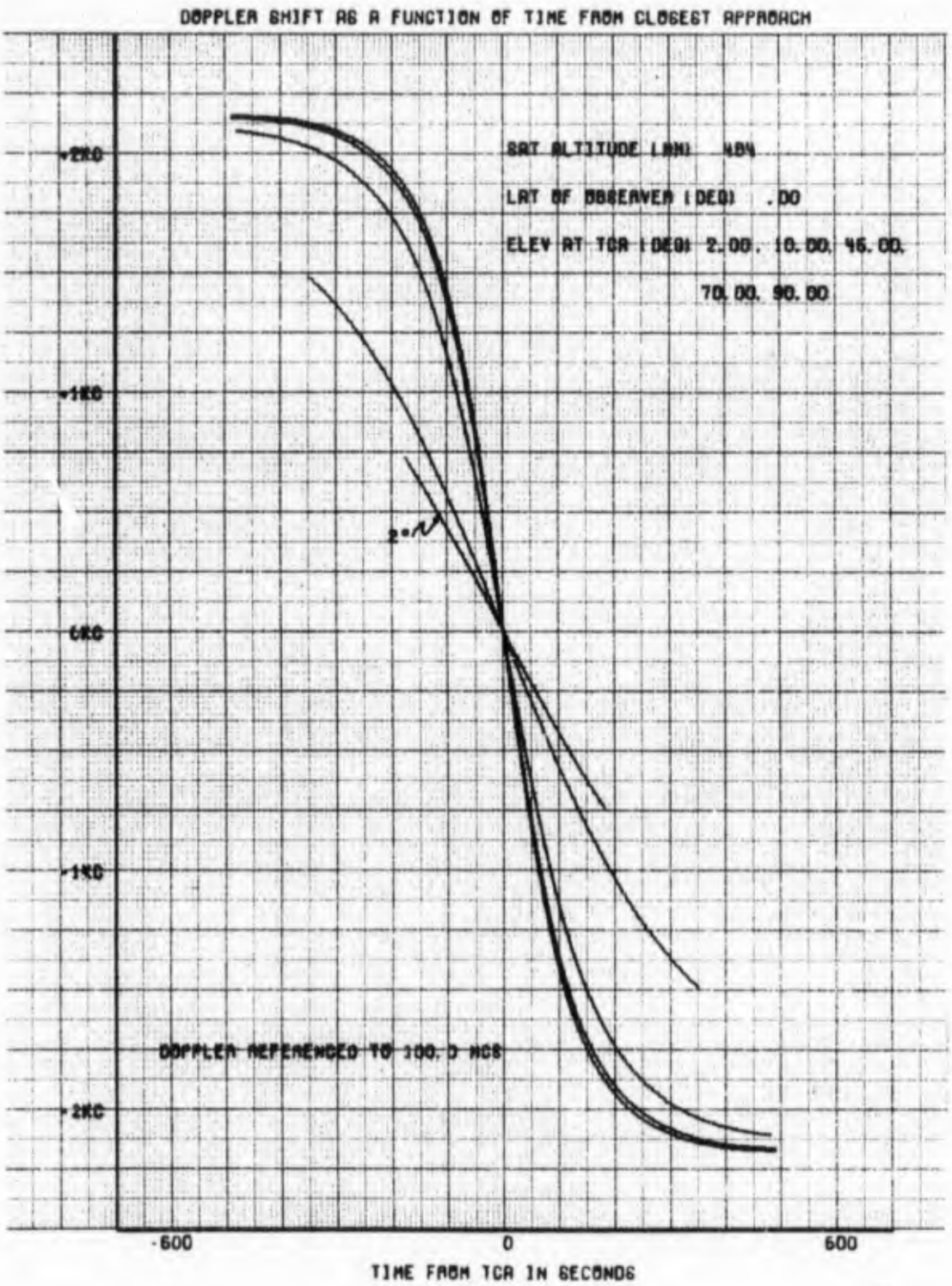

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 360
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

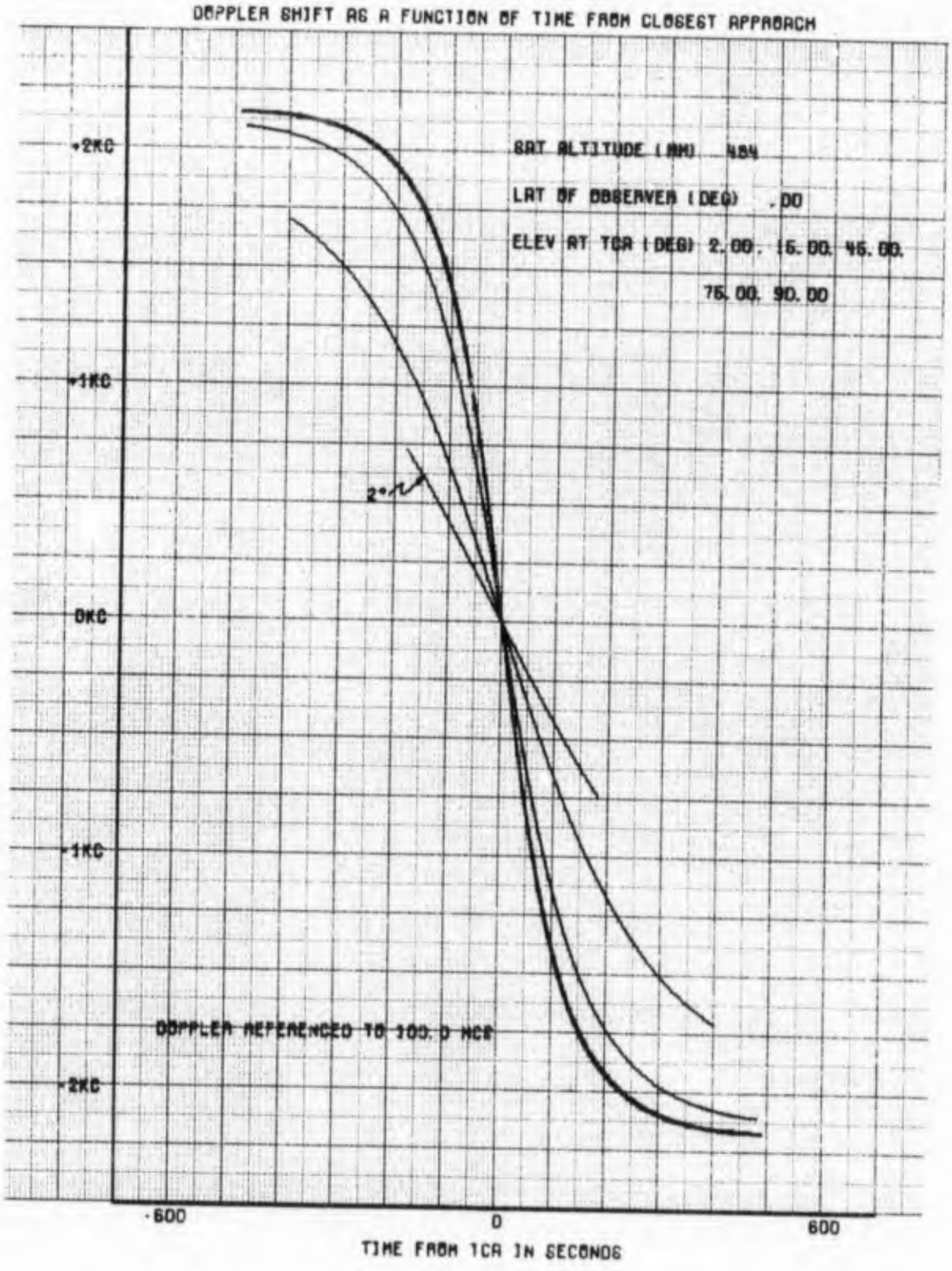

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 400
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

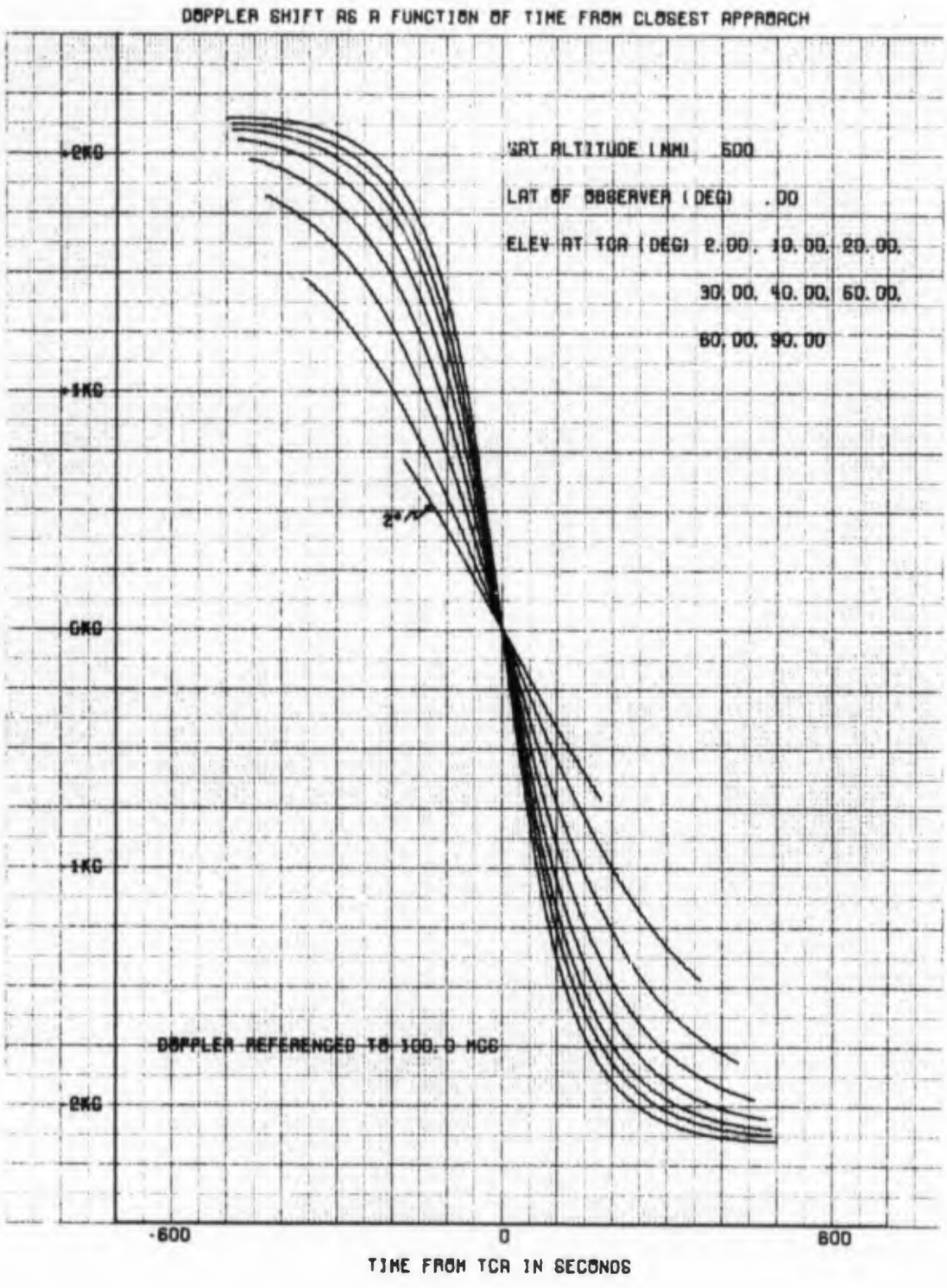

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 400
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

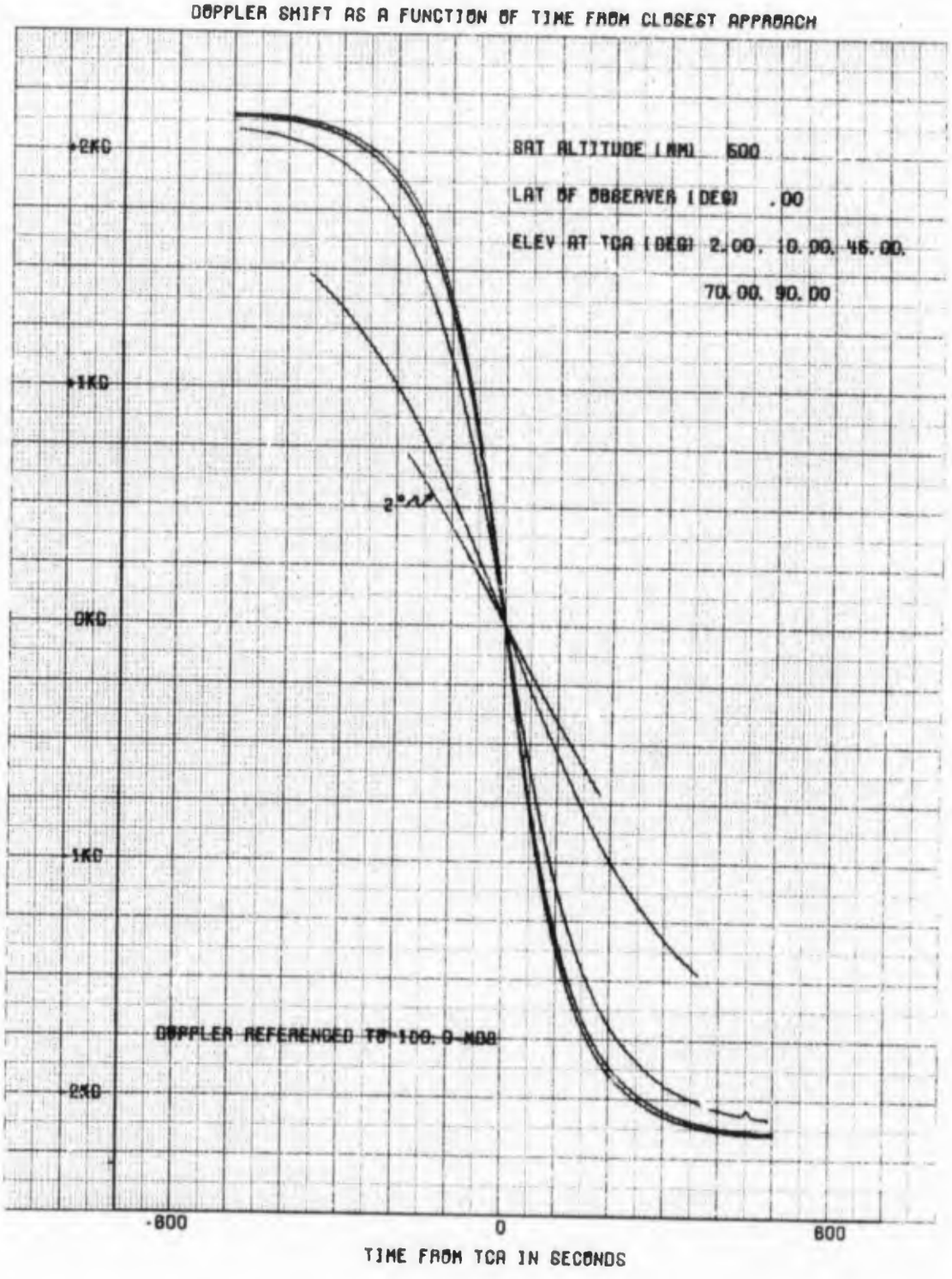

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SRT ALTITUDE (NMI) 450
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

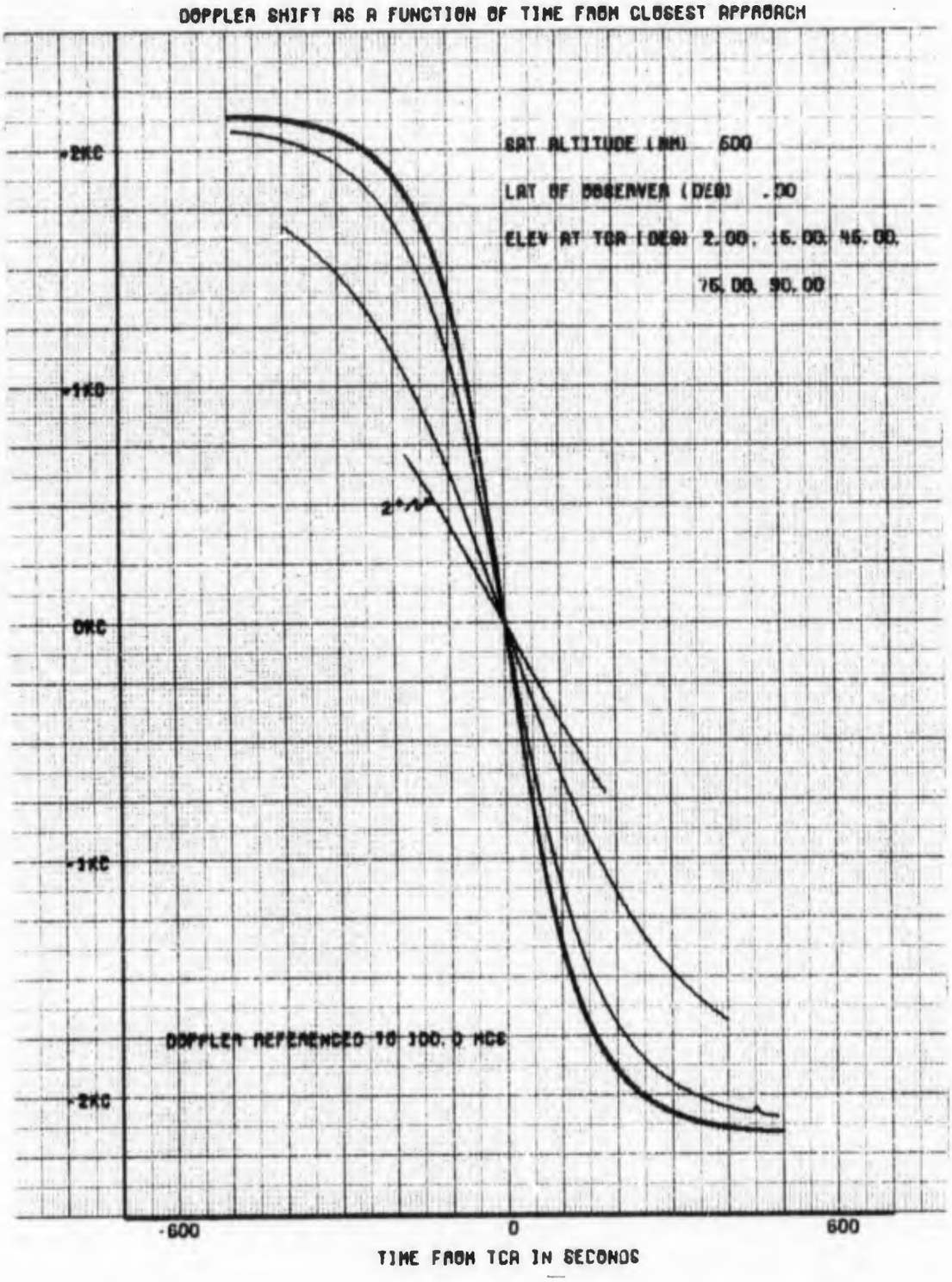

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 450
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

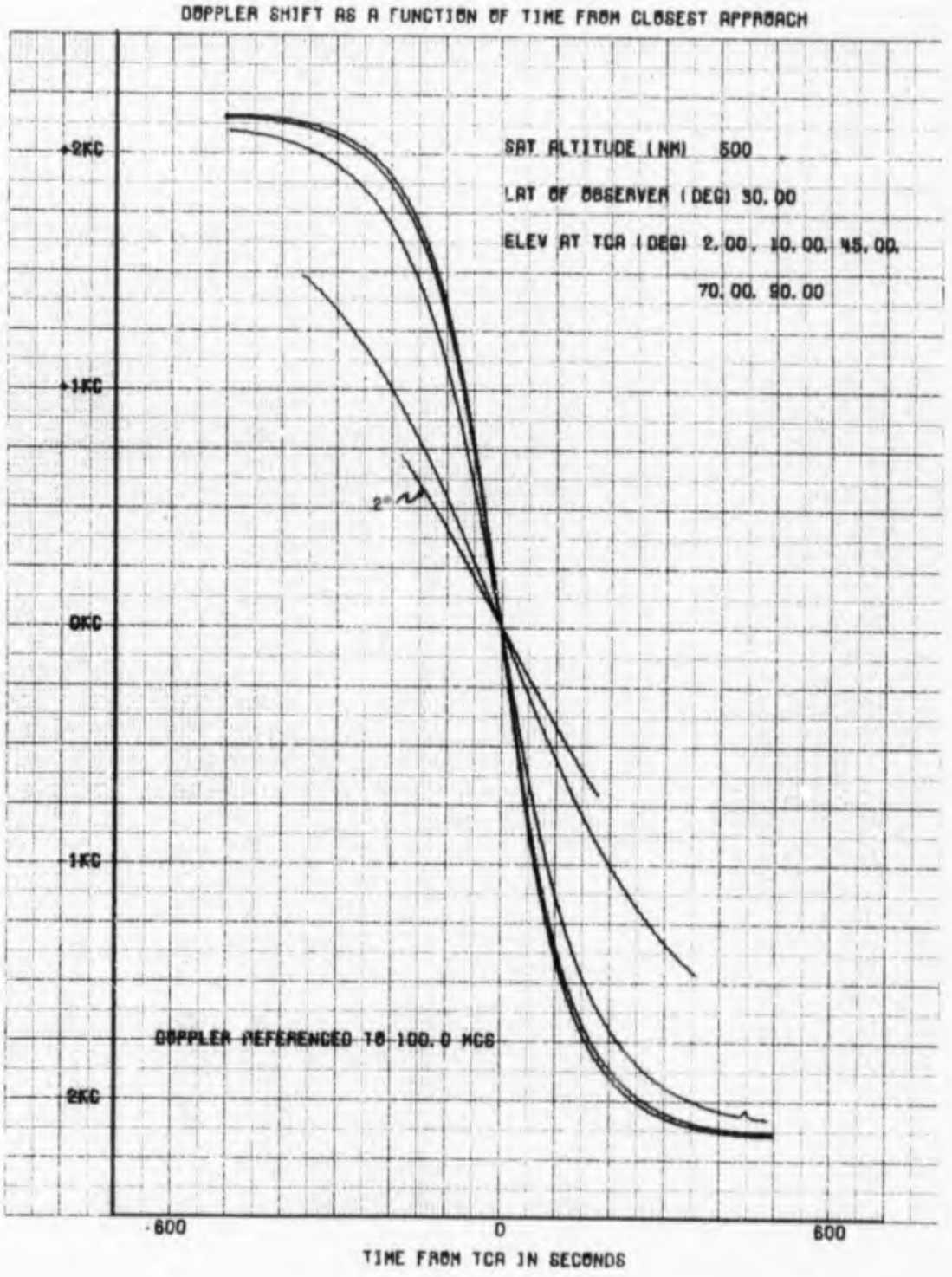

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (KM) 484
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 46.00,
70.00, 90.00
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

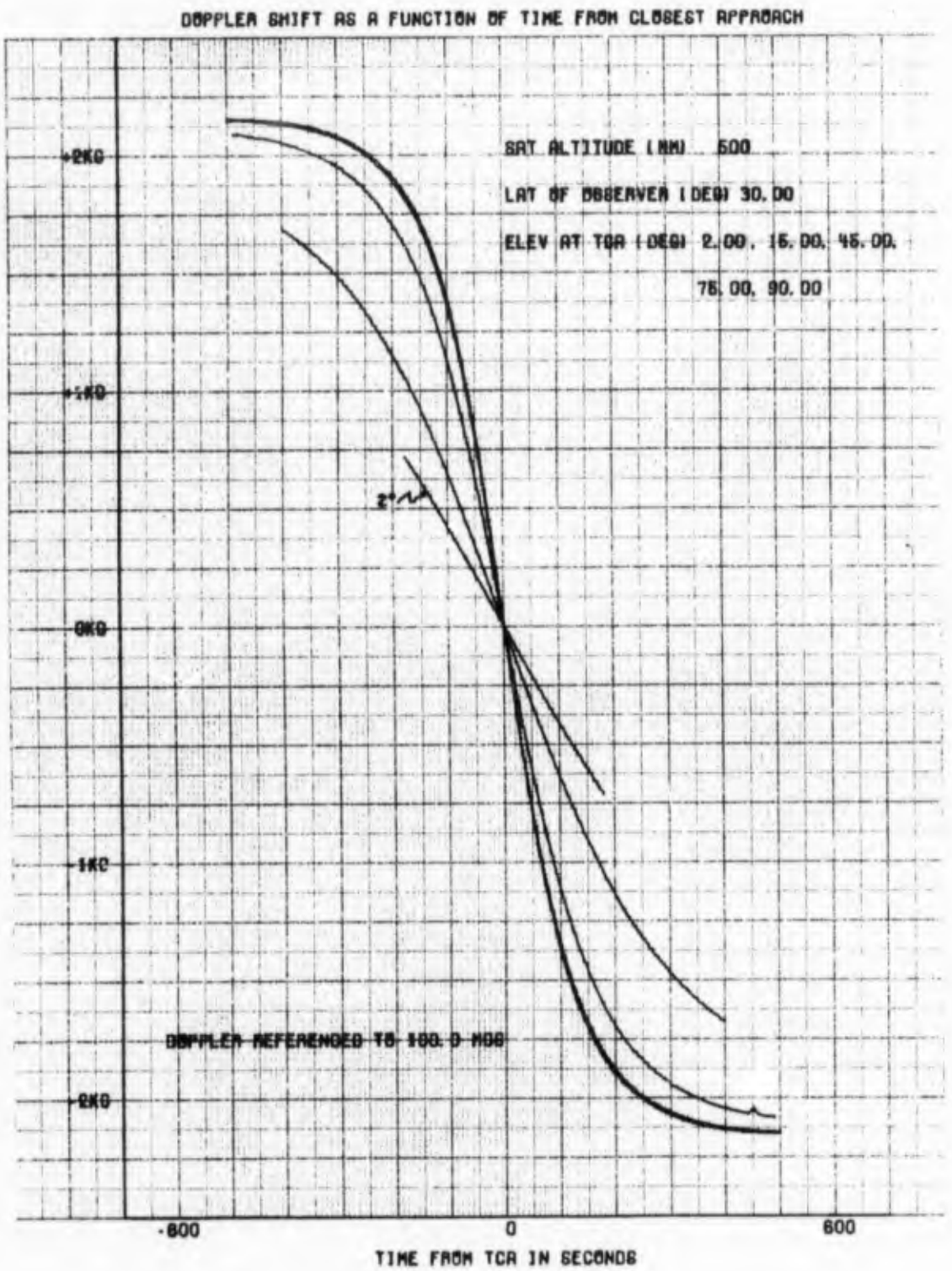

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 484
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

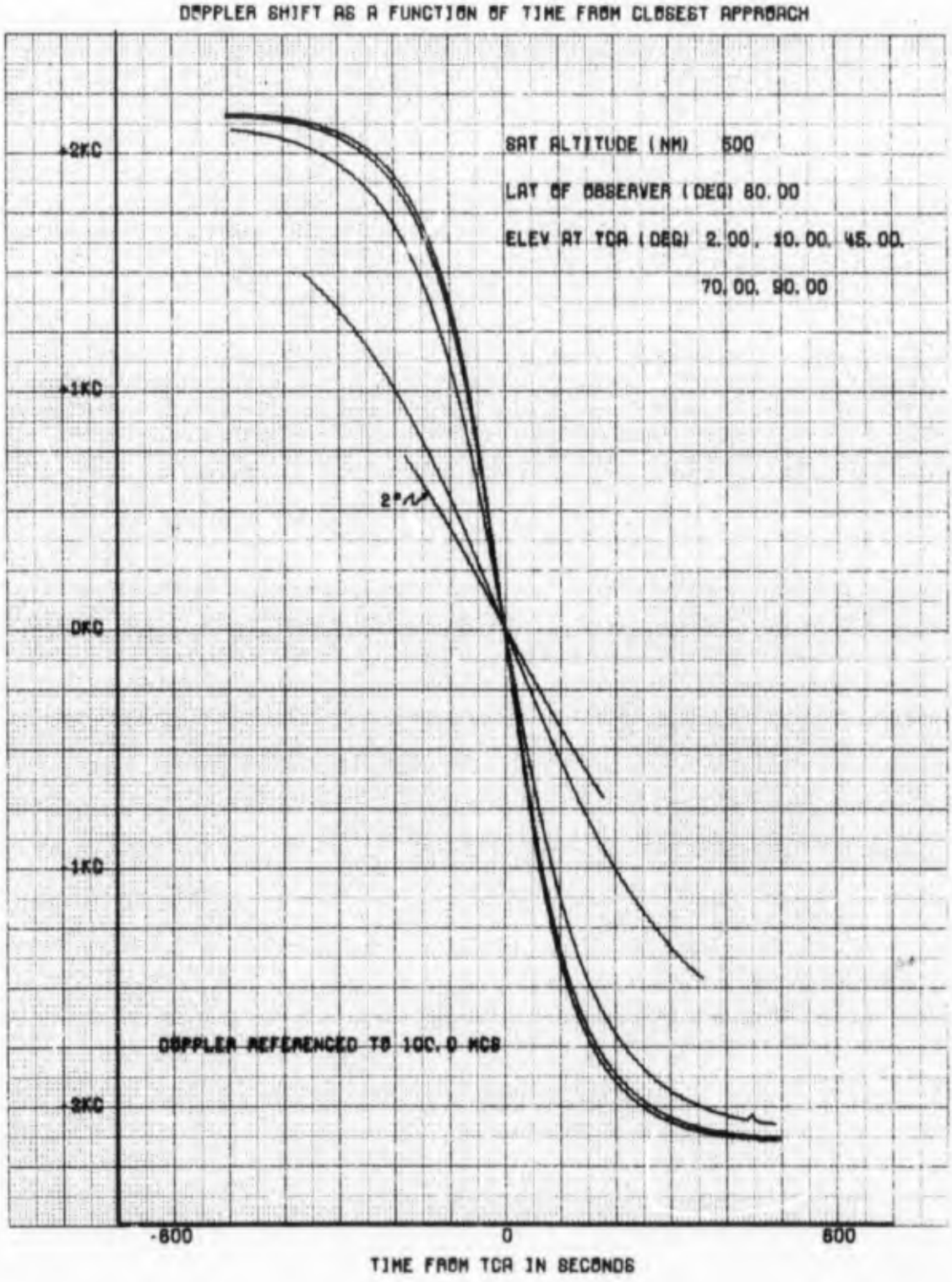

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NMI 500
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 20.00,
30.00, 40.00, 60.00,
80.00, 90.00
2KC
1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

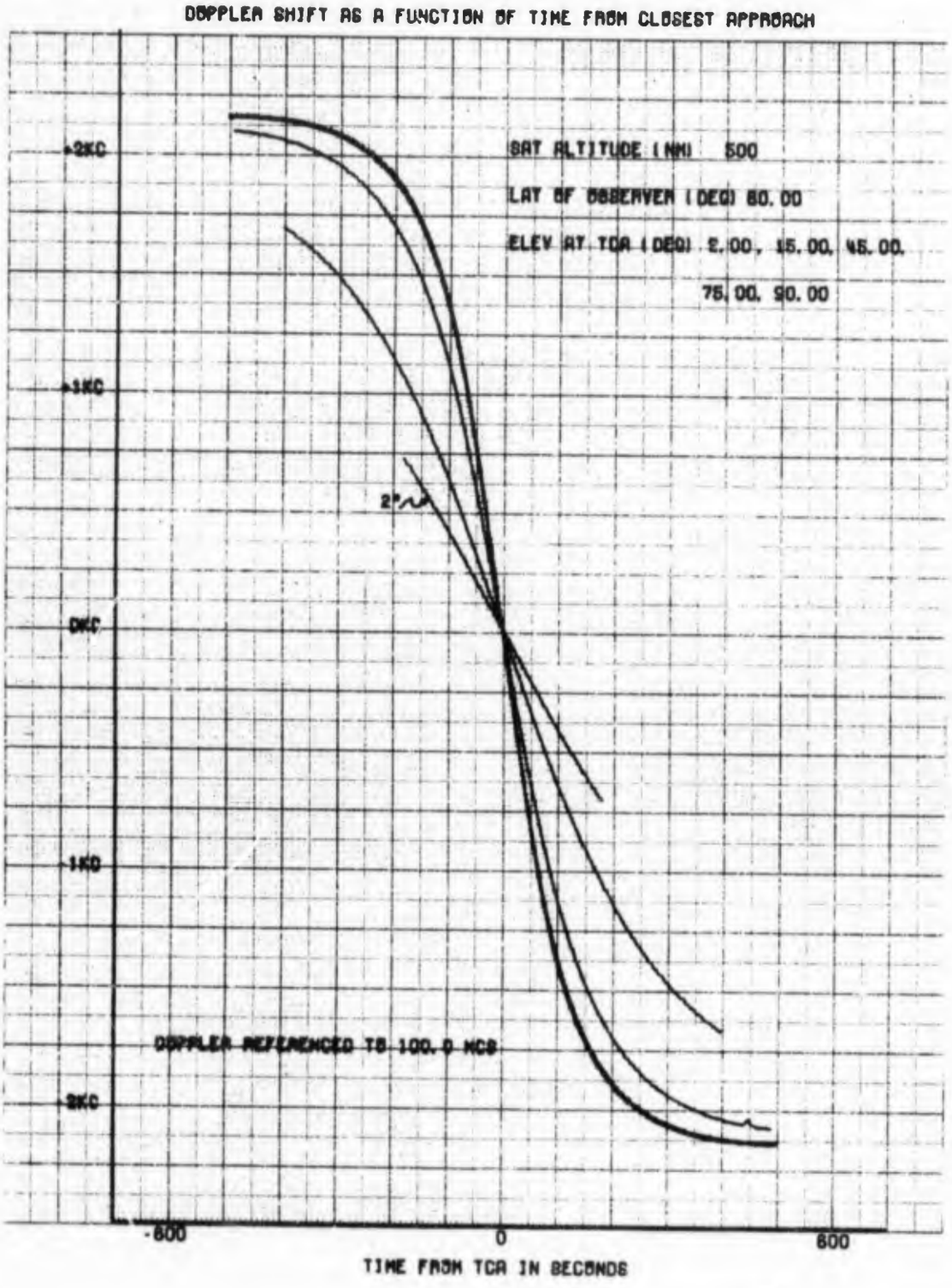

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 500
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 46.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MHz
-600
0
600
TIME FROM TCA IN SECONDS

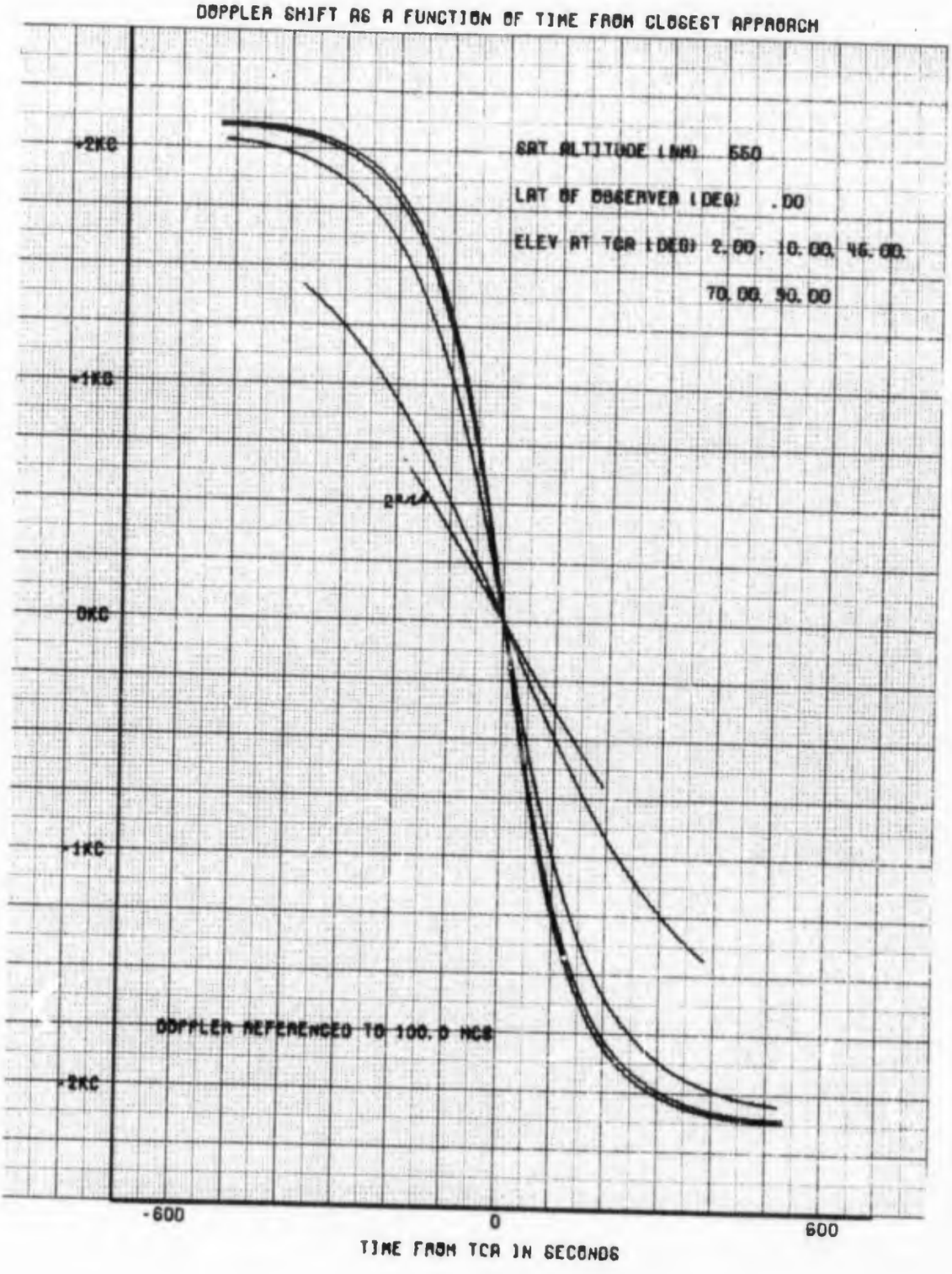

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 500
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

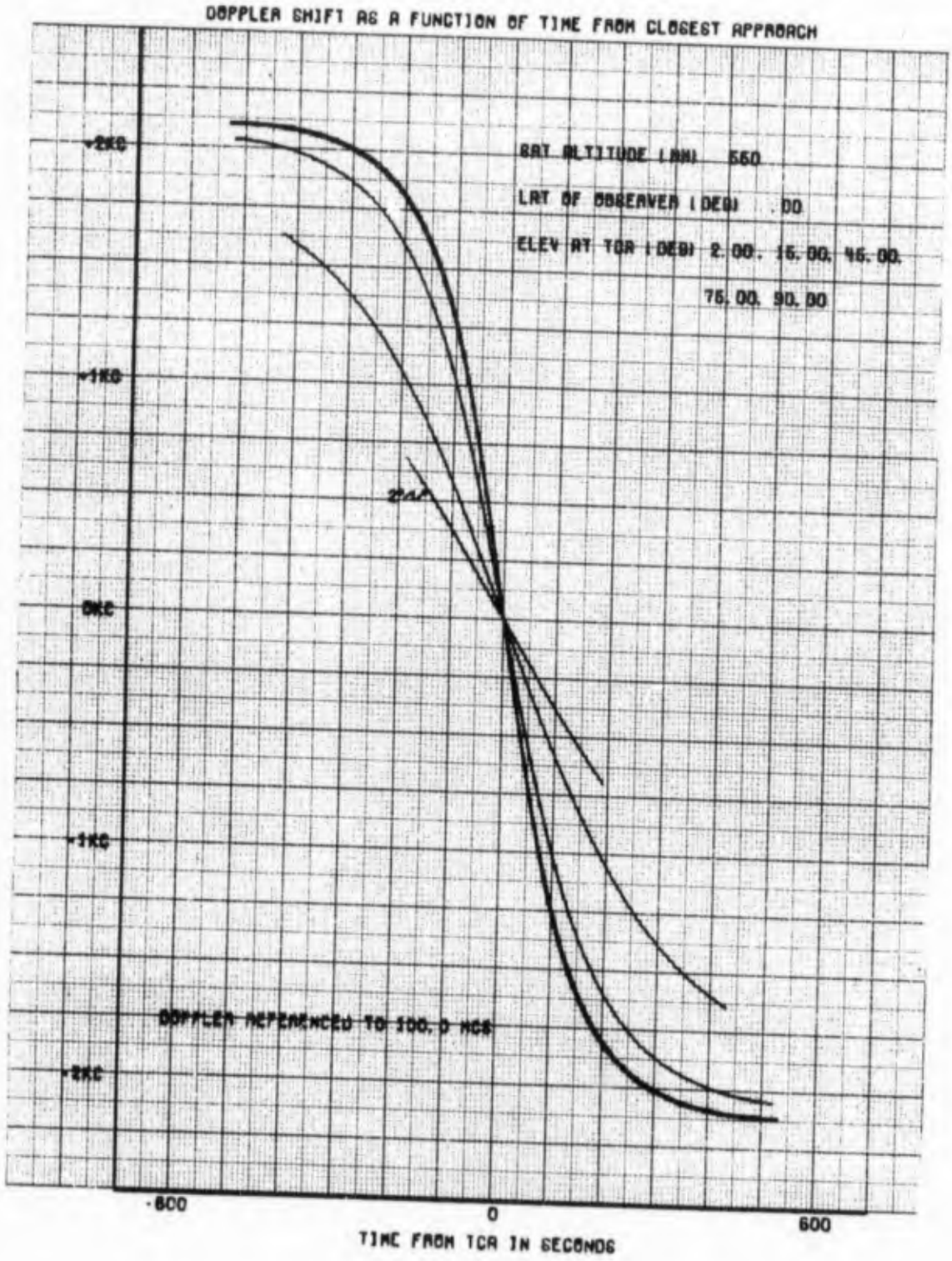

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 500
LAT OF OBSERVER (DEG) 30.00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

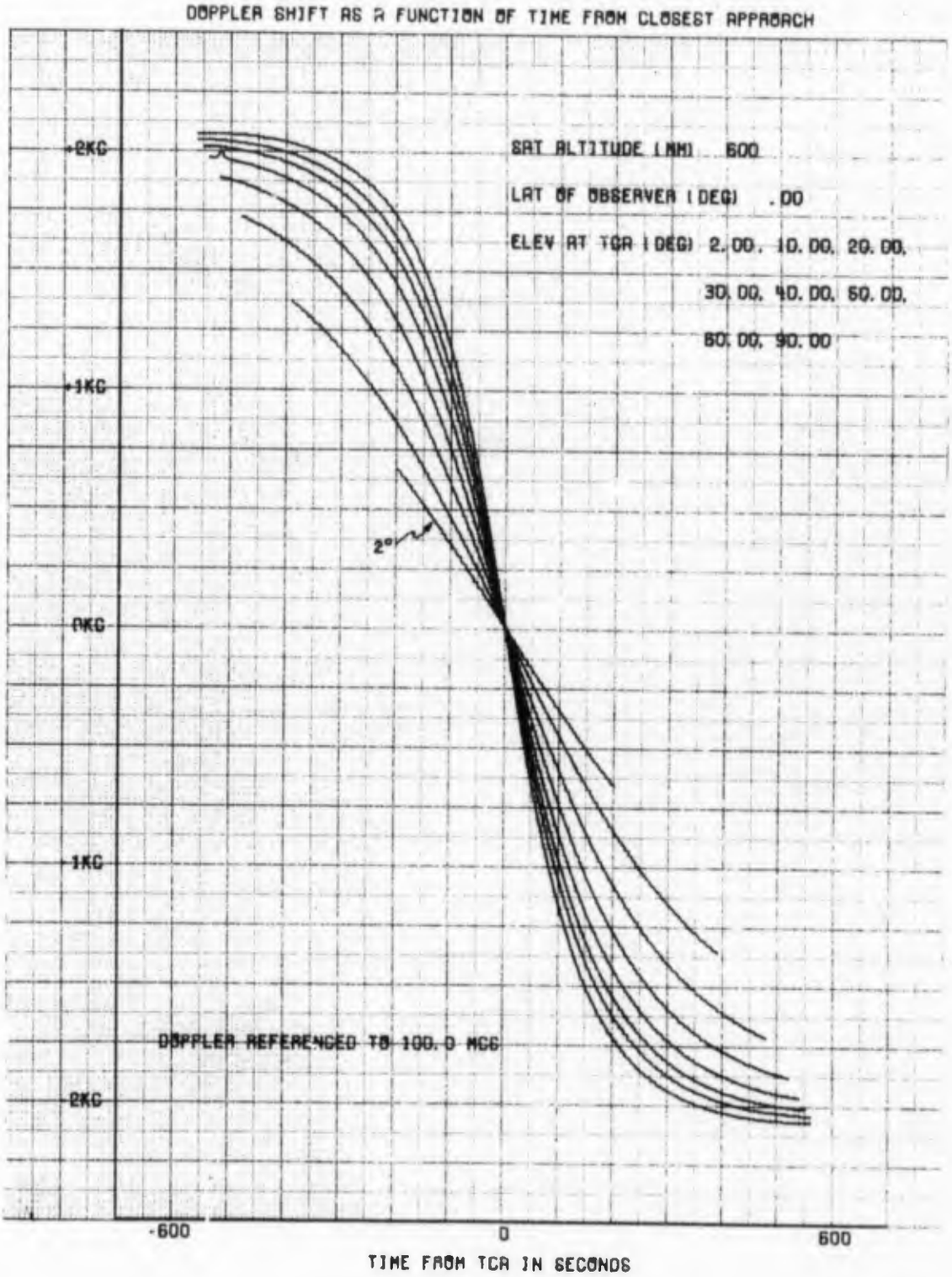

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NMI 500
LAT OF OBSERVER (DEG) 30.00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MHZ
-600
0
600
TIME FROM TCA IN SECONDS

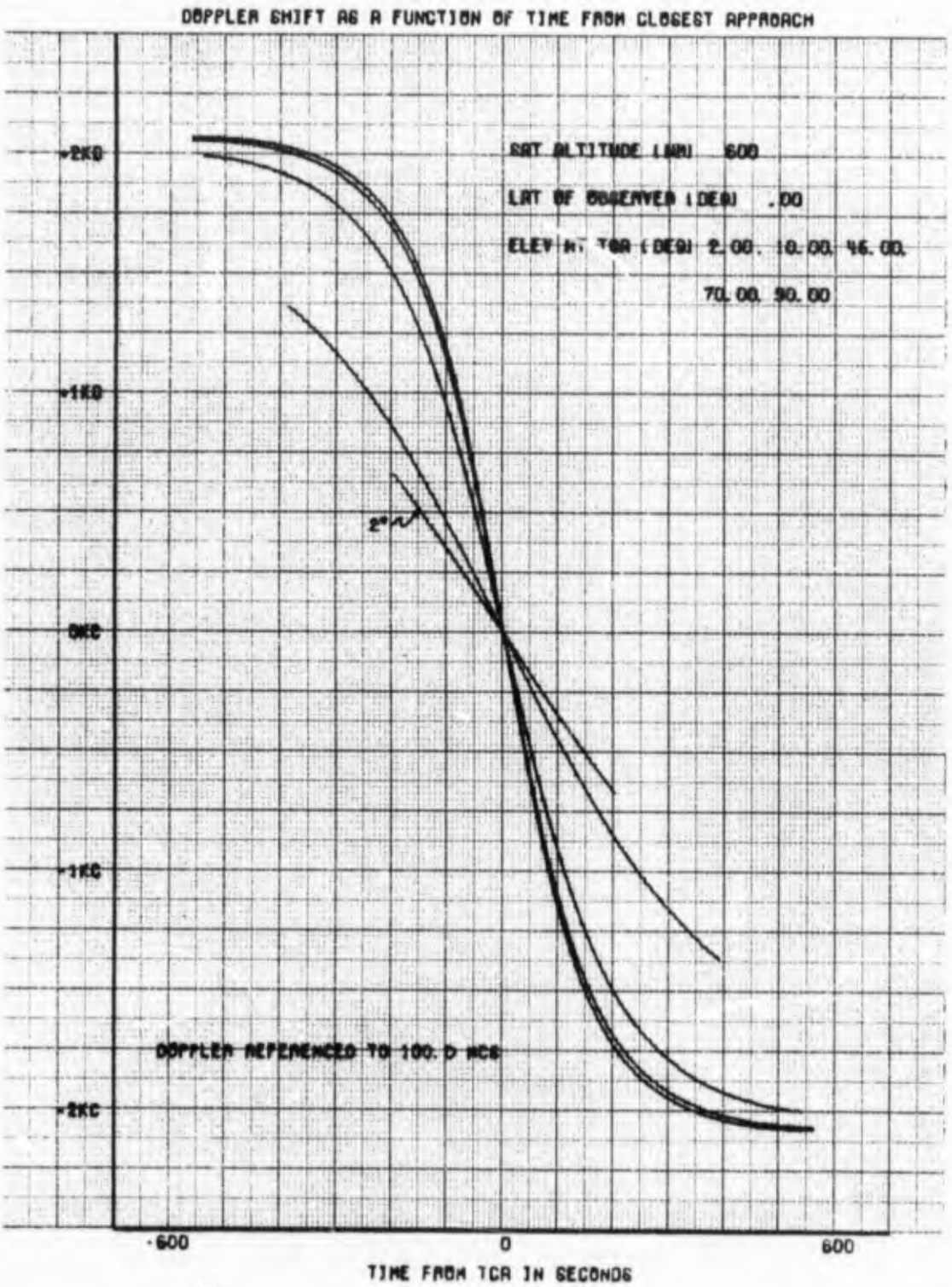

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 500
LAT OF OBSERVER (DEG) 80.00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

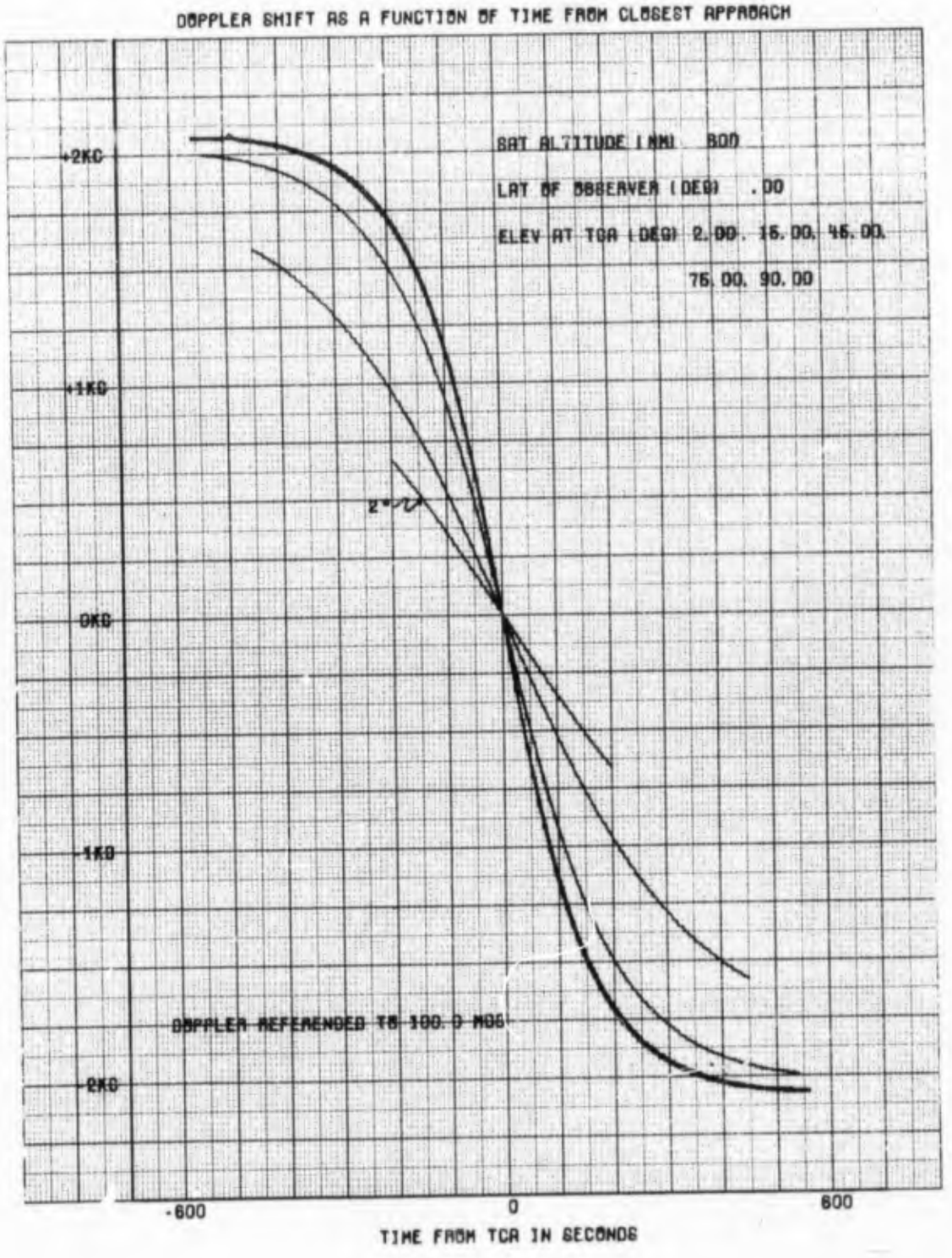

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 500
LAT OF OBSERVER (DEG) 80.00
ELEV AT TCA (DEG) 5.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

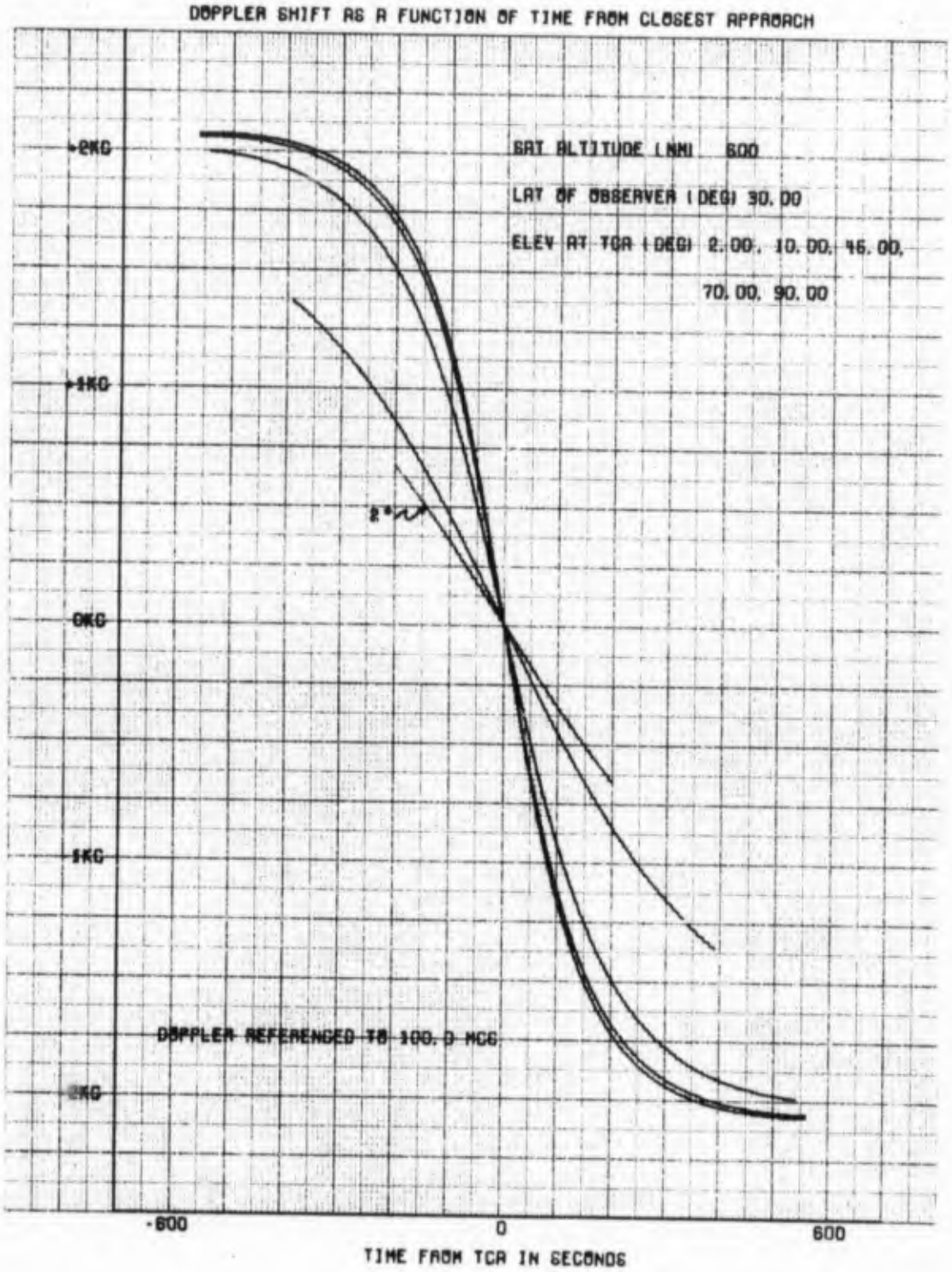

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 550
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 46.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

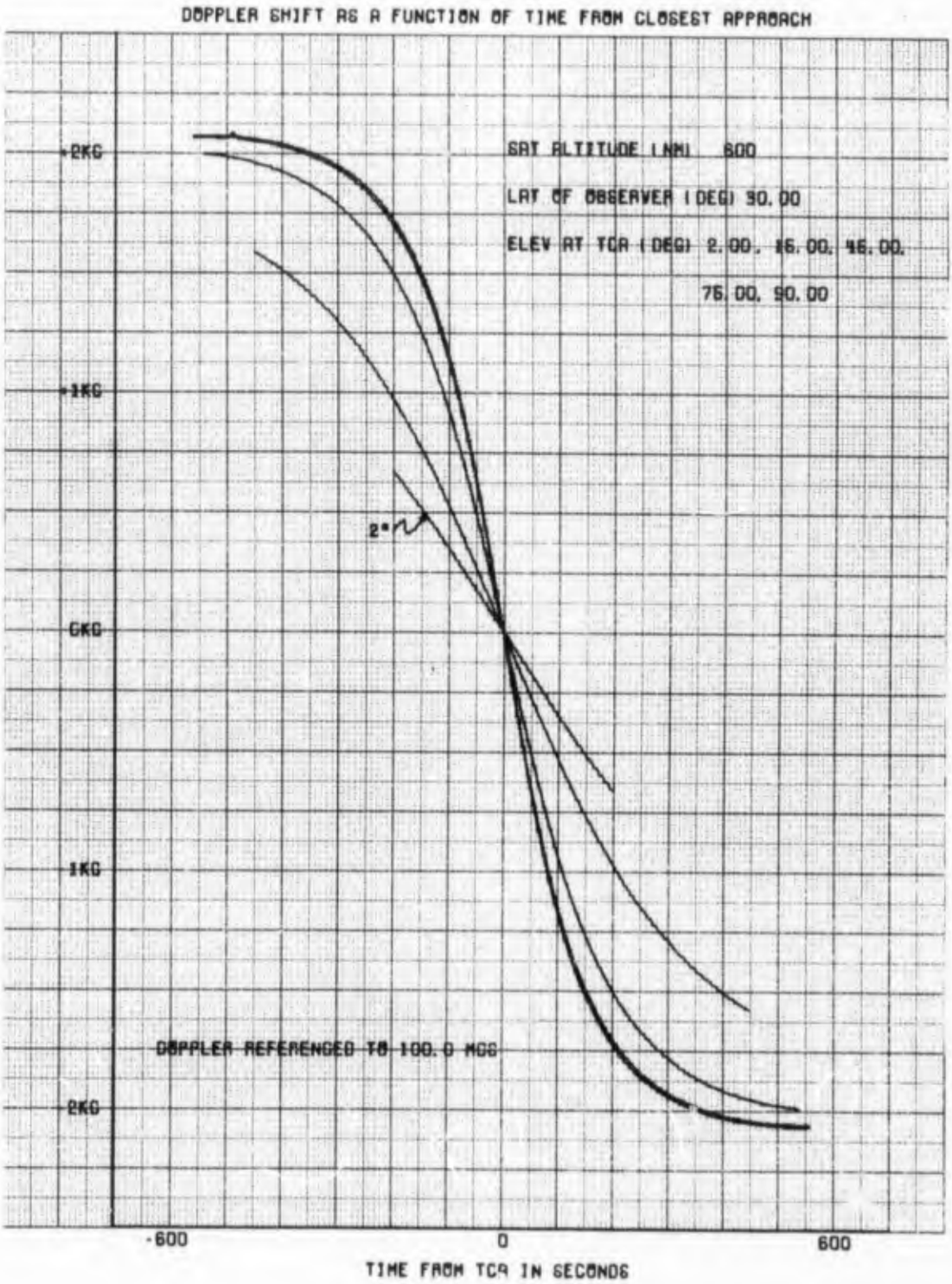

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (KM) 560
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

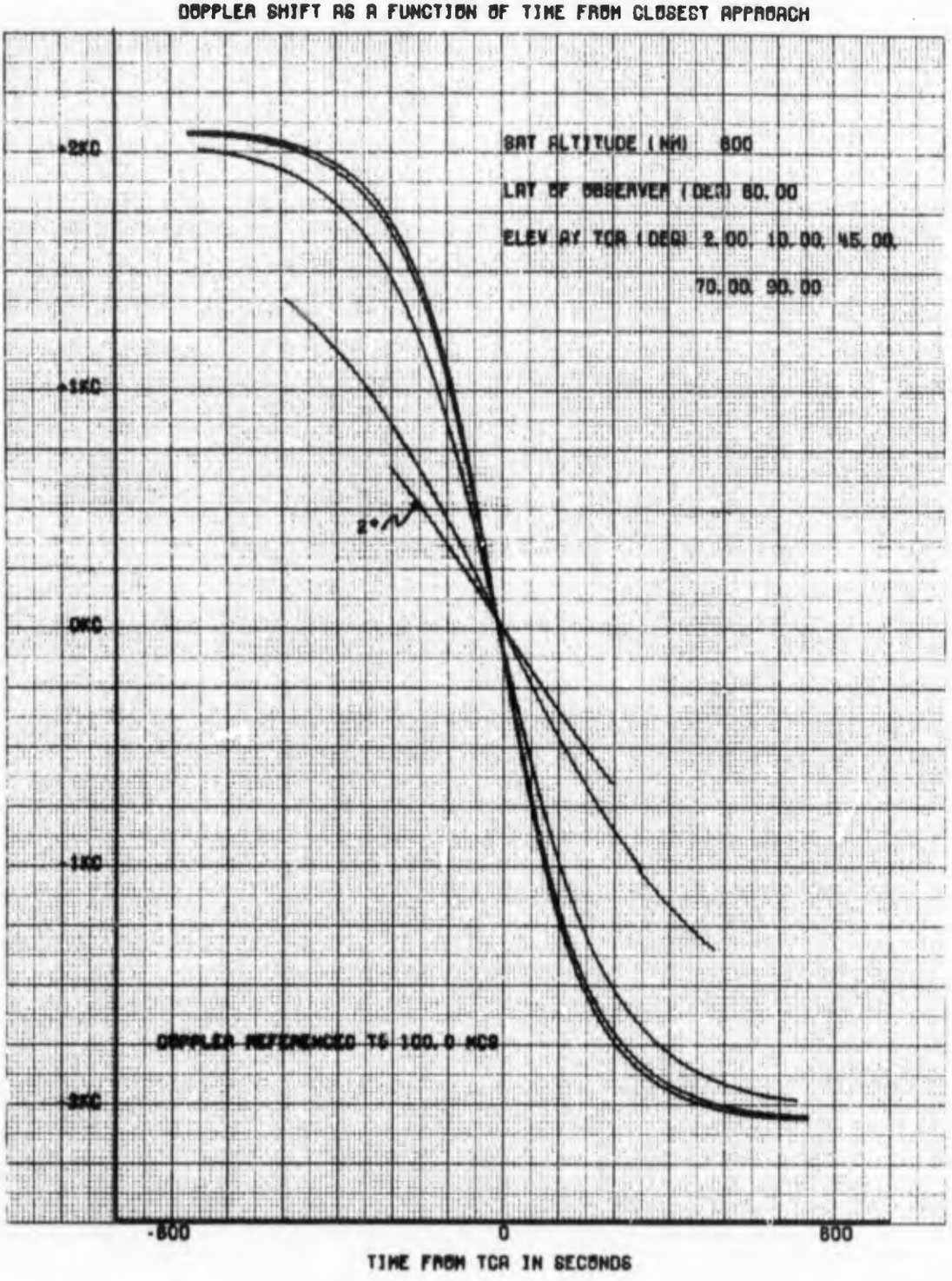

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 600
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 20.00,
30.00, 40.00, 50.00,
60.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

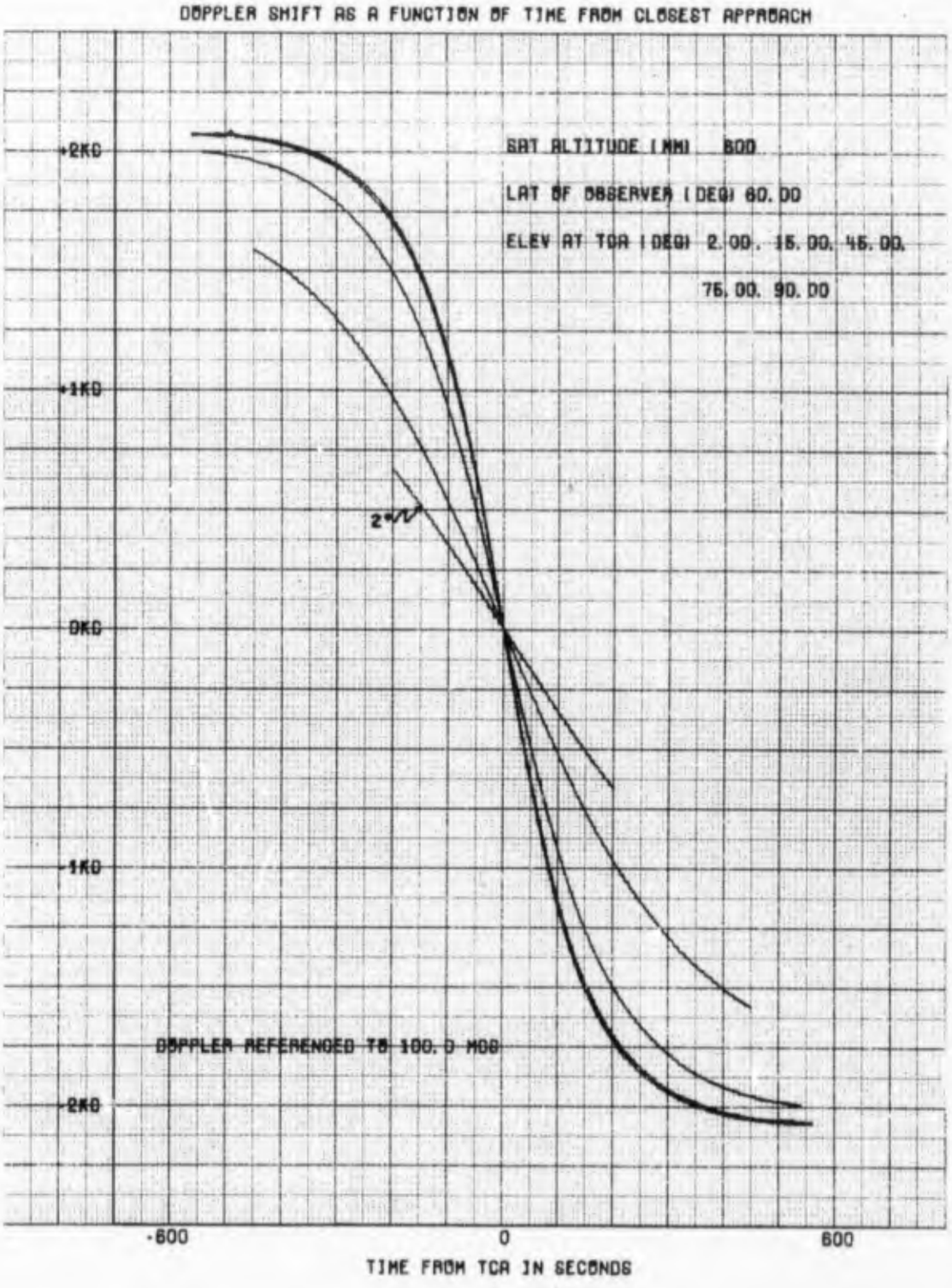

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NMI) 600
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 46.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

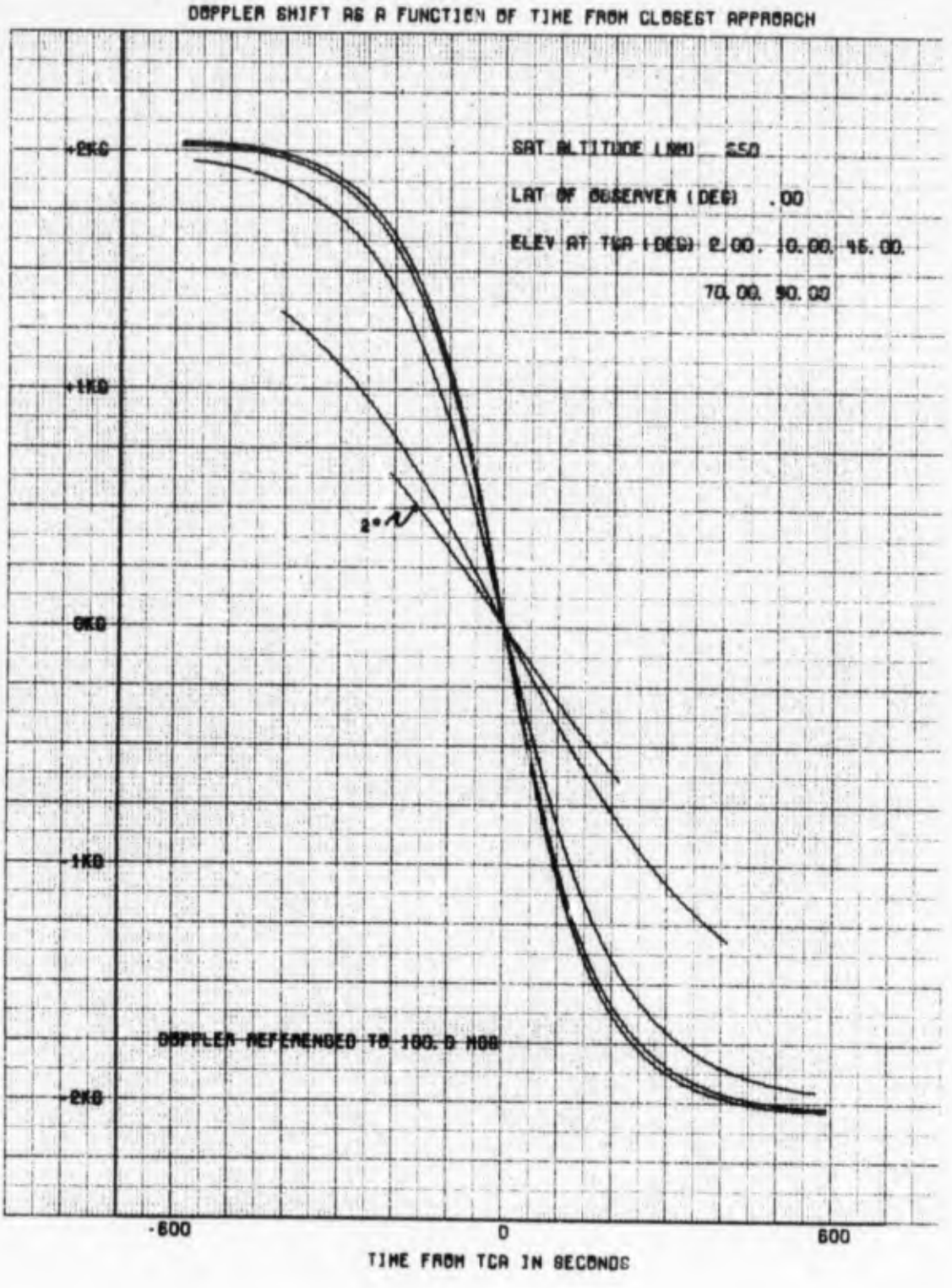

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NMI) 800
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MOS
-600
0
600
TIME FROM TCA IN SECONDS

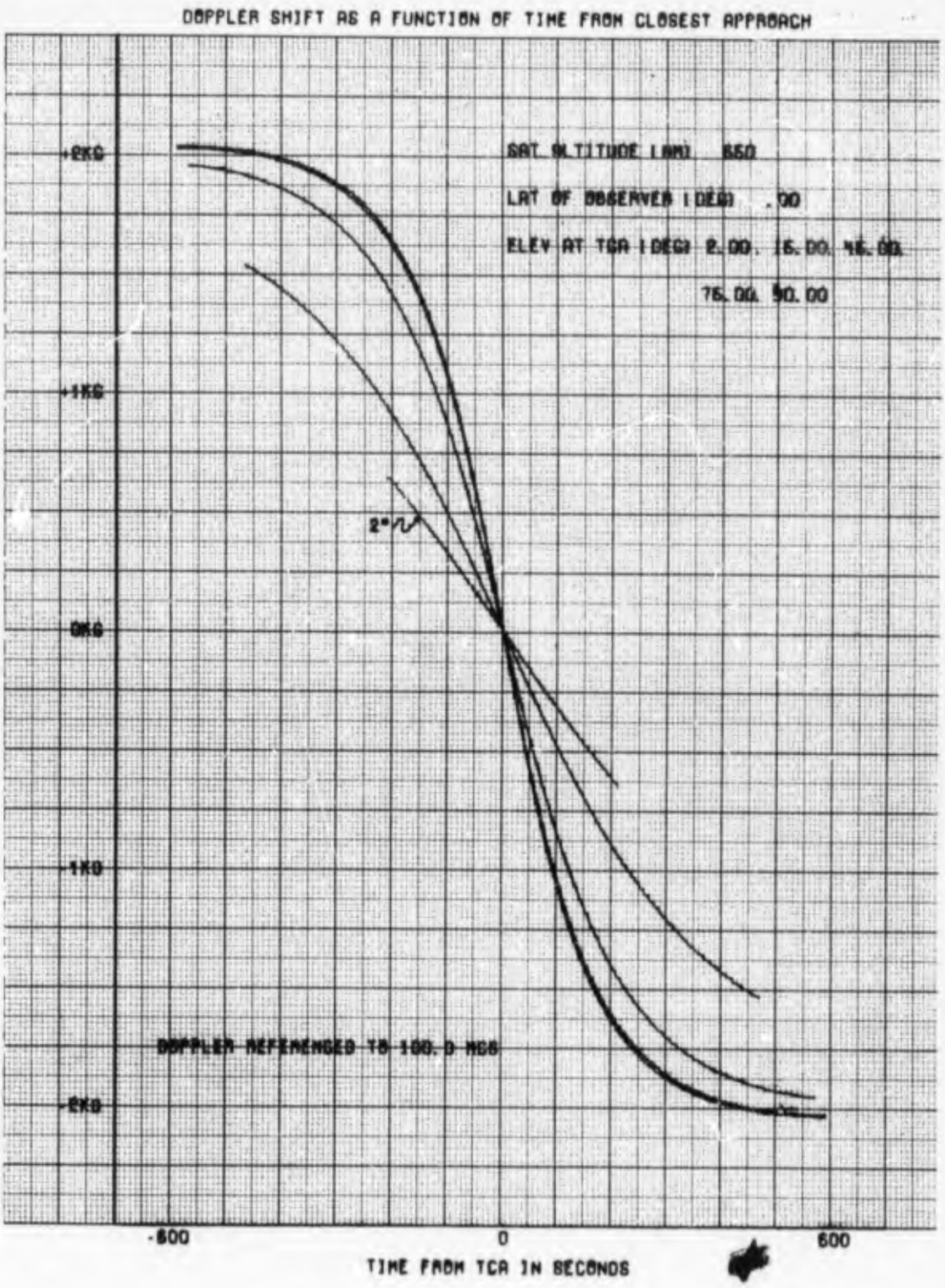

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NMI 600
LAT OF OBSERVER (DEG) 30.00
ELEV AT TCA (DEG) 2.00, 10.00, 16.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

