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Technical Memorandum 33-375

*Trajectory Considerations for a Mission to
Jupiter in 1972*

R. A. Wallace

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Abstract

This Technical Memorandum presents the results of a preliminary study of trajectory considerations for a mission to Jupiter in 1972. Minimum launch energies for the 1970-1980 decade are shown to place the 1972 opportunity in perspective. Further, a short discussion of Jupiter is given to show how the trajectory analysis could be affected by the unique properties of the planet.

Trajectory design charts are given for the 1972 launch opportunity in the form of launch and arrival date plots with pertinent trajectory parameter overlays. Using these design charts, a launch period and interplanetary trajectories were selected. Also included are the trajectory considerations for an orbiter of Jupiter and an appendix tabulating the geocentric, heliocentric, and zeocentric (i.e., a coordinate system centered at Jupiter) conditions of the selected trajectories.

Trajectory Considerations for a Mission to Jupiter in 1972

I. Introduction

A. Jupiter

Before beginning a study of trajectories to Jupiter, it is necessary to put the planet itself in perspective; otherwise, the study results that follow might seem meaningless.

Jupiter* is truly the giant planet of our solar system. If its size were increased by a factor of about three, its thermal and gravitational equilibrium state would result in a second Sun in our solar system. As it is, its mass is some 318 times that of the Earth, with a mean diameter about 11 times the Earth diameter. Operating on these numbers, the mean density of Jupiter is less than that of the Earth by a factor of four — a little more than a third higher than the water in your coffee. The effects of the Jupiter high mass on trajectories to it are to increase the size of low-transfer-energy (i.e., energy required to retro into orbit) satellite orbits about the planet and to allow drastic changes in the flyby trajectories, resulting in interesting post encounter missions.

Jupiter's place in the solar system is fifth in distance from the Sun, traveling in almost a circular orbit (eccentricity of Jupiter is 0.05 and that of the Earth is 0.02) of

mean radius 5.2 AU. Its orbital period of revolution is almost 12 yr. The distance between Jupiter and Earth will vary from about 600×10^6 km to about 900×10^6 km with minimums and maximums occurring every 200 days (or half the synodic period). These numbers have a direct bearing on the communication distances for a Jupiter probe. Also, since the asteroid belt lies between Earth and Jupiter, extended time would be spent in traversing it during any Jupiter mission.

Upon reaching Jupiter, there are some interesting physical phenomena that might influence flyby trajectories and satellite orbit selection. Jupiter has a mean visible surface rotation rate of 360 deg every 9 h and 53 min. Coupled with its huge size and mass, the planet angular momentum is large indeed. For this reason, many planetologists believe that the magnetic field generated by Jupiter would be quite strong and would interact spectacularly with interplanetary fields and particles. It is believed that the trapped radiation belts that would exist should be investigated in the region of altitudes from 10,000 km to 20 planetary radii or more (the equatorial radius of Jupiter is close to 71,366 km). Further, the high rotation rate has caused interesting dark and light surface bands. Together with spots, the surface of Jupiter should afford quite fruitful results from a television experiment. The Great Red Spot, at roughly -25 -deg zeo-centric latitude, has been observed for the past 300 yr, but

*Further information on Jupiter can be obtained from Ref. 1.

this spot varies in its rotation rate, implying that it is not attached to any solid surface (if one exists) of the planet. Certainly with the multitude of interesting features within a 10-deg band of -25 -deg latitude, an orbit selection should make allowance for an orbital inclination of at least 35 deg.

B. Earth-Jupiter Trajectories in the 1970s

Data for Earth-Jupiter trajectories are contained in two sources: an internal JPL document* and Ref. 2. Information for Earth-Jupiter trajectories for launch opportunities between 1969 and 1973 is contained in

*EPD 358 provides data on the opportunities from 1974 to 1981 with design plots of the launch date vs arrival date form.

Ref. 2. The plots in this document are not in a convenient form, however, and plots for the present 1972 study were regenerated in the more useful launch date vs arrival date form. Figure 1, the data for which were taken from these sources, shows a comparison of the absolute minimum launch-energy requirements vs launch year for the 1971 to 1981 time period. The minimum values are fairly close in the first half of the decade, being within 10 percent of each other. The minimums occur at an interval of about every 400 days, the length of the synodic period. Minimum-launch-energy trajectories will have flight times between 720 and 1000 days for Type I transfers (heliocentric transfer angles less than 180 deg), and flight times over 1000 days for Type II transfers (heliocentric transfer angles greater than 180 deg).