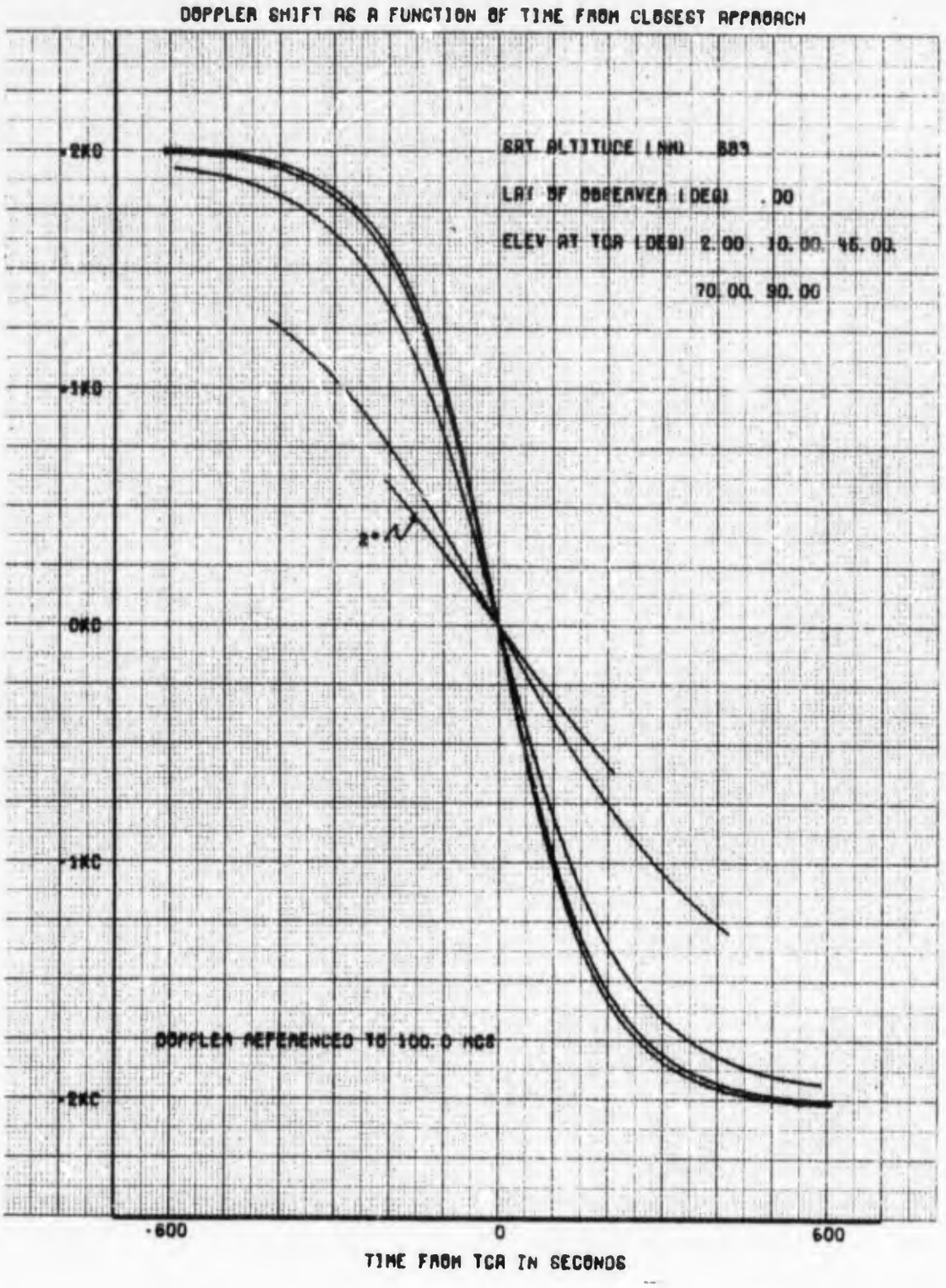

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 600
LAT OF OBSERVER (DEG) 30.00
ELEV AT TCA (DEG) 2.00, 16.00, 46.00,
76.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

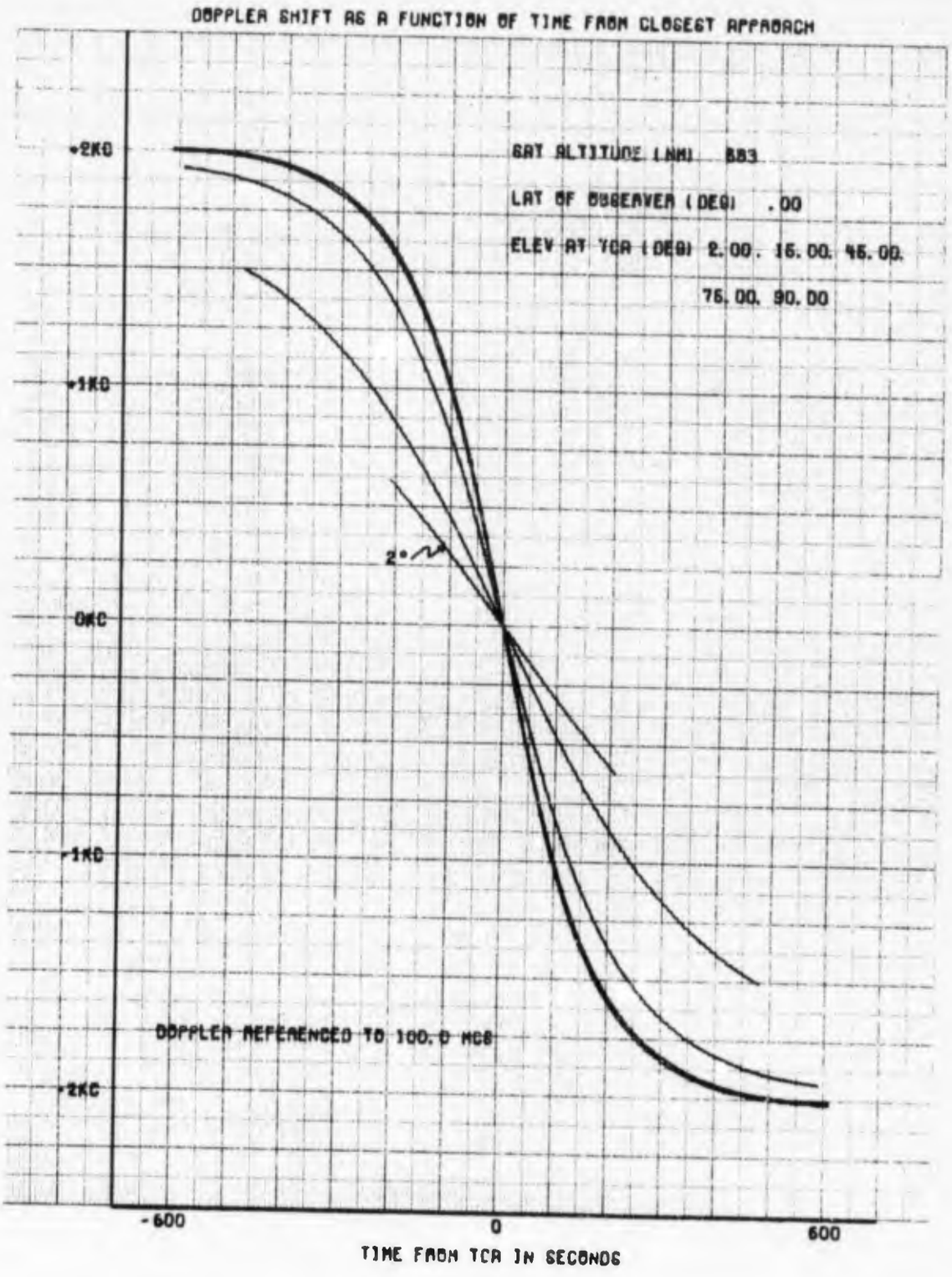

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 600
LAT OF OBSERVER (DEG) 60.00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
2°
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

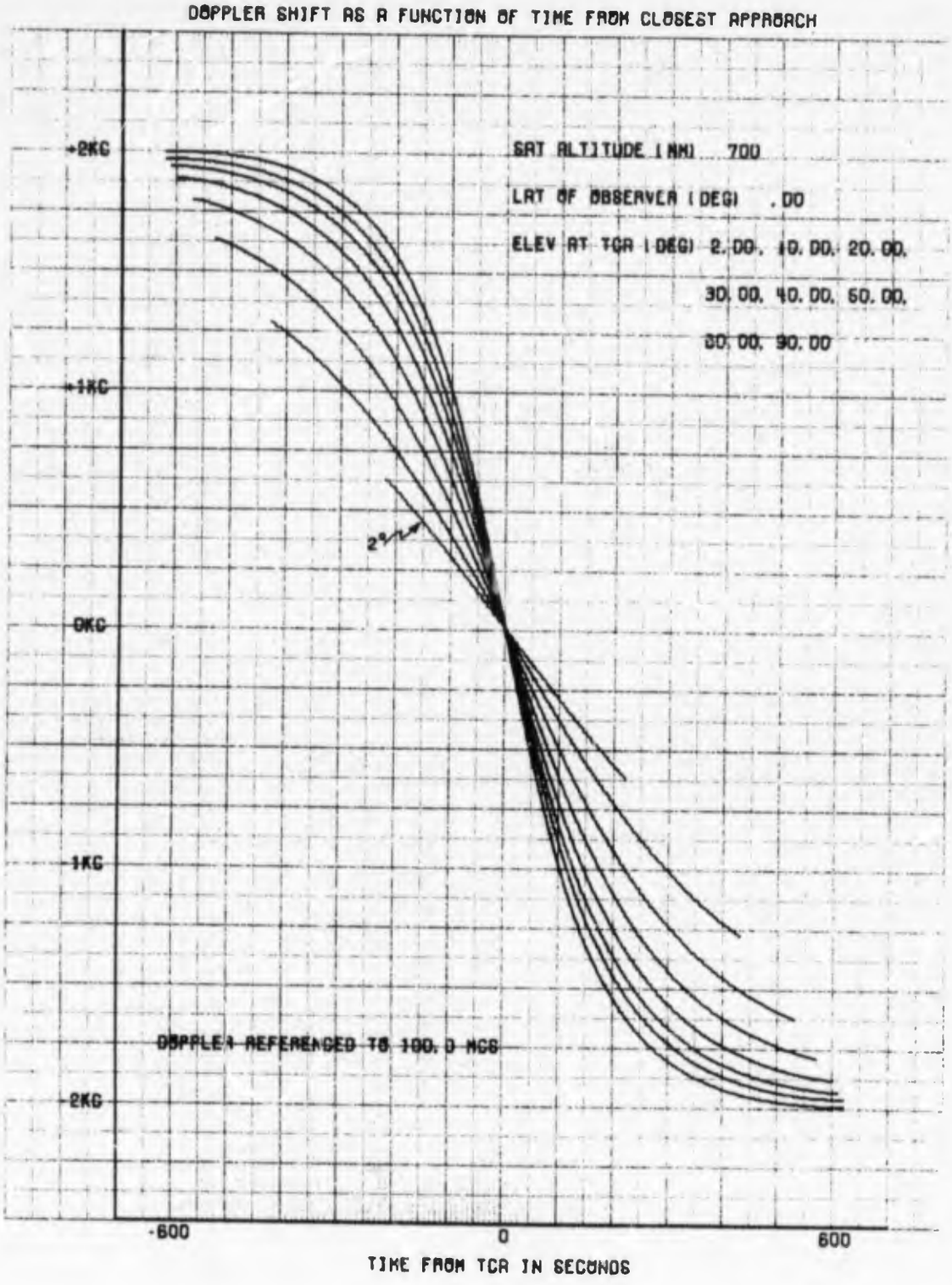

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 800
LAT OF OBSERVER (DEG) 60.00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

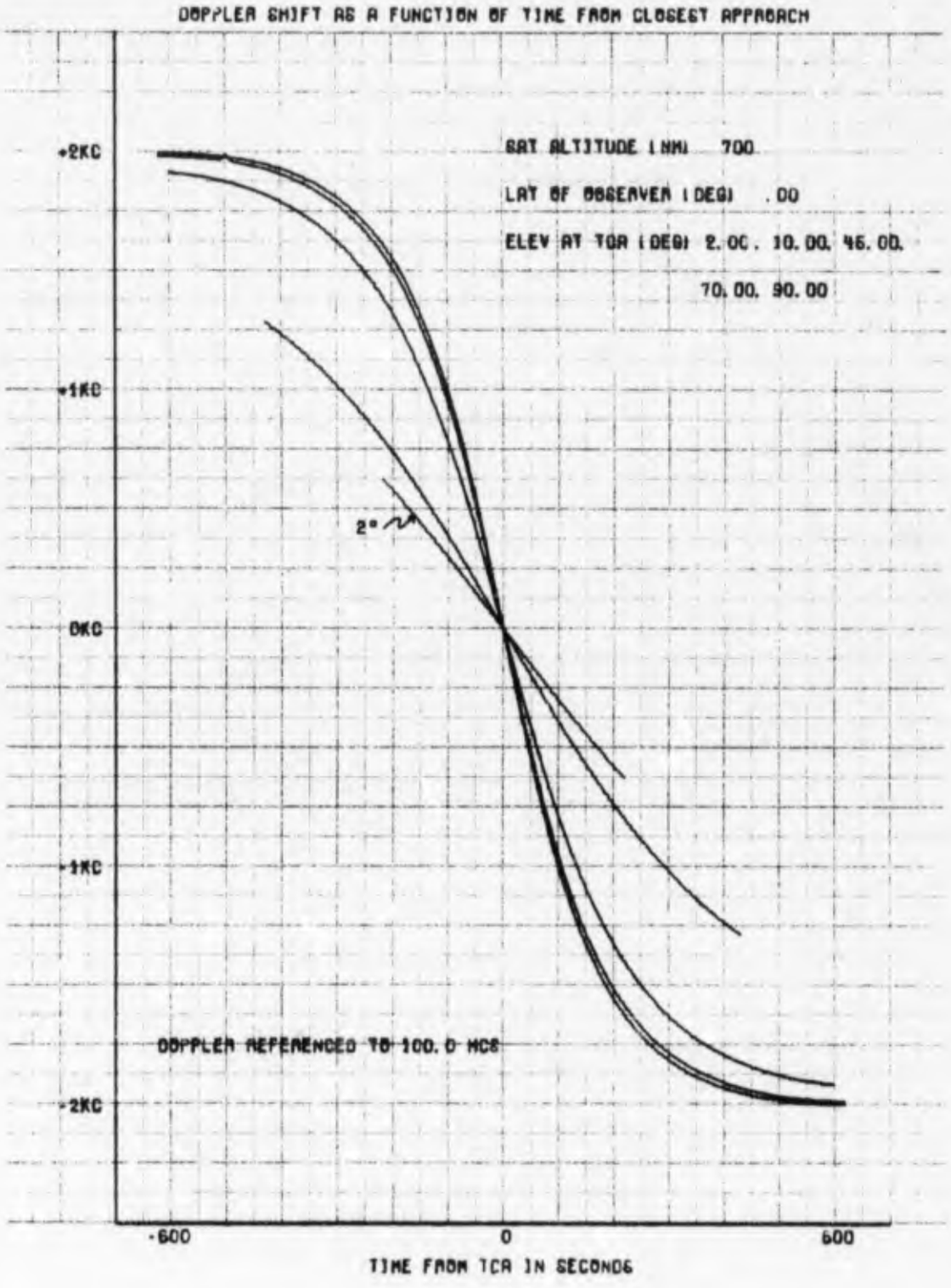

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (KM) 550
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MHz
-600
0
600
TIME FROM TCA IN SECONDS

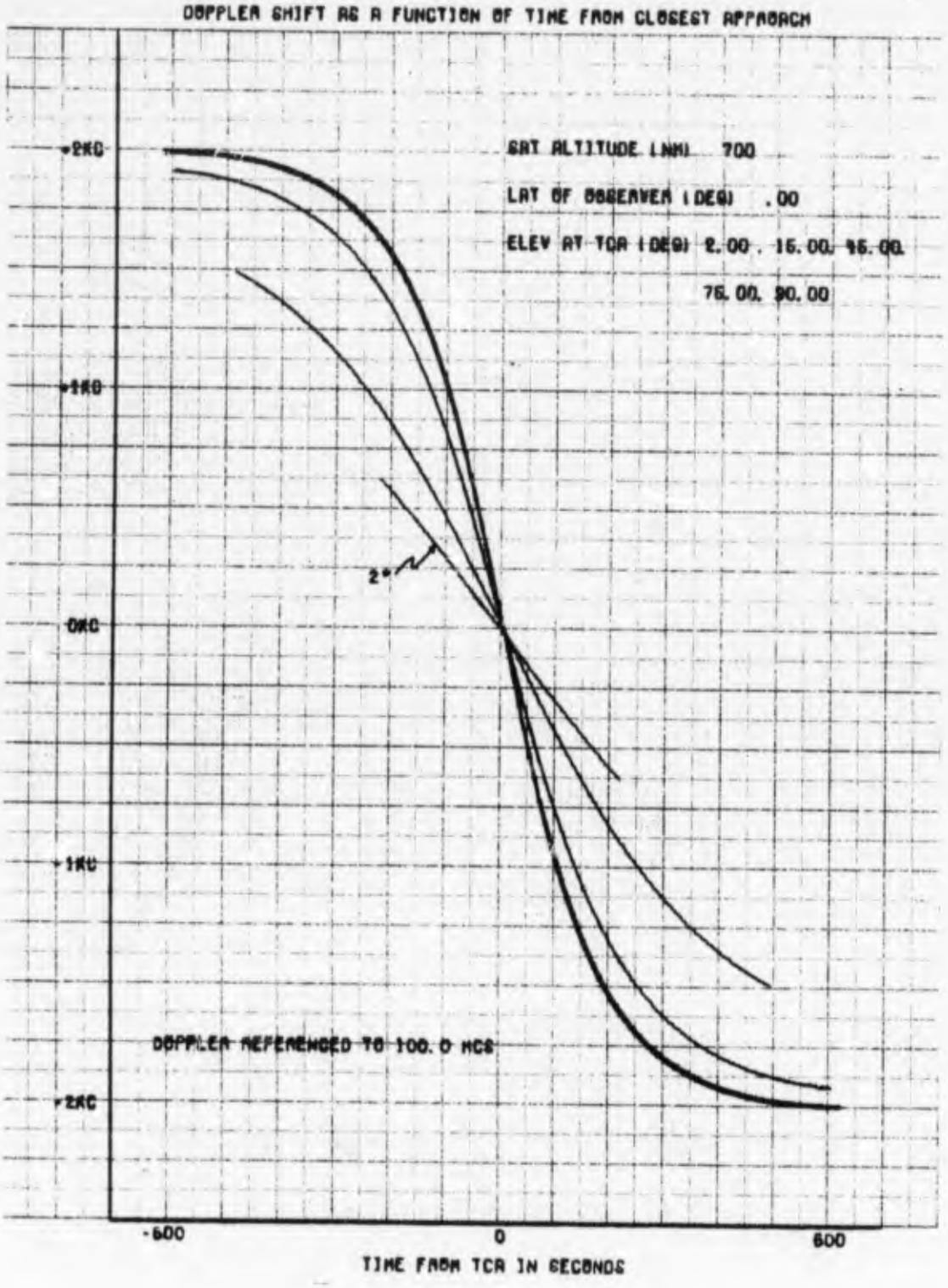

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT. ALTITUDE (NM) 550
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

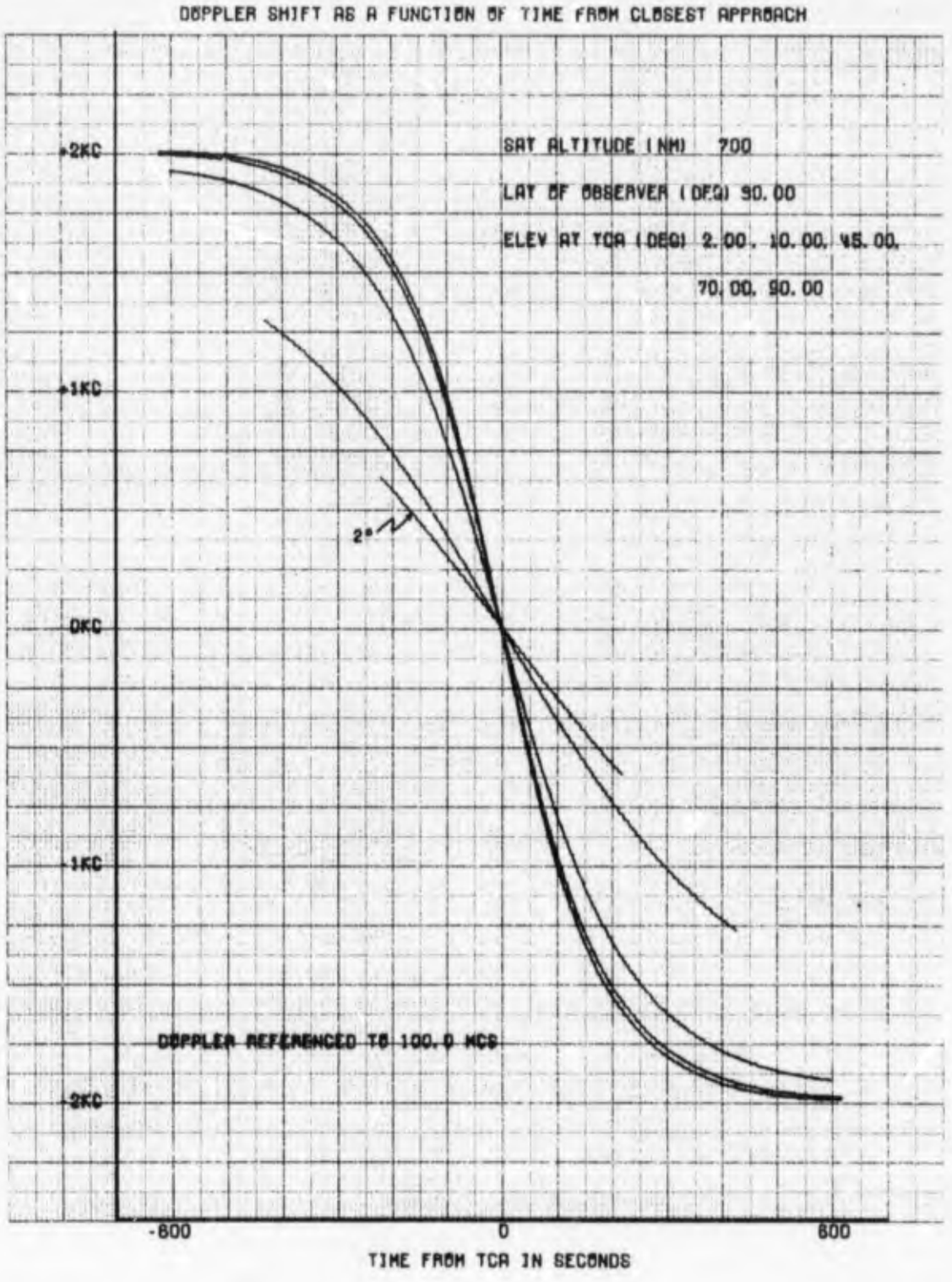

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUCE (NMI) 883
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

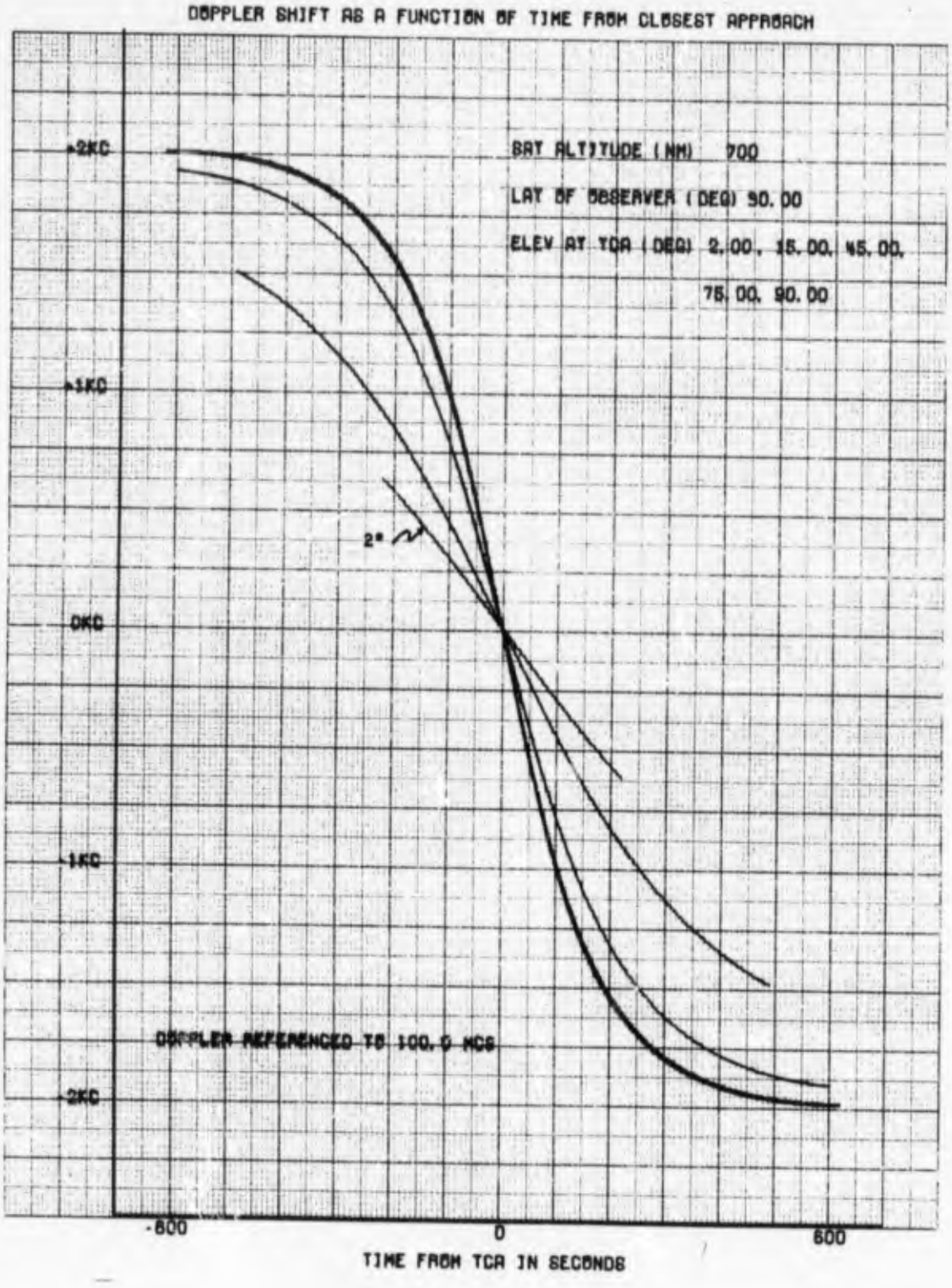

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 883
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

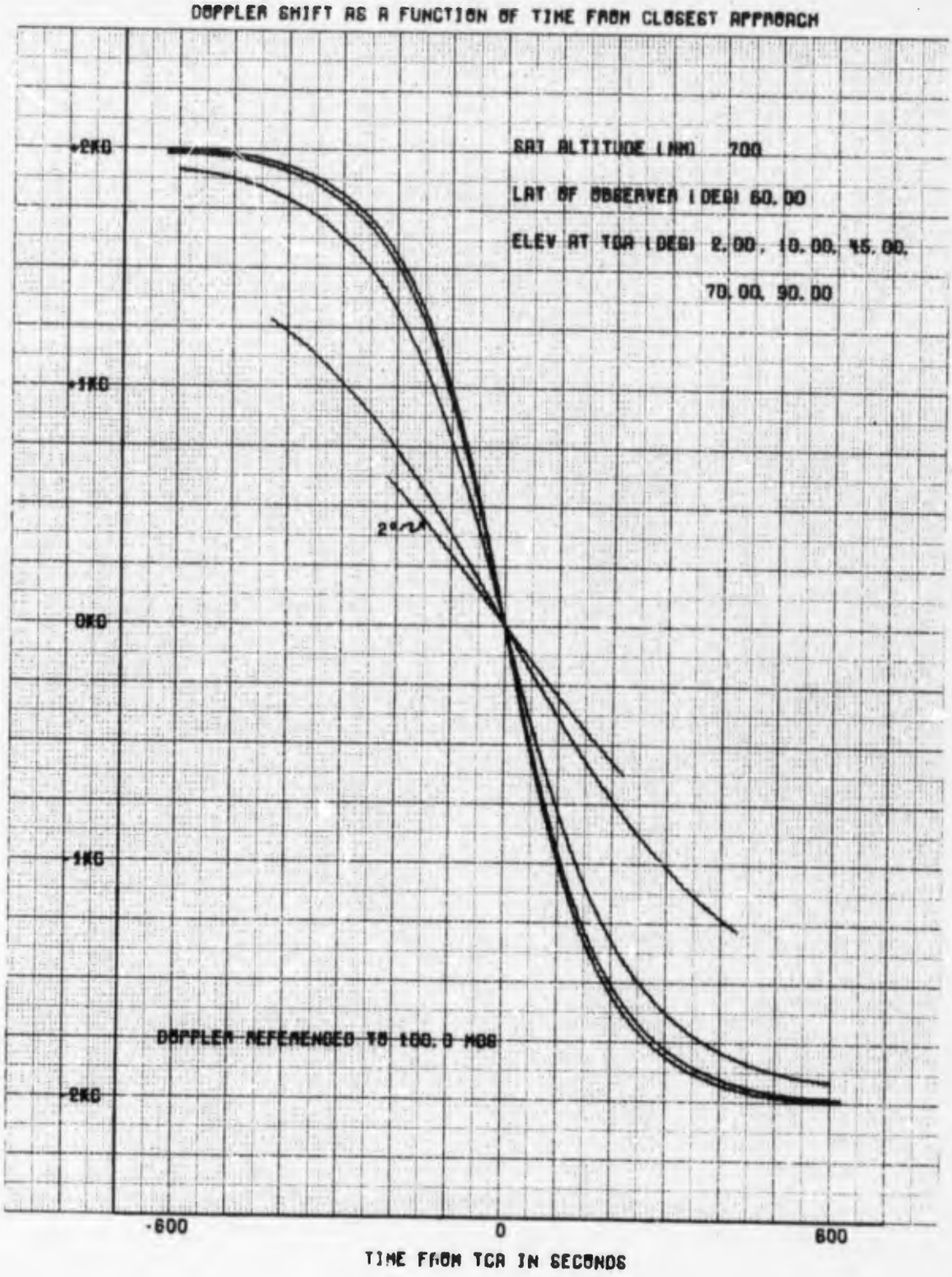

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 700
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 20.00,
30.00, 40.00, 50.00,
80.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°/s
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

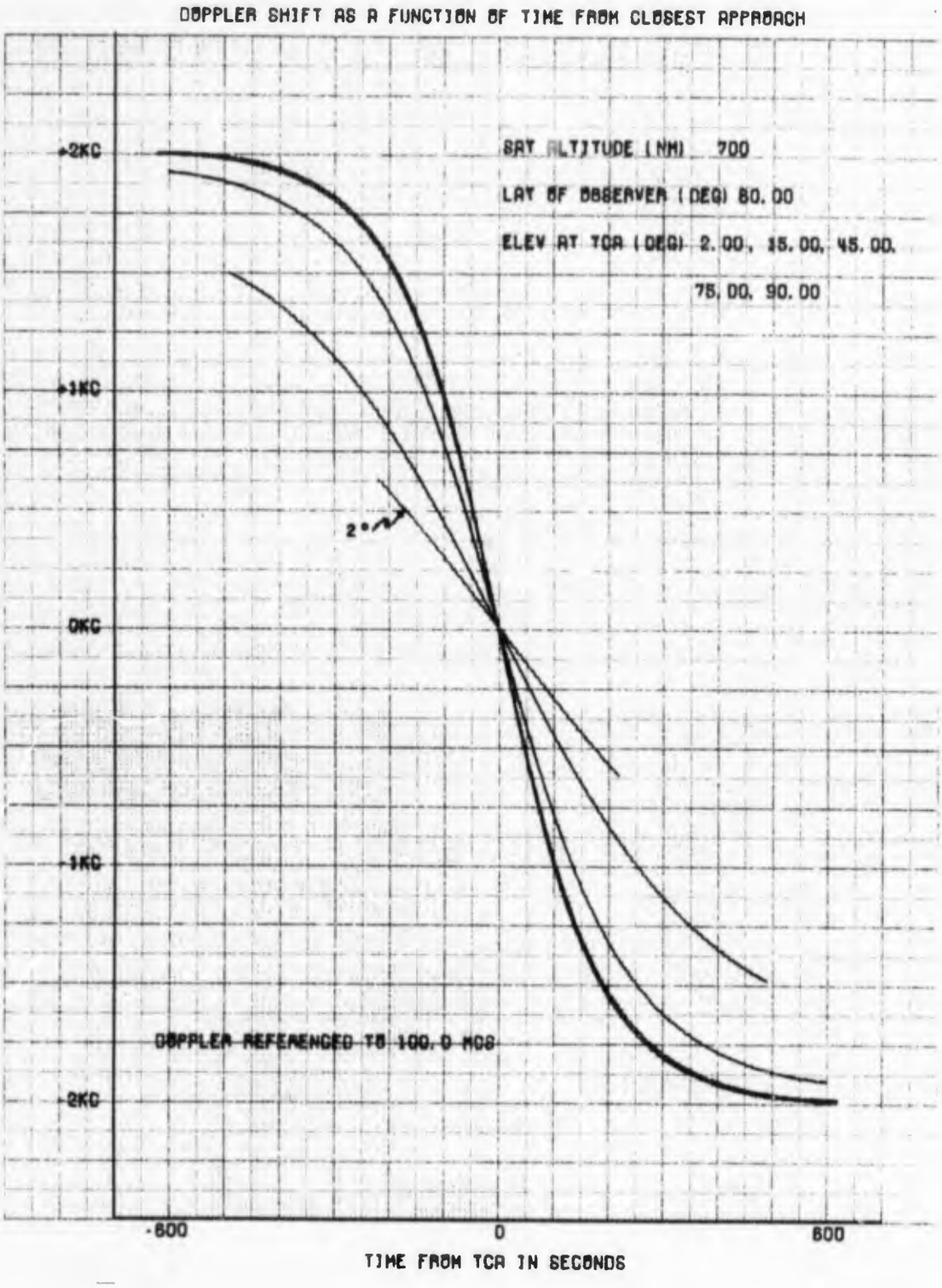

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 700.
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 46.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

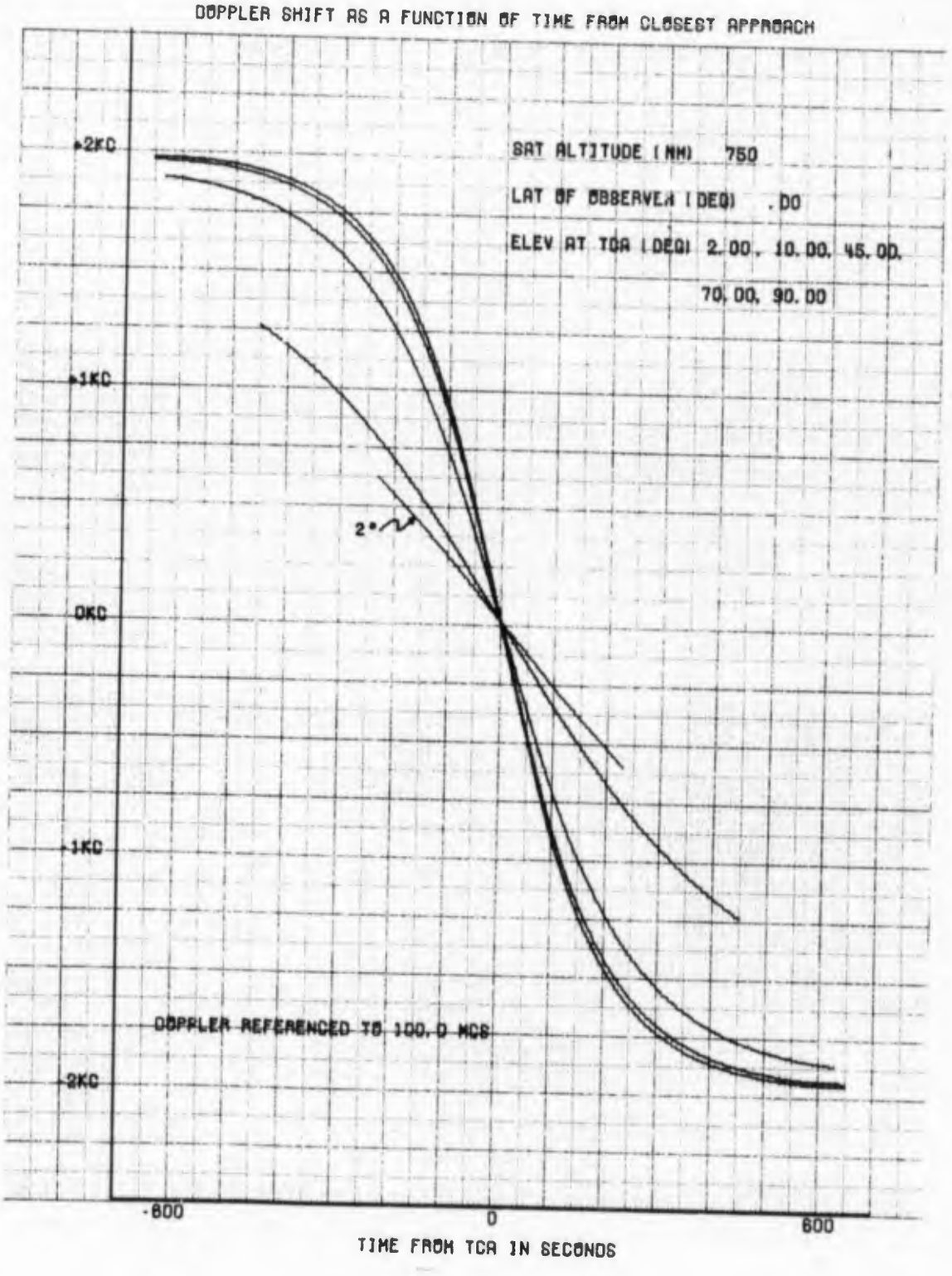

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 700
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

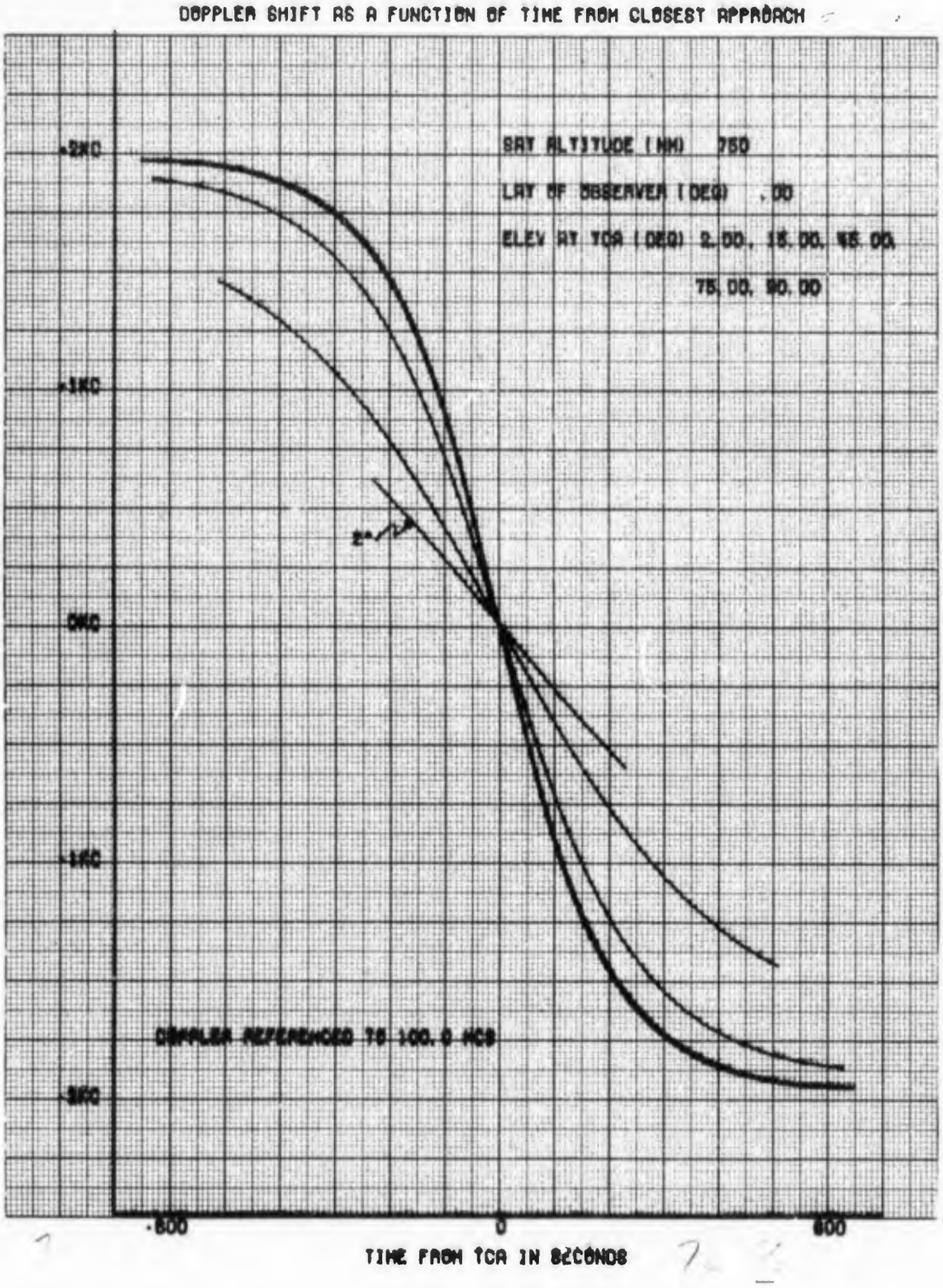

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 700
LAT OF OBSERVER (DEG) 90.00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

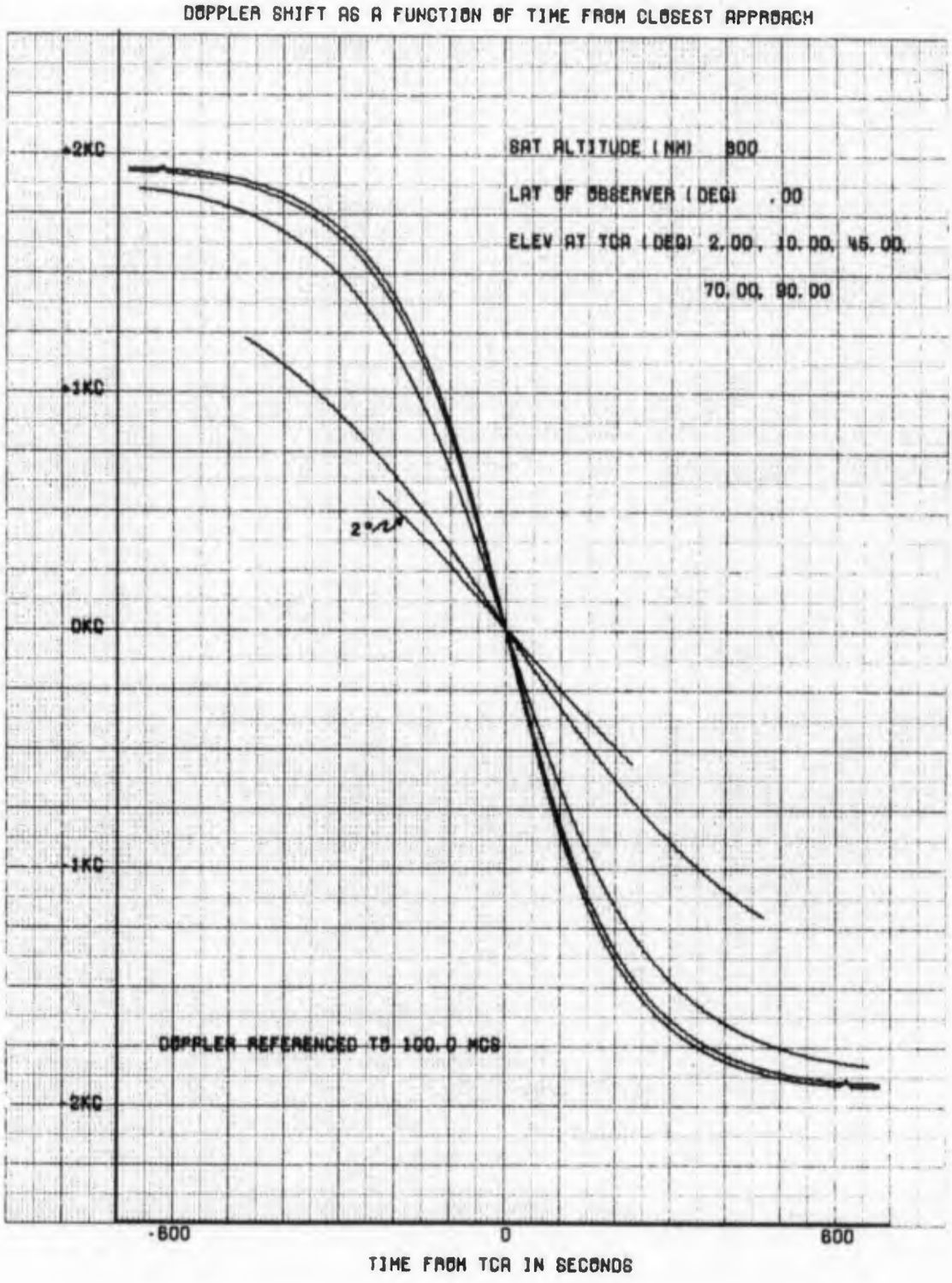

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 700
LAT OF OBSERVER (DEG) 90.00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

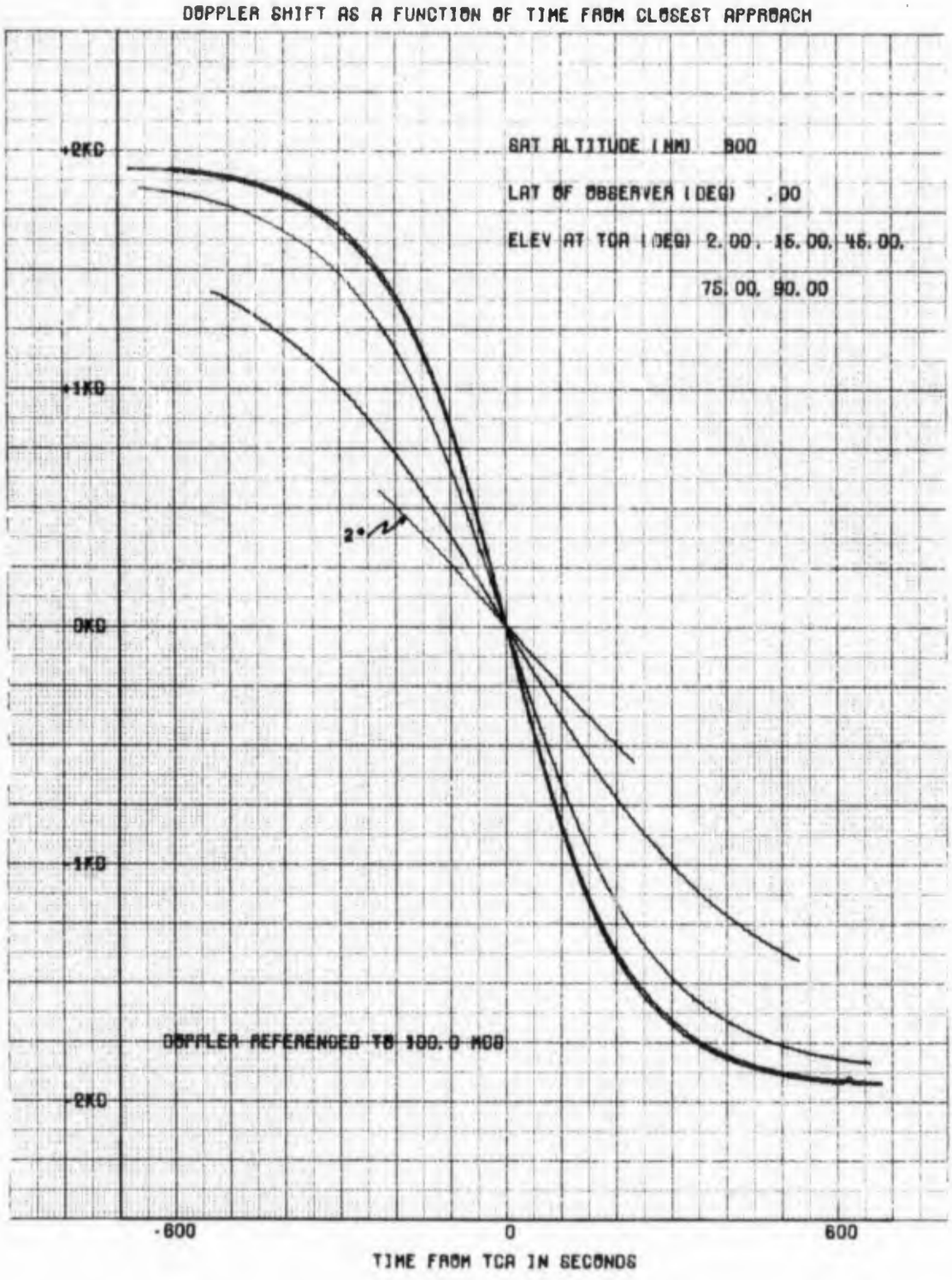

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 700
LAT OF OBSERVER (DEG) 60.00
ELEV AT TCA (DEG) 2.00, 10.00, 15.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
-600
0
600
TIME FROM TCA IN SECONDS

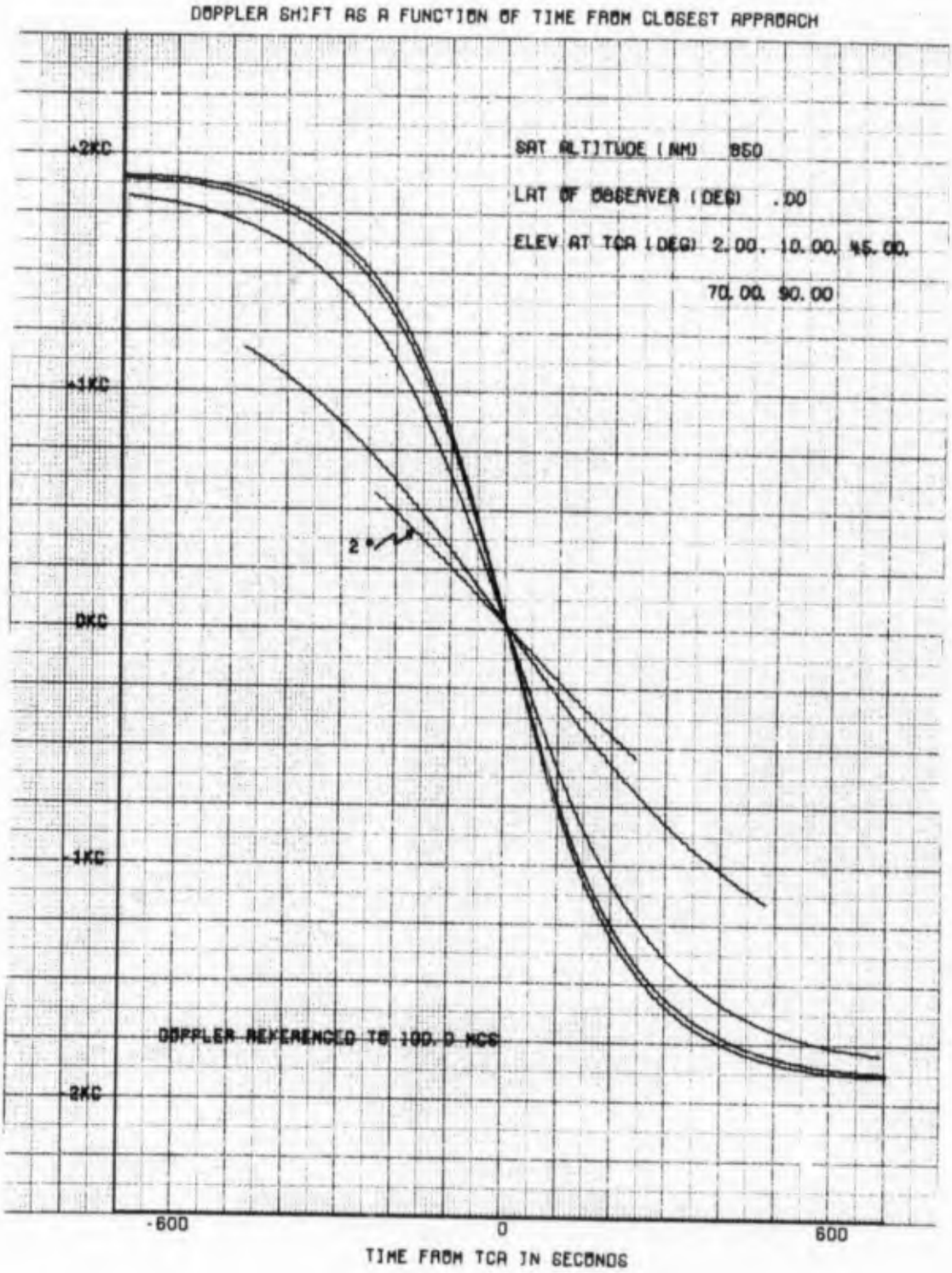

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 700
LAT OF OBSERVER (DEG) 60.00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

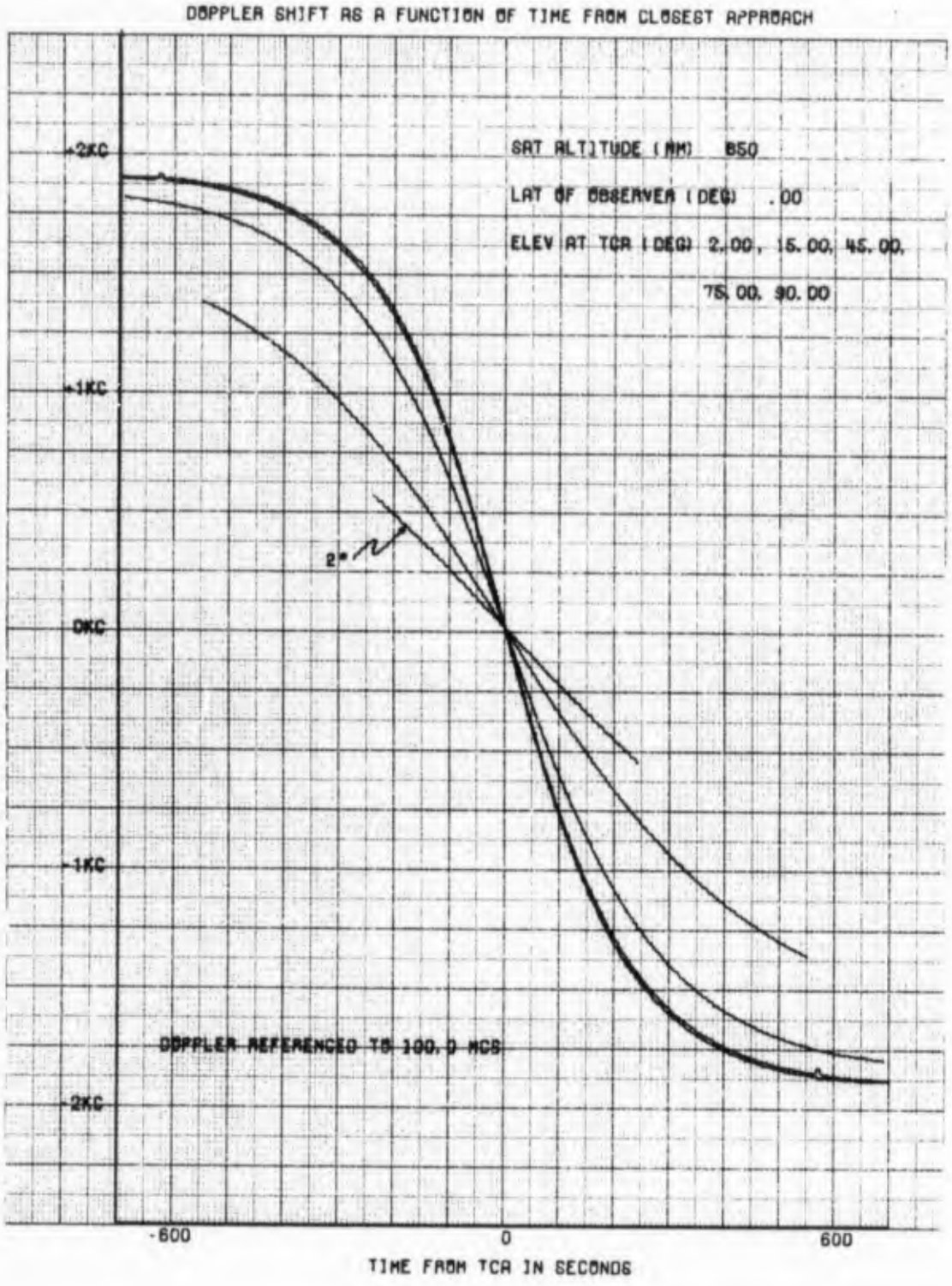

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 750
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

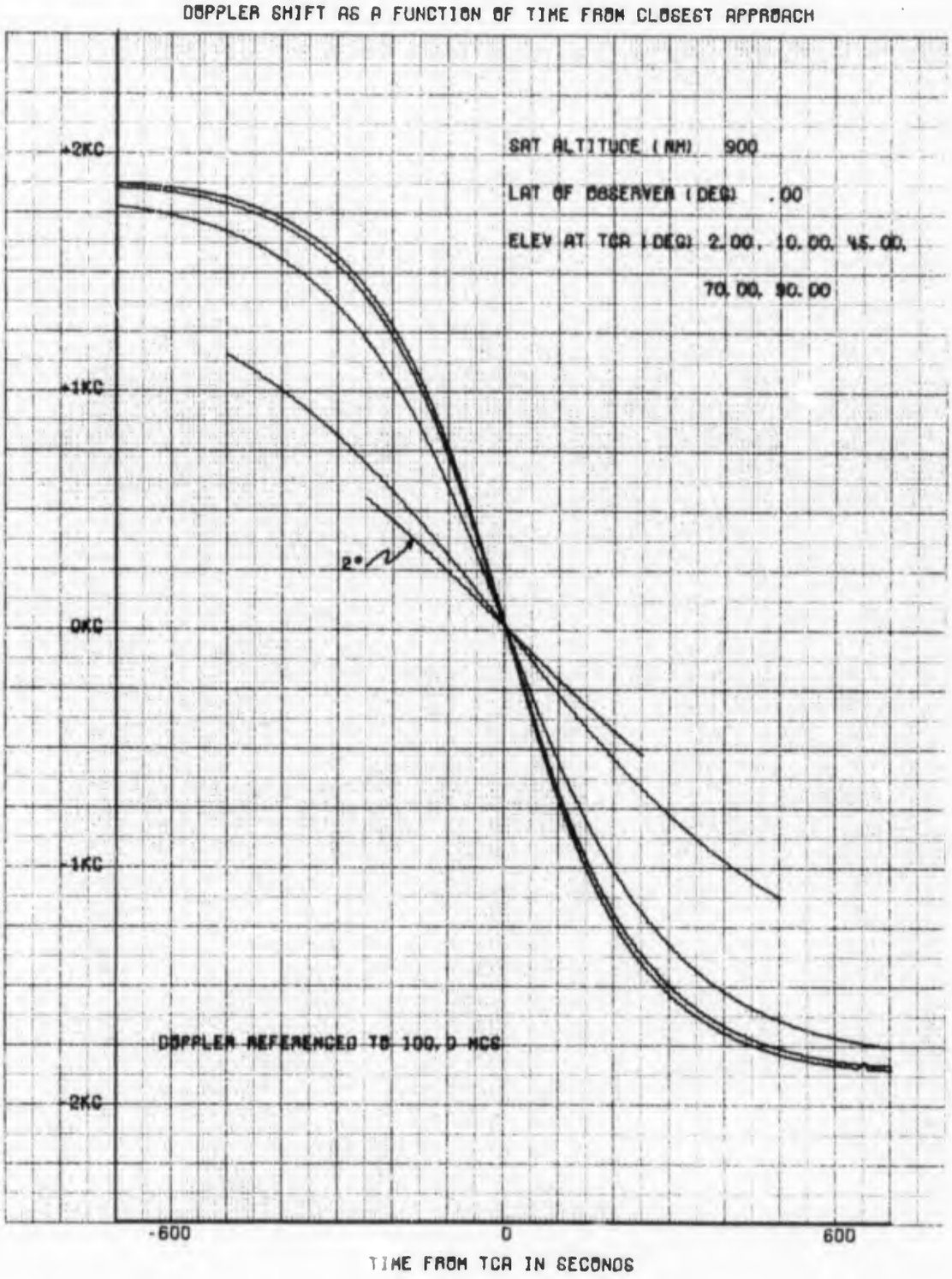

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 750
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

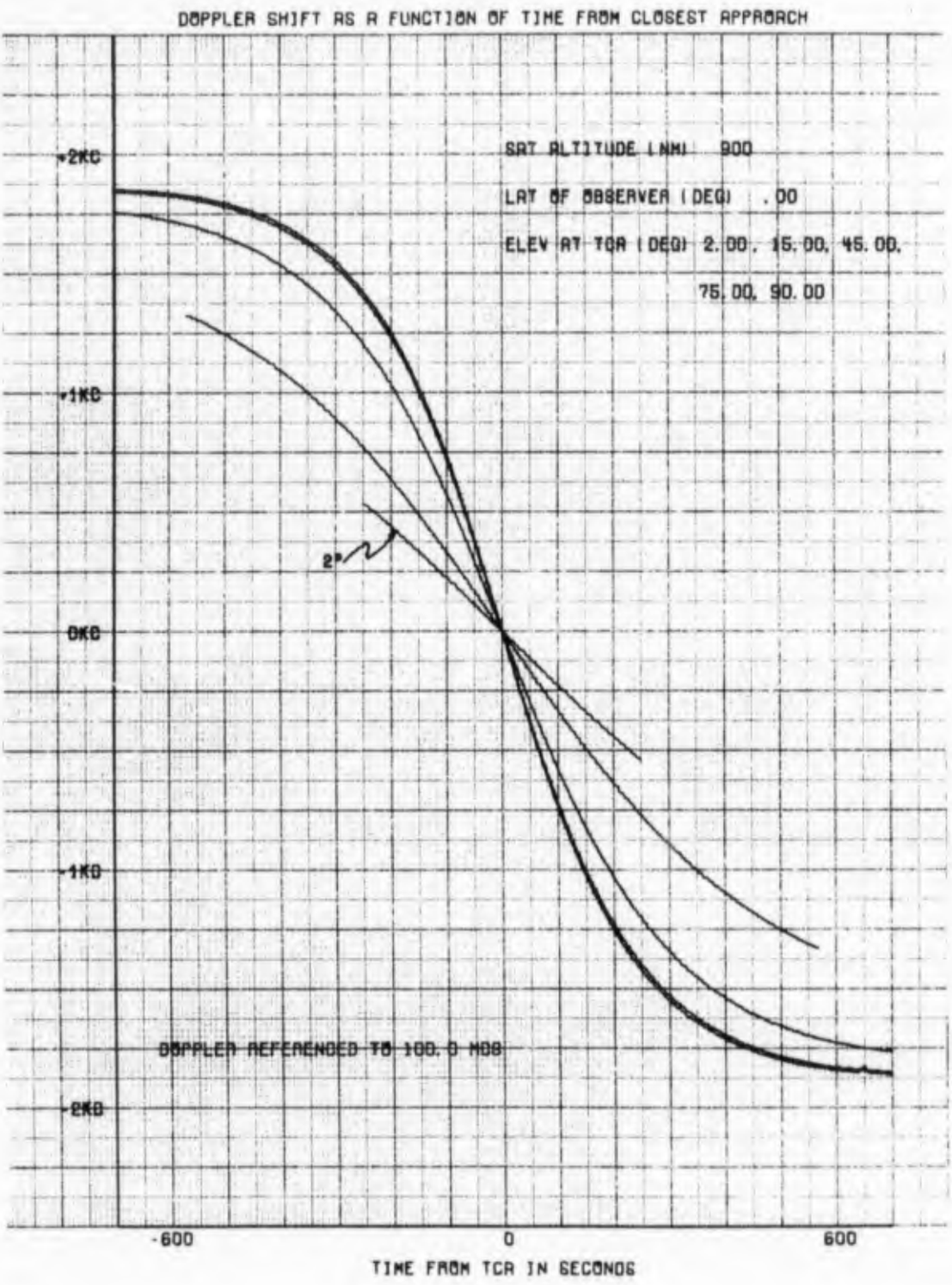

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 800
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

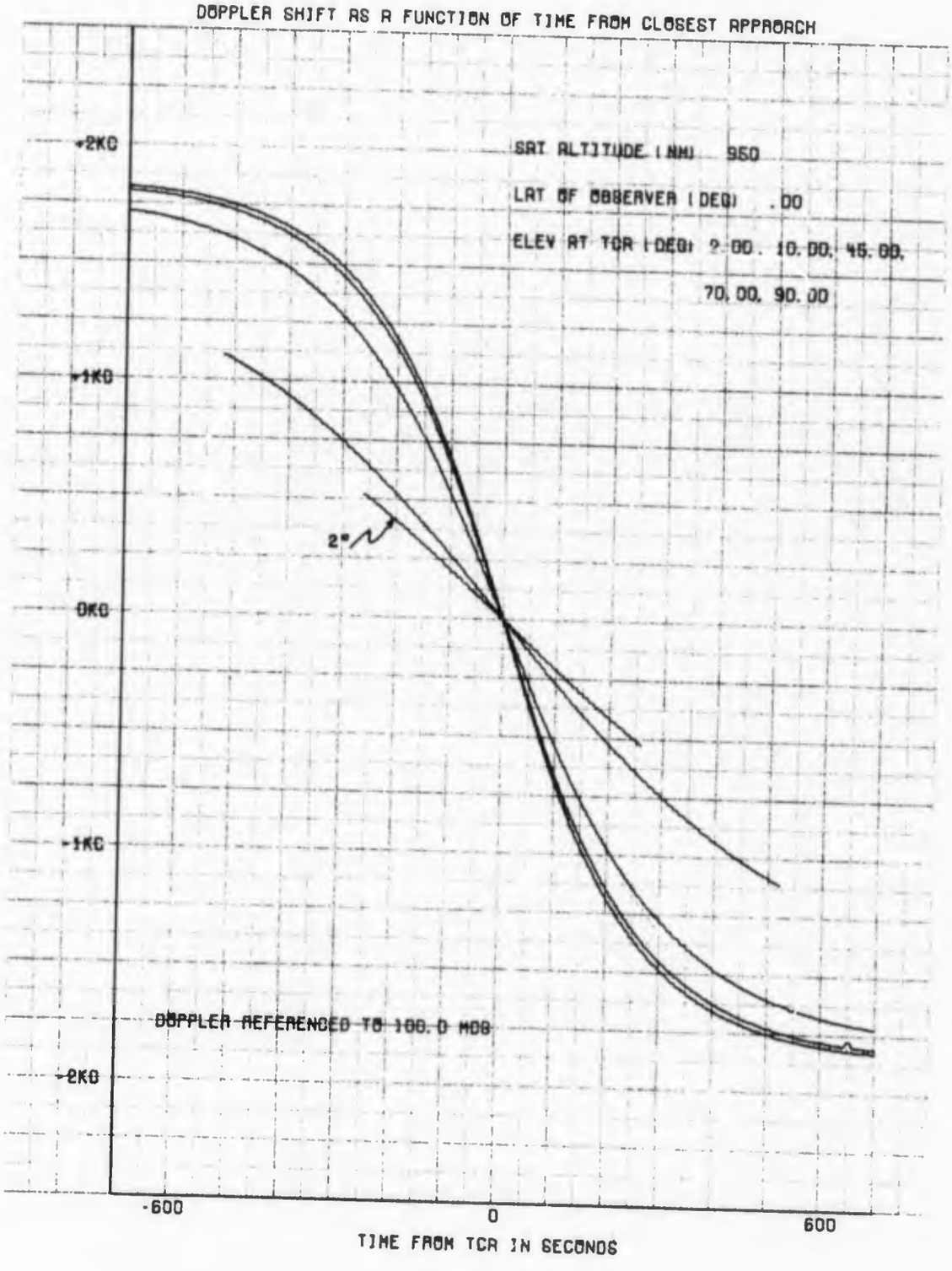

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 800
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

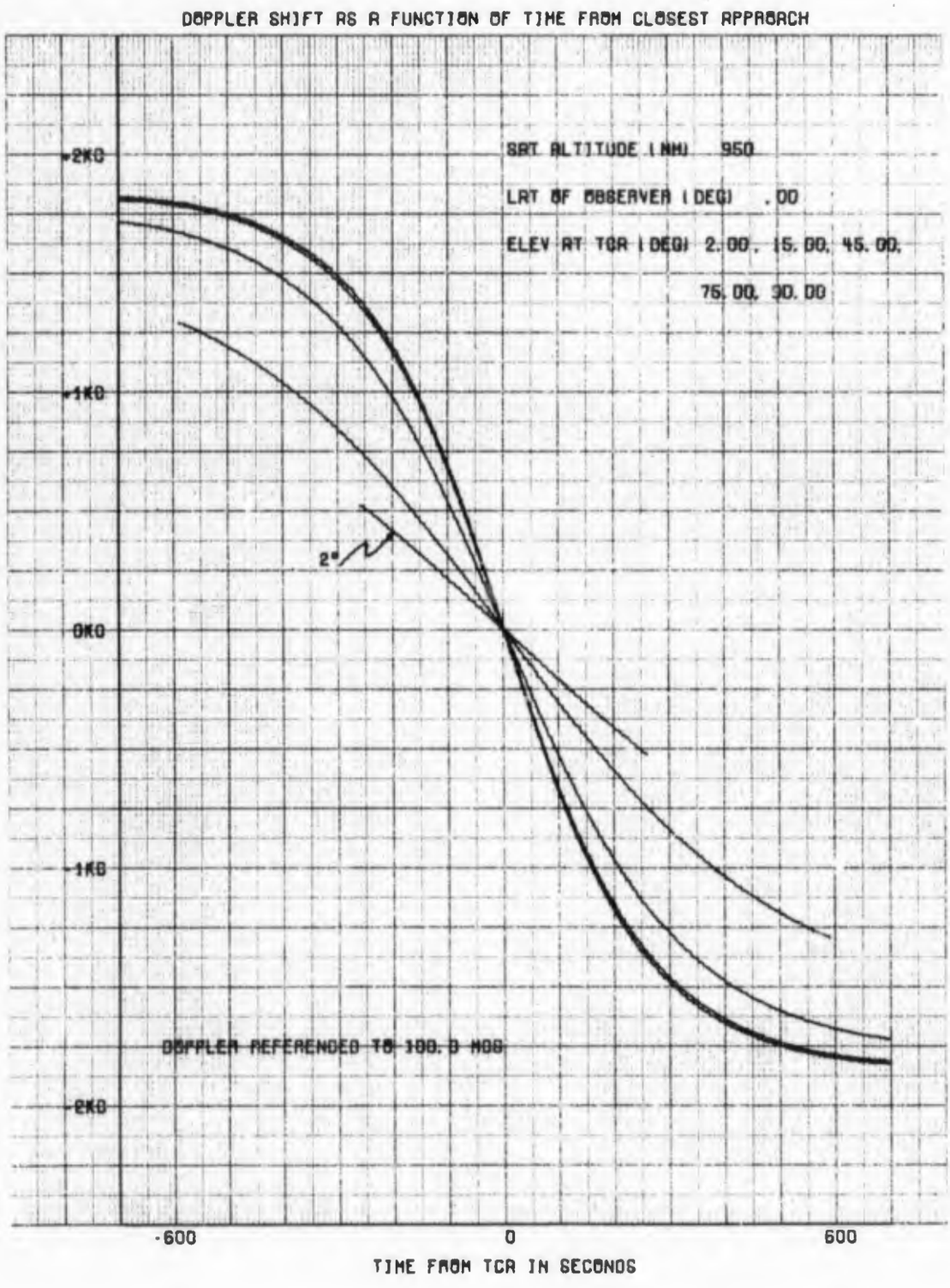

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 850
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

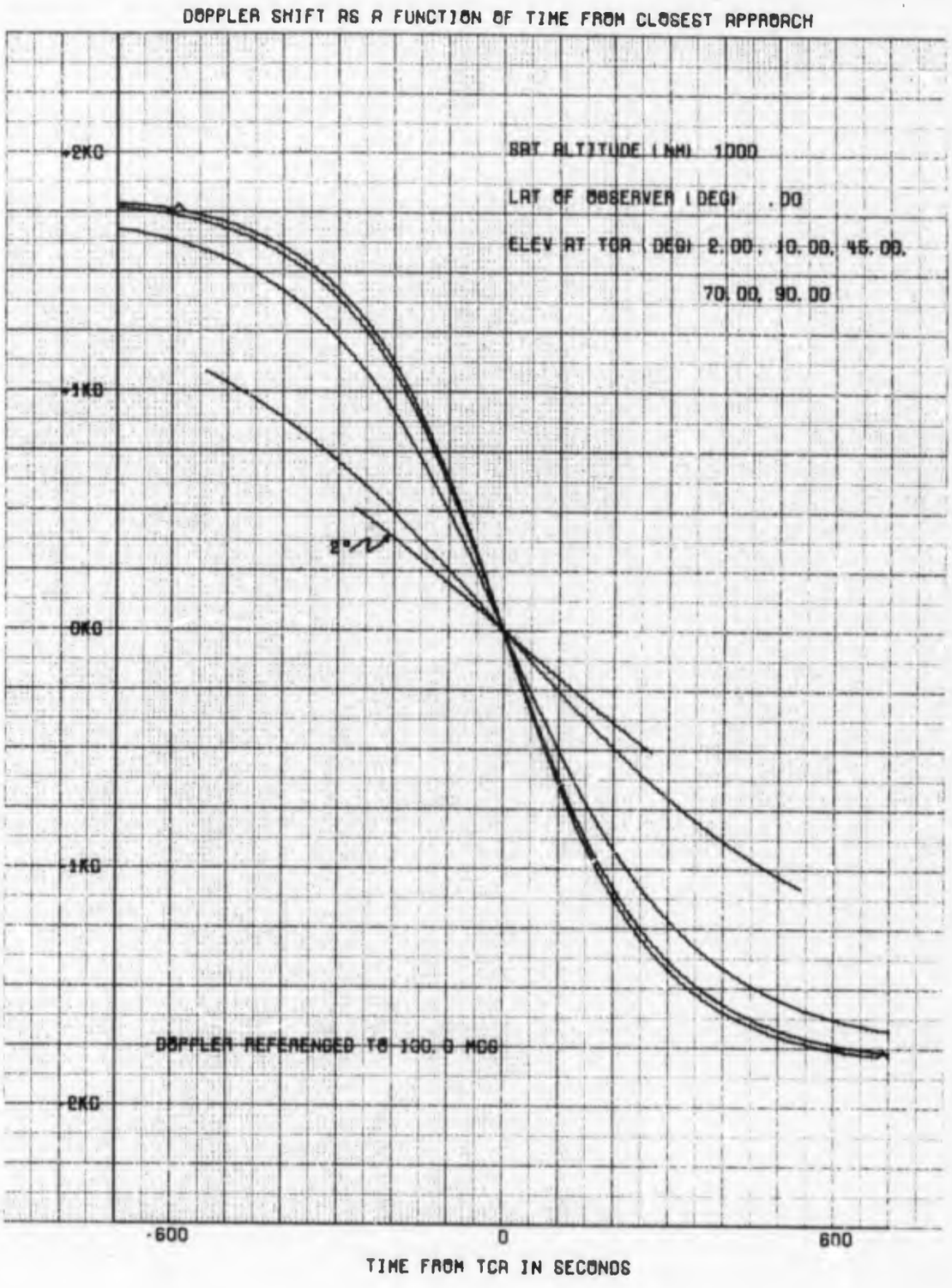

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 850
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS

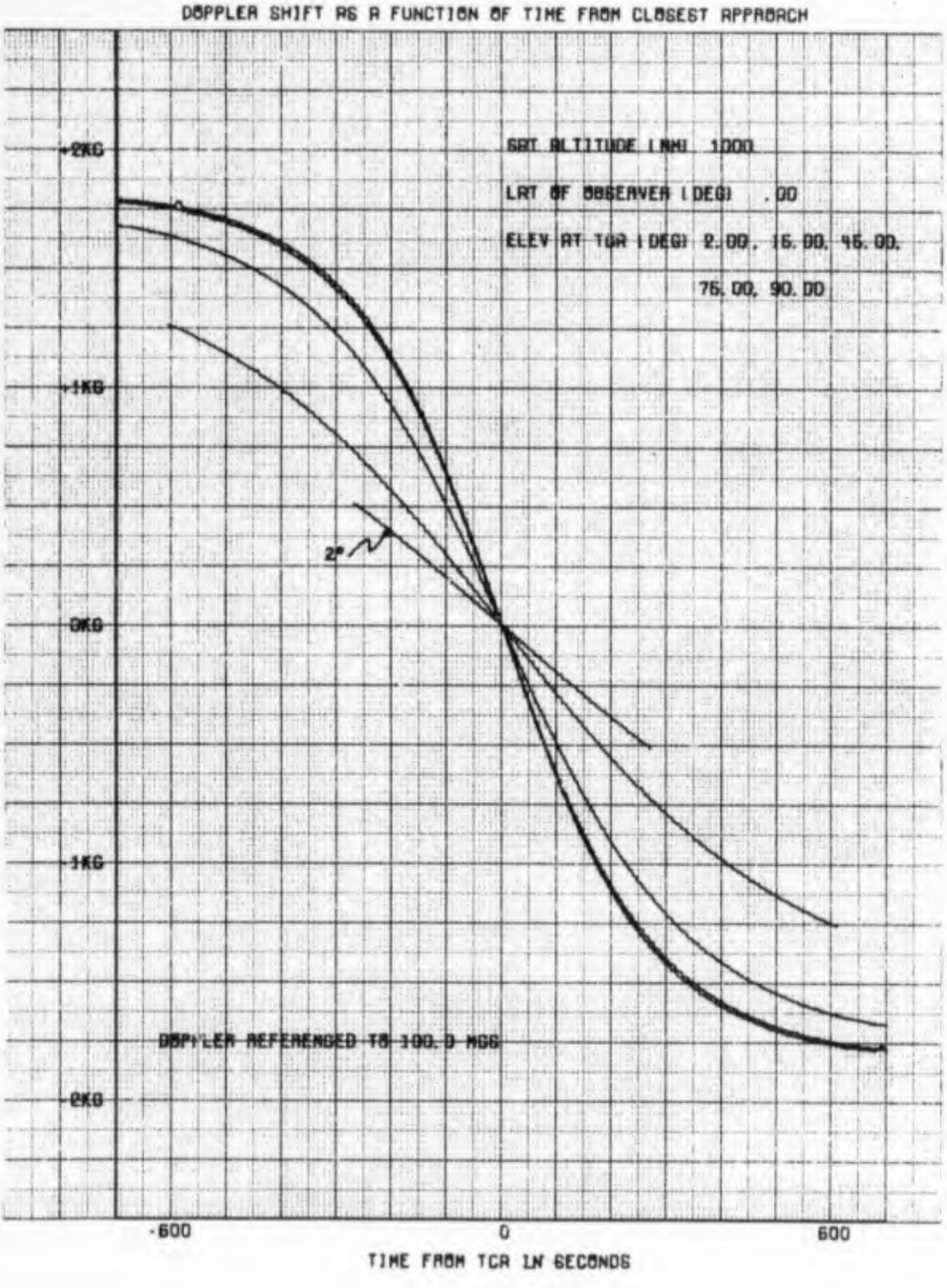

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 900
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS


DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NMI) 900
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MDS
-600
0
600
TIME FROM TCA IN SECONDS


DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SRT ALTITUDE (NMI) 950
LAT OF OBSERVER (DEG) .00
ELEV AT TCR (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
2°
0KC
-1KC
DOPPLER REFERENCED TO 100.0 MDS
-2KC
-600
0
600
TIME FROM TCR IN SECONDS


DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 950
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
2°
DOPPLER REFERENCED TO 100.0 MHz
2KC
1KC
0KC
-1KC
-2KC
-600
0
600
TIME FROM TCA IN SECONDS


DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NM) 1000
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 10.00, 45.00,
70.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCS
-600
0
600
TIME FROM TCA IN SECONDS


DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH
SAT ALTITUDE (NMI) 1000
LAT OF OBSERVER (DEG) .00
ELEV AT TCA (DEG) 2.00, 15.00, 45.00,
75.00, 90.00
+2KC
+1KC
0KC
-1KC
-2KC
2°
DOPPLER REFERENCED TO 100.0 MCC
-600
0
600
TIME FROM TCA IN SECONDS

Appendix 3

Tabulated List of Doppler as a Function of Time

Following are complete tabulated lists of doppler as a function of time from closest approach for each of the curves in the previous plots.