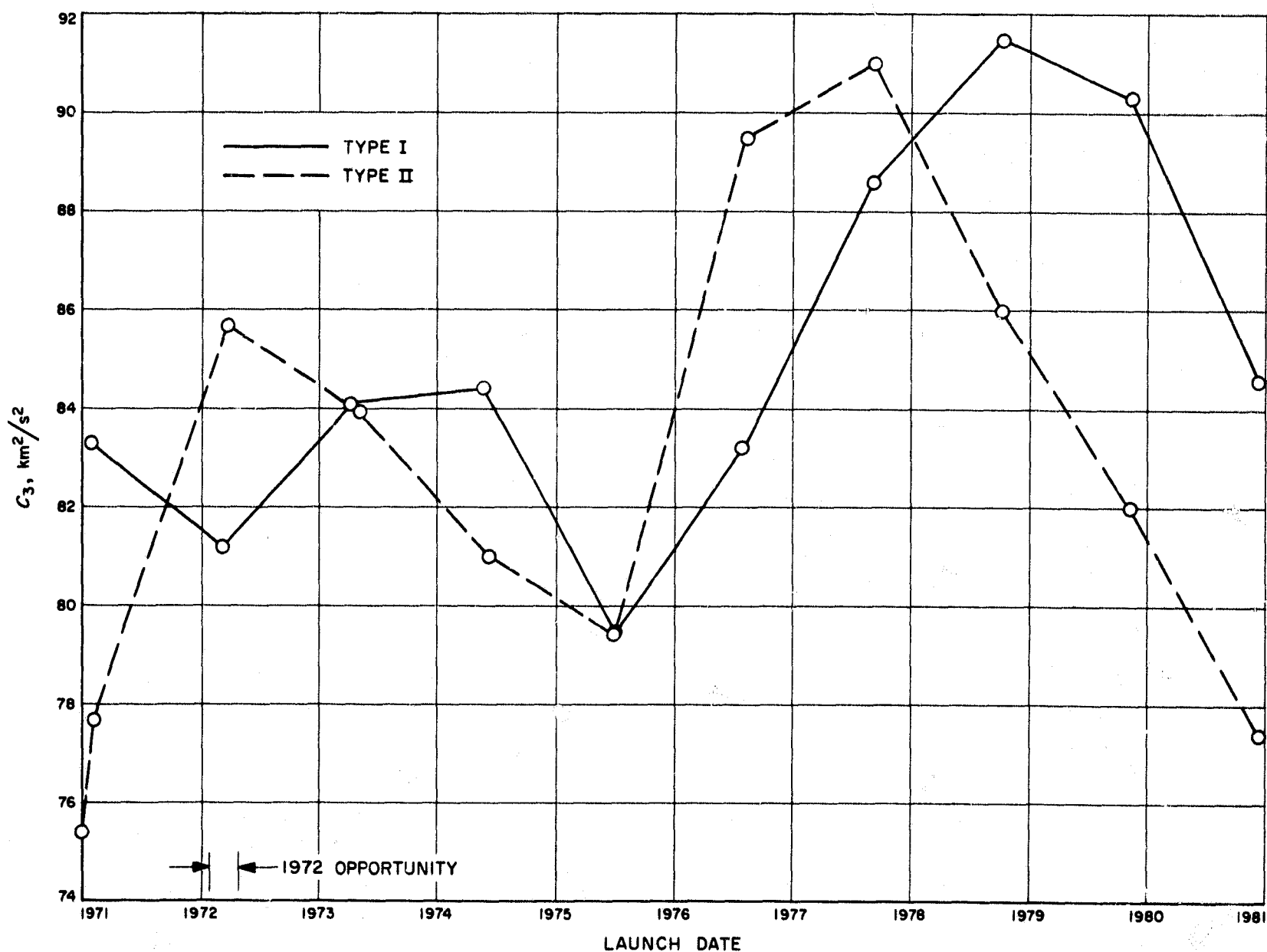


Fig. 1. Absolute minimum energy for Earth-Jupiter trajectories: 1971-1981

C. Launch Vehicles

In a previous study, the launch vehicle requirements for a Jupiter flyby mission were considered to be an output of a systems and configuration analysis. Based on that study, system weight requirements were between 600 and 700 lb for a flyby type of mission.

In the present study a number of launch vehicle configurations are supplied with payload figures. A question then proposed concerns the type of mission that could be accomplished with these vehicles. This study does not answer this question, but it does conclude whether a mission can be flown or not with the vehicles proposed.

Figure 2 is a plot of spacecraft system weight as a function of geocentric launch energy C_3 for seven launch vehicle configurations. The data for these vehicles are supplied by Batelle Memorial Institute through their NASA Launch Vehicle Planning Project. The numbers should be considered as preliminary since none of these configurations is designed specifically for interplanetary missions. There is a question also of whether the figures show true *separated* payload weight.