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 250.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-120.	0.50	1305.5	1.369	849.	846.	854.
-90.	1.13	1269.0	1.058	657.	653.	660.
-60.	1.60	1242.3	0.721	448.	445.	449.
-30.	1.90	1226.0	0.365	227.	226.	228.
0.	2.00	1220.5	0.	0.	-0.	-0.
30.	1.90	1226.0	0.365	-228.	-226.	-227.
60.	1.60	1242.3	0.721	-449.	-445.	-448.
90.	1.13	1269.0	1.058	-660.	-653.	-657.
120.	0.50	1305.5	1.369	-854.	-846.	-849.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

141.0 ROT SLANT RANGE(E) IS 1334.9 -979.

141.0 ROT SLANT RANGE(W) IS 1334.4 -973.

SMAX IS 1335.1

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 250.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-240.	0.99	1276.9	2.860	1768.	1767.	1780.
-210.	2.50	1193.6	2.685	1661.	1658.	1671.
-180.	4.01	1116.3	2.467	1527.	1524.	1535.
-150.	5.49	1046.2	2.198	1362.	1358.	1368.
-120.	6.89	985.0	1.871	1160.	1156.	1164.
-90.	8.13	934.6	1.481	919.	915.	922.
-60.	9.12	896.8	1.030	640.	636.	641.
-30.	9.77	873.3	0.529	329.	327.	329.
0.	10.00	865.3	0.	0.	-0.	-0.
30.	9.77	873.3	0.529	-329.	-327.	-329.
60.	9.12	896.8	1.030	-641.	-636.	-640.
90.	8.13	934.6	1.481	-922.	-915.	-919.
120.	6.89	985.0	1.871	-1164.	-1156.	-1160.
150.	5.49	1046.2	2.198	-1368.	-1358.	-1362.
180.	4.01	1116.3	2.467	-1535.	-1524.	-1527.
210.	2.50	1193.6	2.685	-1671.	-1658.	-1661.
240.	0.99	1276.9	2.860	-1780.	-1767.	-1768.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

259.0 ROT SLANT RANGE(E) IS 1334.0 -1838.

260.0 ROT SLANT RANGE(W) IS 1334.7 -1827.

SMAX IS 1335.1

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 250.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-270.	0.96	1278.8	3.233	1998.	1997.	2010.
-240.	2.69	1183.5	3.115	1927.	1925.	1937.
-210.	4.50	1092.2	2.962	1833.	1830.	1841.
-180.	6.39	1006.2	2.763	1711.	1707.	1718.
-150.	8.32	927.0	2.504	1551.	1547.	1557.
-120.	10.25	856.7	2.171	1346.	1341.	1350.
-90.	12.06	797.6	1.751	1087.	1082.	1089.
-60.	13.59	752.6	1.239	769.	765.	770.
-30.	14.63	724.1	0.644	400.	398.	401.
0.	15.00	714.4	0.	0.	-0.	-0.
30.	14.63	724.1	0.644	-401.	-398.	-400.
60.	13.59	752.6	1.239	-770.	-765.	-769.
90.	12.06	797.6	1.751	-1089.	-1082.	-1087.
120.	10.25	856.7	2.171	-1350.	-1341.	-1346.
150.	8.32	927.0	2.504	-1557.	-1547.	-1551.
180.	6.39	1006.2	2.763	-1718.	-1707.	-1711.
210.	4.50	1092.2	2.962	-1841.	-1830.	-1833.
240.	2.69	1183.5	3.115	-1937.	-1925.	-1927.
270.	0.96	1278.8	3.233	-2010.	-1997.	-1998.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

286.0	ROT SLANT RANGE(E) IS 1333.6	-2042.	
287.0	ROT SLANT RANGE(W) IS 1334.4		-2031.
	SMAX IS 1335.1		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 250.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-300.	1.73	1235.1	3.765	2328.	2326.	2333.
-270.	3.88	1122.4	3.742	2315.	2312.	2319.
-240.	6.28	1010.7	3.706	2293.	2289.	2296.
-210.	9.03	900.3	3.650	2259.	2255.	2262.
-180.	12.24	791.9	3.566	2207.	2203.	2210.
-150.	16.11	686.8	3.433	2126.	2121.	2128.
-120.	20.87	586.7	3.220	1995.	1989.	1997.
-90.	26.84	495.0	2.867	1777.	1771.	1778.
-60.	34.09	417.2	2.270	1408.	1402.	1409.
-30.	41.46	362.5	1.307	811.	807.	811.
0.	45.00	342.3	0.	0.	-0.	-0.
30.	41.46	362.5	1.307	-811.	-807.	-811.
60.	34.09	417.2	2.270	-1409.	-1402.	-1408.
90.	26.84	495.0	2.867	-1778.	-1771.	-1777.
120.	20.87	586.7	3.220	-1997.	-1989.	-1995.
150.	16.11	686.8	3.433	-2128.	-2121.	-2126.
180.	12.24	791.9	3.566	-2210.	-2203.	-2207.
210.	9.03	900.3	3.650	-2262.	-2255.	-2259.
240.	6.28	1010.7	3.706	-2296.	-2289.	-2293.
270.	3.88	1122.4	3.742	-2319.	-2312.	-2315.
300.	1.73	1235.1	3.765	-2333.	-2326.	-2328.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

325.0 ROT SLANT RANGE(E) IS 1332.4 -2340.

326.0 ROT SLANT RANGE(W) IS 1334.9 -2336.

SMAX IS 1335.1

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 250.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-330.	0.05	1331.9	3.832	2371.	2367.	2373.
-300.	2.06	1216.9	3.828	2369.	2365.	2370.
-270.	4.29	1102.2	3.817	2362.	2358.	2364.
-240.	6.81	988.0	3.798	2350.	2346.	2352.
-210.	9.74	874.5	3.765	2330.	2326.	2332.
-180.	13.24	762.3	3.711	2297.	2293.	2298.
-150.	17.61	652.2	3.622	2243.	2238.	2244.
-120.	23.30	545.6	3.470	2149.	2144.	2149.
-90.	31.15	445.2	3.193	1978.	1973.	1979.
-60.	42.45	356.5	2.661	1649.	1644.	1650.
-30.	58.17	290.5	1.634	1013.	1009.	1013.
0.	70.00	264.9	0.	-0.	-0.	0.
30.	58.17	290.5	1.634	-1013.	-1009.	-1013.
60.	42.45	356.5	2.661	-1650.	-1644.	-1649.
90.	31.15	445.2	3.193	-1979.	-1973.	-1978.
120.	23.30	545.6	3.470	-2149.	-2144.	-2149.
150.	17.61	652.2	3.622	-2244.	-2238.	-2243.
180.	13.24	762.3	3.711	-2298.	-2293.	-2297.
210.	9.74	874.5	3.765	-2332.	-2326.	-2330.
240.	6.81	988.0	3.798	-2352.	-2346.	-2350.
270.	4.29	1102.2	3.817	-2364.	-2358.	-2362.
300.	2.06	1216.9	3.828	-2370.	-2365.	-2369.
330.	0.05	1331.9	3.832	-2373.	-2367.	-2371.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

330.0 ROT SLANT RANGE(E) IS 1334.7 -2373.

330.0 ROT SLANT RANGE(W) IS 1334.2 -2371.

SMAX IS 1335.1

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 250.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-330.	0.08	1330.6	3.836	2374.	2370.	2375.
-300.	2.09	1215.6	3.833	2372.	2368.	2373.
-270.	4.32	1100.7	3.823	2366.	2362.	2367.
-240.	6.85	986.3	3.805	2355.	2351.	2356.
-210.	9.79	872.6	3.774	2336.	2331.	2337.
-180.	13.32	760.0	3.723	2305.	2300.	2305.
-150.	17.73	649.5	3.637	2252.	2247.	2253.
-120.	23.50	542.4	3.491	2162.	2156.	2162.
-90.	31.53	441.3	3.222	1996.	1990.	1996.
-60.	43.30	351.6	2.699	1673.	1667.	1673.
-30.	60.40	284.4	1.669	1035.	1031.	1035.
0.	75.00	258.2	0.	-0.	-0.	0.
30.	60.40	284.4	1.669	-1035.	-1031.	-1035.
60.	43.30	351.6	2.699	-1673.	-1667.	-1673.
90.	31.53	441.3	3.222	-1996.	-1990.	-1996.
120.	23.50	542.4	3.491	-2162.	-2156.	-2162.
150.	17.73	649.5	3.637	-2253.	-2247.	-2252.
180.	13.32	760.0	3.723	-2305.	-2300.	-2305.
210.	9.79	872.6	3.774	-2337.	-2331.	-2336.
240.	6.85	986.3	3.805	-2356.	-2351.	-2355.
270.	4.32	1100.7	3.823	-2367.	-2362.	-2366.
300.	2.09	1215.6	3.833	-2373.	-2368.	-2372.
330.	0.08	1330.6	3.836	-2375.	-2370.	-2374.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

330.0 ROT SLANT RANGE(E) IS 1333.4 -2375.

330.0 ROT SLANT RANGE(W) IS 1333.0 -2374.

SMAX IS 1335.1

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 250.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-330.	0.10	1329.2	3.841	2377.	2373.	2377.
-300.	2.12	1214.0	3.839	2376.	2371.	2376.
-270.	4.36	1098.9	3.830	2371.	2366.	2371.
-240.	6.90	984.2	3.813	2361.	2356.	2361.
-210.	9.86	870.2	3.785	2343.	2338.	2343.
-180.	13.42	757.4	3.736	2313.	2308.	2313.
-150.	17.87	646.4	3.656	2264.	2258.	2264.
-120.	23.75	538.6	3.516	2177.	2172.	2177.
-90.	32.01	436.6	3.257	2018.	2012.	2018.
-60.	44.38	345.6	2.746	1702.	1696.	1702.
-30.	63.50	277.0	1.714	1063.	1059.	1063.
0.	90.00	250.0	0.	0.	-0.	-0.
30.	63.50	277.0	1.714	-1063.	-1059.	-1063.
60.	44.38	345.6	2.746	-1702.	-1696.	-1702.
90.	32.01	436.6	3.257	-2018.	-2012.	-2018.
120.	23.75	538.6	3.516	-2177.	-2172.	-2177.
150.	17.87	646.4	3.656	-2264.	-2258.	-2264.
180.	13.42	757.4	3.736	-2313.	-2308.	-2313.
210.	9.86	870.2	3.785	-2343.	-2338.	-2343.
240.	6.90	984.2	3.813	-2361.	-2356.	-2361.
270.	4.36	1098.9	3.830	-2371.	-2366.	-2371.
300.	2.12	1214.0	3.839	-2376.	-2371.	-2376.
330.	0.10	1329.2	3.841	-2377.	-2373.	-2377.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

330.0 ROT SLANT RANGE(E) IS 1331.7 -2377.

330.0 ROT SLANT RANGE(W) IS 1331.7 -2377.

SMAX IS 1335.1

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 300.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-150.	0.01	1466.9	1.462	906.	903.	914.
-120.	0.69	1426.9	1.205	748.	744.	752.
-90.	1.24	1394.9	0.925	575.	572.	578.
-60.	1.66	1371.5	0.628	390.	388.	392.
-30.	1.91	1357.3	0.317	198.	196.	198.
0.	2.00	1352.5	0.	0.	-0.	-0.
30.	1.91	1357.3	0.317	-198.	-196.	-198.
60.	1.66	1371.5	0.628	-392.	-388.	-390.
90.	1.24	1394.9	0.925	-578.	-572.	-575.
120.	0.69	1426.9	1.205	-752.	-744.	-748.
150.	0.01	1466.9	1.462	-914.	-903.	-906.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

151.0 ROT SLANT RANGE(E) IS 1466.7 -919.

152.0 ROT SLANT RANGE(W) IS 1467.5 -917.

SMAX IS 1467.7

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 300.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-270.	0.60	1432.2	2.764	1708.	1708.	1723.
-240.	2.02	1351.5	2.612	1615.	1613.	1628.
-210.	3.44	1275.9	2.427	1502.	1499.	1513.
-180.	4.83	1206.3	2.206	1366.	1363.	1374.
-150.	6.17	1143.9	1.942	1204.	1200.	1210.
-120.	7.40	1090.2	1.633	1013.	1009.	1017.
-90.	8.46	1046.4	1.278	793.	789.	796.
-60.	9.29	1014.0	0.880	547.	543.	548.
-30.	9.82	994.0	0.449	279.	277.	279.
0.	10.00	987.2	0.	0.	-0.	-0.
30.	9.82	994.0	0.449	-279.	-277.	-279.
60.	9.29	1014.0	0.880	-548.	-543.	-547.
90.	8.46	1046.4	1.278	-796.	-789.	-793.
120.	7.40	1090.2	1.633	-1017.	-1009.	-1013.
150.	6.17	1143.9	1.942	-1210.	-1200.	-1204.
180.	4.83	1206.3	2.206	-1374.	-1363.	-1366.
210.	3.44	1275.9	2.427	-1513.	-1499.	-1502.
240.	2.02	1351.5	2.612	-1628.	-1613.	-1615.
270.	0.60	1432.2	2.764	-1723.	-1708.	-1708.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

281.0 ROT SLANT RANGE(E) IS 1465.0 -1753.

282.0 ROT SLANT RANGE(W) IS 1464.9 -1740.

SMAX IS 1467.7

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 300.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-300.	0.75	1423.1	3.116	1925.	1925.	1939.
-270.	2.39	1331.2	3.009	1860.	1859.	1872.
-240.	4.09	1242.9	2.873	1777.	1775.	1788.
-210.	5.83	1159.1	2.703	1673.	1670.	1682.
-180.	7.61	1081.1	2.490	1542.	1538.	1549.
-150.	9.38	1010.3	2.225	1379.	1374.	1385.
-120.	11.09	948.2	1.899	1178.	1173.	1182.
-90.	12.63	897.0	1.508	936.	932.	939.
-60.	13.88	858.4	1.051	653.	649.	654.
-30.	14.71	834.4	0.541	336.	334.	337.
0.	15.00	826.3	0.	0.	-0.	-0.
30.	14.71	834.4	0.541	-337.	-334.	-336.
60.	13.88	858.4	1.051	-654.	-649.	-653.
90.	12.63	897.0	1.508	-939.	-932.	-936.
120.	11.09	948.2	1.899	-1182.	-1173.	-1178.
150.	9.38	1010.3	2.225	-1385.	-1374.	-1379.
180.	7.61	1081.1	2.490	-1549.	-1538.	-1542.
210.	5.83	1159.1	2.703	-1682.	-1670.	-1673.
240.	4.09	1242.9	2.873	-1788.	-1775.	-1777.
270.	2.39	1331.2	3.009	-1872.	-1859.	-1860.
300.	0.75	1423.1	3.116	-1939.	-1925.	-1925.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

313.0 ROT SLANT RANGE(E) IS 1467.0 -1964.

314.0 ROT SLANT RANGE(W) IS 1466.9 -1951.

SMAX IS 1467.7

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 300.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	0.13	1460.2	3.690	2281.	2280.	2287.
-330.	2.05	1349.7	3.675	2272.	2270.	2278.
-300.	4.15	1239.8	3.651	2258.	2255.	2263.
-270.	6.46	1130.7	3.615	2236.	2233.	2241.
-240.	9.05	1023.0	3.562	2204.	2201.	2208.
-210.	12.01	917.2	3.486	2158.	2154.	2161.
-180.	15.44	814.2	3.374	2089.	2084.	2092.
-150.	19.49	715.3	3.207	1986.	1981.	1989.
-120.	24.35	622.7	2.952	1829.	1824.	1831.
-90.	30.12	539.6	2.558	1586.	1580.	1587.
-60.	36.57	471.3	1.954	1212.	1207.	1213.
-30.	42.44	425.1	1.084	673.	670.	673.
0.	45.00	408.5	0.	0.	-0.	-0.
30.	42.44	425.1	1.084	-673.	-670.	-673.
60.	36.57	471.3	1.954	-1213.	-1207.	-1212.
90.	30.12	539.6	2.558	-1587.	-1580.	-1586.
120.	24.35	622.7	2.952	-1831.	-1824.	-1829.
150.	19.49	715.3	3.207	-1989.	-1981.	-1986.
180.	15.44	814.2	3.374	-2092.	-2084.	-2089.
210.	12.01	917.2	3.486	-2161.	-2154.	-2158.
240.	9.05	1023.0	3.562	-2208.	-2201.	-2204.
270.	6.46	1130.7	3.615	-2241.	-2233.	-2236.
300.	4.15	1239.8	3.651	-2263.	-2255.	-2258.
330.	2.05	1349.7	3.675	-2278.	-2270.	-2272.
360.	0.13	1460.2	3.690	-2287.	-2280.	-2281.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

361.0 ROT SLANT RANGE(E) IS 1467.5 -2288.

361.0 ROT SLANT RANGE(W) IS 1465.7 -2281.

SMAX IS 1467.7

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 300.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	0.48	1439.1	3.754	2322.	2319.	2324.
-330.	2.48	1326.6	3.748	2319.	2316.	2321.
-300.	4.67	1214.3	3.737	2312.	2308.	2314.
-270.	7.11	1102.5	3.717	2300.	2296.	2302.
-240.	9.89	991.4	3.686	2281.	2277.	2283.
-210.	13.12	881.5	3.637	2251.	2247.	2253.
-180.	17.00	773.5	3.561	2205.	2200.	2206.
-150.	21.80	668.3	3.441	2131.	2126.	2132.
-120.	27.97	567.7	3.246	2011.	2005.	2011.
-90.	36.18	474.9	2.914	1806.	1800.	1806.
-60.	47.27	395.3	2.336	1448.	1443.	1449.
-30.	61.06	338.7	1.364	846.	843.	846.
0.	70.00	317.6	0.	0.	-0.	-0.
30.	61.06	338.7	1.364	-846.	-843.	-846.
60.	47.27	395.3	2.336	-1449.	-1443.	-1448.
90.	36.18	474.9	2.914	-1806.	-1800.	-1806.
120.	27.97	567.7	3.246	-2011.	-2005.	-2011.
150.	21.80	668.3	3.441	-2132.	-2126.	-2131.
180.	17.00	773.5	3.561	-2206.	-2200.	-2205.
210.	13.12	881.5	3.637	-2253.	-2247.	-2251.
240.	9.89	991.4	3.686	-2283.	-2277.	-2281.
270.	7.11	1102.5	3.717	-2302.	-2296.	-2300.
300.	4.67	1214.3	3.737	-2314.	-2308.	-2312.
330.	2.48	1326.6	3.748	-2321.	-2316.	-2319.
360.	0.48	1439.1	3.754	-2324.	-2319.	-2322.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

366.0 ROT SLANT RANGE(E) IS 1464.9 -2325.

366.0 ROT SLANT RANGE(W) IS 1464.2 -2322.

SMAX IS 1467.7

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 300.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	0.51	1437.5	3.758	2325.	2322.	2327.
-330.	2.51	1324.8	3.754	2323.	2319.	2324.
-300.	4.71	1212.4	3.744	2317.	2313.	2318.
-270.	7.16	1100.3	3.725	2305.	2301.	2307.
-240.	9.95	989.0	3.695	2287.	2283.	2288.
-210.	13.21	878.8	3.649	2259.	2254.	2260.
-180.	17.13	770.3	3.576	2214.	2209.	2215.
-150.	21.99	664.6	3.461	2143.	2138.	2144.
-120.	28.28	563.4	3.272	2027.	2021.	2027.
-90.	36.75	469.7	2.947	1826.	1821.	1827.
-60.	48.44	389.0	2.374	1472.	1467.	1472.
-30.	63.74	331.3	1.395	865.	861.	865.
0.	75.00	309.7	0.	-0.	-0.	0.
30.	63.74	331.3	1.395	-865.	-861.	-865.
60.	48.44	389.0	2.374	-1472.	-1467.	-1472.
90.	36.75	469.7	2.947	-1827.	-1821.	-1826.
120.	28.28	563.4	3.272	-2027.	-2021.	-2027.
150.	21.99	664.6	3.461	-2144.	-2138.	-2143.
180.	17.13	770.3	3.576	-2215.	-2209.	-2214.
210.	13.21	878.8	3.649	-2260.	-2254.	-2259.
240.	9.95	989.0	3.695	-2288.	-2283.	-2287.
270.	7.16	1100.3	3.725	-2307.	-2301.	-2305.
300.	4.71	1212.4	3.744	-2318.	-2313.	-2317.
330.	2.51	1324.8	3.754	-2324.	-2319.	-2323.
360.	0.51	1437.5	3.758	-2327.	-2322.	-2325.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

367.0 ROT SLANT RANGE(E) IS 1467.0 -2327.

367.0 ROT SLANT RANGE(W) IS 1466.5 -2325.

SMAX IS 1467.7

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 300.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	0.54	1435.6	3.764	2330.	2325.	2330.
-330.	2.55	1322.8	3.761	2328.	2323.	2328.
-300.	4.75	1210.1	3.752	2322.	2318.	2322.
-270.	7.22	1097.7	3.735	2312.	2307.	2312.
-240.	10.03	986.1	3.707	2295.	2290.	2295.
-210.	13.32	875.5	3.663	2268.	2263.	2268.
-180.	17.28	766.5	3.595	2226.	2221.	2226.
-150.	22.23	660.2	3.485	2158.	2153.	2158.
-120.	28.67	558.2	3.303	2046.	2040.	2046.
-90.	37.47	463.4	2.988	1851.	1846.	1851.
-60.	49.95	381.4	2.422	1502.	1496.	1502.
-30.	67.61	322.3	1.434	889.	886.	889.
0.	89.99	300.0	0.	-0.	-0.	0.
30.	67.61	322.3	1.434	-889.	-886.	-889.
60.	49.95	381.4	2.422	-1502.	-1496.	-1502.
90.	37.47	463.4	2.988	-1851.	-1846.	-1851.
120.	28.67	558.2	3.303	-2046.	-2040.	-2046.
150.	22.23	660.2	3.485	-2158.	-2153.	-2158.
180.	17.28	766.5	3.595	-2226.	-2221.	-2226.
210.	13.32	875.5	3.663	-2268.	-2263.	-2268.
240.	10.03	986.1	3.707	-2295.	-2290.	-2295.
270.	7.22	1097.7	3.735	-2312.	-2307.	-2312.
300.	4.75	1210.1	3.752	-2322.	-2318.	-2322.
330.	2.55	1322.8	3.761	-2328.	-2323.	-2328.
360.	0.54	1435.6	3.764	-2330.	-2325.	-2330.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

367.0 ROT SLANT RANGE(E) IS 1464.9 -2330.

367.0 ROT SLANT RANGE(W) IS 1464.9 -2330.

SMAX IS 1467.7

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 350.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-150.	0.23	1576.9	1.309	812.	809.	819.
-120.	0.84	1541.2	1.073	666.	663.	671.
-90.	1.33	1512.7	0.821	510.	507.	513.
-60.	1.70	1492.0	0.555	346.	343.	347.
-30.	1.92	1479.5	0.280	174.	173.	175.
0.	2.00	1475.3	0.	0.	-0.	-0.
30.	1.92	1479.5	0.280	-175.	-173.	-174.
60.	1.70	1492.0	0.555	-347.	-343.	-346.
90.	1.33	1512.7	0.821	-513.	-507.	-510.
120.	0.84	1541.2	1.073	-671.	-663.	-666.
150.	0.23	1576.9	1.309	-819.	-809.	-812.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

161.0 ROT SLANT RANGE(E) IS 1589.8 -870.

162.0 ROT SLANT RANGE(W) IS 1590.5 -867.

SMAX IS 1590.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 350.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-300.	0.18	1580.1	2.682	1656.	1657.	1674.
-270.	1.53	1501.6	2.549	1575.	1575.	1590.
-240.	2.88	1427.4	2.390	1478.	1477.	1491.
-210.	4.20	1358.5	2.203	1364.	1361.	1375.
-180.	5.49	1295.6	1.985	1229.	1226.	1238.
-150.	6.69	1239.7	1.732	1074.	1070.	1080.
-120.	7.78	1192.0	1.443	896.	892.	900.
-90.	8.70	1153.5	1.120	696.	692.	698.
-60.	9.40	1125.1	0.766	476.	473.	477.
-30.	9.85	1107.7	0.389	242.	240.	242.
0.	10.00	1101.9	0.	0.	-0.	-0.
30.	9.85	1107.7	0.389	-242.	-240.	-242.
60.	9.40	1125.1	0.766	-477.	-473.	-476.
90.	8.70	1153.5	1.120	-698.	-692.	-696.
120.	7.78	1192.0	1.443	-900.	-892.	-896.
150.	6.69	1239.7	1.732	-1080.	-1070.	-1074.
180.	5.49	1295.6	1.985	-1238.	-1226.	-1229.
210.	4.20	1358.5	2.203	-1375.	-1361.	-1364.
240.	2.88	1427.4	2.390	-1491.	-1477.	-1478.
270.	1.53	1501.6	2.549	-1590.	-1575.	-1575.
300.	0.18	1580.1	2.682	-1674.	-1657.	-1656.

HE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

303.0 ROT SLANT RANGE(E) IS 1590.6 -1682.

304.0 ROT SLANT RANGE(W) IS 1589.7 -1666.

SMAX IS 1590.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 350.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-330.	0.48	1562.2	3.015	1861.	1862.	1878.
-300.	2.04	1473.1	2.917	1802.	1802.	1817.
-270.	3.64	1387.4	2.797	1729.	1728.	1742.
-240.	5.28	1305.6	2.649	1639.	1637.	1650.
-210.	6.94	1228.7	2.470	1529.	1526.	1538.
-180.	8.59	1157.8	2.252	1395.	1391.	1403.
-150.	10.20	1094.1	1.989	1233.	1229.	1239.
-120.	11.71	1038.9	1.679	1041.	1037.	1046.
-90.	13.04	993.9	1.318	818.	814.	821.
-60.	14.09	960.3	0.910	565.	562.	567.
-30.	14.77	939.6	0.465	289.	287.	290.
0.	15.00	932.6	0.	0.	-0.	-0.
30.	14.77	939.6	0.465	-290.	-287.	-289.
60.	14.09	960.3	0.910	-567.	-562.	-565.
90.	13.04	993.9	1.318	-821.	-814.	-818.
120.	11.71	1038.9	1.679	-1046.	-1037.	-1041.
150.	10.20	1094.1	1.989	-1239.	-1229.	-1233.
180.	8.59	1157.8	2.252	-1403.	-1391.	-1395.
210.	6.94	1228.7	2.470	-1538.	-1526.	-1529.
240.	5.28	1305.6	2.649	-1650.	-1637.	-1639.
270.	3.64	1387.4	2.797	-1742.	-1728.	-1729.
300.	2.04	1473.1	2.917	-1817.	-1802.	-1802.
330.	0.48	1562.2	3.015	-1878.	-1862.	-1861.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

338.0 ROT SLANT RANGE(E) IS 1589.9 -1892.

339.0 ROT SLANT RANGE(W) IS 1588.9 -1877.

SMAX IS 1590.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 350.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.35	1570.0	3.605	2228.	2227.	2236.
-360.	2.24	1462.0	3.589	2219.	2217.	2226.
-330.	4.28	1354.7	3.565	2204.	2202.	2211.
-300.	6.50	1248.2	3.530	2183.	2181.	2189.
-270.	8.95	1143.0	3.481	2153.	2150.	2159.
-240.	11.70	1039.6	3.412	2112.	2108.	2116.
-210.	14.80	938.6	3.316	2052.	2048.	2057.
-180.	18.37	841.0	3.179	1968.	1964.	1972.
-150.	22.50	748.5	2.982	1848.	1842.	1850.
-120.	27.28	663.0	2.697	1672.	1666.	1674.
-90.	32.70	587.9	2.284	1417.	1411.	1418.
-60.	38.34	527.7	1.698	1054.	1049.	1055.
-30.	43.07	488.0	0.919	571.	568.	571.
0.	45.00	474.0	0.	0.	-0.	-0.
30.	43.07	488.0	0.919	-571.	-568.	-571.
60.	38.34	527.7	1.698	-1055.	-1049.	-1054.
90.	32.70	587.9	2.284	-1418.	-1411.	-1417.
120.	27.28	663.0	2.697	-1674.	-1666.	-1672.
150.	22.50	748.5	2.982	-1850.	-1842.	-1848.
180.	18.37	841.0	3.179	-1972.	-1964.	-1968.
210.	14.80	938.6	3.316	-2057.	-2048.	-2052.
240.	11.70	1039.6	3.412	-2116.	-2108.	-2112.
270.	8.95	1143.0	3.481	-2159.	-2150.	-2153.
300.	6.50	1248.2	3.530	-2189.	-2181.	-2183.
330.	4.28	1354.7	3.565	-2211.	-2202.	-2204.
360.	2.24	1462.0	3.589	-2226.	-2217.	-2219.
390.	0.35	1570.0	3.605	-2236.	-2227.	-2228.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

394.0 ROT SLANT RANGE(E) IS 1588.6 -2237.

395.0 ROT SLANT RANGE(W) IS 1589.8 -2229.

SMAX IS 1590.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 350.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.79	1544.3	3.677	2275.	2272.	2278.
-360.	2.76	1434.0	3.672	2271.	2268.	2274.
-330.	4.90	1324.0	3.660	2264.	2261.	2267.
-300.	7.26	1214.5	3.640	2253.	2249.	2255.
-270.	9.90	1105.7	3.611	2235.	2231.	2237.
-240.	12.91	998.0	3.566	2208.	2203.	2209.
-210.	16.42	891.9	3.501	2167.	2163.	2169.
-180.	20.61	788.3	3.403	2107.	2102.	2109.
-150.	25.74	688.3	3.254	2016.	2010.	2017.
-120.	32.21	593.9	3.022	1872.	1867.	1873.
-90.	40.51	508.4	2.651	1643.	1637.	1644.
-60.	51.08	437.1	2.057	1276.	1271.	1276.
-30.	63.07	388.0	1.159	719.	716.	719.
0.	70.00	370.2	0.	-0.	-0.	0.
30.	63.07	388.0	1.159	-719.	-716.	-719.
60.	51.08	437.1	2.057	-1276.	-1271.	-1276.
90.	40.51	508.4	2.651	-1644.	-1637.	-1643.
120.	32.21	593.9	3.022	-1873.	-1867.	-1872.
150.	25.74	688.3	3.254	-2017.	-2010.	-2016.
180.	20.61	788.3	3.403	-2109.	-2102.	-2107.
210.	16.42	891.9	3.501	-2169.	-2163.	-2167.
240.	12.91	998.0	3.566	-2209.	-2203.	-2208.
270.	9.90	1105.7	3.611	-2237.	-2231.	-2235.
300.	7.26	1214.5	3.640	-2255.	-2249.	-2253.
330.	4.90	1324.0	3.660	-2267.	-2261.	-2264.
360.	2.76	1434.0	3.672	-2274.	-2268.	-2271.
390.	0.79	1544.3	3.677	-2278.	-2272.	-2275.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

401.0 ROT SLANT RANGE(E) IS 1588.4 -2278.

401.0 ROT SLANT RANGE(W) IS 1587.4 -2275.

SMAX IS 1590.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 350.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.82	1542.3	3.683	2279.	2275.	2281.
-360.	2.79	1431.9	3.678	2276.	2272.	2278.
-330.	4.94	1321.7	3.667	2269.	2265.	2271.
-300.	7.32	1211.9	3.649	2258.	2254.	2260.
-270.	9.98	1102.8	3.621	2241.	2237.	2243.
-240.	13.01	994.8	3.579	2215.	2211.	2217.
-210.	16.56	888.3	3.516	2177.	2172.	2178.
-180.	20.80	784.1	3.422	2119.	2114.	2120.
-150.	26.03	683.5	3.277	2030.	2025.	2031.
-120.	32.66	588.3	3.051	1890.	1885.	1891.
-90.	41.30	501.8	2.686	1665.	1659.	1665.
-60.	52.57	429.4	2.094	1299.	1294.	1299.
-30.	66.11	379.4	1.186	736.	733.	736.
0.	75.00	361.2	0.	0.	-0.	-0.
30.	66.11	379.4	1.186	-736.	-733.	-736.
60.	52.57	429.4	2.094	-1299.	-1294.	-1299.
90.	41.30	501.8	2.686	-1665.	-1659.	-1665.
120.	32.66	588.3	3.051	-1891.	-1885.	-1890.
150.	26.03	683.5	3.277	-2031.	-2025.	-2030.
180.	20.80	784.1	3.422	-2120.	-2114.	-2119.
210.	16.56	888.3	3.516	-2178.	-2172.	-2177.
240.	13.01	994.8	3.579	-2217.	-2211.	-2215.
270.	9.98	1102.8	3.621	-2243.	-2237.	-2241.
300.	7.32	1211.9	3.649	-2260.	-2254.	-2258.
330.	4.94	1321.7	3.667	-2271.	-2265.	-2269.
360.	2.79	1431.9	3.678	-2278.	-2272.	-2276.
390.	0.82	1542.3	3.683	-2281.	-2275.	-2279.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

402.0 ROT SLANT RANGE(E) IS 1590.0 -2281.

402.0 ROT SLANT RANGE(W) IS 1589.3 -2279.

SMAX IS 1590.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 350.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.86	1539.9	3.690	2284.	2279.	2284.
-360.	2.84	1429.3	3.686	2281.	2277.	2281.
-330.	5.00	1318.9	3.676	2276.	2271.	2276.
-300.	7.39	1208.8	3.660	2266.	2261.	2266.
-270.	10.07	1099.4	3.633	2250.	2245.	2250.
-240.	13.13	990.9	3.594	2225.	2220.	2225.
-210.	16.72	883.9	3.534	2189.	2183.	2189.
-180.	21.03	779.2	3.445	2134.	2128.	2134.
-150.	26.37	677.8	3.306	2048.	2042.	2048.
-120.	33.22	581.6	3.087	1913.	1907.	1913.
-90.	42.29	493.9	2.730	1692.	1686.	1692.
-60.	54.53	420.1	2.141	1328.	1323.	1328.
-30.	70.69	368.8	1.220	757.	754.	757.
0.	89.99	350.0	0.	-0.	-0.	0.
30.	70.69	368.8	1.220	-757.	-754.	-757.
60.	54.53	420.1	2.141	-1328.	-1323.	-1328.
90.	42.29	493.9	2.730	-1692.	-1686.	-1692.
120.	33.22	581.6	3.087	-1913.	-1907.	-1913.
150.	26.37	677.8	3.306	-2048.	-2042.	-2048.
180.	21.03	779.2	3.445	-2134.	-2128.	-2134.
210.	16.72	883.9	3.534	-2189.	-2183.	-2189.
240.	13.13	990.9	3.594	-2225.	-2220.	-2225.
270.	10.07	1099.4	3.633	-2250.	-2245.	-2250.
300.	7.39	1208.8	3.660	-2266.	-2261.	-2266.
330.	5.00	1318.9	3.676	-2276.	-2271.	-2276.
360.	2.84	1429.3	3.686	-2281.	-2277.	-2281.
390.	0.86	1539.9	3.690	-2284.	-2279.	-2284.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

402.0 ROT SLANT RANGE(E) IS 1587.4 -2284.

402.0 ROT SLANT RANGE(W) IS 1587.4 -2284.

SMAX IS 1590.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 400.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-150.	0.41	1681.9	1.182	733.	730.	740.
-120.	0.96	1649.7	0.965	599.	596.	604.
-90.	1.41	1624.2	0.736	458.	455.	460.
-60.	1.73	1605.6	0.497	309.	307.	310.
-30.	1.93	1594.4	0.250	156.	155.	156.
0.	2.00	1590.7	0.	0.	-0.	-0.
30.	1.93	1594.4	0.250	-156.	-155.	-156.
60.	1.73	1605.6	0.497	-310.	-307.	-309.
90.	1.41	1624.2	0.736	-460.	-455.	-458.
120.	0.96	1649.7	0.965	-604.	-596.	-599.
150.	0.41	1681.9	1.182	-740.	-730.	-733.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

171.0 ROT SLANT RANGE(E) IS 1706.0 -830.

171.0 ROT SLANT RANGE(W) IS 1705.2 -821.

SMAX IS 1706.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 400.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-300.	1.05	1644.9	2.492	1539.	1539.	1557.
-270.	2.33	1572.2	2.354	1455.	1454.	1471.
-240.	3.60	1503.9	2.194	1357.	1355.	1370.
-210.	4.84	1440.8	2.009	1243.	1241.	1254.
-180.	6.02	1383.6	1.797	1113.	1110.	1122.
-150.	7.10	1333.3	1.557	965.	962.	972.
-120.	8.07	1290.5	1.288	800.	796.	804.
-90.	8.88	1256.2	0.994	617.	614.	620.
-60.	9.49	1231.1	0.677	421.	418.	422.
-30.	9.87	1215.8	0.343	213.	212.	214.
0.	10.00	1210.7	0.	0.	-0.	-0.
30.	9.87	1215.8	0.343	-214.	-212.	-213.
60.	9.49	1231.1	0.677	-422.	-418.	-421.
90.	8.88	1256.2	0.994	-620.	-614.	-617.
120.	8.07	1290.5	1.288	-804.	-796.	-800.
150.	7.10	1333.3	1.557	-972.	-962.	-965.
180.	6.02	1383.6	1.797	-1122.	-1110.	-1113.
210.	4.84	1440.8	2.009	-1254.	-1241.	-1243.
240.	3.60	1503.9	2.194	-1370.	-1355.	-1357.
270.	2.33	1572.2	2.354	-1471.	-1454.	-1455.
300.	1.05	1644.9	2.492	-1557.	-1539.	-1539.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

323.0 ROT SLANT RANGE(E) IS 1706.0 -1615.

324.0 ROT SLANT RANGE(W) IS 1704.3 -1597.

SMAX IS 1706.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 400.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	0.17	1696.2	2.924	1804.	1806.	1824.
-330.	1.66	1609.8	2.835	1750.	1751.	1768.
-300.	3.18	1526.3	2.728	1685.	1685.	1701.
-270.	4.73	1446.3	2.599	1607.	1606.	1621.
-240.	6.29	1370.6	2.445	1512.	1510.	1524.
-210.	7.85	1299.9	2.261	1400.	1397.	1410.
-180.	9.39	1235.3	2.044	1266.	1263.	1274.
-150.	10.85	1177.7	1.790	1110.	1106.	1116.
-120.	12.19	1128.3	1.497	929.	925.	933.
-90.	13.34	1088.2	1.165	724.	720.	726.
-60.	14.24	1058.7	0.799	497.	494.	498.
-30.	14.80	1040.6	0.407	253.	251.	253.
0.	15.00	1034.4	0.	0.	-0.	-0.
30.	14.80	1040.6	0.407	-253.	-251.	-253.
60.	14.24	1058.7	0.799	-498.	-494.	-497.
90.	13.34	1088.2	1.165	-726.	-720.	-724.
120.	12.19	1128.3	1.497	-933.	-925.	-929.
150.	10.85	1177.7	1.790	-1116.	-1106.	-1110.
180.	9.39	1235.3	2.044	-1274.	-1263.	-1266.
210.	7.85	1299.9	2.261	-1410.	-1397.	-1400.
240.	6.29	1370.6	2.445	-1524.	-1510.	-1512.
270.	4.73	1446.3	2.599	-1621.	-1606.	-1607.
300.	3.18	1526.3	2.728	-1701.	-1685.	-1685.
330.	1.66	1609.8	2.835	-1768.	-1751.	-1750.
360.	0.17	1696.2	2.924	-1824.	-1806.	-1804.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

362.0 ROT SLANT RANGE(E) IS 1706.2 -1827.

363.0 ROT SLANT RANGE(W) IS 1704.1 -1809.

SMAX IS 1706.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 400.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	0.49	1677.6	3.524	2177.	2177.	2186.
-390.	2.33	1572.1	3.507	2168.	2167.	2176.
-360.	4.31	1467.2	3.484	2153.	2152.	2161.
-330.	6.45	1363.2	3.450	2133.	2131.	2141.
-300.	8.78	1260.3	3.405	2106.	2103.	2112.
-270.	11.34	1159.1	3.342	2068.	2065.	2074.
-240.	14.20	1060.0	3.258	2016.	2013.	2022.
-210.	17.40	963.9	3.143	1946.	1941.	1950.
-180.	21.02	871.9	2.985	1849.	1844.	1852.
-150.	25.13	785.5	2.766	1714.	1709.	1717.
-120.	29.74	706.8	2.463	1527.	1521.	1529.
-90.	34.73	638.8	2.046	1269.	1264.	1271.
-60.	39.63	585.4	1.490	925.	920.	926.
-30.	43.49	550.9	0.792	492.	489.	492.
0.	45.00	538.9	0.	0.	-0.	-0.
30.	43.49	550.9	0.792	-492.	-489.	-492.
60.	39.63	585.4	1.490	-926.	-920.	-925.
90.	34.73	638.8	2.046	-1271.	-1264.	-1269.
120.	29.74	706.8	2.463	-1529.	-1521.	-1527.
150.	25.13	785.5	2.766	-1717.	-1709.	-1714.
180.	21.02	871.9	2.985	-1852.	-1844.	-1849.
210.	17.40	963.9	3.143	-1950.	-1941.	-1946.
240.	14.20	1060.0	3.258	-2022.	-2013.	-2016.
270.	11.34	1159.1	3.342	-2074.	-2065.	-2068.
300.	8.78	1260.3	3.405	-2112.	-2103.	-2106.
330.	6.45	1363.2	3.450	-2141.	-2131.	-2133.
360.	4.31	1467.2	3.484	-2161.	-2152.	-2153.
390.	2.33	1572.1	3.507	-2176.	-2167.	-2168.
420.	0.49	1677.6	3.524	-2186.	-2177.	-2177.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

426.0 ROT SLANT RANGE(E) IS 1703.6 -2188.

427.0 ROT SLANT RANGE(W) IS 1704.0 -2179.

SMAX IS 1706.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 400.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	1.00	1647.2	3.604	2229.	2226.	2232.
-390.	2.94	1539.2	3.598	2225.	2222.	2229.
-360.	5.03	1431.4	3.586	2219.	2215.	2222.
-330.	7.31	1324.1	3.567	2207.	2204.	2210.
-300.	9.83	1217.5	3.539	2190.	2186.	2193.
-270.	12.65	1111.9	3.499	2166.	2162.	2168.
-240.	15.88	1007.7	3.441	2131.	2126.	2133.
-210.	19.62	905.6	3.359	2080.	2075.	2082.
-180.	24.05	806.6	3.240	2007.	2002.	2008.
-150.	29.42	711.8	3.065	1899.	1893.	1900.
-120.	36.03	623.5	2.803	1738.	1732.	1738.
-90.	44.23	544.9	2.409	1493.	1488.	1494.
-60.	54.11	480.9	1.821	1130.	1125.	1130.
-30.	64.50	438.0	1.000	621.	618.	621.
0.	70.00	422.8	0.	-0.	-0.	0.
30.	64.50	438.0	1.000	-621.	-618.	-621.
60.	54.11	480.9	1.821	-1130.	-1125.	-1130.
90.	44.23	544.9	2.409	-1494.	-1488.	-1493.
120.	36.03	623.5	2.803	-1738.	-1732.	-1738.
150.	29.42	711.8	3.065	-1900.	-1893.	-1899.
180.	24.05	806.6	3.240	-2008.	-2002.	-2007.
210.	19.62	905.6	3.359	-2082.	-2075.	-2080.
240.	15.88	1007.7	3.441	-2133.	-2126.	-2131.
270.	12.65	1111.9	3.499	-2168.	-2162.	-2166.
300.	9.83	1217.5	3.539	-2193.	-2186.	-2190.
330.	7.31	1324.1	3.567	-2210.	-2204.	-2207.
360.	5.03	1431.4	3.586	-2222.	-2215.	-2219.
390.	2.94	1539.2	3.598	-2229.	-2222.	-2225.
420.	1.00	1647.2	3.604	-2232.	-2226.	-2229.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

435.0 ROT SLANT RANGE(E) IS 1705.4 -2233.

435.0 ROT SLANT RANGE(W) IS 1704.2 -2230.

SMAX IS 1706.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 400.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	1.05	1644.9	3.610	2233.	2230.	2236.
-390.	2.99	1536.7	3.605	2230.	2227.	2233.
-360.	5.08	1428.7	3.594	2224.	2220.	2226.
-330.	7.38	1321.1	3.577	2213.	2209.	2215.
-300.	9.91	1214.2	3.550	2197.	2193.	2199.
-270.	12.76	1108.2	3.512	2174.	2169.	2176.
-240.	16.01	1003.6	3.457	2140.	2135.	2142.
-210.	19.80	901.0	3.377	2092.	2086.	2093.
-180.	24.31	801.3	3.262	2021.	2015.	2022.
-150.	29.80	705.9	3.092	1916.	1910.	1916.
-120.	36.63	616.7	2.835	1757.	1752.	1758.
-90.	45.23	537.1	2.444	1516.	1510.	1516.
-60.	55.90	472.0	1.856	1151.	1146.	1152.
-30.	67.85	428.2	1.023	635.	632.	635.
0.	75.00	412.6	0.	0.	-0.	-0.
30.	67.85	428.2	1.023	-635.	-632.	-635.
60.	55.90	472.0	1.856	-1152.	-1146.	-1151.
90.	45.23	537.1	2.444	-1516.	-1510.	-1516.
120.	36.63	616.7	2.835	-1758.	-1752.	-1757.
150.	29.80	705.9	3.092	-1916.	-1910.	-1916.
180.	24.31	801.3	3.262	-2022.	-2015.	-2021.
210.	19.80	901.0	3.377	-2093.	-2086.	-2092.
240.	16.01	1003.6	3.457	-2142.	-2135.	-2140.
270.	12.76	1108.2	3.512	-2176.	-2169.	-2174.
300.	9.91	1214.2	3.550	-2199.	-2193.	-2197.
330.	7.38	1321.1	3.577	-2215.	-2209.	-2213.
360.	5.08	1428.7	3.594	-2226.	-2220.	-2224.
390.	2.99	1536.7	3.605	-2233.	-2227.	-2230.
420.	1.05	1644.9	3.610	-2236.	-2230.	-2233.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

435.0 ROT SLANT RANGE(E) IS 1703.0 -2236.

436.0 ROT SLANT RANGE(W) IS 1705.7 -2234.

SMAX IS 1706.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 400.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	1.09	1642.1	3.618	2239.	2235.	2239.
-390.	3.04	1533.6	3.613	2237.	2232.	2237.
-360.	5.15	1425.3	3.604	2231.	2226.	2231.
-330.	7.46	1317.5	3.588	2221.	2216.	2221.
-300.	10.01	1210.2	3.563	2206.	2201.	2206.
-270.	12.89	1103.8	3.527	2184.	2179.	2184.
-240.	16.18	998.7	3.475	2152.	2147.	2152.
-210.	20.03	895.5	3.400	2106.	2100.	2106.
-180.	24.63	795.1	3.289	2038.	2032.	2038.
-150.	30.28	698.7	3.125	1936.	1930.	1936.
-120.	37.39	608.4	2.875	1782.	1776.	1782.
-90.	46.52	527.5	2.490	1544.	1538.	1544.
-60.	58.31	461.1	1.901	1179.	1174.	1179.
-30.	73.07	416.1	1.054	654.	651.	654.
0.	89.99	400.0	0.	-0.	-0.	0.
30.	73.07	416.1	1.054	-654.	-651.	-654.
60.	58.31	461.1	1.901	-1179.	-1174.	-1179.
90.	46.52	527.5	2.490	-1544.	-1538.	-1544.
120.	37.39	608.4	2.875	-1782.	-1776.	-1782.
150.	30.28	698.7	3.125	-1936.	-1930.	-1936.
180.	24.63	795.1	3.289	-2038.	-2032.	-2038.
210.	20.03	895.5	3.400	-2106.	-2100.	-2106.
240.	16.18	998.7	3.475	-2152.	-2147.	-2152.
270.	12.89	1103.8	3.527	-2184.	-2179.	-2184.
300.	10.01	1210.2	3.563	-2206.	-2201.	-2206.
330.	7.46	1317.5	3.588	-2221.	-2216.	-2221.
360.	5.15	1425.3	3.604	-2231.	-2226.	-2231.
390.	3.04	1533.6	3.613	-2237.	-2232.	-2237.
420.	1.09	1642.1	3.618	-2239.	-2235.	-2239.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

436.0 ROT SLANT RANGE(E) IS 1703.5 -2239.

436.0 ROT SLANT RANGE(W) IS 1703.5 -2239.

SMAX IS 1706.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 450.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-180.	0.	0.	0.	782.	0.	791.
-150.	0.56	1782.7	1.074	666.	663.	673.
-120.	1.06	1753.5	0.875	543.	540.	548.
-90.	1.47	1730.4	0.665	414.	411.	416.
-60.	1.76	1713.6	0.448	279.	277.	280.
-30.	1.94	1703.5	0.226	141.	139.	141.
0.	2.00	1700.1	0.	0.	-0.	-0.
30.	1.94	1703.5	0.226	-141.	-139.	-141.
60.	1.76	1713.6	0.448	-280.	-277.	-279.
90.	1.47	1730.4	0.665	-416.	-411.	-414.
120.	1.06	1753.5	0.875	-548.	-540.	-543.
150.	0.56	1782.7	1.074	-673.	-663.	-666.
180.	0.	0.	0.	-791.	0.	-782.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

180.0	ROT SLANT RANGE(E) IS 1815.3	-791.	
181.0	ROT SLANT RANGE(W) IS 1815.6		-786.
	SMAX IS 1816.2		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 450.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-330.	0.57	1782.3	2.439	1505.	1507.	1526.
-300.	1.81	1710.9	2.318	1431.	1432.	1450.
-270.	3.03	1643.4	2.178	1346.	1346.	1362.
-240.	4.22	1580.4	2.019	1249.	1247.	1262.
-210.	5.37	1522.5	1.838	1138.	1135.	1149.
-180.	6.45	1470.4	1.635	1013.	1010.	1022.
-150.	7.44	1424.7	1.408	874.	870.	880.
-120.	8.30	1386.1	1.160	720.	716.	724.
-90.	9.02	1355.3	0.891	554.	550.	556.
-60.	9.56	1332.8	0.604	376.	373.	377.
-30.	9.89	1319.2	0.305	190.	189.	190.
0.	10.00	1314.6	0.	0.	-0.	-0.
30.	9.89	1319.2	0.305	-190.	-189.	-190.
60.	9.56	1332.8	0.604	-377.	-373.	-376.
90.	9.02	1355.3	0.891	-556.	-550.	-554.
120.	8.30	1386.1	1.160	-724.	-716.	-720.
150.	7.44	1424.7	1.408	-880.	-870.	-874.
180.	6.45	1470.4	1.635	-1022.	-1010.	-1013.
210.	5.37	1522.5	1.838	-1149.	-1135.	-1138.
240.	4.22	1580.4	2.019	-1262.	-1247.	-1249.
270.	3.03	1643.4	2.178	-1362.	-1346.	-1346.
300.	1.81	1710.9	2.318	-1450.	-1432.	-1431.
330.	0.57	1782.3	2.439	-1526.	-1507.	-1505.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

342.0 ROT SLANT RANGE(E) IS 1814.8 -1554.

344.0 ROT SLANT RANGE(W) IS 1814.8 -1536.

SMAX IS 1816.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 450.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	1.27	1741.6	2.761	1703.	1705.	1724.
-330.	2.72	1660.2	2.665	1645.	1646.	1664.
-300.	4.19	1581.9	2.551	1576.	1576.	1592.
-270.	5.68	1507.4	2.417	1494.	1493.	1509.
-240.	7.16	1437.2	2.259	1398.	1396.	1410.
-210.	8.63	1372.1	2.076	1285.	1282.	1295.
-180.	10.04	1312.9	1.863	1155.	1151.	1163.
-150.	11.37	1260.6	1.620	1005.	1001.	1011.
-120.	12.56	1216.0	1.345	835.	831.	839.
-90.	13.57	1180.2	1.041	647.	643.	649.
-60.	14.35	1153.9	0.710	442.	439.	443.
-30.	14.83	1137.8	0.360	224.	223.	225.
0.	15.00	1132.3	0.	0.	-0.	-0.
30.	14.83	1137.8	0.360	-225.	-223.	-224.
60.	14.35	1153.9	0.710	-443.	-439.	-442.
90.	13.57	1180.2	1.041	-649.	-643.	-647.
120.	12.56	1216.0	1.345	-839.	-831.	-835.
150.	11.37	1260.6	1.620	-1011.	-1001.	-1005.
180.	10.04	1312.9	1.863	-1163.	-1151.	-1155.
210.	8.63	1372.1	2.076	-1295.	-1282.	-1285.
240.	7.16	1437.2	2.259	-1410.	-1396.	-1398.
270.	5.68	1507.4	2.417	-1509.	-1493.	-1494.
300.	4.19	1581.9	2.551	-1592.	-1576.	-1576.
330.	2.72	1660.2	2.665	-1664.	-1646.	-1645.
360.	1.27	1741.6	2.761	-1724.	-1705.	-1703.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

385.0 ROT SLANT RANGE(E) IS 1816.1 -1767.

387.0 ROT SLANT RANGE(W) IS 1815.8 -1747.

SMAX IS 1816.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 450.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	0.56	1783.1	3.446	2128.	2129.	2139.
-420.	2.36	1679.9	3.429	2119.	2119.	2129.
-390.	4.28	1577.4	3.406	2105.	2104.	2114.
-360.	6.34	1475.6	3.375	2086.	2085.	2095.
-330.	8.56	1375.0	3.332	2060.	2059.	2068.
-300.	10.97	1275.8	3.276	2026.	2024.	2033.
-270.	13.62	1178.6	3.201	1981.	1977.	1987.
-240.	16.54	1084.0	3.102	1920.	1916.	1926.
-210.	19.79	992.8	2.971	1840.	1835.	1845.
-180.	23.41	906.2	2.796	1732.	1727.	1736.
-150.	27.43	825.7	2.561	1588.	1582.	1591.
-120.	31.80	753.3	2.249	1395.	1390.	1397.
-90.	36.34	691.7	1.839	1141.	1136.	1143.
-60.	40.60	644.1	1.318	818.	814.	819.
-30.	43.79	613.7	0.692	430.	427.	430.
0.	45.00	603.2	0.	0.	-0.	-0.
30.	43.79	613.7	0.692	-430.	-427.	-430.
60.	40.60	644.1	1.318	-819.	-814.	-818.
90.	36.34	691.7	1.839	-1143.	-1136.	-1141.
120.	31.80	753.3	2.249	-1397.	-1390.	-1395.
150.	27.43	825.7	2.561	-1591.	-1582.	-1588.
180.	23.41	906.2	2.796	-1736.	-1727.	-1732.
210.	19.79	992.8	2.971	-1845.	-1835.	-1840.
240.	16.54	1084.0	3.102	-1926.	-1916.	-1920.
270.	13.62	1178.6	3.201	-1987.	-1977.	-1981.
300.	10.97	1275.8	3.276	-2033.	-2024.	-2026.
330.	8.56	1375.0	3.332	-2068.	-2059.	-2060.
360.	6.34	1475.6	3.375	-2095.	-2085.	-2086.
390.	4.28	1577.4	3.406	-2114.	-2104.	-2105.
420.	2.36	1679.9	3.429	-2129.	-2119.	-2119.
450.	0.56	1783.1	3.446	-2139.	-2129.	-2128.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

458.0 ROT SLANT RANGE(E) IS 1816.1 -2141.

459.0 ROT SLANT RANGE(W) IS 1815.7 -2130.

SMAX IS 1816.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 450.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	1.16	1748.1	3.533	2185.	2182.	2189.
-420.	3.05	1642.2	3.526	2181.	2178.	2185.
-390.	5.09	1536.6	3.515	2174.	2171.	2178.
-360.	7.29	1431.4	3.497	2164.	2160.	2167.
-330.	9.70	1326.9	3.471	2148.	2144.	2151.
-300.	12.37	1223.3	3.434	2126.	2122.	2128.
-270.	15.35	1120.9	3.383	2095.	2090.	2097.
-240.	18.75	1020.4	3.313	2051.	2046.	2053.
-210.	22.68	922.5	3.214	1991.	1986.	1993.
-180.	27.30	828.0	3.076	1905.	1900.	1907.
-150.	32.81	738.5	2.879	1784.	1778.	1785.
-120.	39.44	656.1	2.596	1609.	1604.	1610.
-90.	47.40	584.0	2.190	1358.	1353.	1359.
-60.	56.54	526.4	1.621	1006.	1001.	1006.
-30.	65.55	488.6	0.874	542.	540.	542.
0.	70.00	475.3	0.	0.	-0.	-0.
30.	65.55	488.6	0.874	-542.	-540.	-542.
60.	56.54	526.4	1.621	-1006.	-1001.	-1006.
90.	47.40	584.0	2.190	-1359.	-1353.	-1358.
120.	39.44	656.1	2.596	-1610.	-1604.	-1609.
150.	32.81	738.5	2.879	-1785.	-1778.	-1784.
180.	27.30	828.0	3.076	-1907.	-1900.	-1905.
210.	22.68	922.5	3.214	-1993.	-1986.	-1991.
240.	18.75	1020.4	3.313	-2053.	-2046.	-2051.
270.	15.35	1120.9	3.383	-2097.	-2090.	-2095.
300.	12.37	1223.3	3.434	-2128.	-2122.	-2126.
330.	9.70	1326.9	3.471	-2151.	-2144.	-2148.
360.	7.29	1431.4	3.497	-2167.	-2160.	-2164.
390.	5.09	1536.6	3.515	-2178.	-2171.	-2174.
420.	3.05	1642.2	3.526	-2185.	-2178.	-2181.
450.	1.16	1748.1	3.533	-2189.	-2182.	-2185.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

467.0 ROT SLANT RANGE(E) IS 1812.8 -2190.

468.0 ROT SLANT RANGE(W) IS 1814.7 -2186.

SMAX IS 1816.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 450.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	1.20	1745.4	3.540	2190.	2187.	2193.
-420.	3.11	1639.3	3.534	2186.	2183.	2189.
-390.	5.15	1533.4	3.524	2180.	2177.	2183.
-360.	7.37	1427.9	3.507	2170.	2166.	2173.
-330.	9.79	1323.1	3.482	2155.	2151.	2158.
-300.	12.48	1219.1	3.447	2134.	2130.	2136.
-270.	15.50	1116.4	3.398	2104.	2099.	2106.
-240.	18.94	1015.4	3.330	2062.	2057.	2064.
-210.	22.93	916.8	3.235	2004.	1999.	2005.
-180.	27.65	821.7	3.101	1921.	1915.	1922.
-150.	33.31	731.4	2.908	1802.	1796.	1803.
-120.	40.21	648.1	2.629	1630.	1624.	1631.
-90.	48.63	574.9	2.225	1380.	1375.	1381.
-60.	58.62	516.2	1.653	1026.	1021.	1026.
-30.	69.15	477.6	0.894	555.	552.	555.
0.	75.00	464.0	0.	-0.	-0.	0.
30.	69.15	477.6	0.894	-555.	-552.	-555.
60.	58.62	516.2	1.653	-1026.	-1021.	-1026.
90.	48.63	574.9	2.225	-1381.	-1375.	-1380.
120.	40.21	648.1	2.629	-1631.	-1624.	-1630.
150.	33.31	731.4	2.908	-1803.	-1796.	-1802.
180.	27.65	821.7	3.101	-1922.	-1915.	-1921.
210.	22.93	916.8	3.235	-2005.	-1999.	-2004.
240.	18.94	1015.4	3.330	-2064.	-2057.	-2062.
270.	15.50	1116.4	3.398	-2106.	-2099.	-2104.
300.	12.48	1219.1	3.447	-2136.	-2130.	-2134.
330.	9.79	1323.1	3.482	-2158.	-2151.	-2155.
360.	7.37	1427.9	3.507	-2173.	-2166.	-2170.
390.	5.15	1533.4	3.524	-2183.	-2177.	-2180.
420.	3.11	1639.3	3.534	-2189.	-2183.	-2186.
450.	1.20	1745.4	3.540	-2193.	-2187.	-2190.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

468.0 ROT SLANT RANGE(E) IS 1813.5 -2193.

469.0 ROT SLANT RANGE(W) IS 1815.9 -2190.

SMAX IS 1816.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 450.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	1.26	1742.1	3.548	2196.	2192.	2196.
-420.	3.17	1635.8	3.543	2194.	2189.	2194.
-390.	5.23	1529.6	3.534	2188.	2183.	2188.
-360.	7.46	1423.8	3.519	2179.	2174.	2179.
-330.	9.90	1318.5	3.496	2165.	2160.	2165.
-300.	12.62	1214.1	3.463	2145.	2139.	2145.
-270.	15.67	1110.9	3.417	2116.	2111.	2116.
-240.	19.17	1009.3	3.352	2077.	2071.	2077.
-210.	23.24	910.0	3.261	2020.	2014.	2020.
-180.	28.08	814.0	3.131	1940.	1934.	1940.
-150.	33.94	722.7	2.944	1825.	1819.	1825.
-120.	41.18	638.2	2.671	1656.	1650.	1656.
-90.	50.22	563.7	2.271	1408.	1403.	1408.
-60.	61.47	503.7	1.695	1052.	1047.	1052.
-30.	74.96	464.0	0.921	571.	569.	571.
0.	89.99	450.0	0.	-0.	-0.	0.
30.	74.96	464.0	0.921	-571.	-569.	-571.
60.	61.47	503.7	1.695	-1052.	-1047.	-1052.
90.	50.22	563.7	2.271	-1408.	-1403.	-1408.
120.	41.18	638.2	2.671	-1656.	-1650.	-1656.
150.	33.94	722.7	2.944	-1825.	-1819.	-1825.
180.	28.08	814.0	3.131	-1940.	-1934.	-1940.
210.	23.24	910.0	3.261	-2020.	-2014.	-2020.
240.	19.17	1009.3	3.352	-2077.	-2071.	-2077.
270.	15.67	1110.9	3.417	-2116.	-2111.	-2116.
300.	12.62	1214.1	3.463	-2145.	-2139.	-2145.
330.	9.90	1318.5	3.496	-2165.	-2160.	-2165.
360.	7.46	1423.8	3.519	-2179.	-2174.	-2179.
390.	5.23	1529.6	3.534	-2188.	-2183.	-2188.
420.	3.17	1635.8	3.543	-2194.	-2189.	-2194.
450.	1.26	1742.1	3.548	-2196.	-2192.	-2196.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

469.0	ROT SLANT RANGE(E) IS 1813.4	-2196.	
469.0	ROT SLANT RANGE(W) IS 1813.4		-2196.
	SMAX IS 1816.2		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 484.3 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-180.	0.10	1882.7	1.187	736.	733.	745.
-150.	0.65	1849.7	1.009	626.	623.	633.
-120.	1.12	1822.2	0.820	510.	507.	514.
-90.	1.50	1800.6	0.623	388.	385.	390.
-60.	1.78	1784.9	0.420	261.	259.	263.
-30.	1.94	1775.4	0.211	132.	130.	132.
0.	2.00	1772.3	0.	0.	-0.	-0.
30.	1.94	1775.4	0.211	-132.	-130.	-132.
60.	1.78	1784.9	0.420	-263.	-259.	-261.
90.	1.50	1800.6	0.623	-390.	-385.	-388.
120.	1.12	1822.2	0.820	-514.	-507.	-510.
150.	0.65	1849.7	1.009	-633.	-623.	-626.
180.	0.10	1882.7	1.187	-745.	-733.	-736.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

187.0 ROT SLANT RANGE(E) IS 1888.5 -771.

187.0 ROT SLANT RANGE(W) IS 1887.4 -761.

SMAX IS 1888.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 484.3 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-330.	1.08	1824.7	2.329	1437.	1439.	1459.
-300.	2.28	1756.6	2.207	1363.	1363.	1382.
-270.	3.46	1692.5	2.067	1278.	1277.	1294.
-240.	4.60	1632.8	1.910	1182.	1180.	1195.
-210.	5.69	1578.1	1.733	1073.	1071.	1084.
-180.	6.71	1529.0	1.536	952.	949.	961.
-150.	7.63	1486.1	1.320	819.	815.	825.
-120.	8.44	1450.0	1.083	673.	669.	677.
-90.	9.10	1421.2	0.830	516.	513.	518.
-60.	9.59	1400.3	0.562	350.	347.	351.
-30.	9.90	1387.6	0.284	177.	175.	177.
0.	10.00	1383.4	0.	0.	-0.	-0.
30.	9.90	1387.6	0.284	-177.	-175.	-177.
60.	9.59	1400.3	0.562	-351.	-347.	-350.
90.	9.10	1421.2	0.830	-518.	-513.	-516.
120.	8.44	1450.0	1.083	-677.	-669.	-673.
150.	7.63	1486.1	1.320	-825.	-815.	-819.
180.	6.71	1529.0	1.536	-961.	-949.	-952.
210.	5.69	1578.1	1.733	-1084.	-1071.	-1073.
240.	4.60	1632.8	1.910	-1195.	-1180.	-1182.
270.	3.46	1692.5	2.067	-1294.	-1277.	-1278.
300.	2.28	1756.6	2.207	-1382.	-1363.	-1363.
330.	1.08	1824.7	2.329	-1459.	-1439.	-1437.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

355.0 ROT SLANT RANGE(E) IS 1887.3 -1515.

357.0 ROT SLANT RANGE(W) IS 1886.7 -1496.

SMAX IS 1888.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 484.3 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.56	1855.1	2.738	1688.	1691.	1711.
-360.	1.97	1774.2	2.653	1637.	1639.	1658.
-330.	3.39	1696.1	2.553	1576.	1577.	1595.
-300.	4.83	1621.2	2.436	1505.	1505.	1522.
-270.	6.26	1550.1	2.300	1422.	1421.	1437.
-240.	7.69	1483.4	2.142	1326.	1323.	1338.
-210.	9.09	1421.8	1.960	1214.	1211.	1224.
-180.	10.42	1366.0	1.752	1086.	1082.	1094.
-150.	11.67	1316.9	1.517	941.	937.	947.
-120.	12.77	1275.3	1.255	779.	775.	783.
-90.	13.70	1241.9	0.968	602.	598.	604.
-60.	14.41	1217.4	0.659	410.	407.	411.
-30.	14.85	1202.5	0.334	208.	206.	208.
0.	15.00	1197.5	0.	0.	-0.	-0.
30.	14.85	1202.5	0.334	-208.	-206.	-208.
60.	14.41	1217.4	0.659	-411.	-407.	-410.
90.	13.70	1241.9	0.968	-604.	-598.	-602.
120.	12.77	1275.3	1.255	-783.	-775.	-779.
150.	11.67	1316.9	1.517	-947.	-937.	-941.
180.	10.42	1366.0	1.752	-1094.	-1082.	-1086.
210.	9.09	1421.8	1.960	-1224.	-1211.	-1214.
240.	7.69	1483.4	2.142	-1338.	-1323.	-1326.
270.	6.26	1550.1	2.300	-1437.	-1421.	-1422.
300.	4.83	1621.2	2.436	-1522.	-1505.	-1505.
330.	3.39	1696.1	2.553	-1595.	-1577.	-1576.
360.	1.97	1774.2	2.653	-1658.	-1639.	-1637.
390.	0.56	1855.1	2.738	-1711.	-1691.	-1688.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