D. Astrodynamic Constants

The design charts produced for this study were plotted from data generated by the JPL Space Research

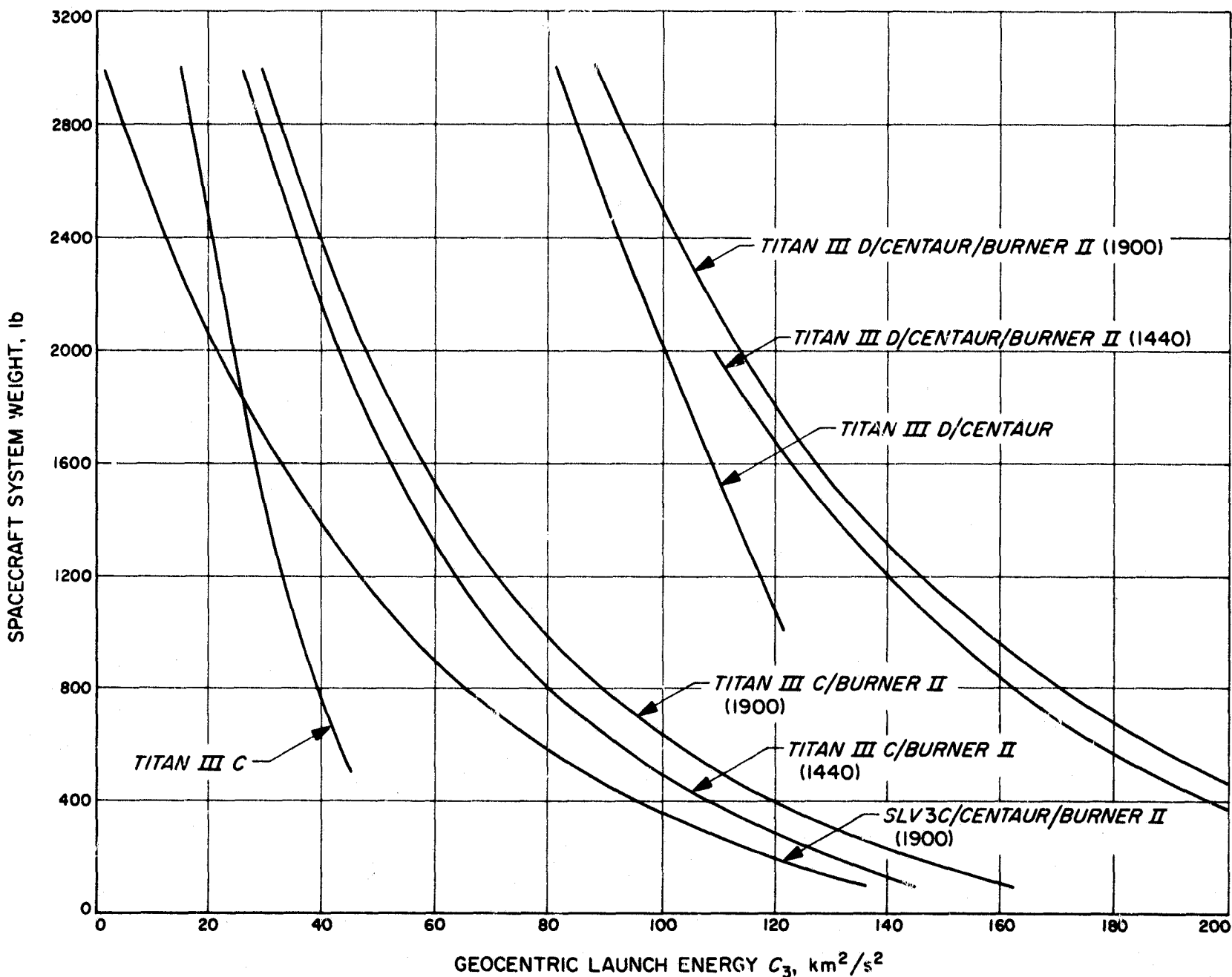


Fig. 2. Launch vehicle C_3 - payload curves

Conic (SPARC) program. This program uses mean elements for the position of the planet. Other constants of importance in flyby and orbiter analyses are the gravitational constant, first order oblateness coefficient, planet surface rotation rate, and surface radius. These constants are given in Table 1.