400.0 ROT SLANT RANGE(E) IS 1887.6 -1727.

402.0 ROT SLANT RANGE(W) IS 1886.5 -1706.

SMAX IS 1888.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 484.3 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.04	1886.2	3.398	2098.	2099.	0.
-450.	1.78	1784.5	3.384	2090.	2090.	2101.
-420.	3.63	1683.2	3.363	2078.	2078.	2088.
-390.	5.59	1582.7	3.336	2061.	2061.	2071.
-360.	7.70	1483.2	3.298	2039.	2038.	2048.
-330.	9.96	1384.9	3.250	2010.	2008.	2018.
-300.	12.42	1288.3	3.186	1971.	1968.	1979.
-270.	15.11	1193.9	3.104	1921.	1917.	1927.
-240.	18.06	1102.4	2.996	1855.	1851.	1861.
-210.	21.31	1014.5	2.855	1768.	1764.	1773.
-180.	24.90	931.5	2.671	1655.	1650.	1659.
-150.	28.83	854.8	2.429	1506.	1501.	1509.
-120.	33.01	786.5	2.115	1312.	1307.	1315.
-90.	37.25	728.8	1.714	1064.	1059.	1065.
-60.	41.12	684.6	1.217	756.	752.	757.
-30.	43.95	656.6	0.635	395.	392.	395.
0.	45.00	647.0	0.	-0.	-0.	0.
30.	43.95	656.6	0.635	-395.	-392.	-395.
60.	41.12	684.6	1.217	-757.	-752.	-756.
90.	37.25	728.8	1.714	-1065.	-1059.	-1064.
120.	33.01	786.5	2.115	-1315.	-1307.	-1312.
150.	28.83	854.8	2.429	-1509.	-1501.	-1506.
180.	24.90	931.5	2.671	-1659.	-1650.	-1655.
210.	21.31	1014.5	2.855	-1773.	-1764.	-1768.
240.	18.06	1102.4	2.996	-1861.	-1851.	-1855.
270.	15.11	1193.9	3.104	-1927.	-1917.	-1921.
300.	12.42	1288.3	3.186	-1979.	-1968.	-1971.
330.	9.96	1384.9	3.250	-2018.	-2008.	-2010.
360.	7.70	1483.2	3.298	-2048.	-2038.	-2039.
390.	5.59	1582.7	3.336	-2071.	-2061.	-2061.
420.	3.63	1683.2	3.363	-2088.	-2078.	-2078.
450.	1.78	1784.5	3.384	-2101.	-2090.	-2090.
480.	0.04	1886.2	3.398	0.	-2099.	-2098.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

478.0 ROT SLANT RANGE(E) IS 1885.3 -2109.

480.0 ROT SLANT RANGE(W) IS 1887.7 -2098.

SMAX IS 1888.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 484.3 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.67	1849.0	3.487	2156.	2154.	2160.
-450.	2.50	1744.5	3.481	2153.	2151.	2157.
-420.	4.45	1640.2	3.472	2148.	2145.	2152.
-390.	6.55	1536.2	3.457	2139.	2135.	2142.
-360.	8.83	1432.8	3.434	2125.	2122.	2129.
-330.	11.32	1330.2	3.403	2106.	2102.	2109.
-300.	14.08	1228.7	3.361	2080.	2076.	2083.
-270.	17.17	1128.8	3.302	2045.	2040.	2047.
-240.	20.67	1030.8	3.223	1996.	1991.	1998.
-210.	24.71	935.7	3.114	1929.	1924.	1931.
-180.	29.42	844.4	2.963	1836.	1831.	1838.
-150.	34.97	758.5	2.754	1707.	1701.	1708.
-120.	41.56	680.0	2.461	1526.	1520.	1527.
-90.	49.30	612.0	2.053	1274.	1268.	1274.
-60.	57.93	558.3	1.502	932.	928.	932.
-30.	66.12	523.4	0.801	498.	495.	498.
0.	70.00	511.2	0.	-0.	-0.	0.
30.	66.12	523.4	0.801	-498.	-495.	-498.
60.	57.93	558.3	1.502	-932.	-928.	-932.
90.	49.30	612.0	2.053	-1274.	-1268.	-1274.
120.	41.56	680.0	2.461	-1527.	-1520.	-1526.
150.	34.97	758.5	2.754	-1708.	-1701.	-1707.
180.	29.42	844.4	2.963	-1838.	-1831.	-1836.
210.	24.71	935.7	3.114	-1931.	-1924.	-1929.
240.	20.67	1030.8	3.223	-1998.	-1991.	-1996.
270.	17.17	1128.8	3.302	-2047.	-2040.	-2045.
300.	14.08	1228.7	3.361	-2083.	-2076.	-2080.
330.	11.32	1330.2	3.403	-2109.	-2102.	-2106.
360.	8.83	1432.8	3.434	-2129.	-2122.	-2125.
390.	6.55	1536.2	3.457	-2142.	-2135.	-2139.
420.	4.45	1640.2	3.472	-2152.	-2145.	-2148.
450.	2.50	1744.5	3.481	-2157.	-2151.	-2153.
480.	0.67	1849.0	3.487	-2160.	-2154.	-2156.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

489.0 ROT SLANT RANGE(E) IS 1885.3 -2161.

490.0 ROT SLANT RANGE(W) IS 1886.9 -2156.

SMAX IS 1888.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 484.3 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.71	1846.1	3.494	2161.	2158.	2164.
-450.	2.56	1741.3	3.489	2158.	2156.	2162.
-420.	4.52	1636.8	3.481	2153.	2150.	2156.
-390.	6.63	1532.6	3.466	2145.	2141.	2148.
-360.	8.92	1428.9	3.446	2132.	2129.	2135.
-330.	11.43	1325.9	3.416	2114.	2110.	2117.
-300.	14.22	1224.0	3.375	2089.	2085.	2092.
-270.	17.34	1123.6	3.319	2055.	2050.	2057.
-240.	20.90	1025.1	3.242	2008.	2003.	2010.
-210.	25.01	929.3	3.137	1943.	1938.	1945.
-180.	29.83	837.3	2.990	1853.	1847.	1854.
-150.	35.56	750.5	2.785	1726.	1720.	1727.
-120.	42.45	671.1	2.495	1547.	1541.	1548.
-90.	50.68	602.0	2.088	1295.	1290.	1296.
-60.	60.19	547.3	1.533	951.	947.	951.
-30.	69.86	511.6	0.820	509.	507.	509.
0.	75.00	499.2	0.	-0.	-0.	0.
30.	69.86	511.6	0.820	-509.	-507.	-509.
60.	60.19	547.3	1.533	-951.	-947.	-951.
90.	50.68	602.0	2.088	-1296.	-1290.	-1295.
120.	42.45	671.1	2.495	-1548.	-1541.	-1547.
150.	35.56	750.5	2.785	-1727.	-1720.	-1726.
180.	29.83	837.3	2.990	-1854.	-1847.	-1853.
210.	25.01	929.3	3.137	-1945.	-1938.	-1943.
240.	20.90	1025.1	3.242	-2010.	-2003.	-2008.
270.	17.34	1123.6	3.319	-2057.	-2050.	-2055.
300.	14.22	1224.0	3.375	-2092.	-2085.	-2089.
330.	11.43	1325.9	3.416	-2117.	-2110.	-2114.
360.	8.92	1428.9	3.446	-2135.	-2129.	-2132.
390.	6.63	1532.6	3.466	-2148.	-2141.	-2145.
420.	4.52	1636.8	3.481	-2156.	-2150.	-2153.
450.	2.56	1741.3	3.489	-2162.	-2156.	-2158.
480.	0.71	1846.1	3.494	-2164.	-2158.	-2161.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

490.0 ROT SLANT RANGE(E) IS 1885.7 -2164.

491.0 ROT SLANT RANGE(W) IS 1887.8 -2161.

SMAX IS 1888.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 484.3 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.77	1842.6	3.502	2168.	2163.	2168.
-450.	2.62	1737.6	3.499	2166.	2161.	2166.
-420.	4.60	1632.7	3.491	2161.	2157.	2161.
-390.	6.73	1528.1	3.478	2154.	2149.	2154.
-360.	9.03	1424.1	3.459	2142.	2137.	2142.
-330.	11.57	1320.7	3.431	2125.	2120.	2125.
-300.	14.38	1218.3	3.393	2101.	2096.	2101.
-270.	17.55	1117.3	3.339	2069.	2063.	2069.
-240.	21.17	1018.1	3.266	2024.	2018.	2024.
-210.	25.37	921.6	3.165	1961.	1955.	1961.
-180.	30.34	828.7	3.023	1874.	1867.	1874.
-150.	36.30	740.8	2.823	1750.	1744.	1750.
-120.	43.57	660.1	2.538	1574.	1568.	1574.
-90.	52.49	589.7	2.133	1323.	1317.	1323.
-60.	63.33	533.7	1.572	976.	971.	976.
-30.	76.05	497.1	0.844	524.	522.	524.
0.	89.97	484.3	0.	-0.	-0.	0.
30.	76.05	497.1	0.844	-524.	-522.	-524.
60.	63.33	533.7	1.572	-976.	-971.	-976.
90.	52.49	589.7	2.133	-1323.	-1317.	-1323.
120.	43.57	660.1	2.538	-1574.	-1568.	-1574.
150.	36.30	740.8	2.823	-1750.	-1744.	-1750.
180.	30.34	828.7	3.023	-1874.	-1867.	-1874.
210.	25.37	921.6	3.165	-1961.	-1955.	-1961.
240.	21.17	1018.1	3.266	-2024.	-2018.	-2024.
270.	17.55	1117.3	3.339	-2069.	-2063.	-2069.
300.	14.38	1218.3	3.393	-2101.	-2096.	-2101.
330.	11.57	1320.7	3.431	-2125.	-2120.	-2125.
360.	9.03	1424.1	3.459	-2142.	-2137.	-2142.
390.	6.73	1528.1	3.478	-2154.	-2149.	-2154.
420.	4.60	1632.7	3.491	-2161.	-2157.	-2161.
450.	2.62	1737.6	3.499	-2166.	-2161.	-2166.
480.	0.77	1842.6	3.502	-2168.	-2163.	-2168.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

491.0 ROT SLANT RANGE(E) IS 1885.1 -2168.

491.0 ROT SLANT RANGE(W) IS 1885.1 -2168.

SMAX IS 1888.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-180.	0.15	1912.0	1.156	717.	714.	726.
-150.	0.69	1879.9	0.981	609.	606.	616.
-120.	1.15	1853.2	0.797	496.	493.	500.
-90.	1.52	1832.1	0.605	377.	374.	379.
-60.	1.78	1816.9	0.407	254.	252.	255.
-30.	1.95	1807.7	0.205	128.	127.	128.
0.	2.00	1804.7	0.	0.	-0.	-0.
30.	1.95	1807.7	0.205	-128.	-127.	-128.
60.	1.78	1816.9	0.407	-255.	-252.	-254.
90.	1.52	1832.1	0.605	-379.	-374.	-377.
120.	1.15	1853.2	0.797	-500.	-493.	-496.
150.	0.69	1879.9	0.981	-616.	-606.	-609.
180.	0.15	1912.0	1.156	-726.	-714.	-717.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

189.0	ROT SLANT RANGE(E) IS 1919.8	-758.	
190.0	ROT SLANT RANGE(W) IS 1920.0		-751.
	SMAX IS 1921.0		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	0.11	1914.4	2.388	1472.	1475.	1497.
-330.	1.30	1844.3	2.281	1407.	1409.	1429.
-300.	2.48	1777.7	2.158	1333.	1333.	1352.
-270.	3.64	1715.0	2.019	1248.	1247.	1264.
-240.	4.76	1656.7	1.863	1153.	1151.	1166.
-210.	5.82	1603.4	1.688	1045.	1043.	1057.
-180.	6.82	1555.6	1.494	926.	923.	935.
-150.	7.71	1513.9	1.282	795.	792.	802.
-120.	8.49	1478.9	1.051	653.	649.	657.
-90.	9.13	1451.0	0.804	500.	497.	503.
-60.	9.61	1430.8	0.544	339.	336.	340.
-30.	9.90	1418.5	0.275	171.	170.	171.
0.	10.00	1414.3	0.	0.	-0.	-0.
30.	9.90	1418.5	0.275	-171.	-170.	-171.
60.	9.61	1430.8	0.544	-340.	-336.	-339.
90.	9.13	1451.0	0.804	-503.	-497.	-500.
120.	8.49	1478.9	1.051	-657.	-649.	-653.
150.	7.71	1513.9	1.282	-802.	-792.	-795.
180.	6.82	1555.6	1.494	-935.	-923.	-926.
210.	5.82	1603.4	1.688	-1057.	-1043.	-1045.
240.	4.76	1656.7	1.863	-1166.	-1151.	-1153.
270.	3.64	1715.0	2.019	-1264.	-1247.	-1248.
300.	2.48	1777.7	2.158	-1352.	-1333.	-1333.
330.	1.30	1844.3	2.281	-1429.	-1409.	-1407.
360.	0.11	1914.4	2.388	-1497.	-1475.	-1472.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

361.0 ROT SLANT RANGE(E) IS 1920.1 -1499.

363.0 ROT SLANT RANGE(W) IS 1919.2 -1478.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.88	1869.0	2.692	1659.	1663.	1683.
-360.	2.27	1789.5	2.605	1607.	1609.	1628.
-330.	3.68	1712.8	2.504	1546.	1547.	1565.
-300.	5.10	1639.4	2.386	1474.	1474.	1491.
-270.	6.52	1569.9	2.249	1391.	1389.	1405.
-240.	7.92	1504.7	2.091	1294.	1292.	1306.
-210.	9.28	1444.6	1.910	1183.	1180.	1193.
-180.	10.58	1390.4	1.705	1057.	1053.	1065.
-150.	11.79	1342.6	1.474	914.	910.	920.
-120.	12.86	1302.2	1.217	756.	752.	760.
-90.	13.76	1269.8	0.937	583.	579.	585.
-60.	14.43	1246.2	0.637	396.	394.	397.
-30.	14.86	1231.8	0.322	201.	199.	201.
0.	15.00	1226.9	0.	0.	-0.	-0.
30.	14.86	1231.8	0.322	-201.	-199.	-201.
60.	14.43	1246.2	0.637	-397.	-394.	-396.
90.	13.76	1269.8	0.937	-585.	-579.	-583.
120.	12.86	1302.2	1.217	-760.	-752.	-756.
150.	11.79	1342.6	1.474	-920.	-910.	-914.
180.	10.58	1390.4	1.705	-1065.	-1053.	-1057.
210.	9.28	1444.6	1.910	-1193.	-1180.	-1183.
240.	7.92	1504.7	2.091	-1306.	-1292.	-1294.
270.	6.52	1569.9	2.249	-1405.	-1389.	-1391.
300.	5.10	1639.4	2.386	-1491.	-1474.	-1474.
330.	3.68	1712.8	2.504	-1565.	-1547.	-1546.
360.	2.27	1789.5	2.605	-1628.	-1609.	-1607.
390.	0.88	1869.0	2.692	-1683.	-1663.	-1659.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

407.0 ROT SLANT RANGE(E) IS 1920.3 -1710.

409.0 ROT SLANT RANGE(W) IS 1918.8 -1688.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 20.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	0.90	1868.0	2.927	1804.	1808.	1827.
-390.	2.42	1781.1	2.862	1765.	1768.	1786.
-360.	3.99	1696.4	2.785	1719.	1720.	1738.
-330.	5.60	1614.2	2.692	1663.	1663.	1680.
-300.	7.26	1535.0	2.582	1596.	1595.	1611.
-270.	8.94	1459.5	2.452	1516.	1514.	1529.
-240.	10.64	1388.2	2.297	1422.	1419.	1433.
-210.	12.33	1321.9	2.116	1310.	1307.	1320.
-180.	13.99	1261.5	1.904	1180.	1176.	1188.
-150.	15.57	1208.0	1.660	1030.	1025.	1035.
-120.	17.01	1162.3	1.382	858.	854.	862.
-90.	18.24	1125.4	1.072	666.	662.	668.
-60.	19.19	1098.3	0.733	456.	453.	457.
-30.	19.79	1081.7	0.372	232.	230.	232.
0.	20.00	1076.1	0.	0.	-0.	-0.
30.	19.79	1081.7	0.372	-232.	-230.	-232.
60.	19.19	1098.3	0.733	-457.	-453.	-456.
90.	18.24	1125.4	1.072	-668.	-662.	-666.
120.	17.01	1162.3	1.382	-862.	-854.	-858.
150.	15.57	1208.0	1.660	-1035.	-1025.	-1030.
180.	13.99	1261.5	1.904	-1188.	-1176.	-1180.
210.	12.33	1321.9	2.116	-1320.	-1307.	-1310.
240.	10.64	1388.2	2.297	-1433.	-1419.	-1422.
270.	8.94	1459.5	2.452	-1529.	-1514.	-1516.
300.	7.26	1535.0	2.582	-1611.	-1595.	-1596.
330.	5.60	1614.2	2.692	-1680.	-1663.	-1663.
360.	3.99	1696.4	2.785	-1738.	-1720.	-1719.
390.	2.42	1781.1	2.862	-1786.	-1768.	-1765.
420.	0.90	1868.0	2.927	-1827.	-1808.	-1804.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

435.0 ROT SLANT RANGE(E) IS 1918.2 -1844.

438.0 ROT SLANT RANGE(W) IS 1919.8 -1824.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 30.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	1.08	1857.5	3.190	1968.	1971.	1986.
-420.	2.76	1762.4	3.152	1945.	1947.	1962.
-390.	4.53	1668.5	3.105	1917.	1918.	1932.
-360.	6.38	1576.2	3.045	1881.	1881.	1895.
-330.	8.34	1485.9	2.972	1837.	1836.	1850.
-300.	10.40	1398.1	2.881	1781.	1780.	1793.
-270.	12.56	1313.3	2.768	1713.	1710.	1723.
-240.	14.84	1232.2	2.629	1628.	1624.	1637.
-210.	17.22	1155.8	2.458	1523.	1519.	1530.
-180.	19.67	1085.1	2.249	1394.	1389.	1400.
-150.	22.13	1021.3	1.995	1237.	1232.	1242.
-120.	24.51	965.9	1.690	1049.	1044.	1052.
-90.	26.67	920.5	1.331	827.	822.	829.
-60.	28.43	886.6	0.922	573.	570.	574.
-30.	29.59	865.6	0.472	294.	292.	294.
0.	30.00	858.5	0.	0.	-0.	-0.
30.	29.59	865.6	0.472	-294.	-292.	-294.
60.	28.43	886.6	0.922	-574.	-570.	-573.
90.	26.67	920.5	1.331	-829.	-822.	-827.
120.	24.51	965.9	1.690	-1052.	-1044.	-1049.
150.	22.13	1021.3	1.995	-1242.	-1232.	-1237.
180.	19.67	1085.1	2.249	-1400.	-1389.	-1394.
210.	17.22	1155.8	2.458	-1530.	-1519.	-1523.
240.	14.84	1232.2	2.629	-1637.	-1624.	-1628.
270.	12.56	1313.3	2.768	-1723.	-1710.	-1713.
300.	10.40	1398.1	2.881	-1793.	-1780.	-1781.
330.	8.34	1485.9	2.972	-1850.	-1836.	-1837.
360.	6.38	1576.2	3.045	-1895.	-1881.	-1881.
390.	4.53	1668.5	3.105	-1932.	-1918.	-1917.
420.	2.76	1762.4	3.152	-1962.	-1947.	-1945.
450.	1.08	1857.5	3.190	-1986.	-1971.	-1968.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

467.0 ROT SLANT RANGE(E) IS 1918.4 -1997.

469.0 ROT SLANT RANGE(W) IS 1918.3 -1979.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 40.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.30	1902.8	3.333	2057.	2059.	2071.
-450.	2.03	1803.1	3.313	2046.	2047.	2059.
-420.	3.84	1704.1	3.287	2030.	2031.	2043.
-390.	5.77	1606.0	3.252	2009.	2009.	2021.
-360.	7.82	1509.1	3.207	1982.	1981.	1993.
-330.	10.02	1413.7	3.150	1947.	1946.	1957.
-300.	12.38	1320.3	3.076	1903.	1900.	1911.
-270.	14.93	1229.3	2.982	1845.	1842.	1853.
-240.	17.69	1141.6	2.862	1772.	1768.	1778.
-210.	20.68	1058.0	2.708	1677.	1673.	1683.
-180.	23.90	979.5	2.512	1557.	1552.	1562.
-150.	27.32	907.8	2.263	1403.	1398.	1407.
-120.	30.83	844.4	1.949	1209.	1204.	1212.
-90.	34.23	791.6	1.561	969.	964.	971.
-60.	37.19	751.5	1.097	682.	678.	682.
-30.	39.25	726.4	0.568	353.	351.	353.
0.	40.00	717.9	0.	0.	-0.	-0.
30.	39.25	726.4	0.568	-353.	-351.	-353.
60.	37.19	751.5	1.097	-682.	-678.	-682.
90.	34.23	791.6	1.561	-971.	-964.	-969.
120.	30.83	844.4	1.949	-1212.	-1204.	-1209.
150.	27.32	907.8	2.263	-1407.	-1398.	-1403.
180.	23.90	979.5	2.512	-1562.	-1552.	-1557.
210.	20.68	1058.0	2.708	-1683.	-1673.	-1677.
240.	17.69	1141.6	2.862	-1778.	-1768.	-1772.
270.	14.93	1229.3	2.982	-1853.	-1842.	-1845.
300.	12.38	1320.3	3.076	-1911.	-1900.	-1903.
330.	10.02	1413.7	3.150	-1957.	-1946.	-1947.
360.	7.82	1509.1	3.207	-1993.	-1981.	-1982.
390.	5.77	1606.0	3.252	-2021.	-2009.	-2009.
420.	3.84	1704.1	3.287	-2043.	-2031.	-2030.
450.	2.03	1803.1	3.313	-2059.	-2047.	-2046.
480.	0.30	1902.8	3.333	-2071.	-2059.	-2057.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

483.0 ROT SLANT RANGE(E) IS 1919.2 -2072.

485.0 ROT SLANT RANGE(W) IS 1920.5 -2058.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.58	1886.4	3.371	2081.	2082.	2093.
-450.	2.34	1785.5	3.355	2072.	2072.	2083.
-420.	4.21	1685.2	3.333	2059.	2059.	2070.
-390.	6.19	1585.6	3.303	2041.	2040.	2051.
-360.	8.31	1487.1	3.263	2017.	2016.	2026.
-330.	10.59	1390.0	3.212	1986.	1984.	1995.
-300.	13.07	1294.6	3.145	1946.	1943.	1953.
-270.	15.77	1201.4	3.059	1893.	1890.	1900.
-240.	18.73	1111.3	2.947	1825.	1821.	1831.
-210.	21.98	1024.9	2.803	1736.	1731.	1741.
-180.	25.55	943.5	2.615	1620.	1615.	1625.
-150.	29.42	868.6	2.371	1470.	1465.	1473.
-120.	33.52	802.0	2.057	1276.	1271.	1279.
-90.	37.63	746.0	1.661	1031.	1026.	1032.
-60.	41.33	703.2	1.175	730.	726.	731.
-30.	44.01	676.3	0.611	380.	378.	380.
0.	45.00	667.0	0.	0.	-0.	-0.
30.	44.01	676.3	0.611	-380.	-378.	-380.
60.	41.33	703.2	1.175	-731.	-726.	-730.
90.	37.63	746.0	1.661	-1032.	-1026.	-1031.
120.	33.52	802.0	2.057	-1279.	-1271.	-1276.
150.	29.42	868.6	2.371	-1473.	-1465.	-1470.
180.	25.55	943.5	2.615	-1625.	-1615.	-1620.
210.	21.98	1024.9	2.803	-1741.	-1731.	-1736.
240.	18.73	1111.3	2.947	-1831.	-1821.	-1825.
270.	15.77	1201.4	3.059	-1900.	-1890.	-1893.
300.	13.07	1294.6	3.145	-1953.	-1943.	-1946.
330.	10.59	1390.0	3.212	-1995.	-1984.	-1986.
360.	8.31	1487.1	3.263	-2026.	-2016.	-2017.
390.	6.19	1585.6	3.303	-2051.	-2040.	-2041.
420.	4.21	1685.2	3.333	-2070.	-2059.	-2059.
450.	2.34	1785.5	3.355	-2083.	-2072.	-2072.
480.	0.58	1886.4	3.371	-2093.	-2082.	-2081.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

488.0 ROT SLANT RANGE(E) IS 1919.5 -2095.

489.0 ROT SLANT RANGE(W) IS 1918.2 -2083.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 50.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.79	1873.9	3.400	2100.	2100.	2110.
-450.	2.59	1772.1	3.387	2092.	2092.	2102.
-420.	4.48	1670.7	3.368	2081.	2081.	2091.
-390.	6.51	1570.1	3.342	2066.	2065.	2074.
-360.	8.69	1470.3	3.307	2045.	2043.	2053.
-330.	11.05	1371.7	3.261	2017.	2014.	2024.
-300.	13.62	1274.8	3.200	1980.	1977.	1987.
-270.	16.44	1179.9	3.121	1932.	1928.	1938.
-240.	19.57	1087.8	3.017	1868.	1864.	1873.
-210.	23.05	999.2	2.881	1784.	1780.	1789.
-180.	26.93	915.4	2.701	1674.	1668.	1677.
-150.	31.23	837.7	2.463	1527.	1522.	1530.
-120.	35.90	768.3	2.152	1335.	1329.	1337.
-90.	40.75	709.5	1.749	1086.	1081.	1087.
-60.	45.30	664.3	1.246	774.	770.	775.
-30.	48.71	635.7	0.652	405.	403.	405.
0.	50.00	625.8	0.	-0.	-0.	0.
30.	48.71	635.7	0.652	-405.	-403.	-405.
60.	45.30	664.3	1.246	-775.	-770.	-774.
90.	40.75	709.5	1.749	-1087.	-1081.	-1086.
120.	35.90	768.3	2.152	-1337.	-1329.	-1335.
150.	31.23	837.7	2.463	-1530.	-1522.	-1527.
180.	26.93	915.4	2.701	-1677.	-1668.	-1674.
210.	23.05	999.2	2.881	-1789.	-1780.	-1784.
240.	19.57	1087.8	3.017	-1873.	-1864.	-1868.
270.	16.44	1179.9	3.121	-1938.	-1928.	-1932.
300.	13.62	1274.8	3.200	-1987.	-1977.	-1980.
330.	11.05	1371.7	3.261	-2024.	-2014.	-2017.
360.	8.69	1470.3	3.307	-2053.	-2043.	-2045.
390.	6.51	1570.1	3.342	-2074.	-2065.	-2066.
420.	4.48	1670.7	3.368	-2091.	-2081.	-2081.
450.	2.59	1772.1	3.387	-2102.	-2092.	-2092.
480.	0.79	1873.9	3.400	-2110.	-2100.	-2100.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

492.0 ROT SLANT RANGE(E) IS 1920.6 -2113.

493.0 ROT SLANT RANGE(W) IS 1919.9 -2102.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 60.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.09	1856.9	3.440	2126.	2125.	2133.
-450.	2.92	1753.8	3.431	2121.	2120.	2128.
-420.	4.87	1651.1	3.417	2113.	2111.	2119.
-390.	6.96	1548.8	3.397	2101.	2098.	2107.
-360.	9.22	1447.3	3.369	2084.	2081.	2089.
-330.	11.68	1346.8	3.330	2060.	2057.	2065.
-300.	14.39	1247.6	3.279	2029.	2025.	2034.
-270.	17.40	1150.3	3.210	1987.	1983.	1991.
-240.	20.79	1055.3	3.118	1931.	1926.	1935.
-210.	24.62	963.5	2.995	1855.	1850.	1859.
-180.	29.01	876.0	2.830	1753.	1748.	1756.
-150.	34.04	794.3	2.605	1615.	1609.	1617.
-120.	39.77	720.5	2.301	1427.	1421.	1428.
-90.	46.09	657.3	1.893	1175.	1170.	1176.
-60.	52.53	608.1	1.365	848.	844.	848.
-30.	57.83	576.5	0.720	448.	445.	448.
0.	60.00	565.6	0.	-0.	-0.	0.
30.	57.83	576.5	0.720	-448.	-445.	-448.
60.	52.53	608.1	1.365	-848.	-844.	-848.
90.	46.09	657.3	1.893	-1176.	-1170.	-1175.
120.	39.77	720.5	2.301	-1428.	-1421.	-1427.
150.	34.04	794.3	2.605	-1617.	-1609.	-1615.
180.	29.01	876.0	2.830	-1756.	-1748.	-1753.
210.	24.62	963.5	2.995	-1859.	-1850.	-1855.
240.	20.79	1055.3	3.118	-1935.	-1926.	-1931.
270.	17.40	1150.3	3.210	-1991.	-1983.	-1987.
300.	14.39	1247.6	3.279	-2034.	-2025.	-2029.
330.	11.68	1346.8	3.330	-2065.	-2057.	-2060.
360.	9.22	1447.3	3.369	-2089.	-2081.	-2084.
390.	6.96	1548.8	3.397	-2107.	-2098.	-2101.
420.	4.87	1651.1	3.417	-2119.	-2111.	-2113.
450.	2.92	1753.8	3.431	-2128.	-2120.	-2121.
480.	1.09	1856.9	3.440	-2133.	-2125.	-2126.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

497.0 ROT SLANT RANGE(E) IS 1920.9 -2135.

497.0 ROT SLANT RANGE(W) IS 1917.9 -2128.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.26	1847.0	3.464	2142.	2140.	2147.
-450.	3.11	1743.1	3.458	2138.	2136.	2143.
-420.	5.10	1639.6	3.447	2132.	2129.	2136.
-390.	7.23	1536.4	3.430	2122.	2119.	2126.
-360.	9.53	1433.9	3.405	2107.	2104.	2111.
-330.	12.06	1332.2	3.372	2087.	2083.	2090.
-300.	14.86	1231.7	3.326	2059.	2055.	2062.
-270.	17.99	1132.8	3.265	2021.	2017.	2024.
-240.	21.54	1036.0	3.181	1970.	1965.	1972.
-210.	25.61	942.2	3.068	1900.	1895.	1902.
-180.	30.35	852.4	2.912	1805.	1799.	1806.
-150.	35.92	768.0	2.698	1673.	1667.	1674.
-120.	42.48	691.3	2.401	1489.	1483.	1490.
-90.	50.10	625.1	1.994	1237.	1232.	1238.
-60.	58.50	573.0	1.451	901.	896.	901.
-30.	66.34	539.4	0.771	479.	476.	479.
0.	70.00	527.7	0.	-0.	-0.	0.
30.	66.34	539.4	0.771	-479.	-476.	-479.
60.	58.50	573.0	1.451	-901.	-896.	-901.
90.	50.10	625.1	1.994	-1238.	-1232.	-1237.
120.	42.48	691.3	2.401	-1490.	-1483.	-1489.
150.	35.92	768.0	2.698	-1674.	-1667.	-1673.
180.	30.35	852.4	2.912	-1806.	-1799.	-1805.
210.	25.61	942.2	3.068	-1902.	-1895.	-1900.
240.	21.54	1036.0	3.181	-1972.	-1965.	-1970.
270.	17.99	1132.8	3.265	-2024.	-2017.	-2021.
300.	14.86	1231.7	3.326	-2062.	-2055.	-2059.
330.	12.06	1332.2	3.372	-2090.	-2083.	-2087.
360.	9.53	1433.9	3.405	-2111.	-2104.	-2107.
390.	7.23	1536.4	3.430	-2126.	-2119.	-2122.
420.	5.10	1639.6	3.447	-2136.	-2129.	-2132.
450.	3.11	1743.1	3.458	-2143.	-2136.	-2138.
480.	1.26	1847.0	3.464	-2147.	-2140.	-2142.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

499.0 ROT SLANT RANGE(E) IS 1917.8 -2148.

500.0 ROT SLANT RANGE(W) IS 1919.4 -2143.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.31	1843.9	3.472	2147.	2145.	2151.
-450.	3.18	1739.8	3.466	2144.	2141.	2147.
-420.	5.17	1636.0	3.456	2138.	2135.	2141.
-390.	7.31	1532.5	3.440	2129.	2125.	2132.
-360.	9.63	1429.7	3.417	2115.	2111.	2117.
-330.	12.18	1327.6	3.385	2095.	2091.	2098.
-300.	15.01	1226.7	3.341	2069.	2064.	2071.
-270.	18.18	1127.3	3.282	2032.	2028.	2034.
-240.	21.78	1030.0	3.201	1983.	1978.	1985.
-210.	25.94	935.5	3.091	1915.	1910.	1917.
-180.	30.80	844.9	2.940	1822.	1816.	1823.
-150.	36.55	759.7	2.729	1692.	1686.	1693.
-120.	43.42	682.0	2.435	1510.	1505.	1511.
-90.	51.55	614.7	2.029	1259.	1253.	1259.
-60.	60.84	561.7	1.481	919.	915.	920.
-30.	70.14	527.3	0.789	490.	488.	490.
0.	75.00	515.3	0.	-0.	-0.	0.
30.	70.14	527.3	0.789	-490.	-488.	-490.
60.	60.84	561.7	1.481	-920.	-915.	-919.
90.	51.55	614.7	2.029	-1259.	-1253.	-1259.
120.	43.42	682.0	2.435	-1511.	-1505.	-1510.
150.	36.55	759.7	2.729	-1693.	-1686.	-1692.
180.	30.80	844.9	2.940	-1823.	-1816.	-1822.
210.	25.94	935.5	3.091	-1917.	-1910.	-1915.
240.	21.78	1030.0	3.201	-1985.	-1978.	-1983.
270.	18.18	1127.3	3.282	-2034.	-2028.	-2032.
300.	15.01	1226.7	3.341	-2071.	-2064.	-2069.
330.	12.18	1327.6	3.385	-2098.	-2091.	-2095.
360.	9.63	1429.7	3.417	-2117.	-2111.	-2115.
390.	7.31	1532.5	3.440	-2132.	-2125.	-2129.
420.	5.17	1636.0	3.456	-2141.	-2135.	-2138.
450.	3.18	1739.8	3.466	-2147.	-2141.	-2144.
480.	1.31	1843.9	3.472	-2151.	-2145.	-2147.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

500.0 ROT SLANT RANGE(E) IS 1918.1 -2151.

501.0 ROT SLANT RANGE(W) IS 1920.2 -2148.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.38	1840.2	3.481	2154.	2150.	2154.
-450.	3.25	1735.8	3.476	2152.	2147.	2152.
-420.	5.25	1631.6	3.467	2146.	2142.	2146.
-390.	7.41	1527.8	3.452	2138.	2133.	2138.
-360.	9.76	1424.6	3.431	2125.	2120.	2125.
-330.	12.33	1322.1	3.401	2107.	2101.	2107.
-300.	15.19	1220.6	3.360	2081.	2076.	2081.
-270.	18.41	1120.6	3.303	2047.	2041.	2047.
-240.	22.08	1022.6	3.226	1999.	1993.	1999.
-210.	26.33	927.3	3.120	1934.	1928.	1934.
-180.	31.35	835.8	2.973	1843.	1837.	1843.
-150.	37.35	749.5	2.768	1716.	1710.	1716.
-120.	44.62	670.6	2.478	1537.	1531.	1537.
-90.	53.46	602.0	2.073	1286.	1280.	1286.
-60.	64.11	547.7	1.520	943.	939.	943.
-30.	76.50	512.3	0.813	505.	502.	505.
0.	90.00	500.0	0.	-0.	-0.	0.
30.	76.50	512.3	0.813	-505.	-502.	-505.
60.	64.11	547.7	1.520	-943.	-939.	-943.
90.	53.46	602.0	2.073	-1286.	-1280.	-1286.
120.	44.62	670.6	2.478	-1537.	-1531.	-1537.
150.	37.35	749.5	2.768	-1716.	-1710.	-1716.
180.	31.35	835.8	2.973	-1843.	-1837.	-1843.
210.	26.33	927.3	3.120	-1934.	-1928.	-1934.
240.	22.08	1022.6	3.226	-1999.	-1993.	-1999.
270.	18.41	1120.6	3.303	-2047.	-2041.	-2047.
300.	15.19	1220.6	3.360	-2081.	-2076.	-2081.
330.	12.33	1322.1	3.401	-2107.	-2101.	-2107.
360.	9.76	1424.6	3.431	-2125.	-2120.	-2125.
390.	7.41	1527.8	3.452	-2138.	-2133.	-2138.
420.	5.25	1631.6	3.467	-2146.	-2142.	-2146.
450.	3.25	1735.8	3.476	-2152.	-2147.	-2152.
480.	1.38	1840.2	3.481	-2154.	-2150.	-2154.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

502.0 ROT SLANT RANGE(E) IS 1920.9 -2155.

502.0 ROT SLANT RANGE(W) IS 1920.9 -2155.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-180.	0.15	1912.0	1.156	715.	714.	723.
-150.	0.69	1879.9	0.981	608.	606.	614.
-120.	1.15	1853.2	0.797	495.	493.	498.
-90.	1.52	1832.1	0.605	376.	374.	378.
-60.	1.78	1816.9	0.407	253.	252.	254.
-30.	1.95	1807.7	0.205	127.	127.	128.
0.	2.00	1804.7	0.	0.	-0.	-0.
30.	1.95	1807.7	0.205	-128.	-127.	-127.
60.	1.78	1816.9	0.407	-254.	-252.	-253.
90.	1.52	1832.1	0.605	-378.	-374.	-376.
120.	1.15	1853.2	0.797	-498.	-493.	-495.
150.	0.69	1879.9	0.981	-614.	-606.	-608.
180.	0.15	1912.0	1.156	-723.	-714.	-715.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

189.0	ROT SLANT RANGE(E) IS 1920.6	-755.	
190.0	ROT SLANT RANGE(W) IS 1920.9		-750.
	SMAX IS 1921.0		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	0.11	1914.4	2.388	1472.	1475.	1493.
-330.	1.30	1844.3	2.281	1406.	1409.	1425.
-300.	2.48	1777.7	2.158	1332.	1333.	1348.
-270.	3.64	1715.0	2.019	1247.	1247.	1261.
-240.	4.76	1656.7	1.863	1151.	1151.	1163.
-210.	5.82	1603.4	1.688	1044.	1043.	1054.
-180.	6.82	1555.6	1.494	925.	923.	933.
-150.	7.71	1513.9	1.282	794.	792.	800.
-120.	8.49	1478.9	1.051	652.	649.	655.
-90.	9.13	1451.0	0.804	499.	497.	501.
-60.	9.61	1430.8	0.544	338.	336.	339.
-30.	9.90	1418.5	0.275	171.	170.	171.
0.	10.00	1414.3	0.	0.	-0.	-0.
30.	9.90	1418.5	0.275	-171.	-170.	-171.
60.	9.61	1430.8	0.544	-339.	-336.	-338.
90.	9.13	1451.0	0.804	-501.	-497.	-499.
120.	8.49	1478.9	1.051	-655.	-649.	-652.
150.	7.71	1513.9	1.282	-800.	-792.	-794.
180.	6.82	1555.6	1.494	-933.	-923.	-925.
210.	5.82	1603.4	1.688	-1054.	-1043.	-1044.
240.	4.76	1656.7	1.863	-1163.	-1151.	-1151.
270.	3.64	1715.0	2.019	-1261.	-1247.	-1247.
300.	2.48	1777.7	2.158	-1348.	-1333.	-1332.
330.	1.30	1844.3	2.281	-1425.	-1409.	-1406.
360.	0.11	1914.4	2.388	-1493.	-1475.	-1472.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

361.0	ROT SLANT RANGE(E) IS 1919.6	-1495.	
363.0	ROT SLANT RANGE(W) IS 1919.4		-1478.
	SMAX IS 1921.0		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.88	1869.0	2.692	1659.	1663.	1679.
-360.	2.27	1789.5	2.605	1606.	1609.	1625.
-330.	3.68	1712.8	2.504	1545.	1547.	1562.
-300.	5.10	1639.4	2.386	1473.	1474.	1488.
-270.	6.52	1569.9	2.249	1389.	1389.	1402.
-240.	7.92	1504.7	2.091	1293.	1292.	1304.
-210.	9.28	1444.6	1.910	1182.	1180.	1191.
-180.	10.58	1390.4	1.705	1055.	1053.	1062.
-150.	11.79	1342.6	1.474	913.	910.	918.
-120.	12.86	1302.2	1.217	755.	752.	758.
-90.	13.76	1269.8	0.937	581.	579.	583.
-60.	14.43	1246.2	0.637	396.	394.	397.
-30.	14.86	1231.8	0.322	200.	199.	201.
0.	15.00	1226.9	0.	0.	-0.	-0.
30.	14.86	1231.8	0.322	-201.	-199.	-200.
60.	14.43	1246.2	0.637	-397.	-394.	-396.
90.	13.76	1269.8	0.937	-583.	-579.	-581.
120.	12.86	1302.2	1.217	-758.	-752.	-755.
150.	11.79	1342.6	1.474	-918.	-910.	-913.
180.	10.58	1390.4	1.705	-1062.	-1053.	-1055.
210.	9.28	1444.6	1.910	-1191.	-1180.	-1182.
240.	7.92	1504.7	2.091	-1304.	-1292.	-1293.
270.	6.52	1569.9	2.249	-1402.	-1389.	-1389.
300.	5.10	1639.4	2.386	-1488.	-1474.	-1473.
330.	3.68	1712.8	2.504	-1562.	-1547.	-1545.
360.	2.27	1789.5	2.605	-1625.	-1609.	-1606.
390.	0.88	1869.0	2.692	-1679.	-1663.	-1659.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

407.0 ROT SLANT RANGE(E) IS 1919.4 -1706.

409.0 ROT SLANT RANGE(W) IS 1918.8 -1688.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.58	1886.4	3.371	2081.	2082.	2091.
-450.	2.34	1785.5	3.355	2071.	2072.	2081.
-420.	4.21	1685.2	3.333	2058.	2059.	2068.
-390.	6.19	1585.6	3.303	2040.	2040.	2049.
-360.	8.31	1487.1	3.263	2016.	2016.	2024.
-330.	10.59	1390.0	3.212	1985.	1984.	1992.
-300.	13.07	1294.6	3.145	1945.	1943.	1951.
-270.	15.77	1201.4	3.059	1892.	1890.	1898.
-240.	18.73	1111.3	2.947	1823.	1821.	1829.
-210.	21.98	1024.9	2.803	1735.	1731.	1739.
-180.	25.55	943.5	2.615	1619.	1615.	1623.
-150.	29.42	868.6	2.371	1469.	1465.	1471.
-120.	33.52	802.0	2.057	1275.	1271.	1277.
-90.	37.63	746.0	1.661	1030.	1026.	1031.
-60.	41.33	703.2	1.175	729.	726.	730.
-30.	44.01	676.3	0.611	379.	378.	380.
0.	45.00	667.0	0.	0.	-0.	-0.
30.	44.01	676.3	0.611	-380.	-378.	-379.
60.	41.33	703.2	1.175	-730.	-726.	-729.
90.	37.63	746.0	1.661	-1031.	-1026.	-1030.
120.	33.52	802.0	2.057	-1277.	-1271.	-1275.
150.	29.42	868.6	2.371	-1471.	-1465.	-1469.
180.	25.55	943.5	2.615	-1623.	-1615.	-1619.
210.	21.98	1024.9	2.803	-1739.	-1731.	-1735.
240.	18.73	1111.3	2.947	-1829.	-1821.	-1823.
270.	15.77	1201.4	3.059	-1898.	-1890.	-1892.
300.	13.07	1294.6	3.145	-1951.	-1943.	-1945.
330.	10.59	1390.0	3.212	-1992.	-1984.	-1985.
360.	8.31	1487.1	3.263	-2024.	-2016.	-2016.
390.	6.19	1585.6	3.303	-2049.	-2040.	-2040.
420.	4.21	1685.2	3.333	-2068.	-2059.	-2058.
450.	2.34	1785.5	3.355	-2081.	-2072.	-2071.
480.	0.58	1886.4	3.371	-2091.	-2082.	-2081.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

488.0 ROT SLANT RANGE(E) IS 1918.3 -2093.

490.0 ROT SLANT RANGE(W) IS 1920.9 -2083.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.26	1847.0	3.464	2141.	2140.	2145.
-450.	3.11	1743.1	3.458	2138.	2136.	2141.
-420.	5.10	1639.6	3.447	2131.	2129.	2135.
-390.	7.23	1536.4	3.430	2121.	2119.	2124.
-360.	9.53	1433.9	3.405	2106.	2104.	2109.
-330.	12.06	1332.2	3.372	2086.	2083.	2089.
-300.	14.86	1231.7	3.326	2058.	2055.	2060.
-270.	17.99	1132.8	3.265	2020.	2017.	2022.
-240.	21.54	1036.0	3.181	1969.	1965.	1971.
-210.	25.61	942.2	3.068	1899.	1895.	1901.
-180.	30.35	852.4	2.912	1803.	1799.	1805.
-150.	35.92	768.0	2.698	1671.	1667.	1672.
-120.	42.48	691.3	2.401	1488.	1483.	1489.
-90.	50.10	625.1	1.994	1236.	1232.	1236.
-60.	58.50	573.0	1.451	900.	896.	900.
-30.	66.34	539.4	0.771	478.	476.	478.
0.	70.00	527.7	0.	0.	-0.	-0.
30.	66.34	539.4	0.771	-478.	-476.	-478.
60.	58.50	573.0	1.451	-900.	-896.	-900.
90.	50.10	625.1	1.994	-1236.	-1232.	-1236.
120.	42.48	691.3	2.401	-1489.	-1483.	-1488.
150.	35.92	768.0	2.698	-1672.	-1667.	-1671.
180.	30.35	852.4	2.912	-1805.	-1799.	-1803.
210.	25.61	942.2	3.068	-1901.	-1895.	-1899.
240.	21.54	1036.0	3.181	-1971.	-1965.	-1969.
270.	17.99	1132.8	3.265	-2022.	-2017.	-2020.
300.	14.86	1231.7	3.326	-2060.	-2055.	-2058.
330.	12.06	1332.2	3.372	-2089.	-2083.	-2086.
360.	9.53	1433.9	3.405	-2109.	-2104.	-2106.
390.	7.23	1536.4	3.430	-2124.	-2119.	-2121.
420.	5.10	1639.6	3.447	-2135.	-2129.	-2131.
450.	3.11	1743.1	3.458	-2141.	-2136.	-2138.
480.	1.26	1847.0	3.464	-2145.	-2140.	-2141.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

500.0 ROT SLANT RANGE(E) IS 1920.2 -2146.

500.0 ROT SLANT RANGE(W) IS 1918.5 -2142.

SMAX IS 1921.0

D' PLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.31	1843.9	3.472	2146.	2145.	2149.
-450.	3.18	1739.8	3.466	2143.	2141.	2146.
-420.	5.17	1636.0	3.456	2137.	2135.	2140.
-390.	7.31	1532.5	3.440	2128.	2125.	2130.
-360.	9.63	1429.7	3.417	2114.	2111.	2116.
-330.	12.18	1327.6	3.385	2094.	2091.	2096.
-300.	15.01	1226.7	3.341	2068.	2064.	2069.
-270.	18.18	1127.3	3.282	2031.	2028.	2033.
-240.	21.78	1030.0	3.201	1982.	1978.	1983.
-210.	25.94	935.5	3.091	1914.	1910.	1915.
-180.	30.80	844.9	2.940	1820.	1816.	1821.
-150.	36.55	759.7	2.729	1690.	1686.	1691.
-120.	43.42	682.0	2.435	1509.	1505.	1509.
-90.	51.55	614.7	2.029	1257.	1253.	1258.
-60.	60.84	561.7	1.481	918.	915.	919.
-30.	70.14	527.3	0.789	489.	488.	490.
0.	75.00	515.3	0.	-0.	-0.	0.
30.	70.14	527.3	0.789	-490.	-488.	-489.
60.	60.84	561.7	1.481	-919.	-915.	-918.
90.	51.55	614.7	2.029	-1258.	-1253.	-1257.
120.	43.42	682.0	2.435	-1509.	-1505.	-1509.
150.	36.55	759.7	2.729	-1691.	-1686.	-1690.
180.	30.80	844.9	2.940	-1821.	-1816.	-1820.
210.	25.94	935.5	3.091	-1915.	-1910.	-1914.
240.	21.78	1030.0	3.201	-1983.	-1978.	-1982.
270.	18.18	1127.3	3.282	-2033.	-2028.	-2031.
300.	15.01	1226.7	3.341	-2069.	-2064.	-2068.
330.	12.18	1327.6	3.385	-2096.	-2091.	-2094.
360.	9.63	1429.7	3.417	-2116.	-2111.	-2114.
390.	7.31	1532.5	3.440	-2130.	-2125.	-2128.
420.	5.17	1636.0	3.456	-2140.	-2135.	-2137.
450.	3.18	1739.8	3.466	-2146.	-2141.	-2143.
480.	1.31	1843.9	3.472	-2149.	-2145.	-2146.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

501.0 ROT SLANT RANGE(E) IS 1920.5 -2150.

501.0 ROT SLANT RANGE(W) IS 1919.3 -2147.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.38	1840.2	3.481	2153.	2150.	2153.
-450.	3.25	1735.8	3.476	2151.	2147.	2151.
-420.	5.25	1631.6	3.467	2145.	2142.	2145.
-390.	7.41	1527.8	3.452	2137.	2133.	2137.
-360.	9.76	1424.6	3.431	2124.	2120.	2124.
-330.	12.33	1322.1	3.401	2105.	2101.	2105.
-300.	15.19	1220.6	3.360	2080.	2076.	2080.
-270.	18.41	1120.6	3.303	2045.	2041.	2045.
-240.	22.08	1022.6	3.226	1998.	1993.	1998.
-210.	26.33	927.3	3.120	1932.	1928.	1932.
-180.	31.35	835.8	2.973	1841.	1837.	1841.
-150.	37.35	749.5	2.768	1714.	1710.	1714.
-120.	44.62	670.6	2.478	1536.	1531.	1536.
-90.	53.46	602.0	2.073	1285.	1280.	1285.
-60.	64.11	547.7	1.520	942.	939.	942.
-30.	76.50	512.3	0.813	504.	502.	504.
0.	90.00	500.0	0.	0.	-0.	-0.
30.	76.50	512.3	0.813	-504.	-502.	-504.
60.	64.11	547.7	1.520	-942.	-939.	-942.
90.	53.46	602.0	2.073	-1285.	-1280.	-1285.
120.	44.62	670.6	2.478	-1536.	-1531.	-1536.
150.	37.35	749.5	2.768	-1714.	-1710.	-1714.
180.	31.35	835.8	2.973	-1841.	-1837.	-1841.
210.	26.33	927.3	3.120	-1932.	-1928.	-1932.
240.	22.08	1022.6	3.226	-1998.	-1993.	-1998.
270.	18.41	1120.6	3.303	-2045.	-2041.	-2045.
300.	15.19	1220.6	3.360	-2080.	-2076.	-2080.
330.	12.33	1322.1	3.401	-2105.	-2101.	-2105.
360.	9.76	1424.6	3.431	-2124.	-2120.	-2124.
390.	7.41	1527.8	3.452	-2137.	-2133.	-2137.
420.	5.25	1631.6	3.467	-2145.	-2142.	-2145.
450.	3.25	1735.8	3.476	-2151.	-2147.	-2151.
480.	1.38	1840.2	3.481	-2153.	-2150.	-2153.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

502.0	ROT SLANT RANGE(E) IS 1919.8	-2154.	
502.0	ROT SLANT RANGE(W) IS 1919.8		-2154.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-180.	0.15	1912.0	1.156	713.	714.	718.
-150.	0.69	1879.9	0.981	606.	606.	609.
-120.	1.15	1853.2	0.797	493.	493.	495.
-90.	1.52	1832.1	0.605	374.	374.	376.
-60.	1.78	1816.9	0.407	252.	252.	253.
-30.	1.95	1807.7	0.205	127.	127.	127.
0.	2.00	1804.7	0.	0.	-0.	-0.
30.	1.95	1807.7	0.205	-127.	-127.	-127.
60.	1.78	1816.9	0.407	-253.	-252.	-252.
90.	1.52	1832.1	0.605	-376.	-374.	-374.
120.	1.15	1853.2	0.797	-495.	-493.	-493.
150.	0.69	1879.9	0.981	-609.	-606.	-606.
180.	0.15	1912.0	1.156	-718.	-714.	-713.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

188.0	ROT SLANT RANGE(E) IS 1920.8	-746.	
188.0	ROT SLANT RANGE(W) IS 1920.3		-741.
	SMAX IS 1921.0		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	0.11	1914.4	2.388	1472.	1475.	1484.
-330.	1.30	1844.3	2.281	1406.	1409.	1417.
-300.	2.48	1777.7	2.158	1331.	1333.	1340.
-270.	3.64	1715.0	2.019	1245.	1247.	1254.
-240.	4.76	1656.7	1.863	1149.	1151.	1156.
-210.	5.82	1603.4	1.688	1042.	1043.	1048.
-180.	6.82	1555.6	1.494	923.	923.	927.
-150.	7.71	1513.9	1.282	792.	792.	795.
-120.	8.49	1478.9	1.051	650.	649.	652.
-90.	9.13	1451.0	0.804	497.	497.	499.
-60.	9.61	1430.8	0.544	337.	336.	337.
-30.	9.90	1418.5	0.275	170.	170.	170.
0.	10.00	1414.3	0.	0.	-0.	-0.
30.	9.90	1418.5	0.275	-170.	-170.	-170.
60.	9.61	1430.8	0.544	-337.	-336.	-337.
90.	9.13	1451.0	0.804	-499.	-497.	-497.
120.	8.49	1478.9	1.051	-652.	-649.	-650.
150.	7.71	1513.9	1.282	-795.	-792.	-792.
180.	6.82	1555.6	1.494	-927.	-923.	-923.
210.	5.82	1603.4	1.688	-1048.	-1043.	-1042.
240.	4.76	1656.7	1.863	-1156.	-1151.	-1149.
270.	3.64	1715.0	2.019	-1254.	-1247.	-1245.
300.	2.48	1777.7	2.158	-1340.	-1333.	-1331.
330.	1.30	1844.3	2.281	-1417.	-1409.	-1406.
360.	0.11	1914.4	2.388	-1484.	-1475.	-1472.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

362.0 ROT SLANT RANGE(E) IS 1920.7 -1488.

363.0 ROT SLANT RANGE(W) IS 1920.2 -1478.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.88	1869.0	2.692	1659.	1663.	1671.
-360.	2.27	1789.5	2.605	1606.	1609.	1617.
-330.	3.68	1712.8	2.504	1544.	1547.	1554.
-300.	5.10	1639.4	2.386	1472.	1474.	1480.
-270.	6.52	1569.9	2.249	1388.	1389.	1395.
-240.	7.92	1504.7	2.091	1291.	1292.	1297.
-210.	9.28	1444.6	1.910	1179.	1180.	1185.
-180.	10.58	1390.4	1.705	1053.	1053.	1057.
-150.	11.79	1342.6	1.474	911.	910.	913.
-120.	12.86	1302.2	1.217	752.	752.	754.
-90.	13.76	1269.8	0.937	580.	579.	581.
-60.	14.43	1246.2	0.637	394.	394.	395.
-30.	14.86	1231.8	0.322	200.	199.	200.
0.	15.00	1226.9	0.	0.	-0.	-0.
30.	14.86	1231.8	0.322	-200.	-199.	-200.
60.	14.43	1246.2	0.637	-395.	-394.	-394.
90.	13.76	1269.8	0.937	-581.	-579.	-580.
120.	12.86	1302.2	1.217	-754.	-752.	-752.
150.	11.79	1342.6	1.474	-913.	-910.	-911.
180.	10.58	1390.4	1.705	-1057.	-1053.	-1053.
210.	9.28	1444.6	1.910	-1185.	-1180.	-1179.
240.	7.92	1504.7	2.091	-1297.	-1292.	-1291.
270.	6.52	1569.9	2.249	-1395.	-1389.	-1388.
300.	5.10	1639.4	2.386	-1480.	-1474.	-1472.
330.	3.68	1712.8	2.504	-1554.	-1547.	-1544.
360.	2.27	1789.5	2.605	-1617.	-1609.	-1606.
390.	0.88	1869.0	2.692	-1671.	-1663.	-1659.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

408.0	ROT SLANT RANGE(E) IS 1920.0	-1699.	
409.0	ROT SLANT RANGE(W) IS 1919.3		-1688.
	SMAX IS 1921.0		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.58	1886.4	3.371	2080.	2082.	2087.
-450.	2.34	1785.5	3.355	2071.	2072.	2077.
-420.	4.21	1685.2	3.333	2057.	2059.	2063.
-390.	6.19	1585.6	3.303	2039.	2040.	2044.
-360.	8.31	1487.1	3.263	2015.	2016.	2020.
-330.	10.59	1390.0	3.212	1984.	1984.	1988.
-300.	13.07	1294.6	3.145	1943.	1943.	1947.
-270.	15.77	1201.4	3.059	1890.	1890.	1893.
-240.	18.73	1111.3	2.947	1821.	1821.	1824.
-210.	21.98	1024.9	2.803	1732.	1731.	1735.
-180.	25.55	943.5	2.615	1616.	1615.	1618.
-150.	29.42	868.6	2.371	1466.	1465.	1467.
-120.	33.52	802.0	2.057	1272.	1271.	1273.
-90.	37.63	746.0	1.661	1027.	1026.	1028.
-60.	41.33	703.2	1.175	727.	726.	727.
-30.	44.01	676.3	0.611	378.	378.	378.
0.	45.00	667.0	0.	-0.	-0.	0.
30.	44.01	676.3	0.611	-378.	-378.	-378.
60.	41.33	703.2	1.175	-727.	-726.	-727.
90.	37.63	746.0	1.661	-1028.	-1026.	-1027.
120.	33.52	802.0	2.057	-1273.	-1271.	-1272.
150.	29.42	868.6	2.371	-1467.	-1465.	-1466.
180.	25.55	943.5	2.615	-1618.	-1615.	-1616.
210.	21.98	1024.9	2.803	-1735.	-1731.	-1732.
240.	18.73	1111.3	2.947	-1824.	-1821.	-1821.
270.	15.77	1201.4	3.059	-1893.	-1890.	-1890.
300.	13.07	1294.6	3.145	-1947.	-1943.	-1943.
330.	10.59	1390.0	3.212	-1988.	-1984.	-1984.
360.	8.31	1487.1	3.263	-2020.	-2016.	-2015.
390.	6.19	1585.6	3.303	-2044.	-2040.	-2039.
420.	4.21	1685.2	3.333	-2063.	-2059.	-2057.
450.	2.34	1785.5	3.355	-2077.	-2072.	-2071.
480.	0.58	1886.4	3.371	-2087.	-2082.	-2080.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

489.0 ROT SLANT RANGE(E) IS 1918.9 -2089.

490.0 ROT SLANT RANGE(W) IS 1919.9 -2083.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.26	1847.0	3.464	2140.	2140.	2142.
-450.	3.11	1743.1	3.458	2136.	2136.	2138.
-420.	5.10	1639.6	3.447	2129.	2129.	2131.
-390.	7.23	1536.4	3.430	2119.	2119.	2121.
-360.	9.53	1433.9	3.405	2104.	2104.	2106.
-330.	12.06	1332.2	3.372	2084.	2083.	2085.
-300.	14.86	1231.7	3.326	2056.	2055.	2057.
-270.	17.99	1132.8	3.265	2018.	2017.	2019.
-240.	21.54	1036.0	3.181	1966.	1965.	1967.
-210.	25.61	942.2	3.068	1896.	1895.	1897.
-180.	30.35	852.4	2.912	1800.	1799.	1801.
-150.	35.92	768.0	2.698	1668.	1667.	1669.
-120.	42.48	691.3	2.401	1485.	1483.	1485.
-90.	50.10	625.1	1.994	1233.	1232.	1233.
-60.	58.50	573.0	1.451	898.	896.	898.
-30.	66.34	539.4	0.771	477.	476.	477.
0.	70.00	527.7	0.	0.	-0.	-0.
30.	66.34	539.4	0.771	-477.	-476.	-477.
60.	58.50	573.0	1.451	-898.	-896.	-898.
90.	50.10	625.1	1.994	-1233.	-1232.	-1233.
120.	42.48	691.3	2.401	-1485.	-1483.	-1485.
150.	35.92	768.0	2.698	-1669.	-1667.	-1668.
180.	30.35	852.4	2.912	-1801.	-1799.	-1800.
210.	25.61	942.2	3.068	-1897.	-1895.	-1896.
240.	21.54	1036.0	3.181	-1967.	-1965.	-1966.
270.	17.99	1132.8	3.265	-2019.	-2017.	-2018.
300.	14.86	1231.7	3.326	-2057.	-2055.	-2056.
330.	12.06	1332.2	3.372	-2085.	-2083.	-2084.
360.	9.53	1433.9	3.405	-2106.	-2104.	-2104.
390.	7.23	1536.4	3.430	-2121.	-2119.	-2119.
420.	5.10	1639.6	3.447	-2131.	-2129.	-2129.
450.	3.11	1743.1	3.458	-2138.	-2136.	-2136.
480.	1.26	1847.0	3.464	-2142.	-2140.	-2140.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

500.0 ROT SLANT RANGE(E) IS 1917.8 -2143.

501.0 ROT SLANT RANGE(W) IS 1920.3 -2141.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.31	1843.9	3.472	2145.	2145.	2147.
-450.	3.18	1739.8	3.466	2141.	2141.	2143.
-420.	5.17	1636.0	3.456	2135.	2135.	2137.
-390.	7.31	1532.5	3.440	2126.	2125.	2127.
-360.	9.63	1429.7	3.417	2112.	2111.	2113.
-330.	12.18	1327.6	3.385	2092.	2091.	2093.
-300.	15.01	1226.7	3.341	2065.	2064.	2066.
-270.	18.18	1127.3	3.282	2029.	2028.	2029.
-240.	21.78	1030.0	3.201	1979.	1978.	1980.
-210.	25.94	935.5	3.091	1911.	1910.	1912.
-180.	30.80	844.9	2.940	1817.	1816.	1818.
-150.	36.55	759.7	2.729	1687.	1686.	1688.
-120.	43.42	682.0	2.435	1506.	1505.	1506.
-90.	51.55	614.7	2.029	1255.	1253.	1255.
-60.	60.84	561.7	1.481	916.	915.	916.
-30.	70.14	527.3	0.789	488.	488.	488.
0.	75.00	515.3	0.	-0.	-0.	0.
30.	70.14	527.3	0.789	-488.	-488.	-488.
60.	60.84	561.7	1.481	-916.	-915.	-916.
90.	51.55	614.7	2.029	-1255.	-1253.	-1255.
120.	43.42	682.0	2.435	-1506.	-1505.	-1506.
150.	36.55	759.7	2.729	-1688.	-1686.	-1687.
180.	30.80	844.9	2.940	-1818.	-1816.	-1817.
210.	25.94	935.5	3.091	-1912.	-1910.	-1911.
240.	21.78	1030.0	3.201	-1980.	-1978.	-1979.
270.	18.18	1127.3	3.282	-2029.	-2028.	-2029.
300.	15.01	1226.7	3.341	-2066.	-2064.	-2065.
330.	12.18	1327.6	3.385	-2093.	-2091.	-2092.
360.	9.63	1429.7	3.417	-2113.	-2111.	-2112.
390.	7.31	1532.5	3.440	-2127.	-2125.	-2126.
420.	5.17	1636.0	3.456	-2137.	-2135.	-2135.
450.	3.18	1739.8	3.466	-2143.	-2141.	-2141.
480.	1.31	1843.9	3.472	-2147.	-2145.	-2145.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

501.0 ROT SLANT RANGE(E) IS 1918.2 -2147.

502.0 ROT SLANT RANGE(W) IS 1920.9 -2146.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 500.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	1.38	1840.2	3.481	2151.	2150.	2151.
-450.	3.25	1735.8	3.476	2148.	2147.	2148.
-420.	5.25	1631.6	3.467	2143.	2142.	2143.
-390.	7.41	1527.8	3.452	2134.	2133.	2134.
-360.	9.76	1424.6	3.431	2121.	2120.	2121.
-330.	12.33	1322.1	3.401	2103.	2101.	2103.
-300.	15.19	1220.6	3.360	2077.	2076.	2077.
-270.	18.41	1120.6	3.303	2042.	2041.	2042.
-240.	22.08	1022.6	3.226	1995.	1993.	1995.
-210.	26.33	927.3	3.120	1929.	1928.	1929.
-180.	31.35	835.8	2.973	1838.	1837.	1838.
-150.	37.35	749.5	2.768	1711.	1710.	1711.
-120.	44.62	670.6	2.478	1532.	1531.	1532.
-90.	53.46	602.0	2.073	1282.	1280.	1282.
-60.	64.11	547.7	1.520	940.	939.	940.
-30.	76.50	512.3	0.813	503.	502.	503.
0.	90.00	500.0	0.	-0.	-0.	0.
30.	76.50	512.3	0.813	-503.	-502.	-503.
60.	64.11	547.7	1.520	-940.	-939.	-940.
90.	53.46	602.0	2.073	-1282.	-1280.	-1282.
120.	44.62	670.6	2.478	-1532.	-1531.	-1532.
150.	37.35	749.5	2.768	-1711.	-1710.	-1711.
180.	31.35	835.8	2.973	-1838.	-1837.	-1838.
210.	26.33	927.3	3.120	-1929.	-1928.	-1929.
240.	22.08	1022.6	3.226	-1995.	-1993.	-1995.
270.	18.41	1120.6	3.303	-2042.	-2041.	-2042.
300.	15.19	1220.6	3.360	-2077.	-2076.	-2077.
330.	12.33	1322.1	3.401	-2103.	-2101.	-2103.
360.	9.76	1424.6	3.431	-2121.	-2120.	-2121.
390.	7.41	1527.8	3.452	-2134.	-2133.	-2134.
420.	5.25	1631.6	3.467	-2143.	-2142.	-2143.
450.	3.25	1735.8	3.476	-2148.	-2147.	-2148.
480.	1.38	1840.2	3.481	-2151.	-2150.	-2151.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

502.0 ROT SLANT RANGE(E) IS 1917.8 -2152.

502.0 ROT SLANT RANGE(W) IS 1917.8 -2152.

SMAX IS 1921.0

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 550.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-180.	0.30	2003.4	1.063	660.	657.	669.
-150.	0.80	1973.9	0.901	560.	556.	566.
-120.	1.22	1949.5	0.731	454.	451.	459.
-90.	1.56	1930.2	0.554	345.	342.	347.
-60.	1.80	1916.3	0.372	232.	230.	233.
-30.	1.95	1907.9	0.187	117.	116.	117.
0.	2.00	1905.1	0.	0.	-0.	-0.
30.	1.95	1907.9	0.187	-117.	-116.	-117.
60.	1.80	1916.3	0.372	-233.	-230.	-232.
90.	1.56	1930.2	0.554	-347.	-342.	-345.
120.	1.22	1949.5	0.731	-459.	-451.	-454.
150.	0.80	1973.9	0.901	-566.	-556.	-560.
180.	0.30	2003.4	1.063	-669.	-657.	-660.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

199.0 ROT SLANT RANGE(E) IS 2021.5 -731.

200.0 ROT SLANT RANGE(W) IS 2021.5 -723.

SMAX IS 2021.6

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 550.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-360.	0.82	1973.0	2.243	1383.	1386.	1408.
-330.	1.96	1907.2	2.135	1317.	1319.	1339.
-300.	3.08	1845.0	2.012	1243.	1243.	1262.
-270.	4.17	1786.7	1.876	1160.	1159.	1176.
-240.	5.22	1732.6	1.724	1067.	1065.	1080.
-210.	6.21	1683.4	1.556	964.	961.	975.
-180.	7.12	1639.4	1.372	851.	847.	859.
-150.	7.94	1601.2	1.172	728.	724.	734.
-120.	8.65	1569.3	0.958	596.	592.	600.
-90.	9.23	1543.9	0.731	455.	452.	457.
-60.	9.65	1525.5	0.494	307.	305.	309.
-30.	9.91	1514.3	0.249	155.	154.	155.
0.	10.00	1510.6	0.	0.	-0.	-0.
30.	9.91	1514.3	0.249	-155.	-154.	-155.
60.	9.65	1525.5	0.494	-309.	-305.	-307.
90.	9.23	1543.9	0.731	-457.	-452.	-455.
120.	8.65	1569.3	0.958	-600.	-592.	-596.
150.	7.94	1601.2	1.172	-734.	-724.	-728.
180.	7.12	1639.4	1.372	-859.	-847.	-851.
210.	6.21	1683.4	1.556	-975.	-961.	-964.
240.	5.22	1732.6	1.724	-1080.	-1065.	-1067.
270.	4.17	1786.7	1.876	-1176.	-1159.	-1160.
300.	3.08	1845.0	2.012	-1262.	-1243.	-1243.
330.	1.96	1907.2	2.135	-1339.	-1319.	-1317.
360.	0.82	1973.0	2.243	-1408.	-1386.	-1383.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

379.0 ROT SLANT RANGE(E) IS 2019.8 -1447.

382.0 ROT SLANT RANGE(W) IS 2020.3 -1426.

SMAX IS 2021.6

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 550.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	0.49	1992.2	2.627	1618.	1623.	1645.
-390.	1.83	1914.6	2.548	1571.	1574.	1595.
-360.	3.18	1839.5	2.458	1516.	1518.	1538.
-330.	4.54	1767.3	2.353	1453.	1454.	1472.
-300.	5.90	1698.4	2.233	1379.	1379.	1397.
-270.	7.25	1633.5	2.095	1296.	1294.	1311.
-240.	8.57	1572.9	1.939	1200.	1198.	1213.
-210.	9.84	1517.3	1.763	1092.	1089.	1102.
-180.	11.04	1467.4	1.565	971.	967.	979.
-150.	12.14	1423.6	1.347	836.	832.	842.
-120.	13.11	1386.8	1.107	688.	684.	692.
-90.	13.90	1357.4	0.849	528.	525.	531.
-60.	14.50	1336.0	0.576	358.	356.	359.
-30.	14.87	1322.9	0.291	181.	180.	181.
0.	15.00	1318.6	0.	0.	-0.	-0.
30.	14.87	1322.9	0.291	-181.	-180.	-181.
60.	14.50	1336.0	0.576	-359.	-356.	-358.
90.	13.90	1357.4	0.849	-531.	-525.	-528.
120.	13.11	1386.8	1.107	-692.	-684.	-688.
150.	12.14	1423.6	1.347	-842.	-832.	-836.
180.	11.04	1467.4	1.565	-979.	-967.	-971.
210.	9.84	1517.3	1.763	-1102.	-1089.	-1092.
240.	8.57	1572.9	1.939	-1213.	-1198.	-1200.
270.	7.25	1633.5	2.095	-1311.	-1294.	-1296.
300.	5.90	1698.4	2.233	-1397.	-1379.	-1379.
330.	4.54	1767.3	2.353	-1472.	-1454.	-1453.
360.	3.18	1839.5	2.458	-1538.	-1518.	-1516.
390.	1.83	1914.6	2.548	-1595.	-1574.	-1571.
420.	0.49	1992.2	2.627	-1645.	-1623.	-1618.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

428.0 ROT SLANT RANGE(E) IS 2019.0 -1657.

431.0 ROT SLANT RANGE(W) IS 2019.0 -1633.

SMAX IS 2021.6

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 550.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-510.	0.57	1987.7	3.299	2036.	2038.	2050.
-480.	2.29	1888.9	3.283	2027.	2028.	2040.
-450.	4.10	1790.7	3.262	2015.	2015.	2027.
-420.	6.01	1693.3	3.234	1998.	1998.	2009.
-390.	8.04	1596.8	3.197	1976.	1975.	1986.
-360.	10.21	1501.5	3.150	1947.	1946.	1957.
-330.	12.55	1407.9	3.090	1911.	1909.	1920.
-300.	15.07	1316.3	3.014	1865.	1862.	1873.
-270.	17.80	1227.2	2.918	1806.	1803.	1813.
-240.	20.76	1141.5	2.796	1731.	1727.	1737.
-210.	23.98	1059.8	2.641	1636.	1631.	1641.
-180.	27.45	983.4	2.444	1515.	1510.	1519.
-150.	31.15	913.7	2.195	1362.	1356.	1365.
-120.	34.96	852.3	1.885	1170.	1165.	1172.
-90.	38.67	801.3	1.506	935.	930.	937.
-60.	41.91	762.7	1.055	656.	652.	656.
-30.	44.18	738.6	0.545	339.	337.	339.
0.	45.00	730.4	0.	0.	-0.	-0.
30.	44.18	738.6	0.545	-339.	-337.	-339.
60.	41.91	762.7	1.055	-656.	-652.	-656.
90.	38.67	801.3	1.506	-937.	-930.	-935.
120.	34.96	852.3	1.885	-1172.	-1165.	-1170.
150.	31.15	913.7	2.195	-1365.	-1356.	-1362.
180.	27.45	983.4	2.444	-1519.	-1510.	-1515.
210.	23.98	1059.8	2.641	-1641.	-1631.	-1636.
240.	20.76	1141.5	2.796	-1737.	-1727.	-1731.
270.	17.80	1227.2	2.918	-1813.	-1803.	-1806.
300.	15.07	1316.3	3.014	-1873.	-1862.	-1865.
330.	12.55	1407.9	3.090	-1920.	-1909.	-1911.
360.	10.21	1501.5	3.150	-1957.	-1946.	-1947.
390.	8.04	1596.8	3.197	-1986.	-1975.	-1976.
420.	6.01	1693.3	3.234	-2009.	-1998.	-1998.
450.	4.10	1790.7	3.262	-2027.	-2015.	-2015.
480.	2.29	1888.9	3.283	-2040.	-2028.	-2027.
510.	0.57	1987.7	3.299	-2050.	-2038.	-2036.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

518.0 ROT SLANT RANGE(E) IS 2020.9 -2052.

519.0 ROT SLANT RANGE(W) IS 2018.6 -2038.

SMAX IS 2021.6

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 550.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-510.	1.32	1943.9	3.398	2101.	2099.	2106.
-480.	3.14	1842.0	3.391	2097.	2095.	2102.
-450.	5.07	1740.4	3.381	2091.	2088.	2096.
-420.	7.13	1639.2	3.365	2081.	2079.	2086.
-390.	9.35	1538.6	3.342	2068.	2065.	2072.
-360.	11.75	1438.8	3.311	2049.	2046.	2053.
-330.	14.39	1340.0	3.270	2024.	2020.	2028.
-300.	17.30	1242.7	3.216	1991.	1987.	1994.
-270.	20.55	1147.3	3.144	1947.	1942.	1950.
-240.	24.21	1054.3	3.049	1888.	1883.	1891.
-210.	28.39	964.6	2.922	1811.	1805.	1813.
-180.	33.20	879.4	2.753	1706.	1701.	1708.
-150.	38.76	800.1	2.525	1566.	1560.	1567.
-120.	45.18	728.6	2.221	1378.	1372.	1379.
-90.	52.41	667.8	1.820	1129.	1124.	1130.
-60.	60.10	620.6	1.306	811.	807.	811.
-30.	66.95	590.4	0.687	427.	424.	427.
0.	70.00	580.0	0.	0.	-0.	-0.
30.	66.95	590.4	0.687	-427.	-424.	-427.
60.	60.10	620.6	1.306	-811.	-807.	-811.
90.	52.41	667.8	1.820	-1130.	-1124.	-1129.
120.	45.18	728.6	2.221	-1379.	-1372.	-1378.
150.	38.76	800.1	2.525	-1567.	-1560.	-1566.
180.	33.20	879.4	2.753	-1708.	-1701.	-1706.
210.	28.39	964.6	2.922	-1813.	-1805.	-1811.
240.	24.21	1054.3	3.049	-1891.	-1883.	-1888.
270.	20.55	1147.3	3.144	-1950.	-1942.	-1947.
300.	17.30	1242.7	3.216	-1994.	-1987.	-1991.
330.	14.39	1340.0	3.270	-2028.	-2020.	-2024.
360.	11.75	1438.8	3.311	-2053.	-2046.	-2049.
390.	9.35	1538.6	3.342	-2072.	-2065.	-2068.
420.	7.13	1639.2	3.365	-2086.	-2079.	-2081.
450.	5.07	1740.4	3.381	-2096.	-2088.	-2091.
480.	3.14	1842.0	3.391	-2102.	-2095.	-2097.
510.	1.32	1943.9	3.398	-2106.	-2099.	-2101.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

531.0 ROT SLANT RANGE(E) IS 2020.8 -2107.

531.0 ROT SLANT RANGE(W) IS 2018.4 -2102.

SMAX IS 2021.6

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 550.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-510.	1.38	1940.4	3.406	2106.	2104.	2110.
-480.	3.21	1838.3	3.400	2103.	2100.	2107.
-450.	5.15	1736.4	3.390	2097.	2094.	2101.
-420.	7.22	1634.9	3.375	2089.	2085.	2092.
-390.	9.45	1534.0	3.354	2076.	2072.	2079.
-360.	11.88	1433.8	3.325	2058.	2054.	2061.
-330.	14.54	1334.6	3.285	2034.	2030.	2037.
-300.	17.49	1236.8	3.233	2002.	1997.	2004.
-270.	20.79	1140.8	3.164	1959.	1954.	1962.
-240.	24.52	1047.2	3.071	1903.	1897.	1904.
-210.	28.80	956.8	2.948	1827.	1821.	1828.
-180.	33.75	870.7	2.782	1724.	1718.	1726.
-150.	39.53	790.5	2.558	1586.	1580.	1587.
-120.	46.29	718.1	2.255	1399.	1393.	1400.
-90.	54.08	656.2	1.853	1150.	1145.	1150.
-60.	62.68	608.1	1.334	828.	824.	829.
-30.	70.92	577.3	0.703	437.	434.	437.
0.	75.00	566.6	0.	0.	-0.	-0.
30.	70.92	577.3	0.703	-437.	-434.	-437.
60.	62.68	608.1	1.334	-829.	-824.	-828.
90.	54.08	656.2	1.853	-1150.	-1145.	-1150.
120.	46.29	718.1	2.255	-1400.	-1393.	-1399.
150.	39.53	790.5	2.558	-1587.	-1580.	-1586.
180.	33.75	870.7	2.782	-1726.	-1718.	-1724.
210.	28.80	956.8	2.948	-1828.	-1821.	-1827.
240.	24.52	1047.2	3.071	-1904.	-1897.	-1903.
270.	20.79	1140.8	3.164	-1962.	-1954.	-1959.
300.	17.49	1236.8	3.233	-2004.	-1997.	-2002.
330.	14.54	1334.6	3.285	-2037.	-2030.	-2034.
360.	11.88	1433.8	3.325	-2061.	-2054.	-2058.
390.	9.45	1534.0	3.354	-2079.	-2072.	-2076.
420.	7.22	1634.9	3.375	-2092.	-2085.	-2089.
450.	5.15	1736.4	3.390	-2101.	-2094.	-2097.
480.	3.21	1838.3	3.400	-2107.	-2100.	-2103.
510.	1.38	1940.4	3.406	-2110.	-2104.	-2106.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

532.0 ROT SLANT RANGE(E) IS 2020.6 -2111.

532.0 ROT SLANT RANGE(W) IS 2018.8 -2107.

SMAX IS 2021.6

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 550.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-510.	1.45	1936.2	3.415	2114.	2110.	2114.
-480.	3.29	1833.8	3.411	2111.	2107.	2111.
-450.	5.24	1731.6	3.402	2106.	2102.	2106.
-420.	7.33	1629.7	3.388	2098.	2093.	2098.
-390.	9.58	1528.4	3.369	2086.	2081.	2086.
-360.	12.04	1427.7	3.341	2069.	2064.	2069.
-330.	14.73	1328.0	3.304	2047.	2041.	2047.
-300.	17.72	1229.6	3.254	2016.	2010.	2016.
-270.	21.08	1132.9	3.188	1975.	1969.	1975.
-240.	24.90	1038.5	3.099	1920.	1914.	1920.
-210.	29.30	947.3	2.979	1847.	1841.	1847.
-180.	34.44	860.2	2.818	1747.	1741.	1747.
-150.	40.50	778.8	2.598	1611.	1605.	1611.
-120.	47.72	705.1	2.298	1426.	1420.	1426.
-90.	56.30	641.9	1.895	1176.	1171.	1176.
-60.	66.36	592.6	1.370	850.	846.	850.
-30.	77.77	561.0	0.724	450.	447.	450.
0.	90.00	550.0	0.	0.	-0.	-0.
30.	77.77	561.0	0.724	-450.	-447.	-450.
60.	66.36	592.6	1.370	-850.	-846.	-850.
90.	56.30	641.9	1.895	-1176.	-1171.	-1176.
120.	47.72	705.1	2.298	-1426.	-1420.	-1426.
150.	40.50	778.8	2.598	-1611.	-1605.	-1611.
180.	34.44	860.2	2.818	-1747.	-1741.	-1747.
210.	29.30	947.3	2.979	-1847.	-1841.	-1847.
240.	24.90	1038.5	3.099	-1920.	-1914.	-1920.
270.	21.08	1132.9	3.188	-1975.	-1969.	-1975.
300.	17.72	1229.6	3.254	-2016.	-2010.	-2016.
330.	14.73	1328.0	3.304	-2047.	-2041.	-2047.
360.	12.04	1427.7	3.341	-2069.	-2064.	-2069.
390.	9.58	1528.4	3.369	-2086.	-2081.	-2086.
420.	7.33	1629.7	3.388	-2098.	-2093.	-2098.
450.	5.24	1731.6	3.402	-2106.	-2102.	-2106.
480.	3.29	1833.8	3.411	-2111.	-2107.	-2111.
510.	1.45	1936.2	3.415	-2114.	-2110.	-2114.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

533.0 ROT SLANT RANGE(E) IS 2019.2 -2114.

533.0 ROT SLANT RANGE(W) IS 2019.2 -2114.

SMAX IS 2021.6

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-180.	0.44	2092.4	0.982	609.	607.	618.
-150.	0.90	2065.2	0.830	516.	513.	522.
-120.	1.29	2042.7	0.672	418.	415.	423.
-90.	1.60	2024.9	0.509	317.	315.	320.
-60.	1.82	2012.2	0.342	213.	211.	214.
-30.	1.95	2004.5	0.172	107.	106.	108.
0.	2.00	2001.9	0.	0.	-0.	-0.
30.	1.95	2004.5	0.172	-108.	-106.	-107.
60.	1.82	2012.2	0.342	-214.	-211.	-213.
90.	1.60	2024.9	0.509	-320.	-315.	-317.
120.	1.29	2042.7	0.672	-423.	-415.	-418.
150.	0.90	2065.2	0.830	-522.	-513.	-516.
180.	0.44	2092.4	0.982	-618.	-607.	-609.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

208.0 ROT SLANT RANGE(E) IS 2118.5 -704.

209.0 ROT SLANT RANGE(W) IS 2118.3 -695.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.36	2097.3	2.206	1359.	1363.	1386.
-360.	1.46	2032.5	2.109	1300.	1303.	1325.
-330.	2.55	1970.8	2.000	1234.	1236.	1256.
-300.	3.62	1912.6	1.879	1161.	1161.	1180.
-270.	4.64	1858.2	1.746	1079.	1078.	1096.
-240.	5.62	1808.0	1.599	990.	988.	1003.
-210.	6.54	1762.4	1.438	891.	888.	902.
-180.	7.39	1721.9	1.264	784.	781.	792.
-150.	8.14	1686.7	1.077	669.	665.	675.
-120.	8.78	1657.4	0.878	546.	542.	550.
-90.	9.30	1634.2	0.668	416.	413.	418.
-60.	9.69	1617.4	0.451	281.	278.	282.
-30.	9.92	1607.2	0.227	141.	140.	142.
0.	10.00	1603.8	0.	0.	-0.	-0.
30.	9.92	1607.2	0.227	-142.	-140.	-141.
60.	9.69	1617.4	0.451	-282.	-278.	-281.
90.	9.30	1634.2	0.668	-418.	-413.	-416.
120.	8.78	1657.4	0.878	-550.	-542.	-546.
150.	8.14	1686.7	1.077	-675.	-665.	-669.
180.	7.39	1721.9	1.264	-792.	-781.	-784.
210.	6.54	1762.4	1.438	-902.	-888.	-891.
240.	5.62	1808.0	1.599	-1003.	-988.	-990.
270.	4.64	1858.2	1.746	-1096.	-1078.	-1079.
300.	3.62	1912.6	1.879	-1180.	-1161.	-1161.
330.	2.55	1970.8	2.000	-1256.	-1236.	-1234.
360.	1.46	2032.5	2.109	-1325.	-1303.	-1300.
390.	0.36	2097.3	2.206	-1386.	-1363.	-1359.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

397.0 ROT SLANT RANGE(E) IS 2116.8 -1400.

401.0 ROT SLANT RANGE(W) IS 2118.5 -1378.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	0.11	2111.7	2.565	1579.	1585.	1608.
-420.	1.41	2035.8	2.494	1536.	1541.	1563.
-390.	2.71	1962.1	2.412	1487.	1490.	1512.
-360.	4.02	1891.2	2.319	1430.	1432.	1453.
-330.	5.33	1823.2	2.212	1366.	1366.	1386.
-300.	6.62	1758.6	2.091	1292.	1292.	1310.
-270.	7.90	1697.9	1.955	1209.	1207.	1224.
-240.	9.14	1641.5	1.801	1115.	1113.	1128.
-210.	10.32	1589.9	1.631	1011.	1007.	1021.
-180.	11.43	1543.8	1.442	895.	891.	902.
-150.	12.43	1503.6	1.236	767.	764.	773.
-120.	13.31	1469.8	1.013	630.	626.	633.
-90.	14.03	1443.0	0.775	482.	478.	484.
-60.	14.56	1423.5	0.524	326.	324.	327.
-30.	14.89	1411.6	0.264	165.	163.	165.
0.	15.00	1407.7	0.	0.	-0.	-0.
30.	14.89	1411.6	0.264	-165.	-163.	-165.
60.	14.56	1423.5	0.524	-327.	-324.	-326.
90.	14.03	1443.0	0.775	-484.	-478.	-482.
120.	13.31	1469.8	1.013	-633.	-626.	-630.
150.	12.43	1503.6	1.236	-773.	-764.	-767.
180.	11.43	1543.8	1.442	-902.	-891.	-895.
210.	10.32	1589.9	1.631	-1021.	-1007.	-1011.
240.	9.14	1641.5	1.801	-1128.	-1113.	-1115.
270.	7.90	1697.9	1.955	-1224.	-1207.	-1209.
300.	6.62	1758.6	2.091	-1310.	-1292.	-1292.
330.	5.33	1823.2	2.212	-1386.	-1366.	-1366.
360.	4.02	1891.2	2.319	-1453.	-1432.	-1430.
390.	2.71	1962.1	2.412	-1512.	-1490.	-1487.
420.	1.41	2035.8	2.494	-1563.	-1541.	-1536.
450.	0.11	2111.7	2.565	-1608.	-1585.	-1579.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

450.0 ROT SLANT RANGE(E) IS 2118.0 -1608.

453.0 ROT SLANT RANGE(W) IS 2116.7 -1583.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 20.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.30	2100.7	2.783	1713.	1719.	1741.
-450.	1.72	2018.1	2.728	1680.	1685.	1707.
-420.	3.16	1937.1	2.664	1642.	1646.	1666.
-390.	4.64	1858.3	2.589	1597.	1599.	1619.
-360.	6.15	1782.0	2.501	1544.	1545.	1564.
-330.	7.67	1708.4	2.399	1482.	1482.	1500.
-300.	9.21	1638.2	2.281	1410.	1409.	1426.
-270.	10.75	1571.7	2.146	1328.	1326.	1341.
-240.	12.28	1509.6	1.991	1233.	1230.	1244.
-210.	13.77	1452.5	1.814	1124.	1121.	1134.
-180.	15.19	1401.0	1.615	1002.	998.	1009.
-150.	16.50	1355.8	1.393	865.	861.	870.
-120.	17.67	1317.6	1.148	713.	709.	717.
-90.	18.65	1287.1	0.882	549.	545.	551.
-60.	19.38	1264.8	0.599	373.	370.	374.
-30.	19.84	1251.3	0.303	189.	187.	189.
0.	20.00	1246.7	0.	0.	-0.	-0.
30.	19.84	1251.3	0.303	-189.	-187.	-189.
60.	19.38	1264.8	0.599	-374.	-370.	-373.
90.	18.65	1287.1	0.882	-551.	-545.	-549.
120.	17.67	1317.6	1.148	-717.	-709.	-713.
150.	16.50	1355.8	1.393	-870.	-861.	-865.
180.	15.19	1401.0	1.615	-1009.	-998.	-1002.
210.	13.77	1452.5	1.814	-1134.	-1121.	-1124.
240.	12.28	1509.6	1.991	-1244.	-1230.	-1233.
270.	10.75	1571.7	2.146	-1341.	-1326.	-1328.
300.	9.21	1638.2	2.281	-1426.	-1409.	-1410.
330.	7.67	1708.4	2.399	-1500.	-1482.	-1482.
360.	6.15	1782.0	2.501	-1564.	-1545.	-1544.
390.	4.64	1858.3	2.589	-1619.	-1599.	-1597.
420.	3.16	1937.1	2.664	-1666.	-1646.	-1642.
450.	1.72	2018.1	2.728	-1707.	-1685.	-1680.
480.	0.30	2100.7	2.783	-1741.	-1719.	-1713.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

483.0	ROT SLANT RANGE(E) IS 2116.6	-1744.	
487.0	ROT SLANT RANGE(W) IS 2118.2		-1720.
	SMAX IS 2118.5		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 30.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-510.	0.75	2074.2	3.041	1873.	1878.	1896.
-480.	2.33	1983.5	3.007	1854.	1858.	1875.
-450.	3.97	1893.9	2.966	1829.	1832.	1849.
-420.	5.67	1805.6	2.916	1799.	1801.	1818.
-390.	7.45	1719.0	2.855	1763.	1764.	1780.
-360.	9.30	1634.4	2.782	1718.	1718.	1734.
-330.	11.22	1552.3	2.694	1665.	1664.	1679.
-300.	13.22	1473.0	2.588	1601.	1599.	1613.
-270.	15.30	1397.2	2.463	1524.	1521.	1535.
-240.	17.43	1325.5	2.313	1432.	1429.	1442.
-210.	19.59	1258.7	2.136	1324.	1319.	1331.
-180.	21.75	1197.6	1.928	1195.	1191.	1202.
-150.	23.85	1143.4	1.685	1046.	1041.	1051.
-120.	25.80	1096.9	1.407	874.	869.	877.
-90.	27.51	1059.3	1.094	680.	676.	682.
-60.	28.84	1031.6	0.749	466.	463.	467.
-30.	29.70	1014.5	0.381	237.	235.	237.
0.	30.00	1008.8	0.	0.	-0.	-0.
30.	29.70	1014.5	0.381	-237.	-235.	-237.
60.	28.84	1031.6	0.749	-467.	-463.	-466.
90.	27.51	1059.3	1.094	-682.	-676.	-680.
120.	25.80	1096.9	1.407	-877.	-869.	-874.
150.	23.85	1143.4	1.685	-1051.	-1041.	-1046.
180.	21.75	1197.6	1.928	-1202.	-1191.	-1195.
210.	19.59	1258.7	2.136	-1331.	-1319.	-1324.
240.	17.43	1325.5	2.313	-1442.	-1429.	-1432.
270.	15.30	1397.2	2.463	-1535.	-1521.	-1524.
300.	13.22	1473.0	2.588	-1613.	-1599.	-1601.
330.	11.22	1552.3	2.694	-1679.	-1664.	-1665.
360.	9.30	1634.4	2.782	-1734.	-1718.	-1718.
390.	7.45	1719.0	2.855	-1780.	-1764.	-1763.
420.	5.67	1805.6	2.916	-1818.	-1801.	-1799.
450.	3.97	1893.9	2.966	-1849.	-1832.	-1829.
480.	2.33	1983.5	3.007	-1875.	-1858.	-1854.
510.	0.75	2074.2	3.041	-1896.	-1878.	-1873.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

521.0 ROT SLANT RANGE(E) IS 2115.9 -1903.

524.0 ROT SLANT RANGE(W) IS 2116.1 -1881.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 40.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	0.20	2106.5	3.188	1966.	1970.	1984.
-510.	1.84	2011.1	3.170	1955.	1958.	1972.
-480.	3.55	1916.3	3.146	1941.	1944.	1957.
-450.	5.34	1822.4	3.116	1923.	1925.	1938.
-420.	7.23	1729.5	3.077	1900.	1901.	1914.
-390.	9.22	1637.9	3.029	1871.	1871.	1884.
-360.	11.33	1547.9	2.969	1835.	1834.	1847.
-330.	13.57	1459.9	2.895	1790.	1788.	1801.
-300.	15.96	1374.3	2.804	1735.	1732.	1745.
-270.	18.49	1291.8	2.692	1667.	1663.	1675.
-240.	21.19	1213.0	2.555	1582.	1578.	1590.
-210.	24.03	1138.8	2.386	1479.	1474.	1485.
-180.	27.00	1070.2	2.180	1352.	1347.	1357.
-150.	30.02	1008.5	1.931	1198.	1193.	1202.
-120.	32.98	954.8	1.634	1014.	1009.	1017.
-90.	35.71	910.9	1.286	799.	794.	800.
-60.	37.96	878.2	0.890	553.	550.	554.
-30.	39.47	857.9	0.456	283.	281.	284.
0.	40.00	851.1	0.	0.	-0.	-0.
30.	39.47	857.9	0.456	-284.	-281.	-283.
60.	37.96	878.2	0.890	-554.	-550.	-553.
90.	35.71	910.9	1.286	-800.	-794.	-799.
120.	32.98	954.8	1.634	-1017.	-1009.	-1014.
150.	30.02	1008.5	1.931	-1202.	-1193.	-1198.
180.	27.00	1070.2	2.180	-1357.	-1347.	-1352.
210.	24.03	1138.8	2.386	-1485.	-1474.	-1479.
240.	21.19	1213.0	2.555	-1590.	-1578.	-1582.
270.	18.49	1291.8	2.692	-1675.	-1663.	-1667.
300.	15.96	1374.3	2.804	-1745.	-1732.	-1735.
330.	13.57	1459.9	2.895	-1801.	-1788.	-1790.
360.	11.33	1547.9	2.969	-1847.	-1834.	-1835.
390.	9.22	1637.9	3.029	-1884.	-1871.	-1871.
420.	7.23	1729.5	3.077	-1914.	-1901.	-1900.
450.	5.34	1822.4	3.116	-1938.	-1925.	-1923.
480.	3.55	1916.3	3.146	-1957.	-1944.	-1941.
510.	1.84	2011.1	3.170	-1972.	-1958.	-1955.
540.	0.20	2106.5	3.188	-1984.	-1970.	-1966.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

541.0 ROT SLANT RANGE(E) IS 2117.6 -1984.

543.0 ROT SLANT RANGE(W) IS 2116.5 -1967.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	0.53	2086.9	3.230	1992.	1995.	2008.
-510.	2.21	1990.2	3.215	1984.	1986.	1998.
-480.	3.96	1894.0	3.194	1972.	1973.	1986.
-450.	5.81	1798.6	3.168	1956.	1957.	1969.
-420.	7.77	1704.0	3.134	1936.	1936.	1948.
-390.	9.84	1610.7	3.091	1910.	1909.	1921.
-360.	12.05	1518.7	3.036	1877.	1876.	1888.
-330.	14.42	1428.6	2.969	1836.	1834.	1846.
-300.	16.96	1340.8	2.884	1785.	1782.	1793.
-270.	19.69	1255.8	2.779	1720.	1717.	1728.
-240.	22.63	1174.3	2.648	1640.	1636.	1647.
-210.	25.79	1097.2	2.485	1540.	1535.	1546.
-180.	29.14	1025.5	2.283	1416.	1411.	1420.
-150.	32.64	960.7	2.034	1262.	1257.	1266.
-120.	36.17	904.0	1.732	1075.	1070.	1077.
-90.	39.51	857.3	1.371	852.	847.	853.
-60.	42.36	822.3	0.954	593.	589.	593.
-30.	44.30	800.6	0.490	305.	303.	305.
0.	45.00	793.2	0.	0.	-0.	-0.
30.	44.30	800.6	0.490	-305.	-303.	-305.
60.	42.36	822.3	0.954	-593.	-589.	-593.
90.	39.51	857.3	1.371	-853.	-847.	-852.
120.	36.17	904.0	1.732	-1077.	-1070.	-1075.
150.	32.64	960.7	2.034	-1266.	-1257.	-1262.
180.	29.14	1025.5	2.283	-1420.	-1411.	-1416.
210.	25.79	1097.2	2.485	-1546.	-1535.	-1540.
240.	22.63	1174.3	2.648	-1647.	-1636.	-1640.
270.	19.69	1255.8	2.779	-1728.	-1717.	-1720.
300.	16.96	1340.8	2.884	-1793.	-1782.	-1785.
330.	14.42	1428.6	2.969	-1846.	-1834.	-1836.
360.	12.05	1518.7	3.036	-1888.	-1876.	-1877.
390.	9.84	1610.7	3.091	-1921.	-1909.	-1910.
420.	7.77	1704.0	3.134	-1948.	-1936.	-1936.
450.	5.81	1798.6	3.168	-1969.	-1957.	-1956.
480.	3.96	1894.0	3.194	-1986.	-1973.	-1972.
510.	2.21	1990.2	3.215	-1998.	-1986.	-1984.
540.	0.53	2086.9	3.230	-2008.	-1995.	-1992.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

547.0 ROT SLANT RANGE(E) IS 2117.1 -2010.

549.0 ROT SLANT RANGE(W) IS 2116.9 -1994.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 50.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	0.79	2071.7	3.262	2013.	2015.	2026.
-510.	2.50	1974.1	3.249	2006.	2007.	2019.
-480.	4.29	1876.8	3.232	1996.	1997.	2008.
-450.	6.18	1780.2	3.209	1982.	1982.	1994.
-420.	8.19	1684.4	3.179	1964.	1964.	1975.
-390.	10.33	1589.6	3.140	1941.	1940.	1951.
-360.	12.63	1496.1	3.090	1911.	1909.	1920.
-330.	15.10	1404.3	3.028	1873.	1871.	1881.
-300.	17.77	1314.6	2.950	1825.	1822.	1833.
-270.	20.67	1227.5	2.851	1765.	1761.	1771.
-240.	23.83	1143.8	2.726	1688.	1684.	1694.
-210.	27.27	1064.3	2.569	1592.	1587.	1597.
-180.	31.00	990.0	2.371	1470.	1465.	1474.
-150.	34.97	922.5	2.124	1318.	1312.	1321.
-120.	39.07	863.2	1.819	1129.	1123.	1131.
-90.	43.08	814.0	1.448	899.	894.	900.
-60.	46.61	777.0	1.012	629.	625.	629.
-30.	49.09	753.8	0.522	324.	322.	325.
0.	50.00	746.0	0.	0.	-0.	-0.
30.	49.09	753.8	0.522	-325.	-322.	-324.
60.	46.61	777.0	1.012	-629.	-625.	-629.
90.	43.08	814.0	1.448	-900.	-894.	-899.
120.	39.07	863.2	1.819	-1131.	-1123.	-1129.
150.	34.97	922.5	2.124	-1321.	-1312.	-1318.
180.	31.00	990.0	2.371	-1474.	-1465.	-1470.
210.	27.27	1064.3	2.569	-1597.	-1587.	-1592.
240.	23.83	1143.8	2.726	-1694.	-1684.	-1688.
270.	20.67	1227.5	2.851	-1771.	-1761.	-1765.
300.	17.77	1314.6	2.950	-1833.	-1822.	-1825.
330.	15.10	1404.3	3.028	-1881.	-1871.	-1873.
360.	12.63	1496.1	3.090	-1920.	-1909.	-1911.
390.	10.33	1589.6	3.140	-1951.	-1940.	-1941.
420.	8.19	1684.4	3.179	-1975.	-1964.	-1964.
450.	6.18	1780.2	3.209	-1994.	-1982.	-1982.
480.	4.29	1876.8	3.232	-2008.	-1997.	-1996.
510.	2.50	1974.1	3.249	-2019.	-2007.	-2006.
540.	0.79	2071.7	3.262	-2026.	-2015.	-2013.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

552.0 ROT SLANT RANGE(E) IS 2118.2 -2029.

553.0 ROT SLANT RANGE(W) IS 2115.7 -2015.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 60.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.14	2051.0	3.306	2042.	2043.	2052.
-510.	2.89	1951.9	3.298	2038.	2037.	2047.
-480.	4.74	1853.2	3.285	2030.	2029.	2039.
-450.	6.70	1754.9	3.267	2020.	2018.	2027.
-420.	8.79	1657.2	3.242	2005.	2003.	2012.
-390.	11.03	1560.4	3.210	1985.	1983.	1992.
-360.	13.44	1464.7	3.168	1960.	1957.	1966.
-330.	16.07	1370.5	3.114	1927.	1924.	1933.
-300.	18.95	1278.0	3.045	1885.	1881.	1890.
-270.	22.11	1188.0	2.956	1831.	1826.	1835.
-240.	25.63	1100.9	2.842	1761.	1756.	1765.
-210.	29.54	1017.7	2.696	1671.	1665.	1674.
-180.	33.90	939.6	2.508	1555.	1549.	1558.
-150.	38.72	867.8	2.266	1406.	1400.	1408.
-120.	43.96	804.3	1.959	1216.	1210.	1217.
-90.	49.41	751.1	1.575	978.	973.	979.
-60.	54.56	710.6	1.110	690.	686.	690.
-30.	58.49	685.1	0.576	358.	356.	358.
0.	60.00	676.4	0.	0.	-0.	-0.
30.	58.49	685.1	0.576	-358.	-356.	-358.
60.	54.56	710.6	1.110	-690.	-686.	-690.
90.	49.41	751.1	1.575	-979.	-973.	-978.
120.	43.96	804.3	1.959	-1217.	-1210.	-1216.
150.	38.72	867.8	2.266	-1408.	-1400.	-1406.
180.	33.90	939.6	2.508	-1558.	-1549.	-1555.
210.	29.54	1017.7	2.696	-1674.	-1665.	-1671.
240.	25.63	1100.9	2.842	-1765.	-1756.	-1761.
270.	22.11	1188.0	2.956	-1835.	-1826.	-1831.
300.	18.95	1278.0	3.045	-1890.	-1881.	-1885.
330.	16.07	1370.5	3.114	-1933.	-1924.	-1927.
360.	13.44	1464.7	3.168	-1966.	-1957.	-1960.
390.	11.03	1560.4	3.210	-1992.	-1983.	-1985.
420.	8.79	1657.2	3.242	-2012.	-2003.	-2005.
450.	6.70	1754.9	3.267	-2027.	-2018.	-2020.
480.	4.74	1853.2	3.285	-2039.	-2029.	-2030.
510.	2.89	1951.9	3.298	-2047.	-2037.	-2038.
540.	1.14	2051.0	3.306	-2052.	-2043.	-2042.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

558.0 ROT SLANT RANGE(E) IS 2117.2 -2054.

559.0 ROT SLANT RANGE(W) IS 2116.3 -2044.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.35	2038.8	3.333	2060.	2059.	2066.
-510.	3.13	1938.9	3.327	2057.	2055.	2063.
-480.	5.01	1839.2	3.317	2051.	2049.	2057.
-450.	7.01	1739.9	3.302	2042.	2040.	2047.
-420.	9.15	1641.2	3.281	2030.	2027.	2034.
-390.	11.45	1543.1	3.253	2013.	2009.	2017.
-360.	13.94	1446.1	3.215	1990.	1986.	1994.
-330.	16.67	1350.3	3.167	1961.	1956.	1964.
-300.	19.68	1256.2	3.104	1922.	1918.	1925.
-270.	23.02	1164.3	3.023	1872.	1867.	1875.
-240.	26.78	1075.1	2.917	1807.	1802.	1810.
-210.	31.02	989.6	2.779	1722.	1716.	1724.
-180.	35.85	908.8	2.598	1611.	1605.	1613.
-150.	41.35	834.3	2.362	1465.	1459.	1467.
-120.	47.56	767.8	2.056	1276.	1270.	1277.
-90.	54.40	711.7	1.665	1034.	1029.	1034.
-60.	61.42	668.8	1.182	734.	730.	735.
-30.	67.42	641.7	0.616	383.	381.	383.
0.	70.00	632.3	0.	-0.	-0.	0.
30.	67.42	641.7	0.616	-383.	-381.	-383.
60.	61.42	668.8	1.182	-735.	-730.	-734.
90.	54.40	711.7	1.665	-1034.	-1029.	-1034.
120.	47.56	767.8	2.056	-1277.	-1270.	-1276.
150.	41.35	834.3	2.362	-1467.	-1459.	-1465.
180.	35.85	908.8	2.598	-1613.	-1605.	-1611.
210.	31.02	989.6	2.779	-1724.	-1716.	-1722.
240.	26.78	1075.1	2.917	-1810.	-1802.	-1807.
270.	23.02	1164.3	3.023	-1875.	-1867.	-1872.
300.	19.68	1256.2	3.104	-1925.	-1918.	-1922.
330.	16.67	1350.3	3.167	-1964.	-1956.	-1961.
360.	13.94	1446.1	3.215	-1994.	-1986.	-1990.
390.	11.45	1543.1	3.253	-2017.	-2009.	-2013.
420.	9.15	1641.2	3.281	-2034.	-2027.	-2030.
450.	7.01	1739.9	3.302	-2047.	-2040.	-2042.
480.	5.01	1839.2	3.317	-2057.	-2049.	-2051.
510.	3.13	1938.9	3.327	-2063.	-2055.	-2057.
540.	1.35	2038.8	3.333	-2066.	-2059.	-2060.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

562.0 ROT SLANT RANGE(E) IS 2118.2 -2068.

562.0 ROT SLANT RANGE(W) IS 2115.4 -2061.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.42	2035.0	3.342	2066.	2064.	2071.
-510.	3.21	1934.8	3.336	2063.	2061.	2068.
-480.	5.10	1834.8	3.327	2058.	2055.	2062.
-450.	7.11	1735.2	3.313	2050.	2047.	2053.
-420.	9.26	1636.1	3.293	2038.	2034.	2041.
-390.	11.58	1537.7	3.266	2022.	2018.	2025.
-360.	14.10	1440.2	3.231	2000.	1996.	2003.
-330.	16.86	1344.0	3.184	1972.	1967.	1974.
-300.	19.91	1249.3	3.123	1934.	1929.	1937.
-270.	23.32	1156.7	3.044	1886.	1881.	1888.
-240.	27.15	1066.9	2.941	1822.	1817.	1824.
-210.	31.51	980.6	2.806	1739.	1733.	1741.
-180.	36.51	899.0	2.628	1630.	1624.	1631.
-150.	42.26	823.5	2.395	1485.	1479.	1486.
-120.	48.85	756.0	2.089	1296.	1291.	1297.
-90.	56.27	699.0	1.697	1053.	1048.	1054.
-60.	64.21	655.2	1.208	750.	746.	750.
-30.	71.53	627.4	0.631	392.	390.	392.
0.	75.00	617.9	0.	-0.	-0.	0.
30.	71.53	627.4	0.631	-392.	-390.	-392.
60.	64.21	655.2	1.208	-750.	-746.	-750.
90.	56.27	699.0	1.697	-1054.	-1048.	-1053.
120.	48.85	756.0	2.089	-1297.	-1291.	-1296.
150.	42.26	823.5	2.395	-1486.	-1479.	-1485.
180.	36.51	899.0	2.628	-1631.	-1624.	-1630.
210.	31.51	980.6	2.806	-1741.	-1733.	-1739.
240.	27.15	1066.9	2.941	-1824.	-1817.	-1822.
270.	23.32	1156.7	3.044	-1888.	-1881.	-1886.
300.	19.91	1249.3	3.123	-1937.	-1929.	-1934.
330.	16.86	1344.0	3.184	-1974.	-1967.	-1972.
360.	14.10	1440.2	3.231	-2003.	-1996.	-2000.
390.	11.58	1537.7	3.266	-2025.	-2018.	-2022.
420.	9.26	1636.1	3.293	-2041.	-2034.	-2038.
450.	7.11	1735.2	3.313	-2053.	-2047.	-2050.
480.	5.10	1834.8	3.327	-2062.	-2055.	-2058.
510.	3.21	1934.8	3.336	-2068.	-2061.	-2063.
540.	1.42	2035.0	3.342	-2071.	-2064.	-2066.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

563.0	ROT SLANT RANGE(E) IS 2117.6	-2072.	
563.0	ROT SLANT RANGE(W) IS 2115.5		-2067.
	SMAX IS 2118.5		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.50	2030.3	3.352	2075.	2071.	2075.
-510.	3.30	1929.8	3.348	2072.	2068.	2072.
-480.	5.20	1829.5	3.339	2068.	2063.	2068.
-450.	7.23	1729.5	3.326	2060.	2055.	2060.
-420.	9.40	1630.0	3.308	2049.	2044.	2049.
-390.	11.74	1531.1	3.283	2033.	2028.	2033.
-360.	14.29	1433.1	3.249	2013.	2007.	2013.
-330.	17.10	1336.3	3.205	1986.	1980.	1986.
-300.	20.20	1240.9	3.147	1950.	1944.	1950.
-270.	23.68	1147.6	3.071	1903.	1897.	1903.
-240.	27.62	1056.9	2.971	1842.	1835.	1842.
-210.	32.13	969.7	2.840	1761.	1754.	1761.
-180.	37.34	887.0	2.666	1653.	1647.	1653.
-150.	43.42	810.3	2.436	1511.	1505.	1511.
-120.	50.52	741.6	2.132	1323.	1317.	1323.
-90.	58.80	683.3	1.737	1078.	1073.	1078.
-60.	68.29	638.4	1.240	770.	766.	770.
-30.	78.83	609.8	0.649	403.	401.	403.
0.	89.99	600.0	0.	-0.	-0.	0.
30.	78.83	609.8	0.649	-403.	-401.	-403.
60.	68.29	638.4	1.240	-770.	-766.	-770.
90.	58.80	683.3	1.737	-1078.	-1073.	-1078.
120.	50.52	741.6	2.132	-1323.	-1317.	-1323.
150.	43.42	810.3	2.436	-1511.	-1505.	-1511.
180.	37.34	887.0	2.666	-1653.	-1647.	-1653.
210.	32.13	969.7	2.840	-1761.	-1754.	-1761.
240.	27.62	1056.9	2.971	-1842.	-1835.	-1842.
270.	23.68	1147.6	3.071	-1903.	-1897.	-1903.
300.	20.20	1240.9	3.147	-1950.	-1944.	-1950.
330.	17.10	1336.3	3.205	-1986.	-1980.	-1986.
360.	14.29	1433.1	3.249	-2013.	-2007.	-2013.
390.	11.74	1531.1	3.283	-2033.	-2028.	-2033.
420.	9.40	1630.0	3.308	-2049.	-2044.	-2049.
450.	7.23	1729.5	3.326	-2060.	-2055.	-2060.
480.	5.20	1829.5	3.339	-2068.	-2063.	-2068.
510.	3.30	1929.8	3.348	-2072.	-2068.	-2072.
540.	1.50	2030.3	3.352	-2075.	-2071.	-2075.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

564.0 ROT SLANT RANGE(E) IS 2115.5 -2075.

564.0 ROT SLANT RANGE(W) IS 2115.5 -2075.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-180.	0.44	2092.4	0.982	608.	607.	616.
-150.	0.90	2065.2	0.830	515.	513.	520.
-120.	1.29	2042.7	0.672	417.	415.	421.
-90.	1.60	2024.9	0.509	317.	315.	319.
-60.	1.82	2012.2	0.342	213.	211.	214.
-30.	1.95	2004.5	0.172	107.	106.	107.
0.	2.00	2001.9	0.	0.	-0.	-0.
30.	1.95	2004.5	0.172	-107.	-106.	-107.
60.	1.82	2012.2	0.342	-214.	-211.	-213.
90.	1.60	2024.9	0.509	-319.	-315.	-317.
120.	1.29	2042.7	0.672	-421.	-415.	-417.
150.	0.90	2065.2	0.830	-520.	-513.	-515.
180.	0.44	2092.4	0.982	-616.	-607.	-608.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

207.0 ROT SLANT RANGE(E) IS 2118.3 -698.

208.0 ROT SLANT RANGE(W) IS 2118.3 -691.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.36	2097.3	2.206	1358.	1363.	1382.
-360.	1.46	2032.5	2.109	1299.	1303.	1321.
-330.	2.55	1970.8	2.000	1233.	1236.	1252.
-300.	3.62	1912.6	1.879	1160.	1161.	1176.
-270.	4.64	1858.2	1.746	1078.	1078.	1092.
-240.	5.62	1808.0	1.599	988.	988.	1000.
-210.	6.54	1762.4	1.438	890.	888.	899.
-180.	7.39	1721.9	1.264	783.	781.	790.
-150.	8.14	1686.7	1.077	668.	665.	673.
-120.	8.78	1657.4	0.878	545.	542.	548.
-90.	9.30	1634.2	0.668	415.	413.	417.
-60.	9.69	1617.4	0.451	280.	278.	281.
-30.	9.92	1607.2	0.227	141.	140.	141.
0.	10.00	1603.8	0.	0.	-0.	-0.
30.	9.92	1607.2	0.227	-141.	-140.	-141.
60.	9.69	1617.4	0.451	-281.	-278.	-280.
90.	9.30	1634.2	0.668	-417.	-413.	-415.
120.	8.78	1657.4	0.878	-548.	-542.	-545.
150.	8.14	1686.7	1.077	-673.	-665.	-668.
180.	7.39	1721.9	1.264	-790.	-781.	-783.
210.	6.54	1762.4	1.438	-899.	-888.	-890.
240.	5.62	1808.0	1.599	-1000.	-988.	-988.
270.	4.64	1858.2	1.746	-1092.	-1078.	-1078.
300.	3.62	1912.6	1.879	-1176.	-1161.	-1160.
330.	2.55	1970.8	2.000	-1252.	-1236.	-1233.
360.	1.46	2032.5	2.109	-1321.	-1303.	-1299.
390.	0.36	2097.3	2.206	-1382.	-1363.	-1358.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

398.0	ROT SLANT RANGE(E) IS 2118.5	-1397.	
400.0	ROT SLANT RANGE(W) IS 2116.6		-1376.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	0.11	2111.7	2.565	1578.	1585.	1604.
-420.	1.41	2035.8	2.494	1536.	1541.	1559.
-390.	2.71	1962.1	2.412	1486.	1490.	1508.
-360.	4.02	1891.2	2.319	1429.	1432.	1449.
-330.	5.33	1823.2	2.212	1365.	1366.	1382.
-300.	6.62	1758.6	2.091	1291.	1292.	1306.
-270.	7.90	1697.9	1.955	1208.	1207.	1221.
-240.	9.14	1641.5	1.801	1114.	1113.	1125.
-210.	10.32	1589.9	1.631	1009.	1007.	1018.
-180.	11.43	1543.8	1.442	893.	891.	900.
-150.	12.43	1503.6	1.236	766.	764.	771.
-120.	13.31	1469.8	1.013	628.	626.	632.
-90.	14.03	1443.0	0.775	481.	478.	483.
-60.	14.56	1423.5	0.524	325.	324.	326.
-30.	14.89	1411.6	0.264	164.	163.	165.
0.	15.00	1407.7	0.	0.	-0.	-0.
30.	14.89	1411.6	0.264	-165.	-163.	-164.
60.	14.56	1423.5	0.524	-326.	-324.	-325.
90.	14.03	1443.0	0.775	-483.	-478.	-481.
120.	13.31	1469.8	1.013	-632.	-626.	-628.
150.	12.43	1503.6	1.236	-771.	-764.	-766.
180.	11.43	1543.8	1.442	-900.	-891.	-893.
210.	10.32	1589.9	1.631	-1018.	-1007.	-1009.
240.	9.14	1641.5	1.801	-1125.	-1113.	-1114.
270.	7.90	1697.9	1.955	-1221.	-1207.	-1208.
300.	6.62	1758.6	2.091	-1306.	-1292.	-1291.
330.	5.33	1823.2	2.212	-1382.	-1366.	-1365.
360.	4.02	1891.2	2.319	-1449.	-1432.	-1429.
390.	2.71	1962.1	2.412	-1508.	-1490.	-1486.
420.	1.41	2035.8	2.494	-1559.	-1541.	-1536.
450.	0.11	2111.7	2.565	-1604.	-1585.	-1578.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

450.0 ROT SLANT RANGE(E) IS 2117.0 -1604.

453.0 ROT SLANT RANGE(W) IS 2116.8 -1582.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	0.53	2086.9	3.230	1992.	1995.	2006.
-510.	2.21	1990.2	3.215	1983.	1986.	1996.
-480.	3.96	1894.0	3.194	1971.	1973.	1983.
-450.	5.81	1798.6	3.168	1956.	1957.	1967.
-420.	7.77	1704.0	3.134	1935.	1936.	1946.
-390.	9.84	1610.7	3.091	1909.	1909.	1919.
-360.	12.05	1518.7	3.036	1876.	1876.	1885.
-330.	14.42	1428.6	2.969	1835.	1834.	1843.
-300.	16.96	1340.8	2.884	1784.	1782.	1791.
-270.	19.69	1255.8	2.779	1719.	1717.	1726.
-240.	22.63	1174.3	2.648	1639.	1636.	1644.
-210.	25.79	1097.2	2.485	1539.	1535.	1543.
-180.	29.14	1025.5	2.283	1414.	1411.	1418.
-150.	32.64	960.7	2.034	1261.	1257.	1264.
-120.	36.17	904.0	1.732	1074.	1070.	1076.
-90.	39.51	857.3	1.371	850.	847.	852.
-60.	42.36	822.3	0.954	592.	589.	592.
-30.	44.30	800.6	0.490	304.	303.	304.
0.	45.00	793.2	0.	0.	-0.	-0.
30.	44.30	800.6	0.490	-304.	-303.	-304.
60.	42.36	822.3	0.954	-592.	-589.	-592.
90.	39.51	857.3	1.371	-852.	-847.	-850.
120.	36.17	904.0	1.732	-1076.	-1070.	-1074.
150.	32.64	960.7	2.034	-1264.	-1257.	-1261.
180.	29.14	1025.5	2.283	-1418.	-1411.	-1414.
210.	25.79	1097.2	2.485	-1543.	-1535.	-1539.
240.	22.63	1174.3	2.648	-1644.	-1636.	-1639.
270.	19.69	1255.8	2.779	-1726.	-1717.	-1719.
300.	16.96	1340.8	2.884	-1791.	-1782.	-1784.
330.	14.42	1428.6	2.969	-1843.	-1834.	-1835.
360.	12.05	1518.7	3.036	-1885.	-1876.	-1876.
390.	9.84	1610.7	3.091	-1919.	-1909.	-1909.
420.	7.77	1704.0	3.134	-1946.	-1936.	-1935.
450.	5.81	1798.6	3.168	-1967.	-1957.	-1956.
480.	3.96	1894.0	3.194	-1983.	-1973.	-1971.
510.	2.21	1990.2	3.215	-1996.	-1986.	-1983.
540.	0.53	2086.9	3.230	-2006.	-1995.	-1992.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

547.0 ROT SLANT RANGE(E) IS 2115.6 -2007.

549.0 ROT SLANT RANGE(W) IS 2116.3 -1994.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.35	2038.8	3.333	2060.	2059.	2065.
-510.	3.13	1938.9	3.327	2056.	2055.	2061.
-480.	5.01	1839.2	3.317	2050.	2049.	2055.
-450.	7.01	1739.9	3.302	2041.	2040.	2046.
-420.	9.15	1641.2	3.281	2029.	2027.	2033.
-390.	11.45	1543.1	3.253	2012.	2009.	2015.
-360.	13.94	1446.1	3.215	1989.	1986.	1992.
-330.	16.67	1350.3	3.167	1959.	1956.	1963.
-300.	19.68	1256.2	3.104	1921.	1918.	1924.
-270.	23.02	1164.3	3.023	1871.	1867.	1873.
-240.	26.78	1075.1	2.917	1806.	1802.	1808.
-210.	31.02	989.6	2.779	1720.	1716.	1722.
-180.	35.85	908.8	2.598	1609.	1605.	1611.
-150.	41.35	834.3	2.362	1464.	1459.	1465.
-120.	47.56	767.8	2.056	1274.	1270.	1275.
-90.	54.40	711.7	1.665	1032.	1029.	1033.
-60.	61.42	668.8	1.182	733.	730.	733.
-30.	67.42	641.7	0.616	382.	381.	382.
0.	70.00	632.3	0.	0.	-0.	-0.
30.	67.42	641.7	0.616	-382.	-381.	-382.
60.	61.42	668.8	1.182	-733.	-730.	-733.
90.	54.40	711.7	1.665	-1033.	-1029.	-1032.
120.	47.56	767.8	2.056	-1275.	-1270.	-1274.
150.	41.35	834.3	2.362	-1465.	-1459.	-1464.
180.	35.85	908.8	2.598	-1611.	-1605.	-1609.
210.	31.02	989.6	2.779	-1722.	-1716.	-1720.
240.	26.78	1075.1	2.917	-1808.	-1802.	-1806.
270.	23.02	1164.3	3.023	-1873.	-1867.	-1871.
300.	19.68	1256.2	3.104	-1924.	-1918.	-1921.
330.	16.67	1350.3	3.167	-1963.	-1956.	-1959.
360.	13.94	1446.1	3.215	-1992.	-1986.	-1989.
390.	11.45	1543.1	3.253	-2015.	-2009.	-2012.
420.	9.15	1641.2	3.281	-2033.	-2027.	-2029.
450.	7.01	1739.9	3.302	-2046.	-2040.	-2041.
480.	5.01	1839.2	3.317	-2055.	-2049.	-2050.
510.	3.13	1938.9	3.327	-2061.	-2055.	-2056.
540.	1.35	2038.8	3.333	-2065.	-2059.	-2060.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

562.0 ROT SLANT RANGE(E) IS 2116.9 -2066.

563.0 ROT SLANT RANGE(W) IS 2117.8 -2061.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.42	2035.0	3.342	2066.	2064.	2069.
-510.	3.21	1934.8	3.336	2063.	2061.	2066.
-480.	5.10	1834.8	3.327	2057.	2055.	2061.
-450.	7.11	1735.2	3.313	2049.	2047.	2052.
-420.	9.26	1636.1	3.293	2037.	2034.	2040.
-390.	11.58	1537.7	3.266	2021.	2018.	2023.
-360.	14.10	1440.2	3.231	1999.	1996.	2001.
-330.	16.86	1344.0	3.184	1970.	1967.	1973.
-300.	19.91	1249.3	3.123	1933.	1929.	1935.
-270.	23.32	1156.7	3.044	1884.	1881.	1886.
-240.	27.15	1066.9	2.941	1821.	1817.	1822.
-210.	31.51	980.6	2.806	1738.	1733.	1739.
-180.	36.51	899.0	2.628	1628.	1624.	1629.
-150.	42.26	823.5	2.395	1484.	1479.	1485.
-120.	48.85	756.0	2.089	1295.	1291.	1296.
-90.	56.27	699.0	1.697	1052.	1048.	1052.
-60.	64.21	655.2	1.208	749.	746.	749.
-30.	71.53	627.4	0.631	391.	390.	391.
0.	75.00	617.9	0.	0.	-0.	-0.
30.	71.53	627.4	0.631	-391.	-390.	-391.
60.	64.21	655.2	1.208	-749.	-746.	-749.
90.	56.27	699.0	1.697	-1052.	-1048.	-1052.
120.	48.85	756.0	2.089	-1296.	-1291.	-1295.
150.	42.26	823.5	2.395	-1485.	-1479.	-1484.
180.	36.51	899.0	2.628	-1629.	-1624.	-1628.
210.	31.51	980.6	2.806	-1739.	-1733.	-1738.
240.	27.15	1066.9	2.941	-1822.	-1817.	-1821.
270.	23.32	1156.7	3.044	-1886.	-1881.	-1884.
300.	19.91	1249.3	3.123	-1935.	-1929.	-1933.
330.	16.86	1344.0	3.184	-1973.	-1967.	-1970.
360.	14.10	1440.2	3.231	-2001.	-1996.	-1999.
390.	11.58	1537.7	3.266	-2023.	-2018.	-2021.
420.	9.26	1636.1	3.293	-2040.	-2034.	-2037.
450.	7.11	1735.2	3.313	-2052.	-2047.	-2049.
480.	5.10	1834.8	3.327	-2061.	-2055.	-2057.
510.	3.21	1934.8	3.336	-2066.	-2061.	-2063.
540.	1.42	2035.0	3.342	-2069.	-2064.	-2066.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

563.0 ROT SLANT RANGE(E) IS 2116.3 -2070.

564.0 ROT SLANT RANGE(W) IS 2117.8 -2066.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.50	2030.3	3.352	2074.	2071.	2074.
-510.	3.30	1929.8	3.348	2071.	2068.	2071.
-480.	5.20	1829.5	3.339	2066.	2063.	2066.
-450.	7.23	1729.5	3.326	2059.	2055.	2059.
-420.	9.40	1630.0	3.308	2047.	2044.	2047.
-390.	11.74	1531.1	3.283	2032.	2028.	2032.
-360.	14.29	1433.1	3.249	2012.	2007.	2012.
-330.	17.10	1336.3	3.205	1984.	1980.	1984.
-300.	20.20	1240.9	3.147	1949.	1944.	1949.
-270.	23.68	1147.6	3.071	1902.	1897.	1902.
-240.	27.62	1056.9	2.971	1840.	1835.	1840.
-210.	32.13	969.7	2.840	1759.	1754.	1759.
-180.	37.34	887.0	2.666	1652.	1647.	1652.
-150.	43.42	810.3	2.436	1509.	1505.	1509.
-120.	50.52	741.6	2.132	1321.	1317.	1321.
-90.	58.80	683.3	1.737	1077.	1073.	1077.
-60.	68.29	638.4	1.240	769.	766.	769.
-30.	78.83	609.8	0.649	403.	401.	403.
0.	89.99	600.0	0.	0.	-0.	-0.
30.	78.83	609.8	0.649	-403.	-401.	-403.
60.	68.29	638.4	1.240	-769.	-766.	-769.
90.	58.80	683.3	1.737	-1077.	-1073.	-1077.
120.	50.52	741.6	2.132	-1321.	-1317.	-1321.
150.	43.42	810.3	2.436	-1509.	-1505.	-1509.
180.	37.34	887.0	2.666	-1652.	-1647.	-1652.
210.	32.13	969.7	2.840	-1759.	-1754.	-1759.
240.	27.62	1056.9	2.971	-1840.	-1835.	-1840.
270.	23.68	1147.6	3.071	-1902.	-1897.	-1902.
300.	20.20	1240.9	3.147	-1949.	-1944.	-1949.
330.	17.10	1336.3	3.205	-1984.	-1980.	-1984.
360.	14.29	1433.1	3.249	-2012.	-2007.	-2012.
390.	11.74	1531.1	3.283	-2032.	-2028.	-2032.
420.	9.40	1630.0	3.308	-2047.	-2044.	-2047.
450.	7.23	1729.5	3.326	-2059.	-2055.	-2059.
480.	5.20	1829.5	3.339	-2066.	-2063.	-2066.
510.	3.30	1929.8	3.348	-2071.	-2068.	-2071.
540.	1.50	2030.3	3.352	-2074.	-2071.	-2074.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

565.0 ROT SLANT RANGE(E) IS 2117.7 -2074.

565.0 ROT SLANT RANGE(W) IS 2117.7 -2074.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-180.	0.44	2092.4	0.982	606.	607.	611.
-150.	0.90	2065.2	0.830	513.	513.	516.
-120.	1.29	2042.7	0.672	416.	415.	418.
-90.	1.60	2024.9	0.509	315.	315.	316.
-60.	1.82	2012.2	0.342	212.	211.	212.
-30.	1.95	2004.5	0.172	106.	106.	106.
0.	2.00	2001.9	0.	0.	-0.	-0.
30.	1.95	2004.5	0.172	-106.	-106.	-106.
60.	1.82	2012.2	0.342	-212.	-211.	-212.
90.	1.60	2024.9	0.509	-316.	-315.	-315.
120.	1.29	2042.7	0.672	-418.	-415.	-416.
150.	0.90	2065.2	0.830	-516.	-513.	-513.
180.	0.44	2092.4	0.982	-611.	-607.	-606.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

205.0	ROT SLANT RANGE(E) IS 2117.8	-686.	
206.0	ROT SLANT RANGE(W) IS 2118.3		-683.
	SMAX IS 2118.5		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.36	2097.3	2.206	1358.	1363.	1372.
-360.	1.46	2032.5	2.109	1299.	1303.	1311.
-330.	2.55	1970.8	2.000	1232.	1236.	1244.
-300.	3.62	1912.6	1.879	1158.	1161.	1168.
-270.	4.64	1858.2	1.746	1077.	1078.	1085.
-240.	5.62	1808.0	1.599	986.	988.	993.
-210.	6.54	1762.4	1.438	888.	888.	893.
-180.	7.39	1721.9	1.264	781.	781.	785.
-150.	8.14	1686.7	1.077	665.	665.	668.
-120.	8.78	1657.4	0.878	543.	542.	545.
-90.	9.30	1634.2	0.668	413.	413.	415.
-60.	9.69	1617.4	0.451	279.	278.	279.
-30.	9.92	1607.2	0.227	140.	140.	141.
0.	10.00	1603.8	0.	0.	-0.	-0.
30.	9.92	1607.2	0.227	-141.	-140.	-140.
60.	9.69	1617.4	0.451	-279.	-278.	-279.
90.	9.30	1634.2	0.668	-415.	-413.	-413.
120.	8.78	1657.4	0.878	-545.	-542.	-543.
150.	8.14	1686.7	1.077	-668.	-665.	-665.
180.	7.39	1721.9	1.264	-785.	-781.	-781.
210.	6.54	1762.4	1.438	-893.	-888.	-888.
240.	5.62	1808.0	1.599	-993.	-988.	-986.
270.	4.64	1858.2	1.746	-1085.	-1078.	-1077.
300.	3.62	1912.6	1.879	-1168.	-1161.	-1158.
330.	2.55	1970.8	2.000	-1244.	-1236.	-1232.
360.	1.46	2032.5	2.109	-1311.	-1303.	-1299.
390.	0.36	2097.3	2.206	-1372.	-1363.	-1358.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

398.0	ROT SLANT RANGE(E) IS 2116.9	-1387.	
400.0	ROT SLANT RANGE(W) IS 2117.7		-1376.
	SMAX IS 2118.5		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	0.11	2111.7	2.565	1580.	1585.	1595.
-420.	1.41	2035.8	2.494	1536.	1541.	1550.
-390.	2.71	1962.1	2.412	1486.	1490.	1499.
-360.	4.02	1891.2	2.319	1429.	1432.	1440.
-330.	5.33	1823.2	2.212	1364.	1366.	1374.
-300.	6.62	1758.6	2.091	1290.	1292.	1298.
-270.	7.90	1697.9	1.955	1206.	1207.	1213.
-240.	9.14	1641.5	1.801	1112.	1113.	1118.
-210.	10.32	1589.9	1.631	1007.	1007.	1012.
-180.	11.43	1543.8	1.442	891.	891.	895.
-150.	12.43	1503.6	1.236	764.	764.	767.
-120.	13.31	1469.8	1.013	626.	626.	628.
-90.	14.03	1443.0	0.775	479.	478.	480.
-60.	14.56	1423.5	0.524	324.	324.	325.
-30.	14.89	1411.6	0.264	164.	163.	164.
0.	15.00	1407.7	0.	0.	-0.	-0.
30.	14.89	1411.6	0.264	-164.	-163.	-164.
60.	14.56	1423.5	0.524	-325.	-324.	-324.
90.	14.03	1443.0	0.775	-480.	-478.	-479.
120.	13.31	1469.8	1.013	-628.	-626.	-626.
150.	12.43	1503.6	1.236	-767.	-764.	-764.
180.	11.43	1543.8	1.442	-895.	-891.	-891.
210.	10.32	1589.9	1.631	-1012.	-1007.	-1007.
240.	9.14	1641.5	1.801	-1118.	-1113.	-1112.
270.	7.90	1697.9	1.955	-1213.	-1207.	-1206.
300.	6.62	1758.6	2.091	-1298.	-1292.	-1290.
330.	5.33	1823.2	2.212	-1374.	-1366.	-1364.
360.	4.02	1891.2	2.319	-1440.	-1432.	-1429.
390.	2.71	1962.1	2.412	-1499.	-1490.	-1486.
420.	1.41	2035.8	2.494	-1550.	-1541.	-1536.
450.	0.11	2111.7	2.565	-1595.	-1585.	-1580.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

451.0 ROT SLANT RANGE(E) IS 2117.0 -1596.

453.0 ROT SLANT RANGE(W) IS 2117.6 -1584.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	0.53	2086.9	3.230	1992.	1995.	2000.
-510.	2.21	1990.2	3.215	1983.	1986.	1991.
-480.	3.96	1894.0	3.194	1971.	1973.	1978.
-450.	5.81	1798.6	3.168	1955.	1957.	1962.
-420.	7.77	1704.0	3.134	1934.	1936.	1940.
-390.	9.84	1610.7	3.091	1908.	1909.	1914.
-360.	12.05	1518.7	3.036	1875.	1876.	1880.
-330.	14.42	1428.6	2.969	1833.	1834.	1838.
-300.	16.96	1340.8	2.884	1781.	1782.	1786.
-270.	19.69	1255.8	2.779	1717.	1717.	1721.
-240.	22.63	1174.3	2.648	1636.	1636.	1639.
-210.	25.79	1097.2	2.485	1536.	1535.	1539.
-180.	29.14	1025.5	2.283	1411.	1411.	1414.
-150.	32.64	960.7	2.034	1258.	1257.	1259.
-120.	36.17	904.0	1.732	1071.	1070.	1072.
-90.	39.31	857.3	1.371	848.	847.	849.
-60.	42.36	822.3	0.954	590.	589.	590.
-30.	44.30	800.6	0.490	303.	303.	303.
0.	45.00	793.2	0.	0.	-0.	-0.
30.	44.30	800.6	0.490	-303.	-303.	-303.
60.	42.36	822.3	0.954	-590.	-589.	-590.
90.	39.51	857.3	1.371	-849.	-847.	-848.
120.	36.17	904.0	1.732	-1072.	-1070.	-1071.
150.	32.64	960.7	2.034	-1259.	-1257.	-1258.
180.	29.14	1025.5	2.283	-1414.	-1411.	-1411.
210.	25.79	1097.2	2.485	-1539.	-1535.	-1536.
240.	22.63	1174.3	2.648	-1639.	-1636.	-1636.
270.	19.69	1255.8	2.779	-1721.	-1717.	-1717.
300.	16.96	1340.8	2.884	-1786.	-1782.	-1781.
330.	14.42	1428.6	2.969	-1838.	-1834.	-1833.
360.	12.05	1518.7	3.036	-1880.	-1876.	-1875.
390.	9.84	1610.7	3.091	-1914.	-1909.	-1908.
420.	7.77	1704.0	3.134	-1940.	-1936.	-1934.
450.	5.81	1798.6	3.168	-1962.	-1957.	-1955.
480.	3.96	1894.0	3.194	-1978.	-1973.	-1971.
510.	2.21	1990.2	3.215	-1991.	-1986.	-1983.
540.	0.53	2086.9	3.230	-2000.	-1995.	-1992.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

548.0 ROT SLANT RANGE(E) IS 2115.5 -2002.

549.0 ROT SLANT RANGE(W) IS 2115.3 -1995.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.35	2038.8	3.333	2059.	2059.	2062.
-510.	3.13	1938.9	3.327	2055.	2055.	2058.
-480.	5.01	1839.2	3.317	2049.	2049.	2052.
-450.	7.01	1739.9	3.302	2040.	2040.	2042.
-420.	9.15	1641.2	3.281	2027.	2027.	2029.
-390.	11.45	1543.1	3.253	2010.	2009.	2012.
-360.	13.94	1446.1	3.215	1987.	1986.	1989.
-330.	16.67	1350.3	3.167	1957.	1956.	1959.
-300.	19.68	1256.2	3.104	1918.	1918.	1920.
-270.	23.02	1164.3	3.023	1868.	1867.	1870.
-240.	26.78	1075.1	2.917	1803.	1802.	1804.
-210.	31.02	989.6	2.779	1718.	1716.	1719.
-180.	35.85	908.8	2.598	1606.	1605.	1607.
-150.	41.35	834.3	2.362	1461.	1459.	1461.
-120.	47.56	767.8	2.056	1271.	1270.	1272.
-90.	54.40	711.7	1.665	1030.	1029.	1030.
-60.	61.42	668.8	1.182	731.	730.	731.
-30.	67.42	641.7	0.616	381.	381.	381.
0.	70.00	632.3	0.	-0.	-0.	0.
30.	67.42	641.7	0.616	-381.	-381.	-381.
60.	61.42	668.8	1.182	-731.	-730.	-731.
90.	54.40	711.7	1.665	-1030.	-1029.	-1030.
120.	47.56	767.8	2.056	-1272.	-1270.	-1271.
150.	41.35	834.3	2.362	-1461.	-1459.	-1461.
180.	35.85	908.8	2.598	-1607.	-1605.	-1606.
210.	31.02	989.6	2.779	-1719.	-1716.	-1718.
240.	26.78	1075.1	2.917	-1804.	-1802.	-1803.
270.	23.02	1164.3	3.023	-1870.	-1867.	-1868.
300.	19.68	1256.2	3.104	-1920.	-1918.	-1918.
330.	16.67	1350.3	3.167	-1959.	-1956.	-1957.
360.	13.94	1446.1	3.215	-1989.	-1986.	-1987.
390.	11.45	1543.1	3.253	-2012.	-2009.	-2010.
420.	9.15	1641.2	3.281	-2029.	-2027.	-2027.
450.	7.01	1739.9	3.302	-2042.	-2040.	-2040.
480.	5.01	1839.2	3.317	-2052.	-2049.	-2049.
510.	3.13	1938.9	3.327	-2058.	-2055.	-2055.
540.	1.35	2038.8	3.333	-2062.	-2059.	-2059.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

563.0 ROT SLANT RANGE(E) IS 2117.4 -2063.

563.0 ROT SLANT RANGE(W) IS 2116.0 -2060.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.42	2035.0	3.342	2064.	2064.	2067.
-510.	3.21	1934.8	3.336	2061.	2061.	2063.
-480.	5.10	1834.8	3.327	2055.	2055.	2057.
-450.	7.11	1735.2	3.313	2047.	2047.	2049.
-420.	9.26	1636.1	3.293	2035.	2034.	2037.
-390.	11.58	1537.7	3.266	2018.	2018.	2020.
-360.	14.10	1440.2	3.231	1996.	1996.	1998.
-330.	16.86	1344.0	3.184	1968.	1967.	1969.
-300.	19.91	1249.3	3.123	1930.	1929.	1932.
-270.	23.32	1156.7	3.044	1882.	1881.	1883.
-240.	27.15	1066.9	2.941	1818.	1817.	1819.
-210.	31.51	980.6	2.806	1735.	1733.	1735.
-180.	36.51	899.0	2.628	1625.	1624.	1626.
-150.	42.26	823.5	2.395	1481.	1479.	1481.
-120.	48.85	756.0	2.089	1292.	1291.	1292.
-90.	56.27	699.0	1.697	1049.	1048.	1050.
-60.	64.21	655.2	1.208	747.	746.	747.
-30.	71.53	627.4	0.631	390.	390.	390.
0.	75.00	617.9	0.	0.	-0.	-0.
30.	71.53	627.4	0.631	-390.	-390.	-390.
60.	64.21	655.2	1.208	-747.	-746.	-747.
90.	56.27	699.0	1.697	-1050.	-1048.	-1049.
120.	48.85	756.0	2.089	-1292.	-1291.	-1292.
150.	42.26	823.5	2.395	-1481.	-1479.	-1481.
180.	36.51	899.0	2.628	-1626.	-1624.	-1625.
210.	31.51	980.6	2.806	-1735.	-1733.	-1735.
240.	27.15	1066.9	2.941	-1819.	-1817.	-1818.
270.	23.32	1156.7	3.044	-1883.	-1881.	-1882.
300.	19.91	1249.3	3.123	-1932.	-1929.	-1930.
330.	16.86	1344.0	3.184	-1969.	-1967.	-1968.
360.	14.10	1440.2	3.231	-1998.	-1996.	-1996.
390.	11.58	1537.7	3.266	-2020.	-2018.	-2018.
420.	9.26	1636.1	3.293	-2037.	-2034.	-2035.
450.	7.11	1735.2	3.313	-2049.	-2047.	-2047.
480.	5.10	1834.8	3.327	-2057.	-2055.	-2055.
510.	3.21	1934.8	3.336	-2063.	-2061.	-2061.
540.	1.42	2035.0	3.342	-2067.	-2064.	-2064.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

564.0 ROT SLANT RANGE(E) IS 2116.9 -2068.

564.0 ROT SLANT RANGE(W) IS 2115.8 -2065.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 600.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	1.50	2030.3	3.352	2072.	2071.	2072.
-510.	3.30	1929.8	3.348	2069.	2068.	2069.
-480.	5.20	1829.5	3.339	2064.	2063.	2064.
-450.	7.23	1729.5	3.326	2056.	2055.	2056.
-420.	9.40	1630.0	3.308	2045.	2044.	2045.
-390.	11.74	1531.1	3.283	2029.	2028.	2029.
-360.	14.29	1433.1	3.249	2009.	2007.	2009.
-330.	17.10	1336.3	3.205	1981.	1980.	1981.
-300.	20.20	1240.9	3.147	1945.	1944.	1945.
-270.	23.68	1147.6	3.071	1899.	1897.	1899.
-240.	27.62	1056.9	2.971	1837.	1835.	1837.
-210.	32.13	969.7	2.840	1756.	1754.	1756.
-180.	37.34	887.0	2.666	1648.	1647.	1648.
-150.	43.42	810.3	2.436	1506.	1505.	1506.
-120.	50.52	741.6	2.132	1318.	1317.	1318.
-90.	58.80	683.3	1.737	1074.	1073.	1074.
-60.	68.29	638.4	1.240	767.	766.	767.
-30.	78.83	609.8	0.649	402.	401.	402.
0.	89.99	600.0	0.	-0.	-0.	0.
30.	78.83	609.8	0.649	-402.	-401.	-402.
60.	68.29	638.4	1.240	-767.	-766.	-767.
90.	58.80	683.3	1.737	-1074.	-1073.	-1074.
120.	50.52	741.6	2.132	-1318.	-1317.	-1318.
150.	43.42	810.3	2.436	-1506.	-1505.	-1506.
180.	37.34	887.0	2.666	-1648.	-1647.	-1648.
210.	32.13	969.7	2.840	-1756.	-1754.	-1756.
240.	27.62	1056.9	2.971	-1837.	-1835.	-1837.
270.	23.68	1147.6	3.071	-1899.	-1897.	-1899.
300.	20.20	1240.9	3.147	-1945.	-1944.	-1945.
330.	17.10	1336.3	3.205	-1981.	-1980.	-1981.
360.	14.29	1433.1	3.249	-2009.	-2007.	-2009.
390.	11.74	1531.1	3.283	-2029.	-2028.	-2029.
420.	9.40	1630.0	3.308	-2045.	-2044.	-2045.
450.	7.23	1729.5	3.326	-2056.	-2055.	-2056.
480.	5.20	1829.5	3.339	-2064.	-2063.	-2064.
510.	3.30	1929.8	3.348	-2069.	-2068.	-2069.
540.	1.50	2030.3	3.352	-2072.	-2071.	-2072.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

565.0 ROT SLANT RANGE(E) IS 2115.3 -2072.

565.0 ROT SLANT RANGE(W) IS 2115.3 -2072.

SMAX IS 2118.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 650.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-210.	0.06	2208.6	1.045	648.	646.	659.
-180.	0.56	2179.3	0.910	565.	562.	573.
-150.	0.98	2154.1	0.768	478.	474.	484.
-120.	1.34	2133.2	0.621	387.	384.	391.
-90.	1.63	2116.9	0.470	293.	290.	295.
-60.	1.83	2105.1	0.315	197.	195.	198.
-30.	1.96	2098.0	0.158	99.	98.	99.
0.	2.00	2095.6	0.	0.	-0.	-0.
30.	1.96	2098.0	0.158	-99.	-98.	-99.
60.	1.83	2105.1	0.315	-198.	-195.	-197.
90.	1.63	2116.9	0.470	-295.	-290.	-293.
120.	1.34	2133.2	0.621	-391.	-384.	-387.
150.	0.98	2154.1	0.768	-484.	-474.	-478.
180.	0.56	2179.3	0.910	-573.	-562.	-565.
210.	0.06	2208.6	1.045	-659.	-646.	-648.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

216.0 ROT SLANT RANGE(E) IS 2211.4 -676.

218.0 ROT SLANT RANGE(W) IS 2212.1 -670.

SMAX IS 2212.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 650.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-390.	0.99	2153.8	2.081	1282.	1285.	1310.
-360.	2.05	2092.8	1.984	1223.	1225.	1248.
-330.	3.09	2034.9	1.876	1158.	1159.	1180.
-300.	4.09	1980.4	1.757	1086.	1086.	1105.
-270.	5.06	1929.6	1.628	1007.	1006.	1023.
-240.	5.98	1882.8	1.486	920.	918.	934.
-210.	6.84	1840.5	1.333	826.	824.	837.
-180.	7.62	1803.0	1.169	725.	722.	733.
-150.	8.31	1770.5	0.993	617.	614.	623.
-120.	8.90	1743.5	0.808	503.	499.	506.
-90.	9.37	1722.1	0.614	382.	379.	385.
-60.	9.72	1706.7	0.413	258.	255.	259.
-30.	9.93	1697.4	0.208	130.	128.	130.
0.	10.00	1694.3	0.	0.	-0.	-0.
30.	9.93	1697.4	0.208	-130.	-128.	-130.
60.	9.72	1706.7	0.413	-259.	-255.	-258.
90.	9.37	1722.1	0.614	-385.	-379.	-382.
120.	8.90	1743.5	0.808	-506.	-499.	-503.
150.	8.31	1770.5	0.993	-623.	-614.	-617.
180.	7.62	1803.0	1.169	-733.	-722.	-725.
210.	6.84	1840.5	1.333	-837.	-824.	-826.
240.	5.98	1882.8	1.486	-934.	-918.	-920.
270.	5.06	1929.6	1.628	-1023.	-1006.	-1007.
300.	4.09	1980.4	1.757	-1105.	-1086.	-1086.
330.	3.09	2034.9	1.876	-1180.	-1159.	-1158.
360.	2.05	2092.8	1.984	-1248.	-1225.	-1223.
390.	0.99	2153.8	2.081	-1310.	-1285.	-1282.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

415.0 ROT SLANT RANGE(E) IS 2211.2 -1356.

419.0 ROT SLANT RANGE(W) IS 2211.7 -1332.

SMAX IS 2212.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 650.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	1.00	2153.4	2.442	1503.	1509.	1533.
-420.	2.25	2081.2	2.368	1458.	1463.	1486.
-390.	3.52	2011.4	2.283	1407.	1411.	1433.
-360.	4.78	1944.3	2.188	1350.	1352.	1373.
-330.	6.03	1880.2	2.081	1285.	1285.	1305.
-300.	7.27	1819.6	1.960	1212.	1211.	1229.
-270.	8.47	1762.8	1.826	1130.	1128.	1145.
-240.	9.64	1710.2	1.677	1038.	1036.	1051.
-210.	10.74	1662.3	1.513	938.	934.	948.
-180.	11.76	1619.6	1.333	827.	824.	835.
-150.	12.68	1582.5	1.139	707.	703.	713.
-120.	13.48	1551.4	0.930	578.	575.	582.
-90.	14.13	1526.8	0.710	442.	438.	444.
-60.	14.61	1508.9	0.479	298.	296.	299.
-30.	14.90	1498.1	0.241	151.	149.	151.
0.	15.00	1494.5	0.	0.	-0.	-0.
30.	14.90	1498.1	0.241	-151.	-149.	-151.
60.	14.61	1508.9	0.479	-299.	-296.	-298.
90.	14.13	1526.8	0.710	-444.	-438.	-442.
120.	13.48	1551.4	0.930	-582.	-575.	-578.
150.	12.68	1582.5	1.139	-713.	-703.	-707.
180.	11.76	1619.6	1.333	-835.	-824.	-827.
210.	10.74	1662.3	1.513	-948.	-934.	-938.
240.	9.64	1710.2	1.677	-1051.	-1036.	-1038.
270.	8.47	1762.8	1.826	-1145.	-1128.	-1130.
300.	7.27	1819.6	1.960	-1229.	-1211.	-1212.
330.	6.03	1880.2	2.081	-1305.	-1285.	-1285.
360.	4.78	1944.3	2.188	-1373.	-1352.	-1350.
390.	3.52	2011.4	2.283	-1433.	-1411.	-1407.
420.	2.25	2081.2	2.368	-1486.	-1463.	-1458.
450.	1.00	2153.4	2.442	-1533.	-1509.	-1503.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

471.0 ROT SLANT RANGE(E) IS 2212.1 -1562.

475.0 ROT SLANT RANGE(W) IS 2211.9 -1535.

SMAX IS 2212.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 650.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-570.	0.47	2184.1	3.163	1950.	1954.	1967.
-540.	2.11	2089.4	3.148	1942.	1945.	1958.
-510.	3.82	1995.2	3.129	1931.	1933.	1946.
-480.	5.61	1901.7	3.104	1916.	1918.	1931.
-450.	7.49	1809.0	3.072	1897.	1898.	1911.
-420.	9.47	1717.4	3.033	1874.	1874.	1886.
-390.	11.58	1627.2	2.984	1844.	1843.	1856.
-360.	13.81	1538.5	2.923	1807.	1806.	1818.
-330.	16.20	1451.9	2.848	1762.	1759.	1772.
-300.	18.74	1367.8	2.756	1706.	1703.	1715.
-270.	21.46	1286.8	2.644	1637.	1633.	1645.
-240.	24.36	1209.4	2.506	1553.	1548.	1559.
-210.	27.43	1136.7	2.338	1449.	1444.	1455.
-180.	30.65	1069.5	2.134	1323.	1318.	1328.
-150.	33.94	1009.1	1.888	1171.	1166.	1175.
-120.	37.19	956.7	1.595	990.	985.	993.
-90.	40.21	913.9	1.253	779.	774.	780.
-60.	42.72	882.0	0.866	539.	535.	539.
-30.	44.40	862.3	0.443	276.	274.	276.
0.	45.00	855.6	0.	0.	-0.	-0.
30.	44.40	862.3	0.443	-276.	-274.	-276.
60.	42.72	882.0	0.866	-539.	-535.	-539.
90.	40.21	913.9	1.253	-780.	-774.	-779.
120.	37.19	956.7	1.595	-993.	-985.	-990.
150.	33.94	1009.1	1.888	-1175.	-1166.	-1171.
180.	30.65	1069.5	2.134	-1328.	-1318.	-1323.
210.	27.43	1136.7	2.338	-1455.	-1444.	-1449.
240.	24.36	1209.4	2.506	-1559.	-1548.	-1553.
270.	21.46	1286.8	2.644	-1645.	-1633.	-1637.
300.	18.74	1367.8	2.756	-1715.	-1703.	-1706.
330.	16.20	1451.9	2.848	-1772.	-1759.	-1762.
360.	13.81	1538.5	2.923	-1818.	-1806.	-1807.
390.	11.58	1627.2	2.984	-1856.	-1843.	-1844.
420.	9.47	1717.4	3.033	-1886.	-1874.	-1874.
450.	7.49	1809.0	3.072	-1911.	-1898.	-1897.
480.	5.61	1901.7	3.104	-1931.	-1918.	-1916.
510.	3.82	1995.2	3.129	-1946.	-1933.	-1931.
540.	2.11	2089.4	3.148	-1958.	-1945.	-1942.
570.	0.47	2184.1	3.163	-1967.	-1954.	-1950.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

576.0 ROT SLANT RANGE(E) IS 2211.5 -1969.

578.0 ROT SLANT RANGE(W) IS 2210.1 -1952.

SMAX IS 2212.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 650.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-570.	1.37	2131.9	3.271	2022.	2021.	2028.
-540.	3.11	2033.8	3.265	2018.	2017.	2025.
-510.	4.94	1936.0	3.255	2013.	2011.	2019.
-480.	6.88	1838.6	3.241	2005.	2002.	2010.
-450.	8.94	1741.6	3.222	1993.	1990.	1998.
-420.	11.14	1645.3	3.196	1977.	1974.	1982.
-390.	13.52	1550.0	3.162	1957.	1953.	1961.
-360.	16.09	1455.7	3.118	1930.	1926.	1935.
-330.	18.90	1363.0	3.063	1896.	1892.	1900.
-300.	21.98	1272.1	2.992	1853.	1848.	1856.
-270.	25.40	1183.7	2.901	1797.	1792.	1801.
-240.	29.22	1098.3	2.786	1726.	1721.	1729.
-210.	33.49	1016.8	2.638	1636.	1630.	1638.
-180.	38.30	940.4	2.450	1519.	1513.	1521.
-150.	43.70	870.4	2.209	1370.	1365.	1372.
-120.	49.68	808.5	1.905	1182.	1177.	1183.
-90.	56.10	756.8	1.528	949.	944.	949.
-60.	62.51	717.6	1.075	668.	664.	668.
-30.	67.80	693.0	0.557	346.	344.	346.
0.	70.00	684.6	0.	0.	-0.	-0.
30.	67.80	693.0	0.557	-346.	-344.	-346.
60.	62.51	717.6	1.075	-668.	-664.	-668.
90.	56.10	756.8	1.528	-949.	-944.	-949.
120.	49.68	808.5	1.905	-1183.	-1177.	-1182.
150.	43.70	870.4	2.209	-1372.	-1365.	-1370.
180.	38.30	940.4	2.450	-1521.	-1513.	-1519.
210.	33.49	1016.8	2.638	-1638.	-1630.	-1636.
240.	29.22	1098.3	2.786	-1729.	-1721.	-1726.
270.	25.40	1183.7	2.901	-1801.	-1792.	-1797.
300.	21.98	1272.1	2.992	-1856.	-1848.	-1853.
330.	18.90	1363.0	3.063	-1900.	-1892.	-1896.
360.	16.09	1455.7	3.118	-1935.	-1926.	-1930.
390.	13.52	1550.0	3.162	-1961.	-1953.	-1957.
420.	11.14	1645.3	3.196	-1982.	-1974.	-1977.
450.	8.94	1741.6	3.222	-1998.	-1990.	-1993.
480.	6.88	1838.6	3.241	-2010.	-2002.	-2005.
510.	4.94	1936.0	3.255	-2019.	-2011.	-2013.
540.	3.11	2033.8	3.265	-2025.	-2017.	-2018.
570.	1.37	2131.9	3.271	-2028.	-2021.	-2022.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

592.0	ROT SLANT RANGE(E) IS 2210.5	-2030.	
593.0	ROT SLANT RANGE(W) IS 2210.5		-2023.
	SMAX IS 2212.4		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 650.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-570.	1.44	2127.7	3.280	2028.	2026.	2033.
-540.	3.19	2029.4	3.275	2025.	2023.	2030.
-510.	5.03	1931.3	3.266	2020.	2017.	2024.
-480.	6.98	1833.5	3.253	2012.	2009.	2016.
-450.	9.06	1736.2	3.234	2001.	1998.	2005.
-420.	11.28	1639.5	3.209	1986.	1983.	1990.
-390.	13.68	1543.7	3.177	1967.	1963.	1970.
-360.	16.28	1449.0	3.135	1941.	1937.	1944.
-330.	19.13	1355.7	3.081	1908.	1904.	1911.
-300.	22.27	1264.2	3.013	1866.	1861.	1869.
-270.	25.76	1175.1	2.925	1812.	1807.	1814.
-240.	29.67	1089.0	2.812	1743.	1737.	1745.
-210.	34.08	1006.7	2.667	1653.	1648.	1655.
-180.	39.08	929.4	2.481	1538.	1532.	1540.
-150.	44.75	858.4	2.242	1391.	1385.	1392.
-120.	51.13	795.5	1.937	1202.	1197.	1203.
-90.	58.17	742.9	1.557	967.	962.	967.
-60.	65.50	702.9	1.098	682.	678.	682.
-30.	72.02	677.7	0.570	354.	352.	354.
0.	75.00	669.1	0.	-0.	-0.	0.
30.	72.02	677.7	0.570	-354.	-352.	-354.
60.	65.50	702.9	1.098	-682.	-678.	-682.
90.	58.17	742.9	1.557	-967.	-962.	-967.
120.	51.13	795.5	1.937	-1203.	-1197.	-1202.
150.	44.75	858.4	2.242	-1392.	-1385.	-1391.
180.	39.08	929.4	2.481	-1540.	-1532.	-1538.
210.	34.08	1006.7	2.667	-1655.	-1648.	-1653.
240.	29.67	1089.0	2.812	-1745.	-1737.	-1743.
270.	25.76	1175.1	2.925	-1814.	-1807.	-1812.
300.	22.27	1264.2	3.013	-1869.	-1861.	-1866.
330.	19.13	1355.7	3.081	-1911.	-1904.	-1908.
360.	16.28	1449.0	3.135	-1944.	-1937.	-1941.
390.	13.68	1543.7	3.177	-1970.	-1963.	-1967.
420.	11.28	1639.5	3.209	-1990.	-1983.	-1986.
450.	9.06	1736.2	3.234	-2005.	-1998.	-2001.
480.	6.98	1833.5	3.253	-2016.	-2009.	-2012.
510.	5.03	1931.3	3.266	-2024.	-2017.	-2020.
540.	3.19	2029.4	3.275	-2030.	-2023.	-2025.
570.	1.44	2127.7	3.280	-2033.	-2026.	-2028.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

593.0	ROT SLANT RANGE(E) IS 2209.3	-2034.	
594.0	ROT SLANT RANGE(W) IS 2210.2		-2029.
	SMAX IS 2212.4		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 650.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-570.	1.53	2122.6	3.291	2037.	2033.	2037.
-540.	3.29	2024.0	3.286	2035.	2030.	2035.
-510.	5.14	1925.5	3.279	2030.	2025.	2030.
-480.	7.11	1827.3	3.266	2023.	2018.	2023.
-450.	9.20	1729.5	3.249	2013.	2007.	2013.
-420.	11.45	1632.4	3.226	1998.	1993.	1998.
-390.	13.88	1536.0	3.196	1980.	1974.	1980.
-360.	16.52	1440.7	3.156	1955.	1950.	1955.
-330.	19.42	1346.8	3.105	1924.	1918.	1924.
-300.	22.62	1254.6	3.038	1883.	1877.	1883.
-270.	26.20	1164.7	2.954	1831.	1825.	1831.
-240.	30.23	1077.6	2.844	1763.	1757.	1763.
-210.	34.81	994.4	2.703	1676.	1670.	1676.
-180.	40.06	915.9	2.519	1563.	1556.	1563.
-150.	46.10	843.7	2.283	1416.	1410.	1416.
-120.	53.05	779.6	1.979	1228.	1222.	1228.
-90.	61.01	725.8	1.596	991.	986.	991.
-60.	69.96	684.7	1.128	701.	697.	701.
-30.	79.74	658.9	0.587	364.	362.	364.
0.	89.99	650.0	0.	-0.	-0.	0.
30.	79.74	658.9	0.587	-364.	-362.	-364.
60.	69.96	684.7	1.128	-701.	-697.	-701.
90.	61.01	725.8	1.596	-991.	-986.	-991.
120.	53.05	779.6	1.979	-1228.	-1222.	-1228.
150.	46.10	843.7	2.283	-1416.	-1410.	-1416.
180.	40.06	915.9	2.519	-1563.	-1556.	-1563.
210.	34.81	994.4	2.703	-1676.	-1670.	-1676.
240.	30.23	1077.6	2.844	-1763.	-1757.	-1763.
270.	26.20	1164.7	2.954	-1831.	-1825.	-1831.
300.	22.62	1254.6	3.038	-1883.	-1877.	-1883.
330.	19.42	1346.8	3.105	-1924.	-1918.	-1924.
360.	16.52	1440.7	3.156	-1955.	-1950.	-1955.
390.	13.88	1536.0	3.196	-1980.	-1974.	-1980.
420.	11.45	1632.4	3.226	-1998.	-1993.	-1998.
450.	9.20	1729.5	3.249	-2013.	-2007.	-2013.
480.	7.11	1827.3	3.266	-2023.	-2018.	-2023.
510.	5.14	1925.5	3.279	-2030.	-2025.	-2030.
540.	3.29	2024.0	3.286	-2035.	-2030.	-2035.
570.	1.53	2122.6	3.291	-2037.	-2033.	-2037.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

595.0 ROT SLANT RANGE(E) IS 2209.9 -2037.

595.0 ROT SLANT RANGE(W) IS 2209.9 -2037.

SMAX IS 2212.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 683.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-210.	0.16	2263.5	0.996	618.	615.	629.
-180.	0.63	2235.6	0.866	538.	535.	546.
-150.	1.04	2211.6	0.731	455.	451.	461.
-120.	1.38	2191.8	0.591	368.	365.	372.
-90.	1.65	2176.2	0.446	279.	276.	281.
-60.	1.84	2165.0	0.299	187.	185.	188.
-30.	1.96	2158.3	0.150	94.	93.	94.
0.	2.00	2156.0	0.	0.	0.	0.
30.	1.96	2158.3	0.150	-94.	-93.	-94.
60.	1.84	2165.0	0.299	-188.	-185.	-187.
90.	1.65	2176.2	0.446	-281.	-276.	-279.
120.	1.38	2191.8	0.591	-372.	-365.	-368.
150.	1.04	2211.6	0.731	-461.	-451.	-455.
180.	0.63	2235.6	0.866	-546.	-535.	-538.
210.	0.16	2263.5	0.996	-629.	-615.	-618.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

222.0	ROT SLANT RANGE(E) IS 2272.0	-661.	
224.0	ROT SLANT RANGE(W) IS 2272.6		-654.
	SMAX IS 2272.9		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 683.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	0.33	2253.1	2.090	1286.	1291.	1317.
-390.	1.38	2191.7	2.003	1233.	1237.	1262.
-360.	2.41	2133.0	1.906	1175.	1177.	1200.
-330.	3.41	2077.4	1.799	1111.	1112.	1133.
-300.	4.38	2025.2	1.683	1040.	1040.	1059.
-270.	5.31	1976.6	1.556	962.	961.	978.
-240.	6.19	1931.9	1.418	878.	876.	891.
-210.	7.01	1891.6	1.270	787.	784.	798.
-180.	7.75	1855.8	1.111	690.	687.	698.
-150.	8.41	1825.0	0.943	586.	583.	592.
-120.	8.96	1799.3	0.766	477.	473.	480.
-90.	9.41	1779.1	0.582	362.	359.	365.
-60.	9.73	1764.5	0.391	244.	242.	245.
-30.	9.93	1755.7	0.197	123.	122.	123.
0.	10.00	1752.7	0.	0.	-0.	-0.
30.	9.93	1755.7	0.197	-123.	-122.	-123.
60.	9.73	1764.5	0.391	-245.	-242.	-244.
90.	9.41	1779.1	0.582	-365.	-359.	-362.
120.	8.96	1799.3	0.766	-480.	-473.	-477.
150.	8.41	1825.0	0.943	-592.	-583.	-586.
180.	7.75	1855.8	1.111	-698.	-687.	-690.
210.	7.01	1891.6	1.270	-798.	-784.	-787.
240.	6.19	1931.9	1.418	-891.	-876.	-878.
270.	5.31	1976.6	1.556	-978.	-961.	-962.
300.	4.38	2025.2	1.683	-1059.	-1040.	-1040.
330.	3.41	2077.4	1.799	-1133.	-1112.	-1111.
360.	2.41	2133.0	1.906	-1200.	-1177.	-1175.
390.	1.38	2191.7	2.003	-1262.	-1237.	-1233.
420.	0.33	2253.1	2.090	-1317.	-1291.	-1286.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

427.0 ROT SLANT RANGE(E) IS 2272.4 -1329.

431.0 ROT SLANT RANGE(W) IS 2272.3 -1304.

SMAX IS 2272.9

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 683.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.32	2253.8	2.430	1494.	1501.	1527.
-450.	1.55	2181.9	2.363	1454.	1460.	1485.
-420.	2.78	2112.1	2.288	1409.	1413.	1437.
-390.	4.02	2044.7	2.202	1357.	1360.	1383.
-360.	5.24	1980.1	2.106	1300.	1301.	1322.
-330.	6.46	1918.5	1.999	1234.	1235.	1255.
-300.	7.66	1860.3	1.879	1162.	1161.	1179.
-270.	8.82	1805.8	1.747	1081.	1079.	1096.
-240.	9.93	1755.6	1.601	992.	989.	1004.
-210.	10.99	1709.9	1.441	894.	890.	903.
-180.	11.96	1669.3	1.268	787.	783.	794.
-150.	12.83	1634.0	1.081	671.	668.	677.
-120.	13.58	1604.5	0.881	548.	545.	552.
-90.	14.18	1581.2	0.671	418.	415.	420.
-60.	14.63	1564.3	0.453	282.	280.	283.
-30.	14.91	1554.1	0.228	142.	141.	142.
0.	15.00	1550.7	0.	0.	-0.	-0.
30.	14.91	1554.1	0.228	-142.	-141.	-142.
60.	14.63	1564.3	0.453	-283.	-280.	-282.
90.	14.18	1581.2	0.671	-420.	-415.	-418.
120.	13.58	1604.5	0.881	-552.	-545.	-548.
150.	12.83	1634.0	1.081	-677.	-668.	-671.
180.	11.96	1669.3	1.268	-794.	-783.	-787.
210.	10.99	1709.9	1.441	-903.	-890.	-894.
240.	9.93	1755.6	1.601	-1004.	-989.	-992.
270.	8.82	1805.8	1.747	-1096.	-1079.	-1081.
300.	7.66	1860.3	1.879	-1179.	-1161.	-1162.
330.	6.46	1918.5	1.999	-1255.	-1235.	-1234.
360.	5.24	1980.1	2.106	-1322.	-1301.	-1300.
390.	4.02	2044.7	2.202	-1383.	-1360.	-1357.
420.	2.78	2112.1	2.288	-1437.	-1413.	-1409.
450.	1.55	2181.9	2.363	-1485.	-1460.	-1454.
480.	0.32	2253.8	2.430	-1527.	-1501.	-1494.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

484.0 ROT SLANT RANGE(E) IS 2270.9 -1532.

489.0 ROT SLANT RANGE(W) IS 2272.2 -1505.

SMAX IS 2272.9

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 683.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-570.	1.49	2185.5	3.111	1918.	1922.	1936.
-540.	3.14	2092.4	3.094	1909.	1912.	1925.
-510.	4.86	1999.9	3.072	1896.	1898.	1912.
-480.	6.67	1908.1	3.044	1879.	1881.	1894.
-450.	8.57	1817.3	3.009	1858.	1859.	1872.
-420.	10.57	1727.6	2.966	1832.	1832.	1845.
-390.	12.69	1639.4	2.913	1800.	1799.	1812.
-360.	14.94	1553.0	2.848	1761.	1759.	1772.
-330.	17.32	1468.7	2.769	1713.	1711.	1723.
-300.	19.86	1387.0	2.673	1655.	1651.	1664.
-270.	22.56	1308.5	2.557	1583.	1580.	1591.
-240.	25.42	1233.8	2.416	1497.	1492.	1504.
-210.	28.42	1163.8	2.245	1392.	1387.	1398.
-180.	31.54	1099.5	2.041	1266.	1261.	1271.
-150.	34.70	1041.8	1.798	1116.	1111.	1119.
-120.	37.78	992.0	1.512	939.	934.	941.
-90.	40.60	951.5	1.183	736.	731.	737.
-60.	42.92	921.4	0.815	507.	504.	508.
-30.	44.46	902.9	0.416	259.	257.	259.
0.	45.00	896.6	0.	0.	-0.	-0.
30.	44.46	902.9	0.416	-259.	-257.	-259.
60.	42.92	921.4	0.815	-508.	-504.	-507.
90.	40.60	951.5	1.183	-737.	-731.	-736.
120.	37.78	992.0	1.512	-941.	-934.	-939.
150.	34.70	1041.8	1.798	-1119.	-1111.	-1116.
180.	31.54	1099.5	2.041	-1271.	-1261.	-1266.
210.	28.42	1163.8	2.245	-1398.	-1387.	-1392.
240.	25.42	1233.8	2.416	-1504.	-1492.	-1497.
270.	22.56	1308.5	2.557	-1591.	-1580.	-1583.
300.	19.86	1387.0	2.673	-1664.	-1651.	-1655.
330.	17.32	1468.7	2.769	-1723.	-1711.	-1713.
360.	14.94	1553.0	2.848	-1772.	-1759.	-1761.
390.	12.69	1639.4	2.913	-1812.	-1799.	-1800.
420.	10.57	1727.6	2.966	-1845.	-1832.	-1832.
450.	8.57	1817.3	3.009	-1872.	-1859.	-1858.
480.	6.67	1908.1	3.044	-1894.	-1881.	-1879.
510.	4.86	1999.9	3.072	-1912.	-1898.	-1896.
540.	3.14	2092.4	3.094	-1925.	-1912.	-1909.
570.	1.49	2185.5	3.111	-1936.	-1922.	-1918.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

595.0 ROT SLANT RANGE(E) IS 2272.4 -1943.

597.0 ROT SLANT RANGE(W) IS 2270.2 -1925.

SMAX IS 2272.9

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 683.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.80	2225.3	3.232	1997.	1997.	2004.
-570.	2.49	2128.4	3.227	1995.	1994.	2002.
-540.	4.26	2031.7	3.219	1990.	1989.	1997.
-510.	6.12	1935.3	3.207	1983.	1981.	1989.
-480.	8.10	1839.3	3.190	1973.	1971.	1979.
-450.	10.20	1743.9	3.168	1960.	1957.	1965.
-420.	12.45	1649.3	3.139	1942.	1939.	1947.
-390.	14.86	1555.7	3.101	1919.	1916.	1924.
-360.	17.48	1463.3	3.054	1890.	1886.	1895.
-330.	20.34	1372.6	2.993	1854.	1849.	1858.
-300.	23.47	1283.9	2.918	1807.	1802.	1811.
-270.	26.92	1197.7	2.822	1748.	1743.	1752.
-240.	30.76	1114.8	2.701	1674.	1669.	1677.
-210.	35.04	1036.0	2.548	1580.	1574.	1582.
-180.	39.82	962.3	2.356	1461.	1455.	1463.
-150.	45.13	895.2	2.113	1311.	1306.	1313.
-120.	50.94	836.1	1.812	1125.	1120.	1126.
-90.	57.09	787.1	1.445	898.	893.	898.
-60.	63.13	750.1	1.012	629.	625.	629.
-30.	68.01	726.9	0.522	325.	323.	325.
0.	70.00	719.1	0.	0.	-0.	-0.
30.	68.01	726.9	0.522	-325.	-323.	-325.
60.	63.13	750.1	1.012	-629.	-625.	-629.
90.	57.09	787.1	1.445	-898.	-893.	-898.
120.	50.94	836.1	1.812	-1126.	-1120.	-1125.
150.	45.13	895.2	2.113	-1313.	-1306.	-1311.
180.	39.82	962.3	2.356	-1463.	-1455.	-1461.
210.	35.04	1036.0	2.548	-1582.	-1574.	-1580.
240.	30.76	1114.8	2.701	-1677.	-1669.	-1674.
270.	26.92	1197.7	2.822	-1752.	-1743.	-1748.
300.	23.47	1283.9	2.918	-1811.	-1802.	-1807.
330.	20.34	1372.6	2.993	-1858.	-1849.	-1854.
360.	17.48	1463.3	3.054	-1895.	-1886.	-1890.
390.	14.86	1555.7	3.101	-1924.	-1916.	-1919.
420.	12.45	1649.3	3.139	-1947.	-1939.	-1942.
450.	10.20	1743.9	3.168	-1965.	-1957.	-1960.
480.	8.10	1839.3	3.190	-1979.	-1971.	-1973.
510.	6.12	1935.3	3.207	-1989.	-1981.	-1983.
540.	4.26	2031.7	3.219	-1997.	-1989.	-1990.
570.	2.49	2128.4	3.227	-2002.	-1994.	-1995.
600.	0.80	2225.3	3.232	-2004.	-1997.	-1997.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

612.0 ROT SLANT RANGE(E) IS 2271.0 -2005.

613.0 ROT SLANT RANGE(W) IS 2270.7 -1998.

SMAX IS 2272.9

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 683.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.87	2221.0	3.241	2004.	2002.	2009.
-570.	2.57	2123.8	3.237	2002.	2000.	2007.
-540.	4.35	2026.8	3.230	1997.	1995.	2002.
-510.	6.23	1930.0	3.219	1991.	1988.	1995.
-480.	8.22	1833.7	3.203	1982.	1978.	1986.
-450.	10.34	1737.9	3.181	1969.	1965.	1973.
-420.	12.61	1642.9	3.153	1952.	1948.	1956.
-390.	15.05	1548.8	3.117	1930.	1926.	1933.
-360.	17.70	1456.0	3.072	1902.	1897.	1905.
-330.	20.60	1364.6	3.013	1866.	1861.	1869.
-300.	23.79	1275.3	2.940	1821.	1816.	1824.
-270.	27.33	1188.5	2.846	1764.	1758.	1766.
-240.	31.27	1104.8	2.728	1691.	1685.	1693.
-210.	35.69	1025.1	2.578	1598.	1592.	1600.
-180.	40.67	950.5	2.387	1480.	1474.	1482.
-150.	46.27	882.4	2.146	1331.	1326.	1333.
-120.	52.51	822.4	1.844	1145.	1139.	1146.
-90.	59.29	772.5	1.474	915.	910.	916.
-60.	66.24	734.7	1.034	642.	639.	642.
-30.	72.30	711.0	0.534	332.	330.	332.
0.	75.00	703.0	0.	0.	-0.	-0.
30.	72.30	711.0	0.534	-332.	-330.	-332.
60.	66.24	734.7	1.034	-642.	-639.	-642.
90.	59.29	772.5	1.474	-916.	-910.	-915.
120.	52.51	822.4	1.844	-1146.	-1139.	-1145.
150.	46.27	882.4	2.146	-1333.	-1326.	-1331.
180.	40.67	950.5	2.387	-1482.	-1474.	-1480.
210.	35.69	1025.1	2.578	-1600.	-1592.	-1598.
240.	31.27	1104.8	2.728	-1693.	-1685.	-1691.
270.	27.33	1188.5	2.846	-1766.	-1758.	-1764.
300.	23.79	1275.3	2.940	-1824.	-1816.	-1821.
330.	20.60	1364.6	3.013	-1869.	-1861.	-1866.
360.	17.70	1456.0	3.072	-1905.	-1897.	-1902.
390.	15.05	1548.8	3.117	-1933.	-1926.	-1930.
420.	12.61	1642.9	3.153	-1956.	-1948.	-1952.
450.	10.34	1737.9	3.181	-1973.	-1965.	-1969.
480.	8.22	1833.7	3.203	-1986.	-1978.	-1982.
510.	6.23	1930.0	3.219	-1995.	-1988.	-1991.
540.	4.35	2026.8	3.230	-2002.	-1995.	-1997.
570.	2.57	2123.8	3.237	-2007.	-2000.	-2002.
600.	0.87	2221.0	3.241	-2009.	-2002.	-2004.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

614.0	ROT SLANT RANGE(E) IS 2272.9	-2009.	
614.0	ROT SLANT RANGE(W) IS 2270.2		-2004.

SMAX IS 2272.9

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 683.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.96	2215.7	3.252	2013.	2009.	2013.
-570.	2.67	2118.2	3.249	2011.	2007.	2011.
-540.	4.46	2020.8	3.242	2008.	2003.	2008.
-510.	6.36	1923.7	3.232	2002.	1997.	2002.
-480.	8.36	1826.9	3.218	1993.	1988.	1993.
-450.	10.50	1730.7	3.198	1981.	1975.	1981.
-420.	12.80	1635.1	3.171	1965.	1959.	1965.
-390.	15.28	1540.5	3.137	1944.	1938.	1944.
-360.	17.97	1447.0	3.094	1917.	1911.	1917.
-330.	20.93	1355.0	3.038	1883.	1877.	1883.
-300.	24.19	1264.9	2.967	1839.	1833.	1839.
-270.	27.82	1177.2	2.876	1783.	1777.	1783.
-240.	31.90	1092.5	2.761	1712.	1706.	1712.
-210.	36.51	1011.8	2.614	1621.	1615.	1621.
-180.	41.76	936.1	2.426	1505.	1499.	1505.
-150.	47.75	866.8	2.187	1357.	1351.	1357.
-120.	54.59	805.5	1.885	1170.	1164.	1170.
-90.	62.32	754.4	1.511	938.	933.	938.
-60.	70.94	715.7	1.062	660.	656.	660.
-30.	80.26	691.3	0.550	342.	340.	342.
0.	89.96	683.0	0.	0.	-0.	-0.
30.	80.26	691.3	0.550	-342.	-340.	-342.
60.	70.94	715.7	1.062	-660.	-656.	-660.
90.	62.32	754.4	1.511	-938.	-933.	-938.
120.	54.59	805.5	1.885	-1170.	-1164.	-1170.
150.	47.75	866.8	2.187	-1357.	-1351.	-1357.
180.	41.76	936.1	2.426	-1505.	-1499.	-1505.
210.	36.51	1011.8	2.614	-1621.	-1615.	-1621.
240.	31.90	1092.5	2.761	-1712.	-1706.	-1712.
270.	27.82	1177.2	2.876	-1783.	-1777.	-1783.
300.	24.19	1264.9	2.967	-1839.	-1833.	-1839.
330.	20.93	1355.0	3.038	-1883.	-1877.	-1883.
360.	17.97	1447.0	3.094	-1917.	-1911.	-1917.
390.	15.28	1540.5	3.137	-1944.	-1938.	-1944.
420.	12.80	1635.1	3.171	-1965.	-1959.	-1965.
450.	10.50	1730.7	3.198	-1981.	-1975.	-1981.
480.	8.36	1826.9	3.218	-1993.	-1988.	-1993.
510.	6.36	1923.7	3.232	-2002.	-1997.	-2002.
540.	4.46	2020.8	3.242	-2008.	-2003.	-2008.
570.	2.67	2118.2	3.249	-2011.	-2007.	-2011.
600.	0.96	2215.7	3.252	-2013.	-2009.	-2013.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

615.0 ROT SLANT RANGE(E) IS 2269.7 -2013.

615.0 ROT SLANT RANGE(W) IS 2269.7 -2013.

SMAX IS 2272.9

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-210.	0.20	2291.4	0.972	603.	601.	614.
-180.	0.66	2264.2	0.845	525.	522.	533.
-150.	1.06	2240.8	0.713	443.	440.	449.
-120.	1.39	2221.4	0.576	359.	356.	363.
-90.	1.66	2206.3	0.435	272.	269.	274.
-60.	1.85	2195.4	0.292	182.	180.	183.
-30.	1.96	2188.8	0.146	92.	90.	92.
0.	2.00	2186.6	0.	0.	0.	0.
30.	1.96	2188.8	0.146	-92.	-90.	-92.
60.	1.85	2195.4	0.292	-183.	-180.	-182.
90.	1.66	2206.3	0.435	-274.	-269.	-272.
120.	1.39	2221.4	0.576	-363.	-356.	-359.
150.	1.06	2240.8	0.713	-449.	-440.	-443.
180.	0.66	2264.2	0.845	-533.	-522.	-525.
210.	0.20	2291.4	0.972	-614.	-601.	-603.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

225.0	ROT SLANT RANGE(E) IS 2302.6	-654.	
227.0	ROT SLANT RANGE(W) IS 2303.1		-646.
	SMAX IS 2303.5		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	0.54	2271.5	2.051	1262.	1267.	1293.
-390.	1.57	2211.2	1.964	1210.	1213.	1238.
-360.	2.58	2153.7	1.867	1152.	1154.	1176.
-330.	3.57	2099.3	1.762	1087.	1088.	1109.
-300.	4.52	2048.1	1.646	1017.	1017.	1036.
-270.	5.43	2000.6	1.520	941.	939.	957.
-240.	6.29	1957.0	1.385	858.	855.	871.
-210.	7.09	1917.6	1.239	768.	765.	779.
-180.	7.81	1882.8	1.084	673.	669.	681.
-150.	8.45	1852.7	0.919	571.	568.	577.
-120.	8.99	1827.7	0.746	464.	461.	468.
-90.	9.43	1808.0	0.566	353.	350.	355.
-60.	9.74	1793.8	0.381	237.	235.	238.
-30.	9.94	1785.2	0.191	119.	118.	120.
0.	10.00	1782.3	0.	0.	-0.	-0.
30.	9.94	1785.2	0.191	-120.	-118.	-119.
60.	9.74	1793.8	0.381	-238.	-235.	-237.
90.	9.43	1808.0	0.566	-355.	-350.	-353.
120.	8.99	1827.7	0.746	-468.	-461.	-464.
150.	8.45	1852.7	0.919	-577.	-568.	-571.
180.	7.81	1882.8	1.084	-681.	-669.	-673.
210.	7.09	1917.6	1.239	-779.	-765.	-768.
240.	6.29	1957.0	1.385	-871.	-855.	-858.
270.	5.43	2000.6	1.520	-957.	-939.	-941.
300.	4.52	2048.1	1.646	-1036.	-1017.	-1017.
330.	3.57	2099.3	1.762	-1109.	-1088.	-1087.
360.	2.58	2153.7	1.867	-1176.	-1154.	-1152.
390.	1.57	2211.2	1.964	-1238.	-1213.	-1210.
420.	0.54	2271.5	2.051	-1293.	-1267.	-1262.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

433.0 ROT SLANT RANGE(E) IS 2303.2 -1316.

437.0 ROT SLANT RANGE(W) IS 2302.7 -1290.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.60	2267.6	2.391	1470.	1477.	1503.
-450.	1.82	2196.8	2.324	1430.	1436.	1461.
-420.	3.04	2128.2	2.247	1384.	1388.	1412.
-390.	4.26	2062.1	2.162	1332.	1335.	1358.
-360.	5.47	1998.6	2.066	1274.	1276.	1297.
-330.	6.67	1938.2	1.958	1210.	1210.	1230.
-300.	7.85	1881.2	1.839	1137.	1136.	1155.
-270.	8.99	1828.0	1.708	1057.	1055.	1072.
-240.	10.08	1778.9	1.564	969.	966.	981.
-210.	11.11	1734.3	1.406	872.	869.	882.
-180.	12.05	1694.6	1.236	767.	763.	775.
-150.	12.90	1660.3	1.053	654.	650.	659.
-120.	13.62	1631.6	0.858	534.	530.	537.
-90.	14.21	1608.9	0.653	407.	403.	409.
-60.	14.64	1592.5	0.440	274.	272.	275.
-30.	14.91	1582.6	0.222	138.	137.	138.
0.	15.00	1579.2	0.	0.	-0.	-0.
30.	14.91	1582.6	0.222	-138.	-137.	-138.
60.	14.64	1592.5	0.440	-275.	-272.	-274.
90.	14.21	1608.9	0.653	-409.	-403.	-407.
120.	13.62	1631.6	0.858	-537.	-530.	-534.
150.	12.90	1660.3	1.053	-659.	-650.	-654.
180.	12.05	1694.6	1.236	-775.	-763.	-767.
210.	11.11	1734.3	1.406	-882.	-869.	-872.
240.	10.08	1778.9	1.564	-981.	-966.	-969.
270.	8.99	1828.0	1.708	-1072.	-1055.	-1057.
300.	7.85	1881.2	1.839	-1155.	-1136.	-1137.
330.	6.67	1938.2	1.958	-1230.	-1210.	-1210.
360.	5.47	1998.6	2.066	-1297.	-1276.	-1274.
390.	4.26	2062.1	2.162	-1358.	-1335.	-1332.
420.	3.04	2128.2	2.247	-1412.	-1388.	-1384.
450.	1.82	2196.8	2.324	-1461.	-1436.	-1430.
480.	0.60	2267.6	2.391	-1503.	-1477.	-1470.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

491.0 ROT SLANT RANGE(E) IS 2301.6 -1518.

496.0 ROT SLANT RANGE(W) IS 2302.4 -1489.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 20.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-510.	1.03	2242.3	2.607	1603.	1610.	1635.
-480.	2.38	2164.9	2.553	1571.	1577.	1600.
-450.	3.76	2089.2	2.490	1534.	1538.	1561.
-420.	5.15	2015.5	2.418	1491.	1494.	1516.
-390.	6.55	1944.2	2.337	1441.	1443.	1464.
-360.	7.97	1875.5	2.243	1385.	1386.	1406.
-330.	9.39	1809.7	2.138	1321.	1321.	1339.
-300.	10.80	1747.3	2.018	1248.	1247.	1264.
-270.	12.19	1688.8	1.884	1166.	1164.	1180.
-240.	13.55	1634.4	1.734	1075.	1071.	1086.
-210.	14.85	1584.9	1.568	972.	969.	982.
-180.	16.06	1540.5	1.385	860.	856.	867.
-150.	17.17	1501.9	1.186	737.	733.	742.
-120.	18.13	1469.5	0.971	604.	600.	607.
-90.	18.92	1443.8	0.742	462.	458.	464.
-60.	19.51	1425.1	0.501	312.	310.	313.
-30.	19.88	1413.8	0.253	158.	156.	158.
0.	20.00	1410.0	0.	0.	-0.	-0.
30.	19.88	1413.8	0.253	-158.	-156.	-158.
60.	19.51	1425.1	0.501	-313.	-310.	-312.
90.	18.92	1443.8	0.742	-464.	-458.	-462.
120.	18.13	1469.5	0.971	-607.	-600.	-604.
150.	17.17	1501.9	1.186	-742.	-733.	-737.
180.	16.06	1540.5	1.385	-867.	-856.	-860.
210.	14.85	1584.9	1.568	-982.	-969.	-972.
240.	13.55	1634.4	1.734	-1086.	-1071.	-1075.
270.	12.19	1688.8	1.884	-1180.	-1164.	-1166.
300.	10.80	1747.3	2.018	-1264.	-1247.	-1248.
330.	9.39	1809.7	2.138	-1339.	-1321.	-1321.
360.	7.97	1875.5	2.243	-1406.	-1386.	-1385.
390.	6.55	1944.2	2.337	-1464.	-1443.	-1441.
420.	5.15	2015.5	2.418	-1516.	-1494.	-1491.
450.	3.76	2089.2	2.490	-1561.	-1538.	-1534.
480.	2.38	2164.9	2.553	-1600.	-1577.	-1571.
510.	1.03	2242.3	2.607	-1635.	-1610.	-1603.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

529.0 ROT SLANT RANGE(E) IS 2301.2 -1654.

534.0 ROT SLANT RANGE(W) IS 2302.2 -1625.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 30.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-570.	0.37	2281.2	2.905	1787.	1795.	1815.
-540.	1.86	2194.5	2.875	1770.	1776.	1796.
-510.	3.40	2108.8	2.839	1749.	1754.	1773.
-480.	4.98	2024.2	2.796	1723.	1727.	1746.
-450.	6.61	1941.1	2.745	1693.	1696.	1714.
-420.	8.31	1859.6	2.685	1657.	1659.	1676.
-390.	10.05	1780.1	2.614	1614.	1615.	1632.
-360.	11.85	1702.9	2.531	1563.	1563.	1580.
-330.	13.71	1628.4	2.433	1504.	1503.	1519.
-300.	15.60	1557.1	2.320	1435.	1433.	1448.
-270.	17.54	1489.4	2.188	1355.	1352.	1366.
-240.	19.49	1426.0	2.036	1262.	1258.	1271.
-210.	21.42	1367.4	1.862	1154.	1150.	1162.
-180.	23.31	1314.5	1.663	1032.	1027.	1038.
-150.	25.09	1267.9	1.439	893.	889.	898.
-120.	26.70	1228.4	1.189	739.	735.	742.
-90.	28.06	1196.8	0.916	570.	566.	572.
-60.	29.11	1173.7	0.623	388.	385.	389.
-30.	29.77	1159.5	0.316	197.	195.	197.
0.	30.00	1154.8	0.	0.	-0.	-0.
30.	29.77	1159.5	0.316	-197.	-195.	-197.
60.	29.11	1173.7	0.623	-389.	-385.	-388.
90.	28.06	1196.8	0.916	-572.	-566.	-570.
120.	26.70	1228.4	1.189	-742.	-735.	-739.
150.	25.09	1267.9	1.439	-898.	-889.	-893.
180.	23.31	1314.5	1.663	-1038.	-1027.	-1032.
210.	21.42	1367.4	1.862	-1162.	-1150.	-1154.
240.	19.49	1426.0	2.036	-1271.	-1258.	-1262.
270.	17.54	1489.4	2.188	-1366.	-1352.	-1355.
300.	15.60	1557.1	2.320	-1448.	-1433.	-1435.
330.	13.71	1628.4	2.433	-1519.	-1503.	-1504.
360.	11.85	1702.9	2.531	-1580.	-1563.	-1563.
390.	10.05	1780.1	2.614	-1632.	-1615.	-1614.
420.	8.31	1859.6	2.685	-1676.	-1659.	-1657.
450.	6.61	1941.1	2.745	-1714.	-1696.	-1693.
480.	4.98	2024.2	2.796	-1746.	-1727.	-1723.
510.	3.40	2108.8	2.839	-1773.	-1754.	-1749.
540.	1.86	2194.5	2.875	-1796.	-1776.	-1770.
570.	0.37	2281.2	2.905	-1815.	-1795.	-1787.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

574.0 ROT SLANT RANGE(E) IS 2302.8 -1817.

578.0 ROT SLANT RANGE(W) IS 2302.8 -1791.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 40.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.03	2301.9	3.055	1882.	1887.	0.
-570.	1.58	2210.5	3.038	1872.	1877.	1893.
-540.	3.20	2119.6	3.017	1860.	1864.	1879.
-510.	4.88	2029.5	2.990	1844.	1847.	1862.
-480.	6.63	1940.3	2.956	1824.	1826.	1842.
-450.	8.46	1852.2	2.915	1800.	1801.	1816.
-420.	10.38	1765.5	2.866	1770.	1770.	1785.
-390.	12.40	1680.4	2.806	1734.	1733.	1748.
-360.	14.52	1597.3	2.734	1690.	1689.	1703.
-330.	16.75	1516.5	2.648	1638.	1636.	1649.
-300.	19.09	1438.6	2.545	1575.	1572.	1585.
-270.	21.54	1364.0	2.421	1499.	1496.	1508.
-240.	24.09	1293.5	2.275	1409.	1405.	1417.
-210.	26.72	1227.8	2.101	1303.	1298.	1309.
-180.	29.39	1167.8	1.897	1177.	1172.	1182.
-150.	32.01	1114.3	1.659	1030.	1025.	1034.
-120.	34.50	1068.6	1.386	861.	856.	863.
-90.	36.71	1031.5	1.078	670.	666.	671.
-60.	38.46	1004.2	0.738	459.	456.	460.
-30.	39.60	987.5	0.376	234.	232.	234.
0.	40.00	981.8	0.	0.	-0.	-0.
30.	39.60	987.5	0.376	-234.	-232.	-234.
60.	38.46	1004.2	0.738	-460.	-456.	-459.
90.	36.71	1031.5	1.078	-671.	-666.	-670.
120.	34.50	1068.6	1.386	-863.	-856.	-861.
150.	32.01	1114.3	1.659	-1034.	-1025.	-1030.
180.	29.39	1167.8	1.897	-1182.	-1172.	-1177.
210.	26.72	1227.8	2.101	-1309.	-1298.	-1303.
240.	24.09	1293.5	2.275	-1417.	-1405.	-1409.
270.	21.54	1364.0	2.421	-1508.	-1496.	-1499.
300.	19.09	1438.6	2.545	-1585.	-1572.	-1575.
330.	16.75	1516.5	2.648	-1649.	-1636.	-1638.
360.	14.52	1597.3	2.734	-1703.	-1689.	-1690.
390.	12.40	1680.4	2.806	-1748.	-1733.	-1734.
420.	10.38	1765.5	2.866	-1785.	-1770.	-1770.
450.	8.46	1852.2	2.915	-1816.	-1801.	-1800.
480.	6.63	1940.3	2.956	-1842.	-1826.	-1824.
510.	4.88	2029.5	2.990	-1862.	-1847.	-1844.
540.	3.20	2119.6	3.017	-1879.	-1864.	-1860.
570.	1.58	2210.5	3.038	-1893.	-1877.	-1872.
600.	0.03	2301.9	3.055	0.	-1887.	-1882.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

597.0 ROT SLANT RANGE(E) IS 2302.3 -1902.

600.0 ROT SLANT RANGE(W) IS 2301.6 -1882.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.40	2279.4	3.099	1910.	1914.	1929.
-570.	2.00	2186.6	3.085	1902.	1906.	1920.
-540.	3.66	2094.3	3.066	1891.	1894.	1908.
-510.	5.40	2002.7	3.043	1878.	1880.	1894.
-480.	7.21	1911.8	3.013	1860.	1861.	1875.
-450.	9.12	1822.0	2.977	1838.	1839.	1852.
-420.	11.13	1733.3	2.932	1811.	1811.	1824.
-390.	13.25	1646.1	2.877	1778.	1777.	1790.
-360.	15.50	1560.8	2.810	1738.	1736.	1749.
-330.	17.89	1477.7	2.729	1688.	1686.	1699.
-300.	20.42	1397.2	2.631	1629.	1625.	1638.
-270.	23.10	1320.0	2.513	1556.	1552.	1564.
-240.	25.94	1246.7	2.370	1469.	1464.	1476.
-210.	28.91	1178.1	2.199	1364.	1359.	1369.
-180.	31.98	1115.1	1.995	1238.	1233.	1242.
-150.	35.07	1058.7	1.754	1089.	1083.	1092.
-120.	38.06	1010.3	1.472	914.	909.	917.
-90.	40.79	970.8	1.150	715.	710.	716.
-60.	43.01	941.6	0.791	492.	489.	493.
-30.	44.48	923.7	0.403	251.	249.	251.
0.	45.00	917.6	0.	0.	-0.	-0.
30.	44.48	923.7	0.403	-251.	-249.	-251.
60.	43.01	941.6	0.791	-493.	-489.	-492.
90.	40.79	970.8	1.150	-716.	-710.	-715.
120.	38.06	1010.3	1.472	-917.	-909.	-914.
150.	35.07	1058.7	1.754	-1092.	-1083.	-1089.
180.	31.98	1115.1	1.995	-1242.	-1233.	-1238.
210.	28.91	1178.1	2.199	-1369.	-1359.	-1364.
240.	25.94	1246.7	2.370	-1476.	-1464.	-1469.
270.	23.10	1320.0	2.513	-1564.	-1552.	-1556.
300.	20.42	1397.2	2.631	-1638.	-1625.	-1629.
330.	17.89	1477.7	2.729	-1699.	-1686.	-1688.
360.	15.50	1560.8	2.810	-1749.	-1736.	-1738.
390.	13.25	1646.1	2.877	-1790.	-1777.	-1778.
420.	11.13	1733.3	2.932	-1824.	-1811.	-1811.
450.	9.12	1822.0	2.977	-1852.	-1839.	-1838.
480.	7.21	1911.8	3.013	-1875.	-1861.	-1860.
510.	5.40	2002.7	3.043	-1894.	-1880.	-1878.
540.	3.66	2094.3	3.066	-1908.	-1894.	-1891.
570.	2.00	2186.6	3.085	-1920.	-1906.	-1902.
600.	0.40	2279.4	3.099	-1929.	-1914.	-1910.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

604.0 ROT SLANT RANGE(E) IS 2301.0 -1930.

607.0 ROT SLANT RANGE(W) IS 2301.5 -1911.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 50.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.70	2261.9	3.133	1932.	1935.	1948.
-570.	2.33	2168.0	3.122	1926.	1928.	1941.
-540.	4.03	2074.6	3.106	1917.	1919.	1931.
-510.	5.80	1981.7	3.085	1905.	1906.	1919.
-480.	7.67	1889.6	3.059	1889.	1890.	1902.
-450.	9.64	1798.3	3.026	1870.	1869.	1882.
-420.	11.73	1708.1	2.985	1845.	1844.	1856.
-390.	13.94	1619.3	2.934	1814.	1813.	1825.
-360.	16.30	1532.1	2.872	1777.	1774.	1786.
-330.	18.82	1447.1	2.796	1730.	1727.	1739.
-300.	21.52	1364.5	2.703	1674.	1670.	1681.
-270.	24.42	1285.1	2.590	1604.	1600.	1611.
-240.	27.51	1209.4	2.452	1519.	1515.	1525.
-210.	30.80	1138.3	2.284	1416.	1411.	1421.
-180.	34.27	1072.7	2.081	1291.	1285.	1295.
-150.	37.83	1013.8	1.837	1140.	1135.	1143.
-120.	41.37	962.9	1.550	962.	957.	964.
-90.	44.68	921.3	1.216	755.	751.	757.
-60.	47.45	890.4	0.839	522.	518.	522.
-30.	49.33	871.3	0.429	267.	265.	267.
0.	50.00	864.8	0.	0.	-0.	-0.
30.	49.33	871.3	0.429	-267.	-265.	-267.
60.	47.45	890.4	0.839	-522.	-518.	-522.
90.	44.68	921.3	1.216	-757.	-751.	-755.
120.	41.37	962.9	1.550	-964.	-957.	-962.
150.	37.83	1013.8	1.837	-1143.	-1135.	-1140.
180.	34.27	1072.7	2.081	-1295.	-1285.	-1291.
210.	30.80	1138.3	2.284	-1421.	-1411.	-1416.
240.	27.51	1209.4	2.452	-1525.	-1515.	-1519.
270.	24.42	1285.1	2.590	-1611.	-1600.	-1604.
300.	21.52	1364.5	2.703	-1681.	-1670.	-1674.
330.	18.82	1447.1	2.796	-1739.	-1727.	-1730.
360.	16.30	1532.1	2.872	-1786.	-1774.	-1777.
390.	13.94	1619.3	2.934	-1825.	-1813.	-1814.
420.	11.73	1708.1	2.985	-1856.	-1844.	-1845.
450.	9.64	1798.3	3.026	-1882.	-1869.	-1870.
480.	7.67	1889.6	3.059	-1902.	-1890.	-1889.
510.	5.80	1981.7	3.085	-1919.	-1906.	-1905.
540.	4.03	2074.6	3.106	-1931.	-1919.	-1917.
570.	2.33	2168.0	3.122	-1941.	-1928.	-1926.
600.	0.70	2261.9	3.133	-1948.	-1935.	-1932.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

610.0 ROT SLANT RANGE(E) IS 2302.1 -1950.

612.0 ROT SLANT RANGE(W) IS 2300.6 -1934.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 60.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.11	2237.6	3.181	1964.	1965.	1975.
-570.	2.79	2142.3	3.173	1960.	1960.	1971.
-540.	4.54	2047.2	3.162	1953.	1953.	1963.
-510.	6.38	1952.6	3.146	1944.	1943.	1953.
-480.	8.33	1858.6	3.124	1931.	1930.	1940.
-450.	10.39	1765.2	3.097	1915.	1913.	1923.
-420.	12.59	1672.8	3.062	1894.	1891.	1902.
-390.	14.94	1581.6	3.018	1867.	1864.	1874.
-360.	17.46	1491.9	2.963	1834.	1831.	1841.
-330.	20.20	1403.9	2.895	1792.	1789.	1798.
-300.	23.17	1318.3	2.811	1741.	1736.	1746.
-270.	26.40	1235.5	2.706	1676.	1672.	1681.
-240.	29.93	1156.2	2.576	1597.	1592.	1601.
-210.	33.79	1081.2	2.415	1498.	1492.	1501.
-180.	37.97	1011.6	2.217	1375.	1369.	1378.
-150.	42.46	948.7	1.973	1224.	1219.	1226.
-120.	47.13	893.8	1.677	1041.	1036.	1043.
-90.	51.76	848.6	1.326	824.	819.	825.
-60.	55.90	814.8	0.921	573.	569.	573.
-30.	58.89	793.8	0.473	294.	292.	294.
0.	60.00	786.7	0.	0.	-0.	-0.
30.	58.89	793.8	0.473	-294.	-292.	-294.
60.	55.90	814.8	0.921	-573.	-569.	-573.
90.	51.76	848.6	1.326	-825.	-819.	-824.
120.	47.13	893.8	1.677	-1043.	-1036.	-1041.
150.	42.46	948.7	1.973	-1226.	-1219.	-1224.
180.	37.97	1011.6	2.217	-1378.	-1369.	-1375.
210.	33.79	1081.2	2.415	-1501.	-1492.	-1498.
240.	29.93	1156.2	2.576	-1601.	-1592.	-1597.
270.	26.40	1235.5	2.706	-1681.	-1672.	-1676.
300.	23.17	1318.3	2.811	-1746.	-1736.	-1741.
330.	20.20	1403.9	2.895	-1798.	-1789.	-1792.
360.	17.46	1491.9	2.963	-1841.	-1831.	-1834.
390.	14.94	1581.6	3.018	-1874.	-1864.	-1867.
420.	12.59	1672.8	3.062	-1902.	-1891.	-1894.
450.	10.39	1765.2	3.097	-1923.	-1913.	-1915.
480.	8.33	1858.6	3.124	-1940.	-1930.	-1931.
510.	6.38	1952.6	3.146	-1953.	-1943.	-1944.
540.	4.54	2047.2	3.162	-1963.	-1953.	-1953.
570.	2.79	2142.3	3.173	-1971.	-1960.	-1960.
600.	1.11	2237.6	3.181	-1975.	-1965.	-1964.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

618.0 ROT SLANT RANGE(E) IS 2302.9 -1977.

619.0 ROT SLANT RANGE(W) IS 2300.4 -1966.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.36	2223.2	3.211	1984.	1983.	1991.
-570.	3.06	2127.0	3.205	1981.	1980.	1988.
-540.	4.85	2030.9	3.196	1976.	1974.	1982.
-510.	6.73	1935.3	3.182	1968.	1966.	1974.
-480.	8.73	1840.1	3.164	1957.	1955.	1963.
-450.	10.84	1745.5	3.140	1943.	1940.	1948.
-420.	13.11	1651.7	3.109	1924.	1921.	1929.
-390.	15.55	1559.0	3.070	1900.	1896.	1905.
-360.	18.19	1467.6	3.020	1870.	1866.	1874.
-330.	21.07	1377.9	2.958	1832.	1827.	1836.
-300.	24.22	1290.3	2.880	1784.	1779.	1787.
-270.	27.69	1205.3	2.781	1723.	1718.	1727.
-240.	31.53	1123.7	2.658	1648.	1642.	1650.
-210.	35.81	1046.2	2.503	1552.	1546.	1554.
-180.	40.57	973.9	2.309	1432.	1426.	1434.
-150.	45.83	908.1	2.066	1282.	1276.	1284.
-120.	51.55	850.5	1.767	1097.	1092.	1098.
-90.	57.57	802.8	1.405	873.	868.	874.
-60.	63.42	766.8	0.982	610.	606.	610.
-30.	68.10	744.4	0.506	314.	312.	314.
0.	70.00	736.8	0.	0.	-0.	-0.
30.	68.10	744.4	0.506	-314.	-312.	-314.
60.	63.42	766.8	0.982	-610.	-606.	-610.
90.	57.57	802.8	1.405	-874.	-868.	-873.
120.	51.55	850.5	1.767	-1098.	-1092.	-1097.
150.	45.83	908.1	2.066	-1284.	-1276.	-1282.
180.	40.57	973.9	2.309	-1434.	-1426.	-1432.
210.	35.81	1046.2	2.503	-1554.	-1546.	-1552.
240.	31.53	1123.7	2.658	-1650.	-1642.	-1648.
270.	27.69	1205.3	2.781	-1727.	-1718.	-1723.
300.	24.22	1290.3	2.880	-1787.	-1779.	-1784.
330.	21.07	1377.9	2.958	-1836.	-1827.	-1832.
360.	18.19	1467.6	3.020	-1874.	-1866.	-1870.
390.	15.55	1559.0	3.070	-1905.	-1896.	-1900.
420.	13.11	1651.7	3.109	-1929.	-1921.	-1924.
450.	10.84	1745.5	3.140	-1948.	-1940.	-1943.
480.	8.73	1840.1	3.164	-1963.	-1955.	-1957.
510.	6.73	1935.3	3.182	-1974.	-1966.	-1968.
540.	4.85	2030.9	3.196	-1982.	-1974.	-1976.
570.	3.06	2127.0	3.205	-1988.	-1980.	-1981.
600.	1.36	2223.2	3.211	-1991.	-1983.	-1984.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

622.0 ROT SLANT RANGE(E) IS 2301.0 -1993.

623.0 ROT SLANT RANGE(W) IS 2300.5 -1985.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.44	2218.7	3.220	1991.	1989.	1996.
-570.	3.15	2122.1	3.215	1988.	1986.	1993.
-540.	4.95	2025.8	3.207	1983.	1981.	1988.
-510.	6.84	1929.8	3.194	1976.	1973.	1981.
-480.	8.85	1834.2	3.177	1966.	1963.	1970.
-450.	10.99	1739.2	3.154	1952.	1948.	1956.
-420.	13.28	1645.0	3.124	1934.	1930.	1938.
-390.	15.75	1551.8	3.087	1911.	1907.	1915.
-360.	18.43	1459.9	3.039	1882.	1877.	1885.
-330.	21.35	1369.6	2.978	1845.	1840.	1848.
-300.	24.56	1281.4	2.902	1798.	1793.	1801.
-270.	28.11	1195.7	2.806	1739.	1733.	1741.
-240.	32.07	1113.3	2.685	1665.	1659.	1667.
-210.	36.50	1034.9	2.532	1570.	1564.	1572.
-180.	41.46	961.7	2.340	1451.	1445.	1453.
-150.	47.02	895.0	2.098	1302.	1296.	1303.
-120.	53.18	836.4	1.798	1116.	1111.	1117.
-90.	59.82	787.8	1.433	890.	885.	891.
-60.	66.59	751.1	1.003	623.	620.	623.
-30.	72.42	728.1	0.517	322.	320.	322.
0.	75.00	720.3	0.	0.	-0.	-0.
30.	72.42	728.1	0.517	-322.	-320.	-322.
60.	66.59	751.1	1.003	-623.	-620.	-623.
90.	59.82	787.8	1.433	-891.	-885.	-890.
120.	53.18	836.4	1.798	-1117.	-1111.	-1116.
150.	47.02	895.0	2.098	-1303.	-1296.	-1302.
180.	41.46	961.7	2.340	-1453.	-1445.	-1451.
210.	36.50	1034.9	2.532	-1572.	-1564.	-1570.
240.	32.07	1113.3	2.685	-1667.	-1659.	-1665.
270.	28.11	1195.7	2.806	-1741.	-1733.	-1739.
300.	24.56	1281.4	2.902	-1801.	-1793.	-1798.
330.	21.35	1369.6	2.978	-1848.	-1840.	-1845.
360.	18.43	1459.9	3.039	-1885.	-1877.	-1882.
390.	15.75	1551.8	3.087	-1915.	-1907.	-1911.
420.	13.28	1645.0	3.124	-1938.	-1930.	-1934.
450.	10.99	1739.2	3.154	-1956.	-1948.	-1952.
480.	8.85	1834.2	3.177	-1970.	-1963.	-1966.
510.	6.84	1929.8	3.194	-1981.	-1973.	-1976.
540.	4.95	2025.8	3.207	-1988.	-1981.	-1983.
570.	3.15	2122.1	3.215	-1993.	-1986.	-1988.
600.	1.44	2218.7	3.220	-1996.	-1989.	-1991.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

624.0 ROT SLANT RANGE(E) IS 2302.6 -1997.

625.0 ROT SLANT RANGE(W) IS 2303.1 -1991.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.54	2213.1	3.231	2000.	1996.	2000.
-570.	3.26	2116.3	3.227	1998.	1994.	1998.
-540.	5.07	2019.5	3.220	1994.	1989.	1994.
-510.	6.98	1923.1	3.208	1987.	1982.	1987.
-480.	9.01	1827.1	3.192	1977.	1972.	1977.
-450.	11.17	1731.6	3.171	1964.	1959.	1964.
-420.	13.49	1636.9	3.143	1947.	1942.	1947.
-390.	15.99	1543.1	3.107	1925.	1920.	1925.
-360.	18.71	1450.6	3.061	1897.	1891.	1897.
-330.	21.69	1359.5	3.003	1862.	1855.	1862.
-300.	24.98	1270.5	2.930	1816.	1810.	1816.
-270.	28.64	1183.9	2.837	1759.	1752.	1759.
-240.	32.74	1100.5	2.719	1686.	1680.	1686.
-210.	37.36	1021.1	2.569	1594.	1587.	1594.
-180.	42.61	946.8	2.379	1476.	1470.	1476.
-150.	48.57	878.9	2.139	1328.	1321.	1328.
-120.	55.34	819.1	1.838	1141.	1136.	1141.
-90.	62.96	769.3	1.469	913.	908.	913.
-60.	71.41	731.6	1.031	640.	637.	640.
-30.	80.51	708.0	0.533	331.	329.	331.
0.	89.97	700.0	0.	0.	-0.	-0.
30.	80.51	708.0	0.533	-331.	-329.	-331.
60.	71.41	731.6	1.031	-640.	-637.	-640.
90.	62.96	769.3	1.469	-913.	-908.	-913.
120.	55.34	819.1	1.838	-1141.	-1136.	-1141.
150.	48.57	878.9	2.139	-1328.	-1321.	-1328.
180.	42.61	946.8	2.379	-1476.	-1470.	-1476.
210.	37.36	1021.1	2.569	-1594.	-1587.	-1594.
240.	32.74	1100.5	2.719	-1686.	-1680.	-1686.
270.	28.64	1183.9	2.837	-1759.	-1752.	-1759.
300.	24.98	1270.5	2.930	-1816.	-1810.	-1816.
330.	21.69	1359.5	3.003	-1862.	-1855.	-1862.
360.	18.71	1450.6	3.061	-1897.	-1891.	-1897.
390.	15.99	1543.1	3.107	-1925.	-1920.	-1925.
420.	13.49	1636.9	3.143	-1947.	-1942.	-1947.
450.	11.17	1731.6	3.171	-1964.	-1959.	-1964.
480.	9.01	1827.1	3.192	-1977.	-1972.	-1977.
510.	6.98	1923.1	3.208	-1987.	-1982.	-1987.
540.	5.07	2019.5	3.220	-1994.	-1989.	-1994.
570.	3.26	2116.3	3.227	-1998.	-1994.	-1998.
600.	1.54	2213.1	3.231	-2000.	-1996.	-2000.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

626.0 ROT SLANT RANGE(E) IS 2302.5 -2001.

626.0 ROT SLANT RANGE(W) IS 2302.5 -2001.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-210.	0.20	2291.4	0.972	602.	601.	612.
-180.	0.66	2264.2	0.845	524.	522.	531.
-150.	1.06	2240.8	0.713	442.	440.	447.
-120.	1.39	2221.4	0.576	358.	356.	361.
-90.	1.66	2206.3	0.435	271.	269.	273.
-60.	1.85	2195.4	0.292	182.	180.	183.
-30.	1.96	2188.8	0.146	91.	90.	92.
0.	2.00	2186.6	0.	0.	-0.	-0.
30.	1.96	2188.8	0.146	-92.	-90.	-91.
60.	1.85	2195.4	0.292	-183.	-180.	-182.
90.	1.66	2206.3	0.435	-273.	-269.	-271.
120.	1.39	2221.4	0.576	-361.	-356.	-358.
150.	1.06	2240.8	0.713	-447.	-440.	-442.
180.	0.66	2264.2	0.845	-531.	-522.	-524.
210.	0.20	2291.4	0.972	-612.	-601.	-602.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

224.0 ROT SLANT RANGE(E) IS 2302.6 -648.

226.0 ROT SLANT RANGE(W) IS 2303.3 -642.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	0.54	2271.5	2.051	1262.	1267.	1289.
-390.	1.57	2211.2	1.964	1209.	1213.	1233.
-360.	2.58	2153.7	1.867	1151.	1154.	1172.
-330.	3.57	2099.3	1.762	1086.	1088.	1105.
-300.	4.52	2048.1	1.646	1016.	1017.	1032.
-270.	5.43	2000.6	1.520	939.	939.	953.
-240.	6.29	1957.0	1.385	856.	855.	868.
-210.	7.09	1917.6	1.239	767.	765.	776.
-180.	7.81	1882.8	1.084	671.	669.	678.
-150.	8.45	1852.7	0.919	570.	568.	575.
-120.	8.99	1827.7	0.746	463.	461.	466.
-90.	9.43	1808.0	0.566	352.	350.	354.
-60.	9.74	1793.8	0.381	237.	235.	238.
-30.	9.94	1785.2	0.191	119.	118.	119.
0.	10.00	1782.3	0.	0.	-0.	-0.
30.	9.94	1785.2	0.191	-119.	-118.	-119.
60.	9.74	1793.8	0.381	-238.	-235.	-237.
90.	9.43	1808.0	0.566	-354.	-350.	-352.
120.	8.99	1827.7	0.746	-466.	-461.	-463.
150.	8.45	1852.7	0.919	-575.	-568.	-570.
180.	7.81	1882.8	1.084	-678.	-669.	-671.
210.	7.09	1917.6	1.239	-776.	-765.	-767.
240.	6.29	1957.0	1.385	-868.	-855.	-856.
270.	5.43	2000.6	1.520	-953.	-939.	-939.
300.	4.52	2048.1	1.646	-1032.	-1017.	-1016.
330.	3.57	2099.3	1.762	-1105.	-1088.	-1086.
360.	2.58	2153.7	1.867	-1172.	-1154.	-1151.
390.	1.57	2211.2	1.964	-1233.	-1213.	-1209.
420.	0.54	2271.5	2.051	-1289.	-1267.	-1262.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

433.0 ROT SLANT RANGE(E) IS 2302.5 -1311.

437.0 ROT SLANT RANGE(W) IS 2303.1 -1289.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.60	2267.6	2.391	1470.	1477.	1499.
-450.	1.82	2196.8	2.324	1429.	1436.	1456.
-420.	3.04	2128.2	2.247	1383.	1388.	1408.
-390.	4.26	2062.1	2.162	1332.	1335.	1354.
-360.	5.47	1998.6	2.066	1274.	1276.	1293.
-330.	6.67	1938.2	1.958	1208.	1210.	1226.
-300.	7.85	1881.2	1.839	1136.	1136.	1151.
-270.	8.99	1828.0	1.708	1056.	1055.	1069.
-240.	10.08	1778.9	1.564	967.	966.	978.
-210.	11.11	1734.3	1.406	871.	869.	879.
-180.	12.05	1694.6	1.236	766.	763.	772.
-150.	12.90	1660.3	1.053	653.	650.	658.
-120.	13.62	1631.6	0.858	533.	530.	536.
-90.	14.21	1608.9	0.653	406.	403.	408.
-60.	14.64	1592.5	0.440	274.	272.	275.
-30.	14.91	1582.6	0.222	138.	137.	138.
0.	15.00	1579.2	0.	0.	-0.	-0.
30.	14.91	1582.6	0.222	-138.	-137.	-138.
60.	14.64	1592.5	0.440	-275.	-272.	-274.
90.	14.21	1608.9	0.653	-408.	-403.	-406.
120.	13.62	1631.6	0.858	-536.	-530.	-533.
150.	12.90	1660.3	1.053	-658.	-650.	-653.
180.	12.05	1694.6	1.236	-772.	-763.	-766.
210.	11.11	1734.3	1.406	-879.	-869.	-871.
240.	10.08	1778.9	1.564	-978.	-966.	-967.
270.	8.99	1828.0	1.708	-1069.	-1055.	-1056.
300.	7.85	1881.2	1.839	-1151.	-1136.	-1136.
330.	6.67	1938.2	1.958	-1226.	-1210.	-1208.
360.	5.47	1998.6	2.066	-1293.	-1276.	-1274.
390.	4.26	2062.1	2.162	-1354.	-1335.	-1332.
420.	3.04	2128.2	2.247	-1408.	-1388.	-1383.
450.	1.82	2196.8	2.324	-1456.	-1436.	-1429.
480.	0.60	2267.6	2.391	-1499.	-1477.	-1470.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

492.0 ROT SLANT RANGE(E) IS 2302.8 -1515.

496.0 ROT SLANT RANGE(W) IS 2302.6 -1489.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.40	2279.4	3.099	1910.	1914.	1926.
-570.	2.00	2186.6	3.085	1902.	1906.	1917.
-540.	3.66	2094.3	3.066	1891.	1894.	1906.
-510.	5.40	2002.7	3.043	1877.	1880.	1891.
-480.	7.21	1911.8	3.013	1860.	1861.	1873.
-450.	9.12	1822.0	2.977	1838.	1839.	1850.
-420.	11.13	1733.3	2.932	1810.	1811.	1822.
-390.	13.25	1646.1	2.877	1777.	1777.	1788.
-360.	15.50	1560.8	2.810	1737.	1736.	1746.
-330.	17.89	1477.7	2.729	1687.	1686.	1696.
-300.	20.42	1397.2	2.631	1627.	1625.	1635.
-270.	23.10	1320.0	2.513	1555.	1552.	1562.
-240.	25.94	1246.7	2.370	1467.	1464.	1473.
-210.	28.91	1178.1	2.199	1362.	1359.	1367.
-180.	31.98	1115.1	1.995	1236.	1233.	1240.
-150.	35.07	1058.7	1.754	1087.	1083.	1090.
-120.	38.06	1010.3	1.472	913.	909.	915.
-90.	40.79	970.8	1.150	714.	710.	715.
-60.	43.01	941.6	0.791	491.	489.	492.
-30.	44.48	923.7	0.403	250.	249.	251.
0.	45.00	917.6	0.	0.	-0.	-0.
30.	44.48	923.7	0.403	-251.	-249.	-250.
60.	43.01	941.6	0.791	-492.	-489.	-491.
90.	40.79	970.8	1.150	-715.	-710.	-714.
120.	38.06	1010.3	1.472	-915.	-909.	-913.
150.	35.07	1058.7	1.754	-1090.	-1083.	-1087.
180.	31.98	1115.1	1.995	-1240.	-1233.	-1236.
210.	28.91	1178.1	2.199	-1367.	-1359.	-1362.
240.	25.94	1246.7	2.370	-1473.	-1464.	-1467.
270.	23.10	1320.0	2.513	-1562.	-1552.	-1555.
300.	20.42	1397.2	2.631	-1635.	-1625.	-1627.
330.	17.89	1477.7	2.729	-1696.	-1686.	-1687.
360.	15.50	1560.8	2.810	-1746.	-1736.	-1737.
390.	13.25	1646.1	2.877	-1788.	-1777.	-1777.
420.	11.13	1733.3	2.932	-1822.	-1811.	-1810.
450.	9.12	1822.0	2.977	-1850.	-1839.	-1838.
480.	7.21	1911.8	3.013	-1873.	-1861.	-1860.
510.	5.40	2002.7	3.043	-1891.	-1880.	-1877.
540.	3.66	2094.3	3.066	-1906.	-1894.	-1891.
570.	2.00	2186.6	3.085	-1917.	-1906.	-1902.
600.	0.40	2279.4	3.099	-1926.	-1914.	-1910.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

605.0	ROT SLANT RANGE(E) IS 2302.3	-1927.	
607.0	ROT SLANT RANGE(W) IS 2300.9		-1911.
	SMAX IS 2303.5		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.36	2223.2	3.211	1983.	1983.	1990.
-570.	3.06	2127.0	3.205	1980.	1980.	1986.
-540.	4.85	2030.9	3.196	1975.	1974.	1981.
-510.	6.73	1935.3	3.182	1967.	1966.	1972.
-480.	8.73	1840.1	3.164	1956.	1955.	1961.
-450.	10.84	1745.5	3.140	1942.	1940.	1946.
-420.	13.11	1651.7	3.109	1923.	1921.	1927.
-390.	15.55	1559.0	3.070	1899.	1896.	1903.
-360.	18.19	1467.6	3.020	1869.	1866.	1872.
-330.	21.07	1377.9	2.958	1830.	1827.	1834.
-300.	24.22	1290.3	2.880	1782.	1779.	1785.
-270.	27.69	1205.3	2.781	1722.	1718.	1725.
-240.	31.53	1123.7	2.658	1646.	1642.	1648.
-210.	35.81	1046.2	2.503	1550.	1546.	1552.
-180.	40.57	973.9	2.309	1430.	1426.	1432.
-150.	45.83	908.1	2.066	1281.	1276.	1282.
-120.	51.55	850.5	1.767	1096.	1092.	1097.
-90.	57.57	802.8	1.405	872.	868.	872.
-60.	63.42	766.8	0.982	609.	606.	609.
-30.	68.10	744.4	0.506	314.	312.	314.
0.	70.00	736.8	0.	0.	-0.	-0.
30.	68.10	744.4	0.506	-314.	-312.	-314.
60.	63.42	766.8	0.982	-609.	-606.	-609.
90.	57.57	802.8	1.405	-872.	-868.	-872.
120.	51.55	850.5	1.767	-1097.	-1092.	-1096.
150.	45.83	908.1	2.066	-1282.	-1276.	-1281.
180.	40.57	973.9	2.309	-1432.	-1426.	-1430.
210.	35.81	1046.2	2.503	-1552.	-1546.	-1550.
240.	31.53	1123.7	2.658	-1648.	-1642.	-1646.
270.	27.69	1205.3	2.781	-1725.	-1718.	-1722.
300.	24.22	1290.3	2.880	-1785.	-1779.	-1782.
330.	21.07	1377.9	2.958	-1834.	-1827.	-1830.
360.	18.19	1467.6	3.020	-1872.	-1866.	-1869.
390.	15.55	1559.0	3.070	-1903.	-1896.	-1899.
420.	13.11	1651.7	3.109	-1927.	-1921.	-1923.
450.	10.84	1745.5	3.140	-1946.	-1940.	-1942.
480.	8.73	1840.1	3.164	-1961.	-1955.	-1956.
510.	6.73	1935.3	3.182	-1972.	-1966.	-1967.
540.	4.85	2030.9	3.196	-1981.	-1974.	-1975.
570.	3.06	2127.0	3.205	-1986.	-1980.	-1980.
600.	1.36	2223.2	3.211	-1990.	-1983.	-1983.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

623.0 ROT SLANT RANGE(E) IS 2302.6 -1991.

624.0 ROT SLANT RANGE(W) IS 2302.6 -1984.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.44	2218.7	3.220	1990.	1989.	1995.
-570.	3.15	2122.1	3.215	1987.	1986.	1992.
-540.	4.95	2025.8	3.207	1982.	1981.	1987.
-510.	6.84	1929.8	3.194	1975.	1973.	1979.
-480.	8.85	1834.2	3.177	1965.	1963.	1968.
-450.	10.99	1739.2	3.154	1951.	1948.	1954.
-420.	13.28	1645.0	3.124	1933.	1930.	1936.
-390.	15.75	1551.8	3.087	1910.	1907.	1913.
-360.	18.43	1459.9	3.039	1880.	1877.	1883.
-330.	21.35	1369.6	2.978	1843.	1840.	1846.
-300.	24.56	1281.4	2.902	1797.	1793.	1799.
-270.	28.11	1195.7	2.806	1738.	1733.	1740.
-240.	32.07	1113.3	2.685	1663.	1659.	1665.
-210.	36.50	1034.9	2.532	1569.	1564.	1570.
-180.	41.46	961.7	2.340	1450.	1445.	1451.
-150.	47.02	895.0	2.098	1301.	1296.	1302.
-120.	53.18	836.4	1.798	1115.	1111.	1116.
-90.	59.82	787.8	1.433	889.	885.	889.
-60.	66.59	751.1	1.003	622.	620.	622.
-30.	72.42	728.1	0.517	321.	320.	321.
0.	75.00	720.3	0.	-0.	-0.	0.
30.	72.42	728.1	0.517	-321.	-320.	-321.
60.	66.59	751.1	1.003	-622.	-620.	-622.
90.	59.82	787.8	1.433	-889.	-885.	-889.
120.	53.18	836.4	1.798	-1116.	-1111.	-1115.
150.	47.02	895.0	2.098	-1302.	-1296.	-1301.
180.	41.46	961.7	2.340	-1451.	-1445.	-1450.
210.	36.50	1034.9	2.532	-1570.	-1564.	-1569.
240.	32.07	1113.3	2.685	-1665.	-1659.	-1663.
270.	28.11	1195.7	2.806	-1740.	-1733.	-1738.
300.	24.56	1281.4	2.902	-1799.	-1793.	-1797.
330.	21.35	1369.6	2.978	-1846.	-1840.	-1843.
360.	18.43	1459.9	3.039	-1883.	-1877.	-1880.
390.	15.75	1551.8	3.087	-1913.	-1907.	-1910.
420.	13.28	1645.0	3.124	-1936.	-1930.	-1933.
450.	10.99	1739.2	3.154	-1954.	-1948.	-1951.
480.	8.85	1834.2	3.177	-1968.	-1963.	-1965.
510.	6.84	1929.8	3.194	-1979.	-1973.	-1975.
540.	4.95	2025.8	3.207	-1987.	-1981.	-1982.
570.	3.15	2122.1	3.215	-1992.	-1986.	-1987.
600.	1.44	2218.7	3.220	-1995.	-1989.	-1990.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

624.0 ROT SLANT RANGE(E) IS 2301.1 -1996.

625.0 ROT SLANT RANGE(W) IS 2302.0 -1991.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 30.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.54	2213.1	3.231	1999.	1996.	1999.
-570.	3.26	2116.3	3.227	1997.	1994.	1997.
-540.	5.07	2019.5	3.220	1992.	1989.	1992.
-510.	6.98	1923.1	3.208	1986.	1982.	1986.
-480.	9.01	1827.1	3.192	1976.	1972.	1976.
-450.	11.17	1731.6	3.171	1963.	1959.	1963.
-420.	13.49	1636.9	3.143	1946.	1942.	1946.
-390.	15.99	1543.1	3.107	1924.	1920.	1924.
-360.	18.71	1450.6	3.061	1896.	1891.	1896.
-330.	21.69	1359.5	3.003	1860.	1855.	1860.
-300.	24.98	1270.5	2.930	1815.	1810.	1815.
-270.	28.64	1183.9	2.837	1757.	1752.	1757.
-240.	32.74	1100.5	2.719	1685.	1680.	1685.
-210.	37.36	1021.1	2.569	1592.	1587.	1592.
-180.	42.61	946.8	2.379	1475.	1470.	1475.
-150.	48.57	878.9	2.139	1326.	1321.	1326.
-120.	55.34	819.1	1.838	1140.	1136.	1140.
-90.	62.96	769.3	1.469	911.	908.	911.
-60.	71.41	731.6	1.031	639.	637.	639.
-30.	80.51	708.0	0.533	331.	329.	331.
0.	89.97	700.0	0.	0.	-0.	-0.
30.	80.51	708.0	0.533	-331.	-329.	-331.
60.	71.41	731.6	1.031	-639.	-637.	-639.
90.	62.96	769.3	1.469	-911.	-908.	-911.
120.	55.34	819.1	1.838	-1140.	-1136.	-1140.
150.	48.57	878.9	2.139	-1326.	-1321.	-1326.
180.	42.61	946.8	2.379	-1475.	-1470.	-1475.
210.	37.36	1021.1	2.569	-1592.	-1587.	-1592.
240.	32.74	1100.5	2.719	-1685.	-1680.	-1685.
270.	28.64	1183.9	2.837	-1757.	-1752.	-1757.
300.	24.98	1270.5	2.930	-1815.	-1810.	-1815.
330.	21.69	1359.5	3.003	-1860.	-1855.	-1860.
360.	18.71	1450.6	3.061	-1896.	-1891.	-1896.
390.	15.99	1543.1	3.107	-1924.	-1920.	-1924.
420.	13.49	1636.9	3.143	-1946.	-1942.	-1946.
450.	11.17	1731.6	3.171	-1963.	-1959.	-1963.
480.	9.01	1827.1	3.192	-1976.	-1972.	-1976.
510.	6.98	1923.1	3.208	-1986.	-1982.	-1986.
540.	5.07	2019.5	3.220	-1992.	-1989.	-1992.
570.	3.26	2116.3	3.227	-1997.	-1994.	-1997.
600.	1.54	2213.1	3.231	-1999.	-1996.	-1999.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

626.0 ROT SLANT RANGE(E) IS 2301.2 -2000.

626.0 ROT SLANT RANGE(W) IS 2301.2 -2000.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-210.	0.20	2291.4	0.972	600.	601.	606.
-180.	0.66	2264.2	0.845	522.	522.	526.
-150.	1.06	2240.8	0.713	440.	440.	443.
-120.	1.39	2221.4	0.576	356.	356.	358.
-90.	1.66	2206.3	0.435	269.	269.	270.
-60.	1.85	2195.4	0.292	181.	180.	181.
-30.	1.96	2188.8	0.146	91.	90.	91.
0.	2.00	2186.6	0.	0.	-0.	-0.
30.	1.96	2188.8	0.146	-91.	-90.	-91.
60.	1.85	2195.4	0.292	-181.	-180.	-181.
90.	1.66	2206.3	0.435	-270.	-269.	-269.
120.	1.39	2221.4	0.576	-358.	-356.	-356.
150.	1.06	2240.8	0.713	-443.	-440.	-440.
180.	0.66	2264.2	0.845	-526.	-522.	-522.
210.	0.20	2291.4	0.972	-606.	-601.	-600.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

222.0 ROT SLANT RANGE(E) IS 2302.6 -636.

223.0 ROT SLANT RANGE(W) IS 2302.9 -633.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-420.	0.54	2271.5	2.051	1262.	1267.	1278.
-390.	1.57	2211.2	1.964	1209.	1213.	1223.
-360.	2.58	2153.7	1.867	1150.	1154.	1163.
-330.	3.57	2099.3	1.762	1085.	1088.	1096.
-300.	4.52	2048.1	1.646	1015.	1017.	1024.
-270.	5.43	2000.6	1.520	938.	939.	946.
-240.	6.29	1957.0	1.385	854.	855.	861.
-210.	7.09	1917.6	1.239	765.	765.	770.
-180.	7.81	1882.8	1.084	669.	669.	673.
-150.	8.45	1852.7	0.919	568.	568.	571.
-120.	8.99	1827.7	0.746	461.	461.	463.
-90.	9.43	1808.0	0.566	350.	350.	351.
-60.	9.74	1793.8	0.381	236.	235.	236.
-30.	9.94	1785.2	0.191	118.	118.	119.
0.	10.00	1782.3	0.	0.	-0.	-0.
30.	9.94	1785.2	0.191	-119.	-118.	-118.
60.	9.74	1793.8	0.381	-236.	-235.	-236.
90.	9.43	1808.0	0.566	-351.	-350.	-350.
120.	8.99	1827.7	0.746	-463.	-461.	-461.
150.	8.45	1852.7	0.919	-571.	-568.	-568.
180.	7.81	1882.8	1.084	-673.	-669.	-669.
210.	7.09	1917.6	1.239	-770.	-765.	-765.
240.	6.29	1957.0	1.385	-861.	-855.	-854.
270.	5.43	2000.6	1.520	-946.	-939.	-938.
300.	4.52	2048.1	1.646	-1024.	-1017.	-1015.
330.	3.57	2099.3	1.762	-1096.	-1088.	-1085.
360.	2.58	2153.7	1.867	-1163.	-1154.	-1150.
390.	1.57	2211.2	1.964	-1223.	-1213.	-1209.
420.	0.54	2271.5	2.051	-1278.	-1267.	-1262.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

434.0 ROT SLANT RANGE(E) IS 2302.8 -1302.

436.0 ROT SLANT RANGE(W) IS 2302.5 -1288.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.60	2267.6	2.391	1471.	1477.	1488.
-450.	1.82	2196.8	2.324	1430.	1436.	1446.
-420.	3.04	2128.2	2.247	1384.	1388.	1398.
-390.	4.26	2062.1	2.162	1331.	1335.	1344.
-360.	5.47	1998.6	2.066	1273.	1276.	1284.
-330.	6.67	1938.2	1.958	1207.	1210.	1217.
-300.	7.85	1881.2	1.839	1134.	1136.	1143.
-270.	8.99	1828.0	1.708	1054.	1055.	1061.
-240.	10.08	1778.9	1.564	965.	966.	971.
-210.	11.11	1734.3	1.406	868.	869.	873.
-180.	12.05	1694.6	1.236	763.	763.	767.
-150.	12.90	1660.3	1.053	651.	650.	653.
-120.	13.62	1631.6	0.858	530.	530.	532.
-90.	14.21	1608.9	0.653	404.	403.	405.
-60.	14.64	1592.5	0.440	272.	272.	273.
-30.	14.91	1582.6	0.222	137.	137.	137.
0.	15.00	1579.2	0.	0.	-0.	-0.
30.	14.91	1582.6	0.222	-137.	-137.	-137.
60.	14.64	1592.5	0.440	-273.	-272.	-272.
90.	14.21	1608.9	0.653	-405.	-403.	-404.
120.	13.62	1631.6	0.858	-532.	-530.	-530.
150.	12.90	1660.3	1.053	-653.	-650.	-651.
180.	12.05	1694.6	1.236	-767.	-763.	-763.
210.	11.11	1734.3	1.406	-873.	-869.	-868.
240.	10.08	1778.9	1.564	-971.	-966.	-965.
270.	8.99	1828.0	1.708	-1061.	-1055.	-1054.
300.	7.85	1881.2	1.839	-1143.	-1136.	-1134.
330.	6.67	1938.2	1.958	-1217.	-1210.	-1207.
360.	5.47	1998.6	2.066	-1284.	-1276.	-1273.
390.	4.26	2062.1	2.162	-1344.	-1335.	-1331.
420.	3.04	2128.2	2.247	-1398.	-1388.	-1384.
450.	1.82	2196.8	2.324	-1446.	-1436.	-1430.
480.	0.60	2267.6	2.391	-1488.	-1477.	-1471.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

493.0 ROT SLANT RANGE(E) IS 2302.2 -1505.

495.0 ROT SLANT RANGE(W) IS 2301.3 -1490.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.40	2279.4	3.099	1911.	1914.	1920.
-570.	2.00	2186.6	3.085	1902.	1906.	1911.
-540.	3.66	2094.3	3.066	1891.	1894.	1900.
-510.	5.40	2002.7	3.043	1877.	1880.	1885.
-480.	7.21	1911.8	3.013	1859.	1861.	1867.
-450.	9.12	1822.0	2.977	1837.	1839.	1844.
-420.	11.13	1733.3	2.932	1809.	1811.	1816.
-390.	13.25	1646.1	2.877	1776.	1777.	1782.
-360.	15.50	1560.8	2.810	1735.	1736.	1741.
-330.	17.89	1477.7	2.729	1685.	1686.	1690.
-300.	20.42	1397.2	2.631	1625.	1625.	1630.
-270.	23.10	1320.0	2.513	1552.	1552.	1556.
-240.	25.94	1246.7	2.370	1465.	1464.	1468.
-210.	28.91	1178.1	2.199	1359.	1359.	1362.
-180.	31.98	1115.1	1.995	1233.	1233.	1236.
-150.	35.07	1058.7	1.754	1084.	1083.	1086.
-120.	38.06	1010.3	1.472	910.	909.	911.
-90.	40.79	970.8	1.150	711.	710.	712.
-60.	43.01	941.6	0.791	489.	489.	490.
-30.	44.48	923.7	0.403	250.	249.	250.
0.	45.00	917.6	0.	0.	-0.	-0.
30.	44.48	923.7	0.403	-250.	-249.	-250.
60.	43.01	941.6	0.791	-490.	-489.	-489.
90.	40.79	970.8	1.150	-712.	-710.	-711.
120.	38.06	1010.3	1.472	-911.	-909.	-910.
150.	35.07	1058.7	1.754	-1086.	-1083.	-1084.
180.	31.98	1115.1	1.995	-1236.	-1233.	-1233.
210.	28.91	1178.1	2.199	-1362.	-1359.	-1359.
240.	25.94	1246.7	2.370	-1468.	-1464.	-1465.
270.	23.10	1320.0	2.513	-1556.	-1552.	-1552.
300.	20.42	1397.2	2.631	-1630.	-1625.	-1625.
330.	17.89	1477.7	2.729	-1690.	-1686.	-1685.
360.	15.50	1560.8	2.810	-1741.	-1736.	-1735.
390.	13.25	1646.1	2.877	-1782.	-1777.	-1776.
420.	11.13	1733.3	2.932	-1816.	-1811.	-1809.
450.	9.12	1822.0	2.977	-1844.	-1839.	-1837.
480.	7.21	1911.8	3.013	-1867.	-1861.	-1859.
510.	5.40	2002.7	3.043	-1885.	-1880.	-1877.
540.	3.66	2094.3	3.066	-1900.	-1894.	-1891.
570.	2.00	2186.6	3.085	-1911.	-1906.	-1902.
600.	0.40	2279.4	3.099	-1920.	-1914.	-1911.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

606.0 ROT SLANT RANGE(E) IS 2301.4 -1922.

608.0 ROT SLANT RANGE(W) IS 2303.1 -1912.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.36	2223.2	3.211	1983.	1983.	1986.
-570.	3.06	2127.0	3.205	1979.	1980.	1983.
-540.	4.85	2030.9	3.196	1974.	1974.	1977.
-510.	6.73	1935.3	3.182	1966.	1966.	1969.
-480.	8.73	1840.1	3.164	1955.	1955.	1958.
-450.	10.84	1745.5	3.140	1940.	1940.	1943.
-420.	13.11	1651.7	3.109	1921.	1921.	1924.
-390.	15.55	1559.0	3.070	1897.	1896.	1899.
-360.	18.19	1467.6	3.020	1866.	1866.	1868.
-330.	21.07	1377.9	2.958	1828.	1827.	1830.
-300.	24.22	1290.3	2.880	1780.	1779.	1781.
-270.	27.69	1205.3	2.781	1719.	1718.	1721.
-240.	31.53	1123.7	2.658	1643.	1642.	1644.
-210.	35.81	1046.2	2.503	1547.	1546.	1549.
-180.	40.57	973.9	2.309	1427.	1426.	1428.
-150.	45.83	908.1	2.066	1278.	1276.	1278.
-120.	51.55	850.5	1.767	1093.	1092.	1093.
-90.	57.57	802.8	1.405	869.	868.	870.
-60.	63.42	766.8	0.982	607.	606.	607.
-30.	68.10	744.4	0.506	313.	312.	313.
0.	70.00	736.8	0.	0.	-0.	-0.
30.	68.10	744.4	0.506	-313.	-312.	-313.
60.	63.42	766.8	0.982	-607.	-606.	-607.
90.	57.57	802.8	1.405	-870.	-868.	-869.
120.	51.55	850.5	1.767	-1093.	-1092.	-1093.
150.	45.83	908.1	2.066	-1278.	-1276.	-1278.
180.	40.57	973.9	2.309	-1428.	-1426.	-1427.
210.	35.81	1046.2	2.503	-1549.	-1546.	-1547.
240.	31.53	1123.7	2.658	-1644.	-1642.	-1643.
270.	27.69	1205.3	2.781	-1721.	-1718.	-1719.
300.	24.22	1290.3	2.880	-1781.	-1779.	-1780.
330.	21.07	1377.9	2.958	-1830.	-1827.	-1828.
360.	18.19	1467.6	3.020	-1868.	-1866.	-1866.
390.	15.55	1559.0	3.070	-1899.	-1896.	-1897.
420.	13.11	1651.7	3.109	-1924.	-1921.	-1921.
450.	10.84	1745.5	3.140	-1943.	-1940.	-1940.
480.	8.73	1840.1	3.164	-1958.	-1955.	-1955.
510.	6.73	1935.3	3.182	-1969.	-1966.	-1966.
540.	4.85	2030.9	3.196	-1977.	-1974.	-1974.
570.	3.06	2127.0	3.205	-1983.	-1980.	-1979.
600.	1.36	2223.2	3.211	-1986.	-1983.	-1983.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

624.0	ROT SLANT RANGE(E) IS 2302.6	-1988.	
624.0	ROT SLANT RANGE(W) IS 2300.7		-1984.
	SMAX IS 2303.5		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.44	2218.7	3.220	1989.	1989.	1992.
-570.	3.15	2122.1	3.215	1986.	1986.	1988.
-540.	4.95	2025.8	3.207	1981.	1981.	1983.
-510.	6.84	1929.8	3.194	1973.	1973.	1976.
-480.	8.85	1834.2	3.177	1963.	1963.	1965.
-450.	10.99	1739.2	3.154	1949.	1948.	1951.
-420.	13.28	1645.0	3.124	1931.	1930.	1933.
-390.	15.75	1551.8	3.087	1907.	1907.	1909.
-360.	18.43	1459.9	3.039	1878.	1877.	1880.
-330.	21.35	1369.6	2.978	1841.	1840.	1842.
-300.	24.56	1281.4	2.902	1794.	1793.	1795.
-270.	28.11	1195.7	2.806	1735.	1733.	1736.
-240.	32.07	1113.3	2.685	1660.	1659.	1661.
-210.	36.50	1034.9	2.532	1566.	1564.	1567.
-180.	41.46	961.7	2.340	1447.	1445.	1447.
-150.	47.02	895.0	2.098	1298.	1296.	1298.
-120.	53.18	836.4	1.798	1112.	1111.	1113.
-90.	59.82	787.8	1.433	887.	885.	887.
-60.	66.59	751.1	1.003	620.	620.	621.
-30.	72.42	728.1	0.517	320.	320.	320.
0.	75.00	720.3	0.	0.	-0.	-0.
30.	72.42	728.1	0.517	-320.	-320.	-320.
60.	66.59	751.1	1.003	-621.	-620.	-620.
90.	59.82	787.8	1.433	-887.	-885.	-887.
120.	53.18	836.4	1.798	-1113.	-1111.	-1112.
150.	47.02	895.0	2.098	-1298.	-1296.	-1298.
180.	41.46	961.7	2.340	-1447.	-1445.	-1447.
210.	36.50	1034.9	2.532	-1567.	-1564.	-1566.
240.	32.07	1113.3	2.685	-1661.	-1659.	-1660.
270.	28.11	1195.7	2.806	-1736.	-1733.	-1735.
300.	24.56	1281.4	2.902	-1795.	-1793.	-1794.
330.	21.35	1369.6	2.978	-1842.	-1840.	-1841.
360.	18.43	1459.9	3.039	-1880.	-1877.	-1878.
390.	15.75	1551.8	3.087	-1909.	-1907.	-1907.
420.	13.28	1645.0	3.124	-1933.	-1930.	-1931.
450.	10.99	1739.2	3.154	-1951.	-1948.	-1949.
480.	8.85	1834.2	3.177	-1965.	-1963.	-1963.
510.	6.84	1929.8	3.194	-1976.	-1973.	-1973.
540.	4.95	2025.8	3.207	-1983.	-1981.	-1981.
570.	3.15	2122.1	3.215	-1988.	-1986.	-1986.
600.	1.44	2218.7	3.220	-1992.	-1989.	-1989.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

625.0	ROT SLANT RANGE(E) IS 2301.2	-1993.		
626.0	ROT SLANT RANGE(W) IS 2303.0			-1990.
	SMAX IS 2303.5			

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 700.0 NAUTICAL MILES

LATITUDE OF OBSERVER 60.000 DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	1.54	2213.1	3.231	1997.	1996.	1997.
-570.	3.26	2116.3	3.227	1995.	1994.	1995.
-540.	5.07	2019.5	3.220	1990.	1989.	1990.
-510.	6.98	1923.1	3.208	1983.	1982.	1983.
-480.	9.01	1827.1	3.192	1973.	1972.	1973.
-450.	11.17	1731.6	3.171	1960.	1959.	1960.
-420.	13.49	1636.9	3.143	1943.	1942.	1943.
-390.	15.99	1543.1	3.107	1921.	1920.	1921.
-360.	18.71	1450.6	3.061	1893.	1891.	1893.
-330.	21.69	1359.5	3.003	1857.	1855.	1857.
-300.	24.98	1270.5	2.930	1812.	1810.	1812.
-270.	28.64	1183.9	2.837	1754.	1752.	1754.
-240.	32.74	1100.5	2.719	1681.	1680.	1681.
-210.	37.36	1021.1	2.569	1589.	1587.	1589.
-180.	42.61	946.8	2.379	1471.	1470.	1471.
-150.	48.57	878.9	2.139	1323.	1321.	1323.
-120.	55.34	819.1	1.838	1137.	1136.	1137.
-90.	62.96	769.3	1.469	909.	908.	909.
-60.	71.41	731.6	1.031	638.	637.	638.
-30.	80.51	708.0	0.533	330.	329.	330.
0.	89.97	700.0	0.	0.	-0.	-0.
30.	80.51	708.0	0.533	-330.	-329.	-330.
60.	71.41	731.6	1.031	-638.	-637.	-638.
90.	62.96	769.3	1.469	-909.	-908.	-909.
120.	55.34	819.1	1.838	-1137.	-1136.	-1137.
150.	48.57	878.9	2.139	-1323.	-1321.	-1323.
180.	42.61	946.8	2.379	-1471.	-1470.	-1471.
210.	37.36	1021.1	2.569	-1589.	-1587.	-1589.
240.	32.74	1100.5	2.719	-1681.	-1680.	-1681.
270.	28.64	1183.9	2.837	-1754.	-1752.	-1754.
300.	24.98	1270.5	2.930	-1812.	-1810.	-1812.
330.	21.69	1359.5	3.003	-1857.	-1855.	-1857.
360.	18.71	1450.6	3.061	-1893.	-1891.	-1893.
390.	15.99	1543.1	3.107	-1921.	-1920.	-1921.
420.	13.49	1636.9	3.143	-1943.	-1942.	-1943.
450.	11.17	1731.6	3.171	-1960.	-1959.	-1960.
480.	9.01	1827.1	3.192	-1973.	-1972.	-1973.
510.	6.98	1923.1	3.208	-1983.	-1982.	-1983.
540.	5.07	2019.5	3.220	-1990.	-1989.	-1990.
570.	3.26	2116.3	3.227	-1995.	-1994.	-1995.
600.	1.54	2213.1	3.231	-1997.	-1996.	-1997.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

627.0 ROT SLANT RANGE(E) IS 2301.7 -1998.

627.0 ROT SLANT RANGE(W) IS 2301.7 -1998.

SMAX IS 2303.5

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 750.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-210.	0.33	2372.7	0.907	563.	560.	574.
-180.	0.76	2347.3	0.787	489.	486.	497.
-150.	1.13	2325.5	0.663	413.	410.	419.
-120.	1.44	2307.5	0.535	334.	331.	337.
-90.	1.68	2293.5	0.404	252.	250.	255.
-60.	1.86	2283.3	0.271	169.	167.	170.
-30.	1.96	2277.2	0.136	85.	84.	85.
0.	2.00	2275.2	0.	0.	0.	0.
30.	1.96	2277.2	0.136	-85.	-84.	-85.
60.	1.86	2283.3	0.271	-170.	-167.	-169.
90.	1.68	2293.5	0.404	-255.	-250.	-252.
120.	1.44	2307.5	0.535	-337.	-331.	-334.
150.	1.13	2325.5	0.663	-419.	-410.	-413.
180.	0.76	2347.3	0.787	-497.	-486.	-489.
210.	0.33	2372.7	0.907	-574.	-560.	-563.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

234.0 ROT SLANT RANGE(E) IS 2391.4 -633.

236.0 ROT SLANT RANGE(W) IS 2391.7 -624.

SMAX IS 2392.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 750.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	0.11	2385.8	2.021	1242.	1248.	1277.
-420.	1.11	2326.3	1.942	1195.	1199.	1226.
-390.	2.10	2269.4	1.855	1143.	1146.	1171.
-360.	3.07	2215.1	1.760	1085.	1087.	1110.
-330.	4.01	2163.9	1.656	1023.	1023.	1044.
-300.	4.91	2115.9	1.544	954.	954.	973.
-270.	5.77	2071.3	1.423	881.	879.	896.
-240.	6.57	2030.6	1.293	801.	799.	814.
-210.	7.32	1993.8	1.154	716.	713.	726.
-180.	7.99	1961.4	1.007	626.	622.	634.
-150.	8.58	1933.5	0.853	531.	527.	536.
-120.	9.08	1910.3	0.691	431.	427.	434.
-90.	9.47	1892.1	0.524	327.	324.	329.
-60.	9.76	1878.9	0.352	220.	217.	221.
-30.	9.94	1871.0	0.177	110.	109.	111.
0.	10.00	1868.3	0.	0.	-0.	-0.
30.	9.94	1871.0	0.177	-111.	-109.	-110.
60.	9.76	1878.9	0.352	-221.	-217.	-220.
90.	9.47	1892.1	0.524	-329.	-324.	-327.
120.	9.08	1910.3	0.691	-434.	-427.	-431.
150.	8.58	1933.5	0.853	-536.	-527.	-531.
180.	7.99	1961.4	1.007	-634.	-622.	-626.
210.	7.32	1993.8	1.154	-726.	-713.	-716.
240.	6.57	2030.6	1.293	-814.	-799.	-801.
270.	5.77	2071.3	1.423	-896.	-879.	-881.
300.	4.91	2115.9	1.544	-973.	-954.	-954.
330.	4.01	2163.9	1.656	-1044.	-1023.	-1023.
360.	3.07	2215.1	1.760	-1110.	-1087.	-1085.
390.	2.10	2269.4	1.855	-1171.	-1146.	-1143.
420.	1.11	2326.3	1.942	-1226.	-1199.	-1195.
450.	0.11	2385.8	2.021	-1277.	-1248.	-1242.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

450.0 ROT SLANT RANGE(E) IS 2391.0 -1277.

455.0 ROT SLANT RANGE(W) IS 2391.4 -1250.

SMAX IS 2392.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 750.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-510.	0.23	2378.7	2.342	1439.	1447.	1475.
-480.	1.41	2309.3	2.281	1402.	1409.	1436.
-450.	2.59	2241.9	2.211	1360.	1366.	1392.
-420.	3.77	2176.7	2.133	1314.	1318.	1342.
-390.	4.95	2114.0	2.047	1262.	1265.	1288.
-360.	6.11	2054.0	1.951	1204.	1205.	1227.
-330.	7.25	1997.0	1.845	1140.	1140.	1160.
-300.	8.37	1943.4	1.728	1069.	1068.	1086.
-270.	9.44	1893.4	1.600	991.	989.	1005.
-240.	10.47	1847.5	1.461	905.	903.	917.
-210.	11.43	1805.9	1.310	813.	809.	822.
-180.	12.30	1769.0	1.148	713.	709.	721.
-150.	13.08	1737.1	0.976	607.	603.	612.
-120.	13.75	1710.5	0.794	494.	490.	498.
-90.	14.28	1689.6	0.603	376.	373.	378.
-60.	14.68	1674.4	0.406	253.	251.	254.
-30.	14.92	1665.2	0.204	128.	126.	128.
0.	15.00	1662.2	0.	0.	-0.	-0.
30.	14.92	1665.2	0.204	-128.	-126.	-128.
60.	14.68	1674.4	0.406	-254.	-251.	-253.
90.	14.28	1689.6	0.603	-378.	-373.	-376.
120.	13.75	1710.5	0.794	-498.	-490.	-494.
150.	13.08	1737.1	0.976	-612.	-603.	-607.
180.	12.30	1769.0	1.148	-721.	-709.	-713.
210.	11.43	1805.9	1.310	-822.	-809.	-813.
240.	10.47	1847.5	1.461	-917.	-903.	-905.
270.	9.44	1893.4	1.600	-1005.	-989.	-991.
300.	8.37	1943.4	1.728	-1086.	-1068.	-1069.
330.	7.25	1997.0	1.845	-1160.	-1140.	-1140.
360.	6.11	2054.0	1.951	-1227.	-1205.	-1204.
390.	4.95	2114.0	2.047	-1288.	-1265.	-1262.
420.	3.77	2176.7	2.133	-1342.	-1318.	-1314.
450.	2.59	2241.9	2.211	-1392.	-1366.	-1360.
480.	1.41	2309.3	2.281	-1436.	-1409.	-1402.
510.	0.23	2378.7	2.342	-1475.	-1447.	-1439.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

512.0 ROT SLANT RANGE(E) IS 2391.6 -1477.

517.0 ROT SLANT RANGE(W) IS 2390.9 -1446.

SMAX IS 2392.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 750.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-630.	0.32	2372.8	3.036	1871.	1876.	1891.
-600.	1.88	2281.9	3.023	1863.	1868.	1883.
-570.	3.50	2191.5	3.006	1853.	1857.	1872.
-540.	5.18	2101.6	2.984	1840.	1843.	1858.
-510.	6.94	2012.5	2.956	1824.	1826.	1841.
-480.	8.78	1924.3	2.922	1804.	1805.	1820.
-450.	10.70	1837.2	2.881	1779.	1780.	1794.
-420.	12.73	1751.5	2.831	1749.	1749.	1763.
-390.	14.86	1667.5	2.771	1713.	1712.	1725.
-360.	17.11	1585.4	2.699	1669.	1667.	1681.
-330.	19.49	1505.7	2.613	1617.	1614.	1627.
-300.	21.99	1428.8	2.510	1554.	1550.	1563.
-270.	24.63	1355.3	2.387	1479.	1475.	1487.
-240.	27.39	1285.8	2.241	1389.	1385.	1396.
-210.	30.24	1221.1	2.069	1283.	1278.	1289.
-180.	33.16	1162.0	1.867	1158.	1153.	1163.
-150.	36.05	1109.4	1.632	1013.	1008.	1017.
-120.	38.81	1064.4	1.362	846.	841.	849.
-90.	41.27	1028.0	1.059	658.	654.	660.
-60.	43.25	1001.2	0.725	451.	448.	452.
-30.	44.55	984.7	0.369	230.	228.	230.
0.	45.00	979.2	0.	0.	-0.	-0.
30.	44.55	984.7	0.369	-230.	-228.	-230.
60.	43.25	1001.2	0.725	-452.	-448.	-451.
90.	41.27	1028.0	1.059	-660.	-654.	-658.
120.	38.81	1064.4	1.362	-849.	-841.	-846.
150.	36.05	1109.4	1.632	-1017.	-1008.	-1013.
180.	33.16	1162.0	1.867	-1163.	-1153.	-1158.
210.	30.24	1221.1	2.069	-1289.	-1278.	-1283.
240.	27.39	1285.8	2.241	-1396.	-1385.	-1389.
270.	24.63	1355.3	2.387	-1487.	-1475.	-1479.
300.	21.99	1428.8	2.510	-1563.	-1550.	-1554.
330.	19.49	1505.7	2.613	-1627.	-1614.	-1617.
360.	17.11	1585.4	2.699	-1681.	-1667.	-1669.
390.	14.86	1667.5	2.771	-1725.	-1712.	-1713.
420.	12.73	1751.5	2.831	-1763.	-1749.	-1749.
450.	10.70	1837.2	2.881	-1794.	-1780.	-1779.
480.	8.78	1924.3	2.922	-1820.	-1805.	-1804.
510.	6.94	2012.5	2.956	-1841.	-1826.	-1824.
540.	5.18	2101.6	2.984	-1858.	-1843.	-1840.
570.	3.50	2191.5	3.006	-1872.	-1857.	-1853.
600.	1.88	2281.9	3.023	-1883.	-1868.	-1863.
630.	0.32	2372.8	3.036	-1891.	-1876.	-1871.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

633.0 ROT SLANT RANGE(E) IS 2392.1 -1892.

636.0 ROT SLANT RANGE(W) IS 2391.2 -1872.

SMAX IS 2392.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 750.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-630.	1.35	2312.8	3.152	1947.	1947.	1955.
-600.	3.01	2218.3	3.147	1945.	1944.	1952.
-570.	4.75	2124.0	3.138	1940.	1938.	1947.
-540.	6.58	2030.1	3.125	1932.	1931.	1939.
-510.	8.51	1936.5	3.108	1922.	1920.	1929.
-480.	10.56	1843.6	3.086	1909.	1906.	1915.
-450.	12.73	1751.4	3.058	1892.	1889.	1898.
-420.	15.05	1660.2	3.022	1870.	1867.	1876.
-390.	17.55	1570.2	2.977	1843.	1839.	1848.
-360.	20.24	1481.7	2.922	1809.	1805.	1814.
-330.	23.17	1395.0	2.853	1767.	1763.	1771.
-300.	26.37	1310.7	2.768	1715.	1710.	1719.
-270.	29.87	1229.1	2.663	1651.	1645.	1654.
-240.	33.73	1151.1	2.533	1571.	1565.	1573.
-210.	37.98	1077.4	2.373	1472.	1466.	1474.
-180.	42.65	1009.1	2.175	1350.	1344.	1351.
-150.	47.75	947.4	1.933	1200.	1194.	1202.
-120.	53.22	893.6	1.642	1019.	1014.	1021.
-90.	58.84	849.4	1.296	805.	801.	806.
-60.	64.19	816.3	0.900	559.	556.	560.
-30.	68.35	795.8	0.462	287.	285.	287.
0.	70.00	788.9	0.	0.	-0.	-0.
30.	68.35	795.8	0.462	-287.	-285.	-287.
60.	64.19	816.3	0.900	-560.	-556.	-559.
90.	58.84	849.4	1.296	-806.	-801.	-805.
120.	53.22	893.6	1.642	-1021.	-1014.	-1019.
150.	47.75	947.4	1.933	-1202.	-1194.	-1200.
180.	42.65	1009.1	2.175	-1351.	-1344.	-1350.
210.	37.98	1077.4	2.373	-1474.	-1466.	-1472.
240.	33.73	1151.1	2.533	-1573.	-1565.	-1571.
270.	29.87	1229.1	2.663	-1654.	-1645.	-1651.
300.	26.37	1310.7	2.768	-1719.	-1710.	-1715.
330.	23.17	1395.0	2.853	-1771.	-1763.	-1767.
360.	20.24	1481.7	2.922	-1814.	-1805.	-1809.
390.	17.55	1570.2	2.977	-1848.	-1839.	-1843.
420.	15.05	1660.2	3.022	-1876.	-1867.	-1870.
450.	12.73	1751.4	3.058	-1898.	-1889.	-1892.
480.	10.56	1843.6	3.086	-1915.	-1906.	-1909.
510.	8.51	1936.5	3.108	-1929.	-1920.	-1922.
540.	6.58	2030.1	3.125	-1939.	-1931.	-1932.
570.	4.75	2124.0	3.138	-1947.	-1938.	-1940.
600.	3.01	2218.3	3.147	-1952.	-1944.	-1945.
630.	1.35	2312.8	3.152	-1955.	-1947.	-1947.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

652.0 ROT SLANT RANGE(E) IS 2389.9 -1957.

654.0 ROT SLANT RANGE(W) IS 2391.9 -1948.

SMAX IS 2392.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 750.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-630.	1.43	2307.9	3.162	1954.	1953.	1960.
-600.	3.11	2213.1	3.157	1952.	1950.	1958.
-570.	4.86	2118.5	3.149	1947.	1945.	1953.
-540.	6.70	2024.2	3.137	1941.	1938.	1946.
-510.	8.65	1930.3	3.121	1931.	1928.	1936.
-480.	10.71	1837.0	3.100	1918.	1915.	1923.
-450.	12.90	1744.4	3.073	1902.	1898.	1906.
-420.	15.25	1652.7	3.039	1881.	1877.	1885.
-390.	17.78	1562.1	2.996	1855.	1851.	1859.
-360.	20.52	1473.0	2.942	1822.	1817.	1826.
-330.	23.50	1385.7	2.875	1781.	1776.	1784.
-300.	26.77	1300.7	2.792	1730.	1725.	1733.
-270.	30.37	1218.4	2.689	1667.	1661.	1669.
-240.	34.35	1139.6	2.561	1588.	1582.	1590.
-210.	38.77	1065.0	2.403	1490.	1484.	1492.
-180.	43.67	995.8	2.206	1369.	1363.	1370.
-150.	49.09	933.1	1.965	1220.	1214.	1221.
-120.	55.00	878.4	1.672	1038.	1033.	1039.
-90.	61.27	833.4	1.323	822.	817.	822.
-60.	67.51	799.6	0.920	571.	568.	572.
-30.	72.75	778.6	0.472	294.	292.	294.
0.	75.00	771.5	0.	-0.	-0.	0.
30.	72.75	778.6	0.472	-294.	-292.	-294.
60.	67.51	799.6	0.920	-572.	-568.	-571.
90.	61.27	833.4	1.323	-822.	-817.	-822.
120.	55.00	878.4	1.672	-1039.	-1033.	-1038.
150.	49.09	933.1	1.965	-1221.	-1214.	-1220.
180.	43.67	995.8	2.206	-1370.	-1363.	-1369.
210.	38.77	1065.0	2.403	-1492.	-1484.	-1490.
240.	34.35	1139.6	2.561	-1590.	-1582.	-1588.
270.	30.37	1218.4	2.689	-1669.	-1661.	-1667.
300.	26.77	1300.7	2.792	-1733.	-1725.	-1730.
330.	23.50	1385.7	2.875	-1784.	-1776.	-1781.
360.	20.52	1473.0	2.942	-1826.	-1817.	-1822.
390.	17.78	1562.1	2.996	-1859.	-1851.	-1855.
420.	15.25	1652.7	3.039	-1885.	-1877.	-1881.
450.	12.90	1744.4	3.073	-1906.	-1898.	-1902.
480.	10.71	1837.0	3.100	-1923.	-1915.	-1918.
510.	8.65	1930.3	3.121	-1936.	-1928.	-1931.
540.	6.70	2024.2	3.137	-1946.	-1938.	-1941.
570.	4.86	2118.5	3.149	-1953.	-1945.	-1947.
600.	3.11	2213.1	3.157	-1958.	-1950.	-1952.
630.	1.43	2307.9	3.162	-1960.	-1953.	-1954.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

654.0 ROT SLANT RANGE(E) IS 2391.0 -1961.

655.0 ROT SLANT RANGE(W) IS 2391.0 -1955.

SMAX IS 2392.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 750.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-630.	1.53	2302.0	3.174	1965.	1960.	1965.
-600.	3.22	2206.8	3.170	1962.	1958.	1962.
-570.	4.99	2111.8	3.163	1958.	1954.	1958.
-540.	6.85	2017.1	3.152	1952.	1947.	1952.
-510.	8.81	1922.7	3.137	1943.	1938.	1943.
-480.	10.89	1828.9	3.117	1931.	1926.	1931.
-450.	13.12	1735.7	3.092	1916.	1910.	1916.
-420.	15.50	1643.5	3.059	1896.	1890.	1896.
-390.	18.07	1552.3	3.018	1871.	1864.	1871.
-360.	20.87	1462.5	2.966	1839.	1833.	1839.
-330.	23.92	1374.4	2.902	1799.	1793.	1799.
-300.	27.27	1288.5	2.822	1750.	1743.	1750.
-270.	30.99	1205.3	2.721	1688.	1681.	1688.
-240.	35.13	1125.5	2.596	1611.	1604.	1611.
-210.	39.77	1049.8	2.440	1514.	1507.	1514.
-180.	44.98	979.4	2.246	1394.	1387.	1394.
-150.	50.84	915.6	2.005	1245.	1238.	1245.
-120.	57.41	859.7	1.710	1062.	1056.	1062.
-90.	64.71	813.6	1.356	843.	838.	843.
-60.	72.68	778.9	0.945	587.	584.	587.
-30.	81.19	757.3	0.486	302.	300.	302.
0.	89.96	750.0	0.	0.	-0.	-0.
30.	81.19	757.3	0.486	-302.	-300.	-302.
60.	72.68	778.9	0.945	-587.	-584.	-587.
90.	64.71	813.6	1.356	-843.	-838.	-843.
120.	57.41	859.7	1.710	-1062.	-1056.	-1062.
150.	50.84	915.6	2.005	-1245.	-1238.	-1245.
180.	44.98	979.4	2.246	-1394.	-1387.	-1394.
210.	39.77	1049.8	2.440	-1514.	-1507.	-1514.
240.	35.13	1125.5	2.596	-1611.	-1604.	-1611.
270.	30.99	1205.3	2.721	-1688.	-1681.	-1688.
300.	27.27	1288.5	2.822	-1750.	-1743.	-1750.
330.	23.92	1374.4	2.902	-1799.	-1793.	-1799.
360.	20.87	1462.5	2.966	-1839.	-1833.	-1839.
390.	18.07	1552.3	3.018	-1871.	-1864.	-1871.
420.	15.50	1643.5	3.059	-1896.	-1890.	-1896.
450.	13.12	1735.7	3.092	-1916.	-1910.	-1916.
480.	10.89	1828.9	3.117	-1931.	-1926.	-1931.
510.	8.81	1922.7	3.137	-1943.	-1938.	-1943.
540.	6.85	2017.1	3.152	-1952.	-1947.	-1952.
570.	4.99	2111.8	3.163	-1958.	-1954.	-1958.
600.	3.22	2206.8	3.170	-1962.	-1958.	-1962.
630.	1.53	2302.0	3.174	-1965.	-1960.	-1965.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

656.0 ROT SLANT RANGE(E) IS 2390.1 -1965.

656.0 ROT SLANT RANGE(W) IS 2390.1 -1965.

SMAX IS 2392.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 800.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-240.	0.	0.	0.	593.	0.	607.
-210.	0.44	2452.6	0.848	527.	524.	537.
-180.	0.84	2428.8	0.735	457.	454.	465.
-150.	1.19	2408.5	0.618	385.	382.	391.
-120.	1.48	2391.8	0.499	311.	308.	315.
-90.	1.70	2378.6	0.376	235.	233.	237.
-60.	1.87	2369.2	0.252	158.	156.	159.
-30.	1.97	2363.5	0.126	79.	78.	79.
0.	2.00	2361.6	0.	0.	0.	0.
30.	1.97	2363.5	0.126	-79.	-78.	-79.
60.	1.87	2369.2	0.252	-159.	-156.	-158.
90.	1.70	2378.6	0.376	-237.	-233.	-235.
120.	1.48	2391.8	0.499	-315.	-308.	-311.
150.	1.19	2408.5	0.618	-391.	-382.	-385.
180.	0.84	2428.8	0.735	-465.	-454.	-457.
210.	0.44	2452.6	0.848	-537.	-524.	-527.
240.	0.	0.	0.	-607.	0.	-593.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

243.0	ROT SLANT RANGE(E) IS 2478.0	-613.	
245.0	ROT SLANT RANGE(W) IS 2478.1		-604.
	SMAX IS 2478.8		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 800.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-450.	0.68	2438.3	1.918	1179.	1185.	1213.
-420.	1.65	2382.0	1.839	1132.	1136.	1163.
-390.	2.59	2328.1	1.753	1080.	1083.	1108.
-360.	3.51	2276.9	1.660	1024.	1025.	1048.
-330.	4.41	2228.6	1.559	963.	963.	984.
-300.	5.26	2183.4	1.450	897.	896.	915.
-270.	6.07	2141.7	1.334	826.	824.	841.
-240.	6.82	2103.5	1.209	750.	747.	762.
-210.	7.52	2069.2	1.078	669.	666.	679.
-180.	8.14	2038.9	0.939	584.	580.	591.
-150.	8.69	2012.9	0.794	494.	490.	499.
-120.	9.15	1991.3	0.643	400.	397.	404.
-90.	9.52	1974.4	0.487	304.	301.	305.
-60.	9.78	1962.2	0.327	204.	202.	205.
-30.	9.95	1954.8	0.164	103.	101.	103.
0.	10.00	1952.4	0.	0.	-0.	-0.
30.	9.95	1954.8	0.164	-103.	-101.	-103.
60.	9.78	1962.2	0.327	-205.	-202.	-204.
90.	9.52	1974.4	0.487	-305.	-301.	-304.
120.	9.15	1991.3	0.643	-404.	-397.	-400.
150.	8.69	2012.9	0.794	-499.	-490.	-494.
180.	8.14	2038.9	0.939	-591.	-580.	-584.
210.	7.52	2069.2	1.078	-679.	-666.	-669.
240.	6.82	2103.5	1.209	-762.	-747.	-750.
270.	6.07	2141.7	1.334	-841.	-824.	-826.
300.	5.26	2183.4	1.450	-915.	-896.	-897.
330.	4.41	2228.6	1.559	-984.	-963.	-963.
360.	3.51	2276.9	1.660	-1048.	-1025.	-1024.
390.	2.59	2328.1	1.753	-1108.	-1083.	-1080.
420.	1.65	2382.0	1.839	-1163.	-1136.	-1132.
450.	0.68	2438.3	1.918	-1213.	-1185.	-1179.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

467.0	ROT SLANT RANGE(E) IS 2476.9	-1240.	
473.0	ROT SLANT RANGE(W) IS 2478.1		-1212.
	SMAX IS 2478.8		

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 800.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-510.	1.01	2418.8	2.238	1374.	1383.	1411.
-480.	2.16	2352.6	2.175	1337.	1343.	1371.
-450.	3.30	2288.4	2.104	1295.	1300.	1326.
-420.	4.45	2226.4	2.026	1248.	1251.	1276.
-390.	5.58	2166.9	1.939	1196.	1198.	1221.
-360.	6.69	2110.2	1.844	1138.	1139.	1161.
-330.	7.78	2056.4	1.739	1075.	1074.	1095.
-300.	8.84	2005.9	1.625	1005.	1004.	1022.
-270.	9.85	1959.0	1.501	930.	927.	944.
-240.	10.81	1915.9	1.367	848.	845.	859.
-210.	11.71	1877.1	1.223	759.	756.	769.
-180.	12.52	1842.6	1.070	665.	661.	672.
-150.	13.24	1812.9	0.907	564.	561.	570.
-120.	13.86	1788.3	0.737	459.	455.	462.
-90.	14.35	1768.8	0.559	349.	345.	350.
-60.	14.71	1754.8	0.376	235.	232.	235.
-30.	14.93	1746.3	0.189	118.	117.	118.
0.	15.00	1743.4	0.	0.	-0.	-0.
30.	14.93	1746.3	0.189	-118.	-117.	-118.
60.	14.71	1754.8	0.376	-235.	-232.	-235.
90.	14.35	1768.8	0.559	-350.	-345.	-349.
120.	13.86	1788.3	0.737	-462.	-455.	-459.
150.	13.24	1812.9	0.907	-570.	-561.	-564.
180.	12.52	1842.6	1.070	-672.	-661.	-665.
210.	11.71	1877.1	1.223	-769.	-756.	-759.
240.	10.81	1915.9	1.367	-859.	-845.	-848.
270.	9.85	1959.0	1.501	-944.	-927.	-930.
300.	8.84	2005.9	1.625	-1022.	-1004.	-1005.
330.	7.78	2056.4	1.739	-1095.	-1074.	-1075.
360.	6.69	2110.2	1.844	-1161.	-1139.	-1138.
390.	5.58	2166.9	1.939	-1221.	-1198.	-1196.
420.	4.45	2226.4	2.026	-1276.	-1251.	-1248.
450.	3.30	2288.4	2.104	-1326.	-1300.	-1295.
480.	2.16	2352.6	2.175	-1371.	-1343.	-1337.
510.	1.01	2418.8	2.238	-1411.	-1383.	-1374.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

532.0	ROT SLANT RANGE(E) IS 2477.4	-1438.	
538.0	ROT SLANT RANGE(W) IS 2477.5		-1406.

SMAX IS 2478.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 800.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-660.	0.24	2464.5	2.976	1833.	1839.	1855.
-630.	1.76	2375.4	2.964	1826.	1831.	1847.
-600.	3.34	2286.7	2.947	1816.	1821.	1837.
-570.	4.97	2198.6	2.926	1804.	1808.	1824.
-540.	6.67	2111.1	2.901	1789.	1792.	1807.
-510.	8.44	2024.6	2.869	1771.	1772.	1788.
-480.	10.30	1939.1	2.831	1748.	1749.	1764.
-450.	12.23	1854.8	2.786	1720.	1721.	1736.
-420.	14.27	1772.0	2.731	1688.	1687.	1702.
-390.	16.40	1691.0	2.666	1649.	1647.	1661.
-360.	18.64	1612.1	2.590	1602.	1600.	1614.
-330.	20.99	1535.8	2.499	1547.	1544.	1557.
-300.	23.46	1462.4	2.392	1481.	1478.	1491.
-270.	26.04	1392.4	2.266	1404.	1400.	1412.
-240.	28.71	1326.6	2.119	1314.	1309.	1321.
-210.	31.45	1265.5	1.947	1208.	1203.	1214.
-180.	34.20	1210.0	1.748	1085.	1080.	1090.
-150.	36.91	1160.9	1.521	945.	939.	948.
-120.	39.45	1119.1	1.263	785.	781.	788.
-90.	41.68	1085.4	0.978	608.	604.	609.
-60.	43.46	1060.6	0.668	415.	412.	416.
-30.	44.60	1045.5	0.339	211.	209.	211.
0.	45.00	1040.4	0.	0.	-0.	-0.
30.	44.60	1045.5	0.339	-211.	-209.	-211.
60.	43.46	1060.6	0.668	-416.	-412.	-415.
90.	41.68	1085.4	0.978	-609.	-604.	-608.
120.	39.45	1119.1	1.263	-788.	-781.	-785.
150.	36.91	1160.9	1.521	-948.	-939.	-945.
180.	34.20	1210.0	1.748	-1090.	-1080.	-1085.
210.	31.45	1265.5	1.947	-1214.	-1203.	-1208.
240.	28.71	1326.6	2.119	-1321.	-1309.	-1314.
270.	26.04	1392.4	2.266	-1412.	-1400.	-1404.
300.	23.46	1462.4	2.392	-1491.	-1478.	-1481.
330.	20.99	1535.8	2.499	-1557.	-1544.	-1547.
360.	18.64	1612.1	2.590	-1614.	-1600.	-1602.
390.	16.40	1691.0	2.666	-1661.	-1647.	-1649.
420.	14.27	1772.0	2.731	-1702.	-1687.	-1688.
450.	12.23	1854.8	2.786	-1736.	-1721.	-1720.
480.	10.30	1939.1	2.831	-1764.	-1749.	-1748.
510.	8.44	2024.6	2.869	-1788.	-1772.	-1771.
540.	6.67	2111.1	2.901	-1807.	-1792.	-1789.
570.	4.97	2198.6	2.926	-1824.	-1808.	-1804.
600.	3.34	2286.7	2.947	-1837.	-1821.	-1816.
630.	1.76	2375.4	2.964	-1847.	-1831.	-1826.
660.	0.24	2464.5	2.976	-1855.	-1839.	-1833.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

661.0 ROT SLANT RANGE(E) IS 2478.5 -1855.

664.0 ROT SLANT RANGE(W) IS 2476.2 -1833.

SMAX IS 2478.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 800.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-660.	1.32	2400.7	3.095	1912.	1912.	1921.
-630.	2.95	2307.9	3.090	1909.	1909.	1918.
-600.	4.65	2215.3	3.082	1905.	1904.	1913.
-570.	6.43	2123.1	3.070	1898.	1897.	1905.
-540.	8.30	2031.2	3.054	1889.	1887.	1896.
-510.	10.28	1939.9	3.034	1876.	1874.	1883.
-480.	12.37	1849.2	3.007	1861.	1858.	1867.
-450.	14.59	1759.5	2.975	1841.	1838.	1847.
-420.	16.96	1670.8	2.934	1816.	1813.	1822.
-390.	19.50	1583.5	2.885	1786.	1782.	1791.
-360.	22.24	1497.8	2.824	1749.	1744.	1754.
-330.	25.21	1414.2	2.749	1703.	1698.	1708.
-300.	28.44	1333.0	2.659	1648.	1642.	1651.
-270.	31.95	1254.9	2.548	1579.	1574.	1583.
-240.	35.80	1180.4	2.413	1496.	1490.	1499.
-210.	40.00	1110.4	2.248	1395.	1389.	1397.
-180.	44.58	1045.9	2.049	1272.	1266.	1274.
-150.	49.50	987.9	1.810	1124.	1118.	1126.
-120.	54.69	937.7	1.528	949.	944.	950.
-90.	59.95	896.7	1.199	745.	741.	746.
-60.	64.84	866.2	0.828	515.	512.	515.
-30.	68.56	847.3	0.423	263.	262.	263.
0.	70.00	840.9	0.	0.	-0.	-0.
30.	68.56	847.3	0.423	-263.	-262.	-263.
60.	64.84	866.2	0.828	-515.	-512.	-515.
90.	59.95	896.7	1.199	-746.	-741.	-745.
120.	54.69	937.7	1.528	-950.	-944.	-949.
150.	49.50	987.9	1.810	-1126.	-1118.	-1124.
180.	44.58	1045.9	2.049	-1274.	-1266.	-1272.
210.	40.00	1110.4	2.248	-1397.	-1389.	-1395.
240.	35.80	1180.4	2.413	-1499.	-1490.	-1496.
270.	31.95	1254.9	2.548	-1583.	-1574.	-1579.
300.	28.44	1333.0	2.659	-1651.	-1642.	-1648.
330.	25.21	1414.2	2.749	-1708.	-1698.	-1703.
360.	22.24	1497.8	2.824	-1754.	-1744.	-1749.
390.	19.50	1583.5	2.885	-1791.	-1782.	-1786.
420.	16.96	1670.8	2.934	-1822.	-1813.	-1816.
450.	14.59	1759.5	2.975	-1847.	-1838.	-1841.
480.	12.37	1849.2	3.007	-1867.	-1858.	-1861.
510.	10.28	1939.9	3.034	-1883.	-1874.	-1876.
540.	8.30	2031.2	3.054	-1896.	-1887.	-1889.
570.	6.43	2123.1	3.070	-1905.	-1897.	-1898.
600.	4.65	2215.3	3.082	-1913.	-1904.	-1905.
630.	2.95	2307.9	3.090	-1918.	-1909.	-1909.
660.	1.32	2400.7	3.095	-1921.	-1912.	-1912.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

682.0 ROT SLANT RANGE(E) IS 2477.1 -1922.

684.0 ROT SLANT RANGE(W) IS 2478.5 -1913.

SMAX IS 2478.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 800.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-660.	1.41	2395.5	3.105	1919.	1918.	1926.
-630.	3.05	2302.4	3.101	1917.	1916.	1923.
-600.	4.76	2209.5	3.093	1913.	1911.	1919.
-570.	6.56	2116.8	3.082	1906.	1904.	1912.
-540.	8.44	2024.6	3.067	1897.	1895.	1903.
-510.	10.43	1932.8	3.048	1886.	1883.	1891.
-480.	12.54	1841.8	3.023	1871.	1867.	1876.
-450.	14.79	1751.5	2.991	1852.	1848.	1856.
-420.	17.19	1662.3	2.952	1828.	1824.	1832.
-390.	19.78	1574.5	2.904	1799.	1794.	1803.
-360.	22.57	1488.2	2.845	1763.	1758.	1766.
-330.	25.60	1403.9	2.773	1718.	1713.	1721.
-300.	28.90	1322.0	2.684	1663.	1658.	1666.
-270.	32.53	1243.1	2.575	1596.	1590.	1599.
-240.	36.51	1167.8	2.441	1514.	1508.	1516.
-210.	40.90	1096.9	2.278	1414.	1407.	1415.
-180.	45.72	1031.4	2.080	1291.	1285.	1293.
-150.	50.98	972.5	1.841	1143.	1137.	1144.
-120.	56.64	921.4	1.556	967.	961.	967.
-90.	62.55	879.6	1.224	760.	756.	761.
-60.	68.31	848.5	0.846	526.	523.	526.
-30.	73.03	829.2	0.433	269.	268.	269.
0.	75.00	822.7	0.	0.	-0.	-0.
30.	73.03	829.2	0.433	-269.	-268.	-269.
60.	68.31	848.5	0.846	-526.	-523.	-526.
90.	62.55	879.6	1.224	-761.	-756.	-760.
120.	56.64	921.4	1.556	-967.	-961.	-967.
150.	50.98	972.5	1.841	-1144.	-1137.	-1143.
180.	45.72	1031.4	2.080	-1293.	-1285.	-1291.
210.	40.90	1096.9	2.278	-1415.	-1407.	-1414.
240.	36.51	1167.8	2.441	-1516.	-1508.	-1514.
270.	32.53	1243.1	2.575	-1599.	-1590.	-1596.
300.	28.90	1322.0	2.684	-1666.	-1658.	-1663.
330.	25.60	1403.9	2.773	-1721.	-1713.	-1718.
360.	22.57	1488.2	2.845	-1766.	-1758.	-1763.
390.	19.78	1574.5	2.904	-1803.	-1794.	-1799.
420.	17.19	1662.3	2.952	-1832.	-1824.	-1828.
450.	14.79	1751.5	2.991	-1856.	-1848.	-1852.
480.	12.54	1841.8	3.023	-1876.	-1867.	-1871.
510.	10.43	1932.8	3.048	-1891.	-1883.	-1886.
540.	8.44	2024.6	3.067	-1903.	-1895.	-1897.
570.	6.56	2116.8	3.082	-1912.	-1904.	-1906.
600.	4.76	2209.5	3.093	-1919.	-1911.	-1913.
630.	3.05	2302.4	3.101	-1923.	-1916.	-1917.
660.	1.41	2395.5	3.105	-1926.	-1918.	-1919.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

684.0 ROT SLANT RANGE(E) IS 2477.8 -1927.

685.0 ROT SLANT RANGE(W) IS 2477.3 -1920.

SMAX IS 2478.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 800.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-660.	1.52	2389.1	3.118	1930.	1926.	1930.
-630.	3.17	2295.7	3.114	1928.	1924.	1928.
-600.	4.90	2202.3	3.107	1924.	1920.	1924.
-570.	6.71	2109.3	3.097	1918.	1913.	1918.
-540.	8.61	2016.5	3.083	1910.	1905.	1910.
-510.	10.63	1924.3	3.065	1899.	1894.	1899.
-480.	12.76	1832.7	3.042	1885.	1879.	1885.
-450.	15.04	1741.9	3.012	1866.	1861.	1866.
-420.	17.48	1652.0	2.975	1844.	1838.	1844.
-390.	20.12	1563.5	2.928	1815.	1809.	1815.
-360.	22.97	1476.4	2.871	1780.	1774.	1780.
-330.	26.08	1391.3	2.801	1737.	1730.	1737.
-300.	29.49	1308.5	2.715	1684.	1677.	1684.
-270.	33.25	1228.6	2.608	1618.	1611.	1618.
-240.	37.41	1152.3	2.477	1537.	1530.	1537.
-210.	42.04	1080.3	2.316	1438.	1431.	1438.
-180.	47.19	1013.7	2.119	1316.	1309.	1316.
-150.	52.93	953.6	1.880	1168.	1161.	1168.
-120.	59.29	901.4	1.593	990.	984.	990.
-90.	66.26	858.5	1.255	780.	775.	780.
-60.	73.81	826.5	0.870	541.	537.	541.
-30.	81.78	806.7	0.446	277.	275.	277.
0.	89.98	800.0	0.	-0.	-0.	0.
30.	81.78	806.7	0.446	-277.	-275.	-277.
60.	73.81	826.5	0.870	-541.	-537.	-541.
90.	66.26	858.5	1.255	-780.	-775.	-780.
120.	59.29	901.4	1.593	-990.	-984.	-990.
150.	52.93	953.6	1.880	-1168.	-1161.	-1168.
180.	47.19	1013.7	2.119	-1316.	-1309.	-1316.
210.	42.04	1080.3	2.316	-1438.	-1431.	-1438.
240.	37.41	1152.3	2.477	-1537.	-1530.	-1537.
270.	33.25	1228.6	2.608	-1618.	-1611.	-1618.
300.	29.49	1308.5	2.715	-1684.	-1677.	-1684.
330.	26.08	1391.3	2.801	-1737.	-1730.	-1737.
360.	22.97	1476.4	2.871	-1780.	-1774.	-1780.
390.	20.12	1563.5	2.928	-1815.	-1809.	-1815.
420.	17.48	1652.0	2.975	-1844.	-1838.	-1844.
450.	15.04	1741.9	3.012	-1866.	-1861.	-1866.
480.	12.76	1832.7	3.042	-1885.	-1879.	-1885.
510.	10.63	1924.3	3.065	-1899.	-1894.	-1899.
540.	8.61	2016.5	3.083	-1910.	-1905.	-1910.
570.	6.71	2109.3	3.097	-1918.	-1913.	-1918.
600.	4.90	2202.3	3.107	-1924.	-1920.	-1924.
630.	3.17	2295.7	3.114	-1928.	-1924.	-1928.
660.	1.52	2389.1	3.118	-1930.	-1926.	-1930.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

686.0 ROT SLANT RANGE(E) IS 2476.2 -1930.

686.0 ROT SLANT RANGE(W) IS 2476.2 -1930.

SMAX IS 2478.8

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 850.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-240.	0.11	2556.5	0.897	557.	554.	569.
-210.	0.54	2531.1	0.794	494.	490.	504.
-180.	0.92	2508.9	0.687	428.	425.	436.
-150.	1.24	2489.9	0.578	361.	357.	366.
-120.	1.51	2474.2	0.466	291.	288.	295.
-90.	1.72	2462.0	0.351	220.	217.	222.
-60.	1.88	2453.2	0.235	147.	145.	148.
-30.	1.97	2447.9	0.118	74.	73.	74.
0.	2.00	2446.1	0.	0.	0.	0.
30.	1.97	2447.9	0.118	-74.	-73.	-74.
60.	1.88	2453.2	0.235	-148.	-145.	-147.
90.	1.72	2462.0	0.351	-222.	-217.	-220.
120.	1.51	2474.2	0.466	-295.	-288.	-291.
150.	1.24	2489.9	0.578	-366.	-357.	-361.
180.	0.92	2508.9	0.687	-436.	-425.	-428.
210.	0.54	2531.1	0.794	-504.	-490.	-494.
240.	0.11	2556.5	0.897	-569.	-554.	-557.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

252.0 ROT SLANT RANGE(E) IS 2562.7 -595.

254.0 ROT SLANT RANGE(W) IS 2562.6 -585.

SMAX IS 2563.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 850.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.27	2547.4	1.892	1162.	1169.	1199.
-450.	1.21	2491.7	1.820	1119.	1125.	1153.
-420.	2.14	2438.3	1.742	1072.	1076.	1103.
-390.	3.04	2387.3	1.658	1022.	1024.	1049.
-360.	3.92	2338.9	1.567	967.	968.	991.
-330.	4.77	2293.3	1.469	907.	907.	929.
-300.	5.58	2250.8	1.364	844.	842.	862.
-270.	6.34	2211.6	1.252	776.	773.	791.
-240.	7.05	2175.8	1.133	703.	700.	715.
-210.	7.70	2143.6	1.008	626.	623.	636.
-180.	8.28	2115.3	0.877	546.	542.	553.
-150.	8.79	2091.1	0.741	461.	457.	466.
-120.	9.22	2070.9	0.599	373.	370.	377.
-90.	9.55	2055.2	0.453	283.	280.	285.
-60.	9.80	2043.8	0.304	190.	188.	191.
-30.	9.95	2037.0	0.152	95.	94.	96.
0.	10.00	2034.7	0.	0.	-0.	-0.
30.	9.95	2037.0	0.152	-96.	-94.	-95.
60.	9.80	2043.8	0.304	-191.	-188.	-190.
90.	9.55	2055.2	0.453	-285.	-280.	-283.
120.	9.22	2070.9	0.599	-377.	-370.	-373.
150.	8.79	2091.1	0.741	-466.	-457.	-461.
180.	8.28	2115.3	0.877	-553.	-542.	-546.
210.	7.70	2143.6	1.008	-636.	-623.	-626.
240.	7.05	2175.8	1.133	-715.	-700.	-703.
270.	6.34	2211.6	1.252	-791.	-773.	-776.
300.	5.58	2250.8	1.364	-862.	-842.	-844.
330.	4.77	2293.3	1.469	-929.	-907.	-907.
360.	3.92	2338.9	1.567	-991.	-968.	-967.
390.	3.04	2387.3	1.658	-1049.	-1024.	-1022.
420.	2.14	2438.3	1.742	-1103.	-1076.	-1072.
450.	1.21	2491.7	1.820	-1153.	-1125.	-1119.
480.	0.27	2547.4	1.892	-1199.	-1169.	-1162.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

485.0 ROT SLANT RANGE(E) IS 2562.9 -1207.

491.0 ROT SLANT RANGE(W) IS 2562.9 -1177.

SMAX IS 2563.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 850.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	0.64	2525.5	2.196	1347.	1357.	1387.
-510.	1.75	2460.5	2.138	1313.	1321.	1350.
-480.	2.86	2397.3	2.073	1275.	1281.	1309.
-450.	3.97	2336.1	2.002	1232.	1237.	1263.
-420.	5.07	2277.2	1.924	1185.	1188.	1213.
-390.	6.16	2220.8	1.838	1133.	1135.	1159.
-360.	7.22	2167.1	1.744	1076.	1077.	1099.
-330.	8.26	2116.3	1.641	1014.	1014.	1034.
-300.	9.26	2068.7	1.530	947.	945.	964.
-270.	10.22	2024.5	1.410	874.	871.	888.
-240.	11.12	1984.1	1.282	795.	792.	807.
-210.	11.96	1947.7	1.145	711.	707.	720.
-180.	12.72	1915.5	0.999	621.	617.	628.
-150.	13.38	1887.9	0.846	526.	523.	531.
-120.	13.95	1864.9	0.686	427.	424.	431.
-90.	14.40	1846.8	0.520	324.	321.	326.
-60.	14.73	1833.7	0.349	218.	216.	219.
-30.	14.93	1825.8	0.175	110.	108.	110.
0.	15.00	1823.2	0.	0.	-0.	-0.
30.	14.93	1825.8	0.175	-110.	-108.	-110.
60.	14.73	1833.7	0.349	-219.	-216.	-218.
90.	14.40	1846.8	0.520	-326.	-321.	-324.
120.	13.95	1864.9	0.686	-431.	-424.	-427.
150.	13.38	1887.9	0.846	-531.	-523.	-526.
180.	12.72	1915.5	0.999	-628.	-617.	-621.
210.	11.96	1947.7	1.145	-720.	-707.	-711.
240.	11.12	1984.1	1.282	-807.	-792.	-795.
270.	10.22	2024.5	1.410	-888.	-871.	-874.
300.	9.26	2068.7	1.530	-964.	-945.	-947.
330.	8.26	2116.3	1.641	-1034.	-1014.	-1014.
360.	7.22	2167.1	1.744	-1099.	-1077.	-1076.
390.	6.16	2220.8	1.838	-1159.	-1135.	-1133.
420.	5.07	2277.2	1.924	-1213.	-1188.	-1185.
450.	3.97	2336.1	2.002	-1263.	-1237.	-1232.
480.	2.86	2397.3	2.073	-1309.	-1281.	-1275.
510.	1.75	2460.5	2.138	-1350.	-1321.	-1313.
540.	0.64	2525.5	2.196	-1387.	-1357.	-1347.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

552.0 ROT SLANT RANGE(E) IS 2561.6 -1401.

559.0 ROT SLANT RANGE(W) IS 2562.3 -1367.

SMAX IS 2563.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 850.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-690.	0.15	2554.4	2.918	1796.	1803.	0.
-660.	1.64	2467.0	2.906	1789.	1795.	1812.
-630.	3.17	2380.1	2.891	1781.	1786.	1802.
-600.	4.76	2293.6	2.871	1769.	1774.	1790.
-570.	6.41	2207.8	2.847	1755.	1759.	1775.
-540.	8.12	2122.9	2.818	1738.	1741.	1757.
-510.	9.91	2038.8	2.782	1717.	1719.	1735.
-480.	11.77	1956.0	2.741	1692.	1693.	1709.
-450.	13.71	1874.5	2.691	1662.	1662.	1678.
-420.	15.74	1794.6	2.633	1627.	1626.	1641.
-390.	17.87	1716.6	2.564	1585.	1584.	1598.
-360.	20.09	1640.9	2.483	1536.	1534.	1548.
-330.	22.41	1567.8	2.389	1479.	1476.	1490.
-300.	24.83	1497.7	2.279	1412.	1408.	1421.
-270.	27.34	1431.2	2.152	1333.	1329.	1342.
-240.	29.92	1368.8	2.004	1243.	1238.	1249.
-210.	32.53	1311.2	1.834	1138.	1133.	1143.
-180.	35.14	1259.0	1.639	1018.	1013.	1022.
-150.	37.66	1213.1	1.420	882.	877.	885.
-120.	40.00	1174.1	1.175	730.	726.	733.
-90.	42.03	1142.8	0.906	564.	560.	565.
-60.	43.63	1120.0	0.617	384.	381.	384.
-30.	44.65	1106.0	0.312	195.	193.	195.
0.	45.00	1101.3	0.	0.	-0.	-0.
30.	44.65	1106.0	0.312	-195.	-193.	-195.
60.	43.63	1120.0	0.617	-384.	-381.	-384.
90.	42.03	1142.8	0.906	-565.	-560.	-564.
120.	40.00	1174.1	1.175	-733.	-726.	-730.
150.	37.66	1213.1	1.420	-885.	-877.	-882.
180.	35.14	1259.0	1.639	-1022.	-1013.	-1018.
210.	32.53	1311.2	1.834	-1143.	-1133.	-1138.
240.	29.92	1368.8	2.004	-1249.	-1238.	-1243.
270.	27.34	1431.2	2.152	-1342.	-1329.	-1333.
300.	24.83	1497.7	2.279	-1421.	-1408.	-1412.
330.	22.41	1567.8	2.389	-1490.	-1476.	-1479.
360.	20.09	1640.9	2.483	-1548.	-1534.	-1536.
390.	17.87	1716.6	2.564	-1598.	-1584.	-1585.
420.	15.74	1794.6	2.633	-1641.	-1626.	-1627.
450.	13.71	1874.5	2.691	-1678.	-1662.	-1662.
480.	11.77	1956.0	2.741	-1709.	-1693.	-1692.
510.	9.91	2038.8	2.782	-1735.	-1719.	-1717.
540.	8.12	2122.9	2.818	-1757.	-1741.	-1738.
570.	6.41	2207.8	2.847	-1775.	-1759.	-1755.
600.	4.76	2293.6	2.871	-1790.	-1774.	-1769.
630.	3.17	2380.1	2.891	-1802.	-1786.	-1781.
660.	1.64	2467.0	2.906	-1812.	-1795.	-1789.
690.	0.15	2554.4	2.918	0.	-1803.	-1796.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

688.0 ROT SLANT RANGE(E) IS 2560.5 -1819.

693.0 ROT SLANT RANGE(W) IS 2562.6

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 850.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-690.	1.29	2487.1	3.040	1878.	1878.	1887.
-660.	2.89	2395.9	3.035	1875.	1875.	1884.
-630.	4.55	2305.0	3.028	1871.	1870.	1879.
-600.	6.28	2214.3	3.016	1864.	1863.	1873.
-570.	8.10	2124.0	3.002	1856.	1854.	1863.
-540.	10.01	2034.3	2.982	1844.	1842.	1852.
-510.	12.02	1945.1	2.958	1830.	1827.	1837.
-480.	14.15	1856.8	2.928	1812.	1809.	1818.
-450.	16.41	1769.5	2.891	1790.	1786.	1796.
-420.	18.82	1683.4	2.847	1762.	1759.	1768.
-390.	21.40	1598.8	2.792	1729.	1725.	1734.
-360.	24.18	1516.0	2.726	1689.	1684.	1694.
-330.	27.18	1435.4	2.647	1640.	1635.	1645.
-300.	30.42	1357.3	2.551	1581.	1576.	1585.
-270.	33.93	1282.5	2.435	1510.	1504.	1514.
-240.	37.75	1211.5	2.296	1424.	1419.	1427.
-210.	41.89	1145.0	2.130	1322.	1316.	1324.
-180.	46.34	1084.0	1.931	1199.	1193.	1201.
-150.	51.08	1029.5	1.697	1054.	1048.	1055.
-120.	56.01	982.6	1.424	885.	880.	886.
-90.	60.92	944.4	1.112	691.	687.	692.
-60.	65.39	916.2	0.765	475.	472.	476.
-30.	68.73	898.8	0.390	242.	241.	243.
0.	70.00	893.0	0.	0.	-0.	-0.
30.	68.73	898.8	0.390	-243.	-241.	-242.
60.	65.39	916.2	0.765	-476.	-472.	-475.
90.	60.92	944.4	1.112	-692.	-687.	-691.
120.	56.01	982.6	1.424	-886.	-880.	-885.
150.	51.08	1029.5	1.697	-1055.	-1048.	-1054.
180.	46.34	1084.0	1.931	-1201.	-1193.	-1199.
210.	41.89	1145.0	2.130	-1324.	-1316.	-1322.
240.	37.75	1211.5	2.296	-1427.	-1419.	-1424.
270.	33.93	1282.5	2.435	-1514.	-1504.	-1510.
300.	30.42	1357.3	2.551	-1585.	-1576.	-1581.
330.	27.18	1435.4	2.647	-1645.	-1635.	-1640.
360.	24.18	1516.0	2.726	-1694.	-1684.	-1689.
390.	21.40	1598.8	2.792	-1734.	-1725.	-1729.
420.	18.82	1683.4	2.847	-1768.	-1759.	-1762.
450.	16.41	1769.5	2.891	-1796.	-1786.	-1790.
480.	14.15	1856.8	2.928	-1818.	-1809.	-1812.
510.	12.02	1945.1	2.958	-1837.	-1827.	-1830.
540.	10.01	2034.3	2.982	-1852.	-1842.	-1844.
570.	8.10	2124.0	3.002	-1863.	-1854.	-1856.
600.	6.28	2214.3	3.016	-1873.	-1863.	-1864.
630.	4.55	2305.0	3.028	-1879.	-1870.	-1871.
660.	2.89	2395.9	3.035	-1884.	-1875.	-1875.
690.	1.29	2487.1	3.040	-1887.	-1878.	-1878.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

712.0 ROT SLANT RANGE(E) IS 2562.9 -1888.

713.0 ROT SLANT RANGE(W) IS 2560.5 -1878.

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 850.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-690.	1.39	2481.5	3.051	1885.	1885.	1892.
-660.	2.99	2390.0	3.046	1883.	1882.	1890.
-630.	4.67	2298.8	3.039	1879.	1878.	1885.
-600.	6.41	2207.7	3.029	1873.	1871.	1879.
-570.	8.25	2117.1	3.015	1865.	1862.	1871.
-540.	10.17	2026.9	2.997	1854.	1851.	1860.
-510.	12.20	1937.3	2.974	1840.	1837.	1845.
-480.	14.36	1848.5	2.945	1823.	1819.	1828.
-450.	16.65	1760.7	2.909	1801.	1797.	1806.
-420.	19.10	1674.0	2.866	1775.	1770.	1779.
-390.	21.73	1588.8	2.813	1743.	1738.	1746.
-360.	24.56	1505.4	2.749	1703.	1698.	1707.
-330.	27.62	1424.0	2.671	1655.	1650.	1659.
-300.	30.96	1345.3	2.577	1598.	1592.	1600.
-270.	34.59	1269.6	2.463	1527.	1521.	1530.
-240.	38.56	1197.7	2.325	1443.	1437.	1445.
-210.	42.89	1130.4	2.160	1340.	1334.	1342.
-180.	47.61	1068.5	1.962	1218.	1212.	1219.
-150.	52.70	1013.0	1.726	1072.	1066.	1073.
-120.	58.11	965.3	1.451	902.	896.	902.
-90.	63.67	926.4	1.135	705.	701.	706.
-60.	68.99	897.6	0.781	486.	483.	486.
-30.	73.26	879.8	0.399	248.	246.	248.
0.	75.00	873.8	0.	0.	-0.	-0.
30.	73.26	879.8	0.399	-248.	-246.	-248.
60.	68.99	897.6	0.781	-486.	-483.	-486.
90.	63.67	926.4	1.135	-706.	-701.	-705.
120.	58.11	965.3	1.451	-902.	-896.	-902.
150.	52.70	1013.0	1.726	-1073.	-1066.	-1072.
180.	47.61	1068.5	1.962	-1219.	-1212.	-1218.
210.	42.89	1130.4	2.160	-1342.	-1334.	-1340.
240.	38.56	1197.7	2.325	-1445.	-1437.	-1443.
270.	34.59	1269.6	2.463	-1530.	-1521.	-1527.
300.	30.96	1345.3	2.577	-1600.	-1592.	-1598.
330.	27.62	1424.0	2.671	-1659.	-1650.	-1655.
360.	24.56	1505.4	2.749	-1707.	-1698.	-1703.
390.	21.73	1588.8	2.813	-1746.	-1738.	-1743.
420.	19.10	1674.0	2.866	-1779.	-1770.	-1775.
450.	16.65	1760.7	2.909	-1806.	-1797.	-1801.
480.	14.36	1848.5	2.945	-1828.	-1819.	-1823.
510.	12.20	1937.3	2.974	-1845.	-1837.	-1840.
540.	10.17	2026.9	2.997	-1860.	-1851.	-1854.
570.	8.25	2117.1	3.015	-1871.	-1862.	-1865.
600.	6.41	2207.7	3.029	-1879.	-1871.	-1873.
630.	4.67	2298.8	3.039	-1885.	-1878.	-1879.
660.	2.99	2390.0	3.046	-1890.	-1882.	-1883.
690.	1.39	2481.5	3.051	-1892.	-1885.	-1885.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

714.0 ROT SLANT RANGE(E) IS 2563.0 -1893.

715.0 ROT SLANT RANGE(W) IS 2562.0 -1886.

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 850.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-690.	1.50	2474.7	3.063	1896.	1892.	1896.
-660.	3.12	2382.9	3.060	1894.	1890.	1894.
-630.	4.81	2291.2	3.054	1891.	1886.	1891.
-600.	6.57	2199.7	3.044	1885.	1881.	1885.
-570.	8.42	2108.6	3.031	1878.	1873.	1878.
-540.	10.37	2017.9	3.014	1867.	1862.	1867.
-510.	12.43	1927.8	2.992	1854.	1849.	1854.
-480.	14.61	1838.4	2.965	1838.	1832.	1838.
-450.	16.94	1749.9	2.931	1817.	1811.	1817.
-420.	19.44	1662.6	2.890	1791.	1785.	1791.
-390.	22.12	1576.6	2.839	1760.	1754.	1760.
-360.	25.03	1492.4	2.777	1722.	1715.	1722.
-330.	28.18	1410.2	2.701	1675.	1669.	1675.
-300.	31.63	1330.5	2.609	1619.	1612.	1619.
-270.	35.41	1253.8	2.497	1550.	1543.	1550.
-240.	39.58	1180.9	2.362	1466.	1459.	1466.
-210.	44.17	1112.4	2.198	1365.	1358.	1365.
-180.	49.25	1049.3	2.000	1242.	1236.	1242.
-150.	54.85	992.8	1.764	1096.	1090.	1096.
-120.	60.99	943.9	1.486	923.	918.	923.
-90.	67.66	904.0	1.165	724.	719.	724.
-60.	74.81	874.4	0.803	499.	496.	499.
-30.	82.31	856.2	0.410	255.	253.	255.
0.	89.97	850.0	0.	-0.	-0.	0.
30.	82.31	856.2	0.410	-255.	-253.	-255.
60.	74.81	874.4	0.803	-499.	-496.	-499.
90.	67.66	904.0	1.165	-724.	-719.	-724.
120.	60.99	943.9	1.486	-923.	-918.	-923.
150.	54.85	992.8	1.764	-1096.	-1090.	-1096.
180.	49.25	1049.3	2.000	-1242.	-1236.	-1242.
210.	44.17	1112.4	2.198	-1365.	-1358.	-1365.
240.	39.58	1180.9	2.362	-1466.	-1459.	-1466.
270.	35.41	1253.8	2.497	-1550.	-1543.	-1550.
300.	31.63	1330.5	2.609	-1619.	-1612.	-1619.
330.	28.18	1410.2	2.701	-1675.	-1669.	-1675.
360.	25.03	1492.4	2.777	-1722.	-1715.	-1722.
390.	22.12	1576.6	2.839	-1760.	-1754.	-1760.
420.	19.44	1662.6	2.890	-1791.	-1785.	-1791.
450.	16.94	1749.9	2.931	-1817.	-1811.	-1817.
480.	14.61	1838.4	2.965	-1838.	-1832.	-1838.
510.	12.43	1927.8	2.992	-1854.	-1849.	-1854.
540.	10.37	2017.9	3.014	-1867.	-1862.	-1867.
570.	8.42	2108.6	3.031	-1878.	-1873.	-1878.
600.	6.57	2199.7	3.044	-1885.	-1881.	-1885.
630.	4.81	2291.2	3.054	-1891.	-1886.	-1891.
660.	3.12	2382.9	3.060	-1894.	-1890.	-1894.
690.	1.50	2474.7	3.063	-1896.	-1892.	-1896.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

716.0 ROT SLANT RANGE(E) IS 2560.7 -1897.

716.0 ROT SLANT RANGE(W) IS 2560.7 -1897.

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 900.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-240.	0.23	2632.3	0.842	523.	520.	536.
-210.	0.63	2608.5	0.745	463.	460.	473.
-180.	0.99	2587.6	0.644	402.	398.	409.
-150.	1.29	2569.8	0.541	338.	334.	343.
-120.	1.54	2555.2	0.436	273.	269.	276.
-90.	1.74	2543.7	0.329	206.	203.	208.
-60.	1.88	2535.5	0.220	138.	136.	139.
-30.	1.97	2530.5	0.110	69.	68.	70.
0.	2.00	2528.9	0.	0.	0.	0.
30.	1.97	2530.5	0.110	-70.	-68.	-69.
60.	1.88	2535.5	0.220	-139.	-136.	-138.
90.	1.74	2543.7	0.329	-208.	-203.	-206.
120.	1.54	2555.2	0.436	-276.	-269.	-273.
150.	1.29	2569.8	0.541	-343.	-334.	-338.
180.	0.99	2587.6	0.644	-409.	-398.	-402.
210.	0.63	2608.5	0.745	-473.	-460.	-463.
240.	0.23	2632.3	0.842	-536.	-520.	-523.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

261.0 ROT SLANT RANGE(E) IS 2645.5 -578.

264.0 ROT SLANT RANGE(W) IS 2646.1 -569.

SMAX IS 2646.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 900.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-480.	0.80	2598.8	1.800	1105.	1112.	1143.
-450.	1.70	2545.9	1.729	1063.	1068.	1097.
-420.	2.59	2495.1	1.652	1017.	1020.	1047.
-390.	3.46	2446.8	1.569	967.	969.	994.
-360.	4.30	2401.1	1.480	914.	914.	938.
-330.	5.10	2358.1	1.385	856.	856.	877.
-300.	5.86	2318.0	1.284	795.	793.	813.
-270.	6.58	2281.1	1.177	730.	727.	744.
-240.	7.25	2247.4	1.064	660.	657.	672.
-210.	7.86	2217.3	0.945	587.	584.	597.
-180.	8.40	2190.8	0.821	511.	507.	518.
-150.	8.88	2168.1	0.692	431.	428.	436.
-120.	9.27	2149.3	0.559	349.	346.	352.
-90.	9.59	2134.5	0.423	264.	261.	266.
-60.	9.82	2123.9	0.283	177.	175.	178.
-30.	9.95	2117.5	0.142	89.	88.	89.
0.	10.00	2115.4	0.	0.	0.	0.
30.	9.95	2117.5	0.142	-89.	-88.	-89.
60.	9.82	2123.9	0.283	-178.	-175.	-177.
90.	9.59	2134.5	0.423	-266.	-261.	-264.
120.	9.27	2149.3	0.559	-352.	-346.	-349.
150.	8.88	2168.1	0.692	-436.	-428.	-431.
180.	8.40	2190.8	0.821	-518.	-507.	-511.
210.	7.86	2217.3	0.945	-597.	-584.	-587.
240.	7.25	2247.4	1.064	-672.	-657.	-660.
270.	6.58	2281.1	1.177	-744.	-727.	-730.
300.	5.86	2318.0	1.284	-813.	-793.	-795.
330.	5.10	2358.1	1.385	-877.	-856.	-856.
360.	4.30	2401.1	1.480	-938.	-914.	-914.
390.	3.46	2446.8	1.569	-994.	-969.	-967.
420.	2.59	2495.1	1.652	-1047.	-1020.	-1017.
450.	1.70	2545.9	1.729	-1097.	-1068.	-1063.
480.	0.80	2598.8	1.800	-1143.	-1112.	-1105.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

502.0 ROT SLANT RANGE(E) IS 2645.4 -1174.

509.0 ROT SLANT RANGE(W) IS 2645.9 -1143.

SMAX IS 2646.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 900.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-570.	0.28	2629.6	2.155	1321.	1331.	1363.
-540.	1.36	2565.8	2.101	1289.	1298.	1329.
-510.	2.44	2503.6	2.042	1254.	1262.	1291.
-480.	3.52	2443.3	1.977	1216.	1221.	1250.
-450.	4.59	2385.0	1.906	1173.	1177.	1204.
-420.	5.65	2329.0	1.828	1126.	1129.	1154.
-390.	6.69	2275.4	1.742	1075.	1076.	1100.
-360.	7.71	2224.5	1.650	1019.	1019.	1041.
-330.	8.70	2176.5	1.550	958.	958.	978.
-300.	9.65	2131.6	1.442	893.	891.	909.
-270.	10.55	2090.0	1.327	822.	820.	836.
-240.	11.40	2052.1	1.204	747.	743.	758.
-210.	12.18	2017.9	1.073	666.	663.	675.
-180.	12.89	1987.8	0.935	581.	578.	588.
-150.	13.51	1961.9	0.790	492.	488.	497.
-120.	14.03	1940.4	0.640	399.	395.	402.
-90.	14.45	1923.5	0.485	302.	299.	304.
-60.	14.75	1911.4	0.325	203.	201.	204.
-30.	14.94	1904.0	0.163	102.	101.	102.
0.	15.00	1901.6	0.	0.	0.	0.
30.	14.94	1904.0	0.163	-102.	-101.	-102.
60.	14.75	1911.4	0.325	-204.	-201.	-203.
90.	14.45	1923.5	0.485	-304.	-299.	-302.
120.	14.03	1940.4	0.640	-402.	-395.	-399.
150.	13.51	1961.9	0.790	-497.	-488.	-492.
180.	12.89	1987.8	0.935	-588.	-578.	-581.
210.	12.18	2017.9	1.073	-675.	-663.	-666.
240.	11.40	2052.1	1.204	-758.	-743.	-747.
270.	10.55	2090.0	1.327	-836.	-820.	-822.
300.	9.65	2131.6	1.442	-909.	-891.	-893.
330.	8.70	2176.5	1.550	-978.	-958.	-958.
360.	7.71	2224.5	1.650	-1041.	-1019.	-1019.
390.	6.69	2275.4	1.742	-1100.	-1076.	-1075.
420.	5.65	2329.0	1.828	-1154.	-1129.	-1126.
450.	4.59	2385.0	1.906	-1204.	-1177.	-1173.
480.	3.52	2443.3	1.977	-1250.	-1221.	-1216.
510.	2.44	2503.6	2.042	-1291.	-1262.	-1254.
540.	1.36	2565.8	2.101	-1329.	-1298.	-1289.
570.	0.28	2629.6	2.155	-1363.	-1331.	-1321.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

572.0	ROT SLANT RANGE(E) IS 2644.3	-1366.		
580.0	ROT SLANT RANGE(W) IS 2645.4			-1330.
	SMAX IS 2646.2			

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 900.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-720.	0.06	2642.7	2.862	1760.	1768.	0.
-690.	1.51	2557.0	2.851	1754.	1761.	1779.
-660.	3.01	2471.7	2.836	1746.	1752.	1769.
-630.	4.56	2386.9	2.817	1735.	1740.	1758.
-600.	6.16	2302.7	2.795	1722.	1726.	1744.
-570.	7.82	2219.2	2.767	1706.	1710.	1727.
-540.	9.54	2136.7	2.735	1687.	1689.	1706.
-510.	11.33	2055.2	2.696	1664.	1666.	1682.
-480.	13.20	1975.0	2.651	1637.	1638.	1654.
-450.	15.14	1896.2	2.598	1605.	1605.	1621.
-420.	17.16	1819.2	2.536	1567.	1567.	1582.
-390.	19.27	1744.2	2.464	1524.	1522.	1537.
-360.	21.47	1671.5	2.380	1473.	1470.	1485.
-330.	23.75	1601.5	2.283	1413.	1410.	1424.
-300.	26.11	1534.7	2.171	1345.	1341.	1354.
-270.	28.54	1471.4	2.042	1266.	1262.	1274.
-240.	31.02	1412.3	1.895	1176.	1171.	1182.
-210.	33.51	1357.9	1.728	1072.	1067.	1078.
-180.	35.97	1308.9	1.539	956.	951.	960.
-150.	38.32	1265.8	1.328	825.	820.	828.
-120.	40.48	1229.4	1.095	681.	676.	683.
-90.	42.33	1200.3	0.842	524.	520.	525.
-60.	43.77	1179.1	0.571	356.	353.	356.
-30.	44.69	1166.2	0.289	180.	179.	180.
0.	45.00	1161.8	0.	0.	0.	0.
30.	44.69	1166.2	0.289	-180.	-179.	-180.
60.	43.77	1179.1	0.571	-356.	-353.	-356.
90.	42.33	1200.3	0.842	-525.	-520.	-524.
120.	40.48	1229.4	1.095	-683.	-676.	-681.
150.	38.32	1265.8	1.328	-828.	-820.	-825.
180.	35.97	1308.9	1.539	-960.	-951.	-956.
210.	33.51	1357.9	1.728	-1078.	-1067.	-1072.
240.	31.02	1412.3	1.895	-1182.	-1171.	-1176.
270.	28.54	1471.4	2.042	-1274.	-1262.	-1266.
300.	26.11	1534.7	2.171	-1354.	-1341.	-1345.
330.	23.75	1601.5	2.283	-1424.	-1410.	-1413.
360.	21.47	1671.5	2.380	-1485.	-1470.	-1473.
390.	19.27	1744.2	2.464	-1537.	-1522.	-1524.
420.	17.16	1819.2	2.536	-1582.	-1567.	-1567.
450.	15.14	1896.2	2.598	-1621.	-1605.	-1605.
480.	13.20	1975.0	2.651	-1654.	-1638.	-1637.
510.	11.33	2055.2	2.696	-1682.	-1666.	-1664.
540.	9.54	2136.7	2.735	-1706.	-1689.	-1687.
570.	7.82	2219.2	2.767	-1727.	-1710.	-1706.
600.	6.16	2302.7	2.795	-1744.	-1726.	-1722.
630.	4.56	2386.9	2.817	-1758.	-1740.	-1735.
660.	3.01	2471.7	2.836	-1769.	-1752.	-1746.
690.	1.51	2557.0	2.851	-1779.	-1761.	-1754.
720.	0.06	2642.7	2.862	0.	-1768.	-1760.

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 900.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-720.	1.26	2571.9	2.987	1844.	1845.	1854.
-690.	2.82	2482.3	2.982	1842.	1842.	1852.
-660.	4.44	2393.0	2.975	1838.	1838.	1847.
-630.	6.14	2303.9	2.964	1832.	1831.	1841.
-600.	7.90	2215.2	2.950	1824.	1823.	1832.
-570.	9.75	2126.9	2.933	1813.	1812.	1821.
-540.	11.69	2039.3	2.910	1800.	1798.	1807.
-510.	13.74	1952.4	2.883	1783.	1781.	1790.
-480.	15.90	1866.4	2.849	1763.	1760.	1770.
-450.	18.20	1781.5	2.808	1738.	1735.	1745.
-420.	20.65	1698.0	2.759	1708.	1705.	1714.
-390.	23.26	1616.0	2.700	1673.	1668.	1678.
-360.	26.06	1536.0	2.630	1630.	1625.	1634.
-330.	29.07	1458.4	2.546	1578.	1573.	1582.
-300.	32.32	1383.4	2.446	1516.	1511.	1520.
-270.	35.81	1311.8	2.327	1443.	1437.	1447.
-240.	39.59	1244.1	2.185	1356.	1350.	1359.
-210.	43.64	1181.0	2.018	1252.	1246.	1255.
-180.	47.97	1123.3	1.821	1131.	1125.	1133.
-150.	52.52	1072.0	1.592	989.	983.	990.
-120.	57.19	1028.1	1.329	826.	821.	827.
-90.	61.77	992.6	1.033	643.	638.	643.
-60.	65.87	966.4	0.708	440.	437.	441.
-30.	68.87	950.4	0.360	224.	222.	224.
0.	70.00	944.9	0.	0.	0.	0.
30.	68.87	950.4	0.360	-224.	-222.	-224.
60.	65.87	966.4	0.708	-441.	-437.	-440.
90.	61.77	992.6	1.033	-643.	-638.	-643.
120.	57.19	1028.1	1.329	-827.	-821.	-826.
150.	52.52	1072.0	1.592	-990.	-983.	-989.
180.	47.97	1123.3	1.821	-1133.	-1125.	-1131.
210.	43.64	1181.0	2.018	-1255.	-1246.	-1252.
240.	39.59	1244.1	2.185	-1359.	-1350.	-1356.
270.	35.81	1311.8	2.327	-1447.	-1437.	-1443.
300.	32.32	1383.4	2.446	-1520.	-1511.	-1516.
330.	29.07	1458.4	2.546	-1582.	-1573.	-1578.
360.	26.06	1536.0	2.630	-1634.	-1625.	-1630.
390.	23.26	1616.0	2.700	-1678.	-1668.	-1673.
420.	20.65	1698.0	2.759	-1714.	-1705.	-1708.
450.	18.20	1781.5	2.808	-1745.	-1735.	-1738.
480.	15.90	1866.4	2.849	-1770.	-1760.	-1763.
510.	13.74	1952.4	2.883	-1790.	-1781.	-1783.
540.	11.69	2039.3	2.910	-1807.	-1798.	-1800.
570.	9.75	2126.9	2.933	-1821.	-1812.	-1813.
600.	7.90	2215.2	2.950	-1832.	-1823.	-1824.
630.	6.14	2303.9	2.964	-1841.	-1831.	-1832.
660.	4.44	2393.0	2.975	-1847.	-1838.	-1838.
690.	2.82	2482.3	2.982	-1852.	-1842.	-1842.
720.	1.26	2571.9	2.987	-1854.	-1845.	-1844.

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 900.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-720.	1.36	2566.0	2.998	1852.	1852.	1859.
-690.	2.93	2476.1	2.993	1850.	1849.	1857.
-660.	4.57	2386.4	2.987	1846.	1845.	1853.
-630.	6.27	2297.0	2.977	1841.	1839.	1847.
-600.	8.05	2207.8	2.964	1833.	1831.	1839.
-570.	9.92	2119.2	2.947	1823.	1820.	1829.
-540.	11.88	2031.1	2.926	1810.	1807.	1816.
-510.	13.95	1943.7	2.899	1794.	1791.	1800.
-480.	16.15	1857.2	2.867	1775.	1771.	1780.
-450.	18.48	1771.8	2.827	1751.	1747.	1755.
-420.	20.96	1687.6	2.780	1722.	1717.	1726.
-390.	23.63	1605.1	2.722	1687.	1682.	1691.
-360.	26.49	1524.4	2.653	1644.	1639.	1648.
-330.	29.58	1446.0	2.571	1594.	1588.	1597.
-300.	32.92	1370.3	2.472	1533.	1527.	1536.
-270.	36.55	1297.9	2.355	1461.	1455.	1463.
-240.	40.49	1229.3	2.214	1374.	1368.	1376.
-210.	44.75	1165.3	2.047	1271.	1265.	1273.
-180.	49.35	1106.7	1.850	1149.	1143.	1151.
-150.	54.27	1054.6	1.620	1007.	1001.	1008.
-120.	59.43	1009.9	1.355	842.	837.	843.
-90.	64.66	973.6	1.055	656.	652.	656.
-60.	69.59	946.9	0.724	450.	447.	450.
-30.	73.45	930.5	0.368	229.	228.	229.
0.	75.00	924.9	0.	0.	0.	0.
30.	73.45	930.5	0.368	-229.	-228.	-229.
60.	69.59	946.9	0.724	-450.	-447.	-450.
90.	64.66	973.6	1.055	-656.	-652.	-656.
120.	59.43	1009.9	1.355	-843.	-837.	-842.
150.	54.27	1054.6	1.620	-1008.	-1001.	-1007.
180.	49.35	1106.7	1.850	-1151.	-1143.	-1149.
210.	44.75	1165.3	2.047	-1273.	-1265.	-1271.
240.	40.49	1229.3	2.214	-1376.	-1368.	-1374.
270.	36.55	1297.9	2.355	-1463.	-1455.	-1461.
300.	32.92	1370.3	2.472	-1536.	-1527.	-1533.
330.	29.58	1446.0	2.571	-1597.	-1588.	-1594.
360.	26.49	1524.4	2.653	-1648.	-1639.	-1644.
390.	23.63	1605.1	2.722	-1691.	-1682.	-1687.
420.	20.96	1687.6	2.780	-1726.	-1717.	-1722.
450.	18.48	1771.8	2.827	-1755.	-1747.	-1751.
480.	16.15	1857.2	2.867	-1780.	-1771.	-1775.
510.	13.95	1943.7	2.899	-1800.	-1791.	-1794.
540.	11.88	2031.1	2.926	-1816.	-1807.	-1810.
570.	9.92	2119.2	2.947	-1829.	-1820.	-1823.
600.	8.05	2207.8	2.964	-1839.	-1831.	-1833.
630.	6.27	2297.0	2.977	-1847.	-1839.	-1841.
660.	4.57	2386.4	2.987	-1853.	-1845.	-1846.
690.	2.93	2476.1	2.993	-1857.	-1849.	-1850.
720.	1.36	2566.0	2.998	-1859.	-1852.	-1852.

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 900.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-720.	1.48	2558.8	3.010	1864.	1860.	1864.
-690.	3.07	2468.6	3.007	1862.	1858.	1862.
-660.	4.72	2378.4	3.001	1859.	1854.	1859.
-630.	6.44	2288.5	2.993	1853.	1849.	1853.
-600.	8.24	2198.9	2.980	1846.	1841.	1846.
-570.	10.12	2109.7	2.965	1837.	1831.	1837.
-540.	12.11	2021.1	2.944	1825.	1819.	1825.
-510.	14.21	1933.1	2.919	1809.	1803.	1809.
-480.	16.44	1846.0	2.888	1790.	1784.	1790.
-450.	18.81	1759.9	2.851	1767.	1761.	1767.
-420.	21.35	1675.0	2.805	1739.	1733.	1739.
-390.	24.08	1591.7	2.749	1705.	1698.	1705.
-360.	27.03	1510.2	2.683	1664.	1657.	1664.
-330.	30.22	1430.9	2.602	1615.	1608.	1615.
-300.	33.69	1354.2	2.506	1555.	1548.	1555.
-270.	37.48	1280.7	2.390	1483.	1476.	1483.
-240.	41.63	1211.0	2.251	1398.	1390.	1398.
-210.	46.18	1145.9	2.085	1295.	1288.	1295.
-180.	51.17	1086.3	1.888	1173.	1166.	1173.
-150.	56.62	1033.0	1.657	1030.	1023.	1030.
-120.	62.55	987.2	1.388	863.	858.	863.
-90.	68.93	950.1	1.083	673.	669.	673.
-60.	75.70	922.6	0.744	463.	459.	463.
-30.	82.77	905.7	0.379	236.	234.	236.
0.	89.98	900.0	0.	0.	0.	0.
30.	82.77	905.7	0.379	-236.	-234.	-236.
60.	75.70	922.6	0.744	-463.	-459.	-463.
90.	68.93	950.1	1.083	-673.	-669.	-673.
120.	62.55	987.2	1.388	-863.	-858.	-863.
150.	56.62	1033.0	1.657	-1030.	-1023.	-1030.
180.	51.17	1086.3	1.888	-1173.	-1166.	-1173.
210.	46.18	1145.9	2.085	-1295.	-1288.	-1295.
240.	41.63	1211.0	2.251	-1398.	-1390.	-1398.
270.	37.48	1280.7	2.390	-1483.	-1476.	-1483.
300.	33.69	1354.2	2.506	-1555.	-1548.	-1555.
330.	30.22	1430.9	2.602	-1615.	-1608.	-1615.
360.	27.03	1510.2	2.683	-1664.	-1657.	-1664.
390.	24.08	1591.7	2.749	-1705.	-1698.	-1705.
420.	21.35	1675.0	2.805	-1739.	-1733.	-1739.
450.	18.81	1759.9	2.851	-1767.	-1761.	-1767.
480.	16.44	1846.0	2.888	-1790.	-1784.	-1790.
510.	14.21	1933.1	2.919	-1809.	-1803.	-1809.
540.	12.11	2021.1	2.944	-1825.	-1819.	-1825.
570.	10.12	2109.7	2.965	-1837.	-1831.	-1837.
600.	8.24	2198.9	2.980	-1846.	-1841.	-1846.
630.	6.44	2288.5	2.993	-1853.	-1849.	-1853.
660.	4.72	2378.4	3.001	-1859.	-1854.	-1859.
690.	3.07	2468.6	3.007	-1862.	-1858.	-1862.
720.	1.48	2558.8	3.010	-1864.	-1860.	-1864.

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 950.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-270.	0.	0.	0.	547.	0.	562.
-240.	0.34	2707.1	0.792	492.	489.	505.
-210.	0.72	2684.7	0.700	436.	432.	445.
-180.	1.05	2665.1	0.605	378.	374.	385.
-150.	1.34	2648.4	0.508	318.	314.	323.
-120.	1.57	2634.7	0.409	256.	253.	259.
-90.	1.76	2623.9	0.308	193.	190.	195.
-60.	1.89	2616.2	0.206	130.	127.	130.
-30.	1.97	2611.6	0.103	65.	64.	65.
0.	2.00	2610.0	0.	0.	0.	0.
30.	1.97	2611.6	0.103	-65.	-64.	-65.
60.	1.89	2616.2	0.206	-130.	-127.	-130.
90.	1.76	2623.9	0.308	-195.	-190.	-193.
120.	1.57	2634.7	0.409	-259.	-253.	-256.
150.	1.34	2648.4	0.508	-323.	-314.	-318.
180.	1.05	2665.1	0.605	-385.	-374.	-378.
210.	0.72	2684.7	0.700	-445.	-432.	-436.
240.	0.34	2707.1	0.792	-505.	-489.	-492.
270.	0.	0.	0.	-562.	0.	-547.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

270.0 ROT SLANT RANGE(E) IS 2726.7 -562.

273.0 ROT SLANT RANGE(W) IS 2727.1 -552.

SMAX IS 2727.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 950.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-510.	0.40	2703.3	1.778	1091.	1098.	1131.
-480.	1.29	2651.0	1.713	1052.	1058.	1089.
-450.	2.16	2600.6	1.642	1010.	1015.	1044.
-420.	3.02	2552.5	1.567	965.	968.	995.
-390.	3.84	2506.7	1.486	917.	918.	943.
-360.	4.64	2463.4	1.400	865.	865.	888.
-330.	5.40	2422.7	1.308	809.	808.	829.
-300.	6.13	2384.9	1.211	750.	748.	767.
-270.	6.80	2350.1	1.108	687.	685.	702.
-240.	7.43	2318.5	1.000	621.	618.	633.
-210.	8.00	2290.1	0.888	552.	548.	561.
-180.	8.51	2265.3	0.770	480.	476.	487.
-150.	8.96	2244.0	0.649	405.	401.	409.
-120.	9.33	2226.4	0.524	327.	324.	330.
-90.	9.62	2212.6	0.396	247.	244.	249.
-60.	9.83	2202.7	0.265	166.	164.	167.
-30.	9.96	2196.7	0.133	83.	82.	84.
0.	10.00	2194.7	0.	0.	0.	0.
30.	9.96	2196.7	0.133	-84.	-82.	-83.
60.	9.83	2202.7	0.265	-167.	-164.	-166.
90.	9.62	2212.6	0.396	-249.	-244.	-247.
120.	9.33	2226.4	0.524	-330.	-324.	-327.
150.	8.96	2244.0	0.649	-409.	-401.	-405.
180.	8.51	2265.3	0.770	-487.	-476.	-480.
210.	8.00	2290.1	0.888	-561.	-548.	-552.
240.	7.43	2318.5	1.000	-633.	-618.	-621.
270.	6.80	2350.1	1.108	-702.	-685.	-687.
300.	6.13	2384.9	1.211	-767.	-748.	-750.
330.	5.40	2422.7	1.308	-829.	-808.	-809.
360.	4.64	2463.4	1.400	-888.	-865.	-865.
390.	3.84	2506.7	1.486	-943.	-918.	-917.
420.	3.02	2552.5	1.567	-995.	-968.	-965.
450.	2.16	2600.6	1.642	-1044.	-1015.	-1010.
480.	1.29	2651.0	1.713	-1089.	-1058.	-1052.
510.	0.40	2703.3	1.778	-1131.	-1098.	-1091.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

519.0 ROT SLANT RANGE(E) IS 2726.3 -1143.

527.0 ROT SLANT RANGE(W) IS 2727.4 -1111.

SMAX IS 2727.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 950.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.	0.	0.	1295.	0.	0.
-570.	0.99	2668.5	2.065	1266.	1276.	1308.
-540.	2.05	2607.4	2.011	1234.	1242.	1274.
-510.	3.10	2547.9	1.951	1198.	1205.	1235.
-480.	4.14	2490.4	1.886	1160.	1165.	1193.
-450.	5.17	2434.9	1.814	1117.	1121.	1148.
-420.	6.19	2381.6	1.737	1071.	1073.	1099.
-390.	7.19	2330.7	1.653	1020.	1021.	1045.
-360.	8.16	2282.4	1.563	965.	965.	987.
-330.	9.10	2237.0	1.465	906.	905.	925.
-300.	10.00	2194.6	1.361	843.	841.	859.
-270.	10.86	2155.4	1.250	775.	772.	789.
-240.	11.65	2119.7	1.132	703.	699.	714.
-210.	12.39	2087.6	1.007	626.	622.	635.
-180.	13.04	2059.3	0.876	545.	541.	552.
-150.	13.62	2035.1	0.740	461.	457.	466.
-120.	14.11	2015.0	0.598	373.	370.	376.
-90.	14.49	1999.2	0.453	283.	280.	284.
-60.	14.77	1987.8	0.304	190.	188.	191.
-30.	14.94	1981.0	0.152	95.	94.	96.
0.	15.00	1978.7	0.	0.	0.	0.
30.	14.94	1981.0	0.152	-96.	-94.	-95.
60.	14.77	1987.8	0.304	-191.	-188.	-190.
90.	14.49	1999.2	0.453	-284.	-280.	-283.
120.	14.11	2015.0	0.598	-376.	-370.	-373.
150.	13.62	2035.1	0.740	-466.	-457.	-461.
180.	13.04	2059.3	0.876	-552.	-541.	-545.
210.	12.39	2087.6	1.007	-635.	-622.	-626.
240.	11.65	2119.7	1.132	-714.	-699.	-703.
270.	10.86	2155.4	1.250	-789.	-772.	-775.
300.	10.00	2194.6	1.361	-859.	-841.	-843.
330.	9.10	2237.0	1.465	-925.	-905.	-906.
360.	8.16	2282.4	1.563	-987.	-965.	-965.
390.	7.19	2330.7	1.653	-1045.	-1021.	-1020.
420.	6.19	2381.6	1.737	-1099.	-1073.	-1071.
450.	5.17	2434.9	1.814	-1148.	-1121.	-1117.
480.	4.14	2490.4	1.886	-1193.	-1165.	-1160.
510.	3.10	2547.9	1.951	-1235.	-1205.	-1198.
540.	2.05	2607.4	2.011	-1274.	-1242.	-1234.
570.	0.99	2668.5	2.065	-1308.	-1276.	-1266.
600.	0.	0.	0.	0.	0.	-1295.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

592.0 ROT SLANT RANGE(E) IS 2725.5 -1332.

601.0 ROT SLANT RANGE(W) IS 2727.0 -1296.

SMAX IS 2727.4

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 950.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-720.	1.39	2645.3	2.797	1720.	1728.	1746.
-690.	2.85	2561.6	2.783	1712.	1719.	1738.
-660.	4.36	2478.4	2.765	1702.	1708.	1727.
-630.	5.92	2395.7	2.744	1690.	1695.	1713.
-600.	7.53	2313.8	2.718	1675.	1679.	1697.
-570.	9.19	2232.6	2.688	1657.	1661.	1678.
-540.	10.92	2152.5	2.653	1636.	1639.	1656.
-510.	12.71	2073.6	2.611	1611.	1613.	1630.
-480.	14.57	1995.9	2.562	1582.	1583.	1600.
-450.	16.51	1919.9	2.506	1548.	1548.	1564.
-420.	18.51	1845.7	2.441	1509.	1508.	1524.
-390.	20.60	1773.5	2.366	1463.	1462.	1477.
-360.	22.76	1703.8	2.280	1411.	1408.	1423.
-330.	25.00	1636.9	2.181	1350.	1347.	1361.
-300.	27.30	1573.1	2.068	1281.	1277.	1291.
-270.	29.65	1513.0	1.939	1202.	1198.	1210.
-240.	32.03	1456.9	1.793	1113.	1108.	1119.
-210.	34.40	1405.6	1.629	1011.	1006.	1017.
-180.	36.71	1359.4	1.446	898.	893.	903.
-150.	38.90	1319.0	1.243	773.	768.	776.
-120.	40.89	1285.0	1.022	636.	631.	638.
-90.	42.59	1257.8	0.784	488.	484.	489.
-60.	43.89	1238.1	0.531	331.	328.	331.
-30.	44.72	1226.1	0.268	167.	166.	167.
0.	45.00	1222.0	0.	0.	0.	0.
30.	44.72	1226.1	0.268	-167.	-166.	-167.
60.	43.89	1238.1	0.531	-331.	-328.	-331.
90.	42.59	1257.8	0.784	-489.	-484.	-488.
120.	40.89	1285.0	1.022	-638.	-631.	-636.
150.	38.90	1319.0	1.243	-776.	-768.	-773.
180.	36.71	1359.4	1.446	-903.	-893.	-898.
210.	34.40	1405.6	1.629	-1017.	-1006.	-1011.
240.	32.03	1456.9	1.793	-1119.	-1108.	-1113.
270.	29.65	1513.0	1.939	-1210.	-1198.	-1202.
300.	27.30	1573.1	2.068	-1291.	-1277.	-1281.
330.	25.00	1636.9	2.181	-1361.	-1347.	-1350.
360.	22.76	1703.8	2.280	-1423.	-1408.	-1411.
390.	20.60	1773.5	2.366	-1477.	-1462.	-1463.
420.	18.51	1845.7	2.441	-1524.	-1508.	-1509.
450.	16.51	1919.9	2.506	-1564.	-1548.	-1548.
480.	14.57	1995.9	2.562	-1600.	-1583.	-1582.
510.	12.71	2073.6	2.611	-1630.	-1613.	-1611.
540.	10.92	2152.5	2.653	-1656.	-1639.	-1636.
570.	9.19	2232.6	2.688	-1678.	-1661.	-1657.
600.	7.53	2313.8	2.718	-1697.	-1679.	-1675.
630.	5.92	2395.7	2.744	-1713.	-1695.	-1690.
660.	4.36	2478.4	2.765	-1727.	-1708.	-1702.
690.	2.85	2561.6	2.783	-1738.	-1719.	-1712.
720.	1.39	2645.3	2.797	-1746.	-1728.	-1720.

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 950.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-750.	1.22	2655.2	2.935	1812.	1813.	1823.
-720.	2.75	2567.3	2.931	1809.	1810.	1820.
-690.	4.34	2479.4	2.924	1806.	1806.	1816.
-660.	5.99	2391.9	2.914	1800.	1800.	1810.
-630.	7.71	2304.6	2.901	1793.	1792.	1802.
-600.	9.50	2217.9	2.884	1783.	1782.	1791.
-570.	11.38	2131.7	2.863	1770.	1769.	1779.
-540.	13.36	2046.1	2.838	1755.	1753.	1763.
-510.	15.43	1961.5	2.807	1737.	1734.	1744.
-480.	17.63	1877.8	2.770	1714.	1711.	1721.
-450.	19.95	1795.4	2.725	1687.	1683.	1694.
-420.	22.43	1714.4	2.672	1655.	1651.	1661.
-390.	25.06	1635.1	2.610	1617.	1612.	1622.
-360.	27.88	1557.9	2.535	1571.	1566.	1576.
-330.	30.89	1483.1	2.447	1517.	1512.	1522.
-300.	34.13	1411.2	2.344	1453.	1448.	1458.
-270.	37.59	1342.7	2.222	1378.	1373.	1382.
-240.	41.31	1278.1	2.079	1290.	1284.	1293.
-210.	45.27	1218.2	1.911	1187.	1181.	1189.
-180.	49.46	1163.7	1.718	1067.	1061.	1069.
-150.	53.82	1115.4	1.495	929.	924.	930.
-120.	58.24	1074.3	1.243	773.	768.	774.
-90.	62.51	1041.1	0.963	599.	595.	599.
-60.	66.28	1016.8	0.658	409.	406.	409.
-30.	68.99	1001.9	0.334	208.	206.	208.
0.	70.00	996.9	0.	0.	0.	0.
30.	68.99	1001.9	0.334	-208.	-206.	-208.
60.	66.28	1016.8	0.658	-409.	-406.	-409.
90.	62.51	1041.1	0.963	-599.	-595.	-599.
120.	58.24	1074.3	1.243	-774.	-768.	-773.
150.	53.82	1115.4	1.495	-930.	-924.	-929.
180.	49.46	1163.7	1.718	-1069.	-1061.	-1067.
210.	45.27	1218.2	1.911	-1189.	-1181.	-1187.
240.	41.31	1278.1	2.079	-1293.	-1284.	-1290.
270.	37.59	1342.7	2.222	-1382.	-1373.	-1378.
300.	34.13	1411.2	2.344	-1458.	-1448.	-1453.
330.	30.89	1483.1	2.447	-1522.	-1512.	-1517.
360.	27.88	1557.9	2.535	-1576.	-1566.	-1571.
390.	25.06	1635.1	2.610	-1622.	-1612.	-1617.
420.	22.43	1714.4	2.672	-1661.	-1651.	-1655.
450.	19.95	1795.4	2.725	-1694.	-1683.	-1687.
480.	17.63	1877.8	2.770	-1721.	-1711.	-1714.
510.	15.43	1961.5	2.807	-1744.	-1734.	-1737.
540.	13.36	2046.1	2.838	-1763.	-1753.	-1755.
570.	11.38	2131.7	2.863	-1779.	-1769.	-1770.
600.	9.50	2217.9	2.884	-1791.	-1782.	-1783.
630.	7.71	2304.6	2.901	-1802.	-1792.	-1793.
660.	5.99	2391.9	2.914	-1810.	-1800.	-1800.
690.	4.34	2479.4	2.924	-1816.	-1806.	-1806.
720.	2.75	2567.3	2.931	-1820.	-1810.	-1809.

```
 750.      1.22     2655.2      2.935      -1823.      -1813.      -1812.
THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH
 771.0    ROT SLANT RANGE(E) IS 2727.1  -1824.
 773.0    ROT SLANT RANGE(W) IS 2726.3                              -1812.
          SMAX IS 2727.4
```

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 950.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-750.	1.32	2649.0	2.946	1820.	1820.	1828.
-720.	2.87	2560.7	2.942	1818.	1817.	1826.
-690.	4.47	2472.5	2.936	1814.	1814.	1822.
-660.	6.13	2384.6	2.927	1809.	1808.	1816.
-630.	7.87	2297.0	2.914	1802.	1800.	1809.
-600.	9.68	2209.8	2.898	1793.	1791.	1799.
-570.	11.58	2123.1	2.879	1781.	1778.	1787.
-540.	13.57	2037.1	2.854	1766.	1763.	1772.
-510.	15.68	1951.9	2.824	1748.	1745.	1754.
-480.	17.90	1867.7	2.788	1726.	1722.	1732.
-450.	20.27	1784.7	2.745	1700.	1696.	1705.
-420.	22.79	1703.1	2.694	1669.	1664.	1673.
-390.	25.48	1623.2	2.632	1631.	1626.	1635.
-360.	28.36	1545.3	2.559	1587.	1581.	1590.
-330.	31.47	1469.8	2.473	1534.	1528.	1537.
-300.	34.81	1397.0	2.371	1471.	1465.	1474.
-270.	38.42	1327.7	2.250	1396.	1390.	1399.
-240.	42.30	1262.3	2.108	1308.	1302.	1310.
-210.	46.49	1201.5	1.941	1205.	1199.	1207.
-180.	50.97	1146.1	1.746	1085.	1079.	1086.
-150.	55.70	1097.0	1.522	946.	940.	947.
-120.	60.62	1055.1	1.268	788.	783.	789.
-90.	65.54	1021.2	0.983	611.	607.	612.
-60.	70.10	996.4	0.672	418.	415.	418.
-30.	73.61	981.1	0.341	212.	211.	212.
0.	75.00	976.0	0.	0.	0.	0.
30.	73.61	981.1	0.341	-212.	-211.	-212.
60.	70.10	996.4	0.672	-418.	-415.	-418.
90.	65.54	1021.2	0.983	-612.	-607.	-611.
120.	60.62	1055.1	1.268	-789.	-783.	-788.
150.	55.70	1097.0	1.522	-947.	-940.	-946.
180.	50.97	1146.1	1.746	-1086.	-1079.	-1085.
210.	46.49	1201.5	1.941	-1207.	-1199.	-1205.
240.	42.30	1262.3	2.108	-1310.	-1302.	-1308.
270.	38.42	1327.7	2.250	-1399.	-1390.	-1396.
300.	34.81	1397.0	2.371	-1474.	-1465.	-1471.
330.	31.47	1469.8	2.473	-1537.	-1528.	-1534.
360.	28.36	1545.3	2.559	-1590.	-1581.	-1587.
390.	25.48	1623.2	2.632	-1635.	-1626.	-1631.
420.	22.79	1703.1	2.694	-1673.	-1664.	-1669.
450.	20.27	1784.7	2.745	-1705.	-1696.	-1700.
480.	17.90	1867.7	2.788	-1732.	-1722.	-1726.
510.	15.68	1951.9	2.824	-1754.	-1745.	-1748.
540.	13.57	2037.1	2.854	-1772.	-1763.	-1766.
570.	11.58	2123.1	2.879	-1787.	-1778.	-1781.
600.	9.68	2209.8	2.898	-1799.	-1791.	-1793.
630.	7.87	2297.0	2.914	-1809.	-1800.	-1802.
660.	6.13	2384.6	2.927	-1816.	-1808.	-1809.
690.	4.47	2472.5	2.936	-1822.	-1814.	-1814.
720.	2.87	2560.7	2.942	-1826.	-1817.	-1818.

```
 750.      1.32     2649.0      2.946      -1828.      -1820.      -1820.
THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH
 773.0    ROT SLANT RANGE(E) IS 2726.2  -1829.
 775.0    ROT SLANT RANGE(W) IS 2727.1                              -1820.
          SMAX IS 2727.4
```

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 950.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-750.	1.45	2641.5	2.959	1832.	1828.	1832.
-720.	3.01	2552.7	2.956	1830.	1826.	1830.
-690.	4.62	2464.1	2.951	1827.	1823.	1827.
-660.	6.30	2375.7	2.942	1822.	1818.	1822.
-630.	8.06	2287.6	2.931	1816.	1811.	1816.
-600.	9.89	2199.9	2.916	1807.	1802.	1807.
-570.	11.81	2112.7	2.898	1796.	1790.	1796.
-540.	13.84	2026.1	2.874	1782.	1776.	1782.
-510.	15.97	1940.3	2.846	1764.	1758.	1764.
-480.	18.24	1855.4	2.811	1743.	1737.	1743.
-450.	20.66	1771.7	2.770	1718.	1711.	1718.
-420.	23.23	1689.3	2.720	1687.	1680.	1687.
-390.	26.00	1608.6	2.661	1651.	1644.	1651.
-360.	28.97	1529.8	2.590	1607.	1600.	1607.
-330.	32.19	1453.3	2.505	1555.	1548.	1555.
-300.	35.67	1379.6	2.405	1493.	1486.	1493.
-270.	39.46	1309.2	2.286	1419.	1412.	1419.
-240.	43.58	1242.7	2.144	1332.	1325.	1332.
-210.	48.07	1180.8	1.978	1229.	1222.	1229.
-180.	52.96	1124.3	1.783	1108.	1102.	1108.
-150.	58.26	1074.1	1.557	968.	962.	968.
-120.	63.97	1031.2	1.299	808.	802.	808.
-90.	70.07	996.5	1.009	628.	623.	628.
-60.	76.51	971.0	0.691	430.	427.	430.
-30.	83.19	955.3	0.351	218.	217.	218.
0.	89.97	950.0	0.	0.	0.	0.
30.	83.19	955.3	0.351	-218.	-217.	-218.
60.	76.51	971.0	0.691	-430.	-427.	-430.
90.	70.07	996.5	1.009	-628.	-623.	-628.
120.	63.97	1031.2	1.299	-808.	-802.	-808.
150.	58.26	1074.1	1.557	-968.	-962.	-968.
180.	52.96	1124.3	1.783	-1108.	-1102.	-1108.
210.	48.07	1180.8	1.978	-1229.	-1222.	-1229.
240.	43.58	1242.7	2.144	-1332.	-1325.	-1332.
270.	39.46	1309.2	2.286	-1419.	-1412.	-1419.
300.	35.67	1379.6	2.405	-1493.	-1486.	-1493.
330.	32.19	1453.3	2.505	-1555.	-1548.	-1555.
360.	28.97	1529.8	2.590	-1607.	-1600.	-1607.
390.	26.00	1608.6	2.661	-1651.	-1644.	-1651.
420.	23.23	1689.3	2.720	-1687.	-1680.	-1687.
450.	20.66	1771.7	2.770	-1718.	-1711.	-1718.
480.	18.24	1855.4	2.811	-1743.	-1737.	-1743.
510.	15.97	1940.3	2.846	-1764.	-1758.	-1764.
540.	13.84	2026.1	2.874	-1782.	-1776.	-1782.
570.	11.81	2112.7	2.898	-1796.	-1790.	-1796.
600.	9.89	2199.9	2.916	-1807.	-1802.	-1807.
630.	8.06	2287.6	2.931	-1816.	-1811.	-1816.
660.	6.30	2375.7	2.942	-1822.	-1818.	-1822.
690.	4.62	2464.1	2.951	-1827.	-1823.	-1827.
720.	3.01	2552.7	2.956	-1830.	-1826.	-1830.

```
 750.     1.45     2641.5      2.959      -1832.      -1828.      -1832.
THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH
 776.0    ROT SLANT RANGE(E) IS 2725.4  -1832.
 776.0    ROT SLANT RANGE(W) IS 2725.4                              -1832.
          SMAX IS 2727.4
```

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 2.000 DEG. SATELLITE ALTITUDE 1000.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-270.	0.04	2804.7	0.830	516.	513.	531.
-240.	0.44	2781.0	0.746	464.	461.	476.
-210.	0.79	2759.9	0.659	411.	407.	420.
-180.	1.11	2741.5	0.569	355.	352.	362.
-150.	1.38	2725.8	0.478	299.	295.	304.
-120.	1.60	2712.9	0.384	241.	237.	244.
-90.	1.77	2702.8	0.289	182.	179.	184.
-60.	1.90	2695.5	0.194	122.	120.	123.
-30.	1.97	2691.2	0.097	61.	60.	61.
0.	2.00	2689.7	0.	0.	0.	0.
30.	1.97	2691.2	0.097	-61.	-60.	-61.
60.	1.90	2695.5	0.194	-123.	-120.	-122.
90.	1.77	2702.8	0.289	-184.	-179.	-182.
120.	1.60	2712.9	0.384	-244.	-237.	-241.
150.	1.38	2725.8	0.478	-304.	-295.	-299.
180.	1.11	2741.5	0.569	-362.	-352.	-355.
210.	0.79	2759.9	0.659	-420.	-407.	-411.
240.	0.44	2781.0	0.746	-476.	-461.	-464.
270.	0.04	2804.7	0.830	-531.	-513.	-516.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

279.0 ROT SLANT RANGE(E) IS 2806.4 -547.

282.0 ROT SLANT RANGE(W) IS 2806.6 -536.

SMAX IS 2807.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 10.000 DEG. SATELLITE ALTITUDE 1000.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-540.	0.03	2805.5	1.755	1075.	1084.	0.
-510.	0.90	2753.7	1.695	1040.	1047.	1080.
-480.	1.75	2703.8	1.630	1002.	1007.	1038.
-450.	2.59	2655.9	1.561	961.	965.	994.
-420.	3.41	2610.2	1.487	917.	919.	946.
-390.	4.20	2566.7	1.409	869.	870.	895.
-360.	4.96	2525.7	1.325	819.	819.	842.
-330.	5.68	2487.3	1.236	765.	764.	785.
-300.	6.37	2451.6	1.143	708.	706.	725.
-270.	7.01	2418.8	1.045	648.	645.	662.
-240.	7.60	2388.9	0.942	585.	582.	597.
-210.	8.14	2362.3	0.835	520.	516.	528.
-180.	8.61	2338.9	0.724	451.	447.	458.
-150.	9.03	2318.9	0.609	380.	376.	385.
-120.	9.37	2302.4	0.491	307.	303.	310.
-90.	9.64	2289.4	0.371	232.	229.	234.
-60.	9.84	2280.1	0.248	156.	153.	156.
-30.	9.96	2274.5	0.125	78.	77.	78.
0.	10.00	2272.7	0.	0.	0.	0.
30.	9.96	2274.5	0.125	-78.	-77.	-78.
60.	9.84	2280.1	0.248	-156.	-153.	-156.
90.	9.64	2289.4	0.371	-234.	-229.	-232.
120.	9.37	2302.4	0.491	-310.	-303.	-307.
150.	9.03	2318.9	0.609	-385.	-376.	-380.
180.	8.61	2338.9	0.724	-458.	-447.	-451.
210.	8.14	2362.3	0.835	-528.	-516.	-520.
240.	7.60	2388.9	0.942	-597.	-582.	-585.
270.	7.01	2418.8	1.045	-662.	-645.	-648.
300.	6.37	2451.6	1.143	-725.	-706.	-708.
330.	5.68	2487.3	1.236	-785.	-764.	-765.
360.	4.96	2525.7	1.325	-842.	-819.	-819.
390.	4.20	2566.7	1.409	-895.	-870.	-869.
420.	3.41	2610.2	1.487	-946.	-919.	-917.
450.	2.59	2655.9	1.561	-994.	-965.	-961.
480.	1.75	2703.8	1.630	-1038.	-1007.	-1002.
510.	0.90	2753.7	1.695	-1080.	-1047.	-1040.
540.	0.03	2805.5	1.755	0.	-1084.	-1075.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

536.0 ROT SLANT RANGE(E) IS 2805.8 -1114.

544.0 ROT SLANT RANGE(W) IS 2805.6 -1080.

SMAX IS 2807.2

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 15.000 DEG. SATELLITE ALTITUDE 1000.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-600.	0.64	2769.0	2.029	1242.	1254.	1288.
-570.	1.67	2708.8	1.979	1213.	1223.	1256.
-540.	2.69	2650.3	1.924	1181.	1189.	1220.
-510.	3.71	2593.4	1.864	1145.	1152.	1182.
-480.	4.72	2538.5	1.799	1106.	1111.	1140.
-450.	5.71	2485.6	1.728	1064.	1068.	1095.
-420.	6.69	2434.9	1.652	1018.	1020.	1046.
-390.	7.65	2386.5	1.569	969.	969.	993.
-360.	8.57	2340.8	1.481	915.	915.	937.
-330.	9.47	2297.7	1.386	858.	856.	877.
-300.	10.32	2257.6	1.286	796.	794.	813.
-270.	11.13	2220.7	1.179	731.	728.	745.
-240.	11.88	2187.0	1.066	662.	658.	673.
-210.	12.57	2156.8	0.947	589.	585.	598.
-180.	13.18	2130.2	0.823	513.	509.	519.
-150.	13.72	2107.4	0.694	433.	429.	437.
-120.	14.17	2088.6	0.561	350.	347.	353.
-90.	14.53	2073.8	0.424	265.	262.	267.
-60.	14.79	2063.2	0.284	178.	176.	179.
-30.	14.95	2056.8	0.143	89.	88.	90.
0.	15.00	2054.6	0.	0.	0.	0.
30.	14.95	2056.8	0.143	-90.	-88.	-89.
60.	14.79	2063.2	0.284	-179.	-176.	-178.
90.	14.53	2073.8	0.424	-267.	-262.	-265.
120.	14.17	2088.6	0.561	-353.	-347.	-350.
150.	13.72	2107.4	0.694	-437.	-429.	-433.
180.	13.18	2130.2	0.823	-519.	-509.	-513.
210.	12.57	2156.8	0.947	-598.	-585.	-589.
240.	11.88	2187.0	1.066	-673.	-658.	-662.
270.	11.13	2220.7	1.179	-745.	-728.	-731.
300.	10.32	2257.6	1.286	-813.	-794.	-796.
330.	9.47	2297.7	1.386	-877.	-856.	-858.
360.	8.57	2340.8	1.481	-937.	-915.	-915.
390.	7.65	2386.5	1.569	-993.	-969.	-969.
420.	6.69	2434.9	1.652	-1046.	-1020.	-1018.
450.	5.71	2485.6	1.728	-1095.	-1068.	-1064.
480.	4.72	2538.5	1.799	-1140.	-1111.	-1106.
510.	3.71	2593.4	1.864	-1182.	-1152.	-1145.
540.	2.69	2650.3	1.924	-1220.	-1189.	-1181.
570.	1.67	2708.8	1.979	-1256.	-1223.	-1213.
600.	0.64	2769.0	2.029	-1288.	-1254.	-1242.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

612.0	ROT SLANT RANGE(E) IS 2805.3			-1300.		
622.0	ROT SLANT RANGE(W) IS 2807.1					-1262.
	SMAX IS 2807.2					

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 45.000 DEG. SATELLITE ALTITUDE 1000.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-750.	1.27	2732.0	2.745	1687.	1696.	1715.
-720.	2.70	2649.9	2.731	1680.	1687.	1707.
-690.	4.17	2568.2	2.715	1670.	1677.	1696.
-660.	5.68	2487.0	2.695	1659.	1665.	1684.
-630.	7.25	2406.5	2.671	1645.	1650.	1669.
-600.	8.86	2326.8	2.643	1629.	1633.	1651.
-570.	10.53	2248.0	2.610	1609.	1612.	1630.
-540.	12.26	2170.3	2.571	1586.	1588.	1606.
-510.	14.05	2093.8	2.527	1559.	1561.	1578.
-480.	15.90	2018.8	2.475	1529.	1529.	1546.
-450.	17.82	1945.4	2.416	1493.	1493.	1509.
-420.	19.81	1873.9	2.349	1452.	1451.	1467.
-390.	21.86	1804.6	2.271	1405.	1403.	1419.
-360.	23.99	1737.7	2.183	1351.	1349.	1364.
-330.	26.17	1673.7	2.083	1290.	1287.	1301.
-300.	28.40	1612.9	1.969	1221.	1217.	1230.
-270.	30.67	1555.7	1.841	1142.	1137.	1150.
-240.	32.95	1502.6	1.698	1054.	1049.	1060.
-210.	35.20	1454.0	1.538	955.	950.	960.
-180.	37.37	1410.5	1.360	845.	840.	850.
-150.	39.42	1372.6	1.166	725.	721.	728.
-120.	41.26	1340.7	0.956	595.	591.	597.
-90.	42.81	1315.3	0.732	456.	452.	457.
-60.	44.00	1296.9	0.495	308.	306.	309.
-30.	44.75	1285.7	0.250	156.	154.	156.
0.	45.00	1282.0	0.	0.	0.	0.
30.	44.75	1285.7	0.250	-156.	-154.	-156.
60.	44.00	1296.9	0.495	-309.	-306.	-308.
90.	42.81	1315.3	0.732	-457.	-452.	-456.
120.	41.26	1340.7	0.956	-597.	-591.	-595.
150.	39.42	1372.6	1.166	-728.	-721.	-725.
180.	37.37	1410.5	1.360	-850.	-840.	-845.
210.	35.20	1454.0	1.538	-960.	-950.	-955.
240.	32.95	1502.6	1.698	-1060.	-1049.	-1054.
270.	30.67	1555.7	1.841	-1150.	-1137.	-1142.
300.	28.40	1612.9	1.969	-1230.	-1217.	-1221.
330.	26.17	1673.7	2.083	-1301.	-1287.	-1290.
360.	23.99	1737.7	2.183	-1364.	-1349.	-1351.
390.	21.86	1804.6	2.271	-1419.	-1403.	-1405.
420.	19.81	1873.9	2.349	-1467.	-1451.	-1452.
450.	17.82	1945.4	2.416	-1509.	-1493.	-1493.
480.	15.90	2018.8	2.475	-1546.	-1529.	-1529.
510.	14.05	2093.8	2.527	-1578.	-1561.	-1559.
540.	12.26	2170.3	2.571	-1606.	-1588.	-1586.
570.	10.53	2248.0	2.610	-1630.	-1612.	-1609.
600.	8.86	2326.8	2.643	-1651.	-1633.	-1629.
630.	7.25	2406.5	2.671	-1669.	-1650.	-1645.
660.	5.68	2487.0	2.695	-1684.	-1665.	-1659.
690.	4.17	2568.2	2.715	-1696.	-1677.	-1670.
720.	2.70	2649.9	2.731	-1707.	-1687.	-1680.

```
 750.      1.27     2732.0      2.745      -1715.      -1696.      -1687.
THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH
 771.0    ROT SLANT RANGE(E) IS 2804.8  -1720.
 777.0    ROT SLANT RANGE(W) IS 2804.5                            -1692.
          SMAX IS 2807.2
```

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 70.000 DEG. SATELLITE ALTITUDE 1000.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-780.	1.18	2737.2	2.885	1780.	1782.	1792.
-750.	2.68	2650.7	2.880	1778.	1779.	1789.
-720.	4.24	2564.4	2.874	1774.	1775.	1785.
-690.	5.85	2478.3	2.864	1769.	1769.	1780.
-660.	7.53	2392.6	2.852	1762.	1762.	1772.
-630.	9.27	2307.2	2.836	1753.	1752.	1763.
-600.	11.09	2222.4	2.817	1742.	1740.	1751.
-570.	13.00	2138.2	2.793	1728.	1726.	1736.
-540.	14.99	2054.8	2.765	1710.	1708.	1719.
-510.	17.10	1972.4	2.731	1690.	1687.	1697.
-480.	19.32	1891.1	2.690	1665.	1662.	1673.
-450.	21.67	1811.0	2.643	1636.	1632.	1643.
-420.	24.16	1732.6	2.586	1602.	1598.	1608.
-390.	26.81	1656.0	2.520	1561.	1557.	1567.
-360.	29.63	1581.5	2.442	1514.	1509.	1519.
-330.	32.64	1509.6	2.351	1458.	1452.	1462.
-300.	35.85	1440.6	2.245	1392.	1387.	1397.
-270.	39.28	1375.0	2.121	1316.	1310.	1320.
-240.	42.93	1313.5	1.977	1227.	1222.	1230.
-210.	46.79	1256.6	1.811	1125.	1119.	1127.
-180.	50.83	1205.1	1.621	1007.	1002.	1009.
-150.	55.00	1159.6	1.406	874.	868.	875.
-120.	59.18	1121.0	1.164	724.	719.	725.
-90.	63.17	1090.0	0.899	559.	555.	560.
-60.	66.64	1067.3	0.612	381.	378.	381.
-30.	69.10	1053.4	0.310	193.	192.	193.
0.	70.00	1048.7	0.	0.	0.	0.
30.	69.10	1053.4	0.310	-193.	-192.	-193.
60.	66.64	1067.3	0.612	-381.	-378.	-381.
90.	63.17	1090.0	0.899	-560.	-555.	-559.
120.	59.18	1121.0	1.164	-725.	-719.	-724.
150.	55.00	1159.6	1.406	-875.	-868.	-874.
180.	50.83	1205.1	1.621	-1009.	-1002.	-1007.
210.	46.79	1256.6	1.811	-1127.	-1119.	-1125.
240.	42.93	1313.5	1.977	-1230.	-1222.	-1227.
270.	39.28	1375.0	2.121	-1320.	-1310.	-1316.
300.	35.85	1440.6	2.245	-1397.	-1387.	-1392.
330.	32.64	1509.6	2.351	-1462.	-1452.	-1458.
360.	29.63	1581.5	2.442	-1519.	-1509.	-1514.
390.	26.81	1656.0	2.520	-1567.	-1557.	-1561.
420.	24.16	1732.6	2.586	-1608.	-1598.	-1602.
450.	21.67	1811.0	2.643	-1643.	-1632.	-1636.
480.	19.32	1891.1	2.690	-1673.	-1662.	-1665.
510.	17.10	1972.4	2.731	-1697.	-1687.	-1690.
540.	14.99	2054.8	2.765	-1719.	-1708.	-1710.
570.	13.00	2138.2	2.793	-1736.	-1726.	-1728.
600.	11.09	2222.4	2.817	-1751.	-1740.	-1742.
630.	9.27	2307.2	2.836	-1763.	-1752.	-1753.
660.	7.53	2392.6	2.852	-1772.	-1762.	-1762.
690.	5.85	2478.3	2.864	-1780.	-1769.	-1769.

```
 720.      4.24     2564.4      2.874      -1785.      -1775.      -1774.
 750.      2.68     2650.7      2.880      -1789.      -1779.      -1778.
 780.      1.18     2737.2      2.885      -1792.      -1782.      -1780.
THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH
 800.0    ROT SLANT RANGE(E) IS 2805.8  -1793.
 803.0    ROT SLANT RANGE(W) IS 2807.0                              -1781.
          SMAX IS 2807.2
```

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 75.000 DEG. SATELLITE ALTITUDE 1000.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-780.	1.29	2730.7	2.896	1788.	1789.	1797.
-750.	2.81	2643.9	2.892	1787.	1787.	1795.
-720.	4.37	2557.2	2.886	1783.	1783.	1791.
-690.	6.00	2470.7	2.877	1779.	1778.	1786.
-660.	7.69	2384.6	2.866	1772.	1770.	1779.
-630.	9.45	2298.8	2.851	1763.	1761.	1770.
-600.	11.29	2213.5	2.833	1752.	1750.	1759.
-570.	13.21	2128.9	2.810	1739.	1736.	1745.
-540.	15.24	2045.0	2.782	1722.	1719.	1728.
-510.	17.37	1962.0	2.749	1702.	1698.	1708.
-480.	19.63	1880.1	2.710	1678.	1674.	1684.
-450.	22.02	1799.5	2.664	1650.	1645.	1655.
-420.	24.56	1720.4	2.608	1616.	1611.	1621.
-390.	27.28	1643.0	2.544	1577.	1571.	1581.
-360.	30.17	1567.9	2.467	1530.	1524.	1533.
-330.	33.28	1495.2	2.377	1475.	1469.	1478.
-300.	36.61	1425.4	2.272	1410.	1404.	1413.
-270.	40.19	1359.0	2.149	1334.	1328.	1337.
-240.	44.02	1296.6	2.006	1246.	1239.	1248.
-210.	48.11	1238.9	1.840	1143.	1137.	1145.
-180.	52.46	1186.5	1.649	1025.	1019.	1026.
-150.	57.02	1140.2	1.432	890.	885.	891.
-120.	61.70	1100.8	1.188	738.	734.	739.
-90.	66.33	1069.2	0.918	571.	567.	571.
-60.	70.56	1046.0	0.626	389.	387.	390.
-30.	73.76	1031.8	0.317	197.	196.	198.
0.	75.00	1027.0	0.	0.	0.	0.
30.	73.76	1031.8	0.317	-198.	-196.	-197.
60.	70.56	1046.0	0.626	-390.	-387.	-389.
90.	66.33	1069.2	0.918	-571.	-567.	-571.
120.	61.70	1100.8	1.188	-739.	-734.	-738.
150.	57.02	1140.2	1.432	-891.	-885.	-890.
180.	52.46	1186.5	1.649	-1026.	-1019.	-1025.
210.	48.11	1238.9	1.840	-1145.	-1137.	-1143.
240.	44.02	1296.6	2.006	-1248.	-1239.	-1246.
270.	40.19	1359.0	2.149	-1337.	-1328.	-1334.
300.	36.61	1425.4	2.272	-1413.	-1404.	-1410.
330.	33.28	1495.2	2.377	-1478.	-1469.	-1475.
360.	30.17	1567.9	2.467	-1533.	-1524.	-1530.
390.	27.28	1643.0	2.544	-1581.	-1571.	-1577.
420.	24.56	1720.4	2.608	-1621.	-1611.	-1616.
450.	22.02	1799.5	2.664	-1655.	-1645.	-1650.
480.	19.63	1880.1	2.710	-1684.	-1674.	-1678.
510.	17.37	1962.0	2.749	-1708.	-1698.	-1702.
540.	15.24	2045.0	2.782	-1728.	-1719.	-1722.
570.	13.21	2128.9	2.810	-1745.	-1736.	-1739.
600.	11.29	2213.5	2.833	-1759.	-1750.	-1752.
630.	9.45	2298.8	2.851	-1770.	-1761.	-1763.
660.	7.69	2384.6	2.866	-1779.	-1770.	-1772.
690.	6.00	2470.7	2.877	-1786.	-1778.	-1779.

```
 720.      4.37     2557.2      2.886      -1791.      -1783.      -1783.
 750.      2.81     2643.9      2.892      -1795.      -1787.      -1787.
 780.      1.29     2730.7      2.896      -1797.      -1789.      -1788.
THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH
 802.0    ROT SLANT RANGE(E) IS 2804.4  -1798.
 804.0    ROT SLANT RANGE(W) IS 2804.7                            -1789.
          SMAX IS 2807.2
```

DOPPLER SHIFT AS A FUNCTION OF TIME FROM CLOSEST APPROACH

ELEVATION AT TCA 90.000 DEG. SATELLITE ALTITUDE 1000.0 NAUTICAL MILES

LATITUDE OF OBSERVER 0. DEG.

TIME FROM CA-SEC	ELEV. ANGLE DEG (NR)	SLANT RANGE NM (NR)	RANGE RATE NM/SEC (NR)	DOPPLER SHIFT IN CYCLES/SECOND AT 100.000 MCS. SUBTRACK TO EAST	NON-ROT. EARTH	SUBTRACK TO WEST
-780.	1.43	2722.7	2.909	1801.	1797.	1801.
-750.	2.95	2635.5	2.906	1800.	1796.	1800.
-720.	4.53	2548.4	2.901	1797.	1792.	1797.
-690.	6.17	2461.4	2.893	1792.	1787.	1792.
-660.	7.88	2374.8	2.883	1786.	1781.	1786.
-630.	9.66	2288.5	2.869	1778.	1772.	1778.
-600.	11.53	2202.7	2.852	1767.	1762.	1767.
-570.	13.48	2117.4	2.830	1754.	1748.	1754.
-540.	15.54	2032.9	2.804	1738.	1732.	1738.
-510.	17.71	1949.3	2.772	1719.	1713.	1719.
-480.	20.02	1866.6	2.735	1696.	1689.	1696.
-450.	22.46	1785.3	2.690	1668.	1661.	1668.
-420.	25.07	1705.4	2.636	1636.	1628.	1636.
-390.	27.86	1627.2	2.573	1597.	1589.	1597.
-360.	30.86	1551.1	2.498	1551.	1543.	1551.
-330.	34.09	1477.4	2.410	1496.	1489.	1496.
-300.	37.57	1406.6	2.307	1432.	1425.	1432.
-270.	41.34	1339.2	2.185	1357.	1350.	1357.
-240.	45.43	1275.7	2.043	1269.	1262.	1269.
-210.	49.85	1216.9	1.877	1166.	1159.	1166.
-180.	54.62	1163.4	1.685	1047.	1041.	1047.
-150.	59.77	1116.1	1.465	911.	905.	911.
-120.	65.27	1075.8	1.217	757.	752.	757.
-90.	71.11	1043.3	0.942	586.	582.	586.
-60.	77.23	1019.5	0.643	400.	397.	400.
-30.	83.56	1004.9	0.326	203.	202.	203.
0.	89.97	1000.0	0.	0.	0.	0.
30.	83.56	1004.9	0.326	-203.	-202.	-203.
60.	77.23	1019.5	0.643	-400.	-397.	-400.
90.	71.11	1043.3	0.942	-586.	-582.	-586.
120.	65.27	1075.8	1.217	-757.	-752.	-757.
150.	59.77	1116.1	1.465	-911.	-905.	-911.
180.	54.62	1163.4	1.685	-1047.	-1041.	-1047.
210.	49.85	1216.9	1.877	-1166.	-1159.	-1166.
240.	45.43	1275.7	2.043	-1269.	-1262.	-1269.
270.	41.34	1339.2	2.185	-1357.	-1350.	-1357.
300.	37.57	1406.6	2.307	-1432.	-1425.	-1432.
330.	34.09	1477.4	2.410	-1496.	-1489.	-1496.
360.	30.86	1551.1	2.498	-1551.	-1543.	-1551.
390.	27.86	1627.2	2.573	-1597.	-1589.	-1597.
420.	25.07	1705.4	2.636	-1636.	-1628.	-1636.
450.	22.46	1785.3	2.690	-1668.	-1661.	-1668.
480.	20.02	1866.6	2.735	-1696.	-1689.	-1696.
510.	17.71	1949.3	2.772	-1719.	-1713.	-1719.
540.	15.54	2032.9	2.804	-1738.	-1732.	-1738.
570.	13.48	2117.4	2.830	-1754.	-1748.	-1754.
600.	11.53	2202.7	2.852	-1767.	-1762.	-1767.
630.	9.66	2288.5	2.869	-1778.	-1772.	-1778.
660.	7.88	2374.8	2.883	-1786.	-1781.	-1786.
690.	6.17	2461.4	2.893	-1792.	-1787.	-1792.

720.	4.53	2548.4	2.901	-1797.	-1792.	-1797.
750.	2.95	2635.5	2.906	-1800.	-1796.	-1800.
780.	1.43	2722.7	2.909	-1801.	-1797.	-1801.

THE FOLLOWING DATA IS FOR THE SATELLITE TIME OF SET FOR A ROTATING EARTH

806.0 ROT SLANT RANGE(E) IS 2805.7 -1801.

806.0 ROT SLANT RANGE(W) IS 2805.7 -1801.

SMAX IS 2807.2

INITIAL DISTRIBUTION EXTERNAL TO THE APPLIED PHYSICS LABORATORY*

The work reported in TG-849 was done under Navy Contract NOw 62-0604-c
(Task Assignment S1K) supported by Naval Air Systems Command.

ORGANIZATION	LOCATION	ATTENTION	No. of Copies
DEPARTMENT OF DEFENSE			
DDC	Alexandria, Va.		20
Department of the Navy			
NAVAIRSYSCOM	Washington, D. C.	AIR-5382	1
		AIR-604	2
NAVORDSYSCOM	Washington, D. C.	ORD-913	2
NAVPLANTREPO	Silver Spring, Md.		1

*Initial distribution of this document within the Applied Physics Laboratory has been made in accordance with a list on file in the APL Technical Reports Group.

UNCLASSIFIED
Security Classification

DOCUMENT CONTROL DATA - R&D
(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)	2a. REPORT SECURITY CLASSIFICATION
The Johns Hopkins Univ., Applied Physics Lab. 8621 Georgia Avenue Silver Spring, Md.	Unclassified
	2b. GROUP

3. REPORT TITLE
ELECTROMAGNETIC DOPPLER SHIFT DATA FOR SATELLITES IN CIRCULAR POLAR ORBITS AT ALTITUDES BETWEEN 250 AND 1000 NAUTICAL MILES

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)
Technical Memorandum

5. AUTHOR(S) (Last name, first name, initial)
Natuck, Gary N. and Clark, John F.

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
August 1966	271	3

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
NOw 62-0604-c b. PROJECT NO. Task Assignment S1K c. d.	TG-849 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)

10. AVAILABILITY/LIMITATION NOTICES
Distribution of this document is unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
None	Naval Air Systems Command Department of the Navy

13. ABSTRACT A computer program has been used to generate doppler shift of an electromagnetic signal from an orbiting satellite as a function of time. The predicted doppler shift as a function of time is available in two different output formats: a continuous plot of doppler as a function of time before and after closest approach and a tabulated list of doppler as a function of time.

The computer program employs a spherical earth and a circular, polar orbit for the satellite.

DD FORM 1 JAN 64 1473

UNCLASSIFIED
Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Satellite Doppler Shift Doppler Curves Doppler Program Satellite System Design Doppler Curves with Variations in Altitude and Elevation at TCA						

INSTRUCTIONS

1. **ORIGINATING ACTIVITY:** Enter the name and address of the contractor, subcontractor, grantee, Department of Defense activity or other organization *(corporate author)* issuing the report.

2a. **REPORT SECURITY CLASSIFICATION:** Enter the overall security classification of the report. Indicate whether "Restricted Data" is included. Marking is to be in accordance with appropriate security regulations.

2b. **GROUP:** Automatic downgrading is specified in DoD Directive 5200.10 and Armed Forces Industrial Manual. Enter the group number. Also, when applicable, show that optional markings have been used for Group 3 and Group 4 as authorized.

3. **REPORT TITLE:** Enter the complete report title in all capital letters. Titles in all cases should be unclassified. If a meaningful title cannot be selected without classification, show title classification in all capitals in parenthesis immediately following the title.

4. **DESCRIPTIVE NOTES:** If appropriate, enter the type of report, e.g., interim, progress, summary, annual, or final. Give the inclusive dates when a specific reporting period is covered.

5. **AUTHOR(S):** Enter the name(s) of author(s) as shown on or in the report. Enter last name, first name, middle initial. If military, show rank and branch of service. The name of the principal author is an absolute minimum requirement.

6. **REPORT DATE:** Enter the date of the report as day, month, year, or month, year. If more than one date appears on the report, use date of publication.

7a. **TOTAL NUMBER OF PAGES:** The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.

7b. **NUMBER OF REFERENCES:** Enter the total number of references cited in the report.

8a. **CONTRACT OR GRANT NUMBER:** If appropriate, enter the applicable number of the contract or grant under which the report was written.

8b, 8c, & 8d. **PROJECT NUMBER:** Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.

9a. **ORIGINATOR'S REPORT NUMBER(S):** Enter the official report number by which the document will be identified and controlled by the originating activity. This number must be unique to this report.

9b. **OTHER REPORT NUMBER(S):** If the report has been assigned any other report numbers *(either by the originator or by the sponsor)*, also enter this number(s).

10. **AVAILABILITY/LIMITATION NOTICES:** Enter any limitations on further dissemination of the report, other than those imposed by security classification, using standard statements such as:

(1) "Qualified requesters may obtain copies of this report from DDC."

(2) "Foreign announcement and dissemination of this report by DDC is not authorized."

(3) "U. S. Government agencies may obtain copies of this report directly from DDC. Other qualified DDC users shall request through

_____."

(4) "U. S. military agencies may obtain copies of this report directly from DDC. Other qualified users shall request through

_____."

(5) "All distribution of this report is controlled. Qualified DDC users shall request through

_____."

If the report has been furnished to the Office of Technical Services, Department of Commerce, for sale to the public, indicate this fact and enter the price, if known.

11. **SUPPLEMENTARY NOTES:** Use for additional explanatory notes.

12. **SPONSORING MILITARY ACTIVITY:** Enter the name of the departmental project office or laboratory sponsoring *(paying for)* the research and development. Include address.

13. **ABSTRACT:** Enter an abstract giving a brief and factual summary of the document indicative of the report, even though it may also appear elsewhere in the body of the technical report. If additional space is required, a continuation sheet shall be attached.

It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as *(TS), (S), (C), or (U)*.

There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

14. **KEY WORDS:** Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, rules, and weights is optional.