Table 1. Astrodynamic constants

Symbol	Value	Definition
Mean orbital elements^a		
a	5.202803 AU = 778,331,525 km	Semimajor axis
e	0.0483376 + 0.00016302 T^b	Eccentricity
i	0.0228410270 - 9.69273622 $\times 10^{-2} T$	Inclination
Ω	1.7355180770 + 1.764479392 $\times 10^{-2} T$	Longitude of ascending node
ω	-1.71333245996 + 1.047822961 $\times 10^{-2} T$	Argument of perihelion
M	3.93135411 + 1.450191928 $\times 10^{-3} d^c$	Mean anomaly
Planet physical constants		
$GM_{Jupiter}$	126.0703305 $\times 10^6$ km ³ /s ² ^d	(see Figs. 26 and 27) First order oblateness coefficient ^d
J	0.02206	
ω_R	9 ^h 50 ^m 30 ^s	Equatorial surface rate of rotation
R	71,366 km	Equatorial surface radius ^e
^a Angles are given in radians. ^b T is a time interval from 1900 January 0.5 ET measured in Julian centuries. ^c d is equal to 36,525 T . ^d From Ref. 3. ^e From Ref. 4.		

II. Trajectory Design Charts

A. Discussion

There is a standard sequence for designing trajectories for a mission. First in the sequence is to provide an overall view of the variation of several mission-dependent parameters. The most efficient method for providing this overall view is to plot these parameters on a launch date-arrival date grid. In this section, 11 different parameters are plotted for the 1972 Earth-Jupiter opportunity.

B. Design Charts

The basic chart shown is a plot of the geocentric launch energy C_3 contours. Overlaid on this basic chart are shown the overlays for 10 other parameters.

1. Launch energy: C_3 . The geocentric launch energy C_3 is equal to twice the orbital energy per unit mass. The value of C_3 determines the payload that can be injected into an Earth-Jupiter trajectory.

The C_3 chart is the base chart (see Figs. 4-7) for all the parameters presented. Also shown on this chart are: communication distance (CD) between Earth and Jupiter for the corresponding arrival date, the Earth-Planet-Sun (EPS) angle on the arrival date scale, and lines of constant flight times T_f .

2. Launch angles: DLA and ZAL. DLA is the declination of the geocentric hyperbolic departure asymptote. If its absolute value is larger than the latitude of the launch site, usually taken to be 28.3 deg N for the Air Force Eastern Test Range (AFETR), then the launch azimuth corridor is restricted symmetrically about the 90-deg launch azimuth according to Fig. 3. The contour plot of DLA is shown on the *blue* overlay to Fig. 4. DLA also has a bearing on parking orbit coast time constraints. DLA constraints are discussed in Section III.

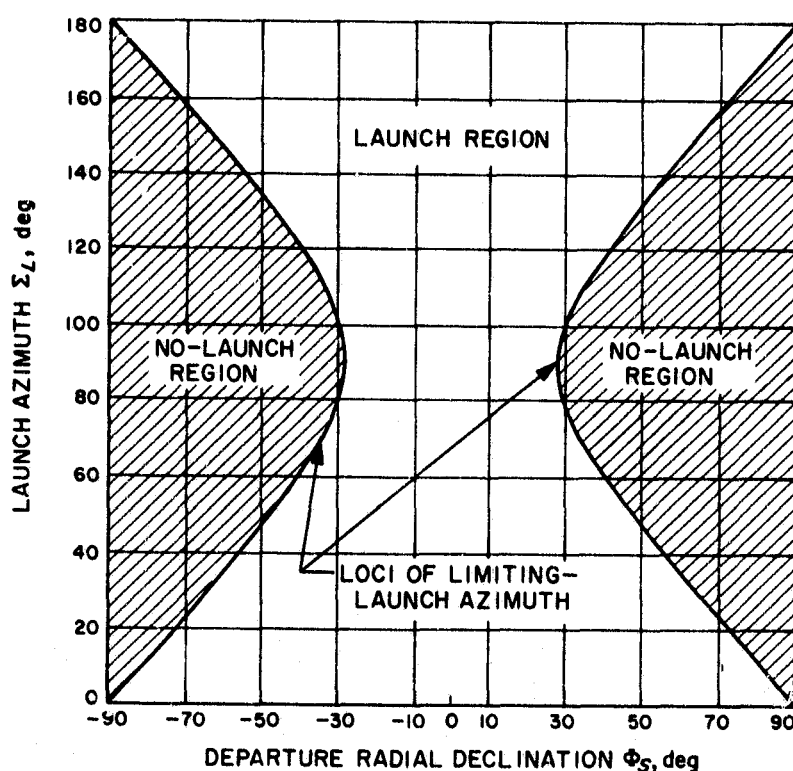


Fig. 3. Limiting launch azimuth vs departure asymptote declination for Cap Kennedy

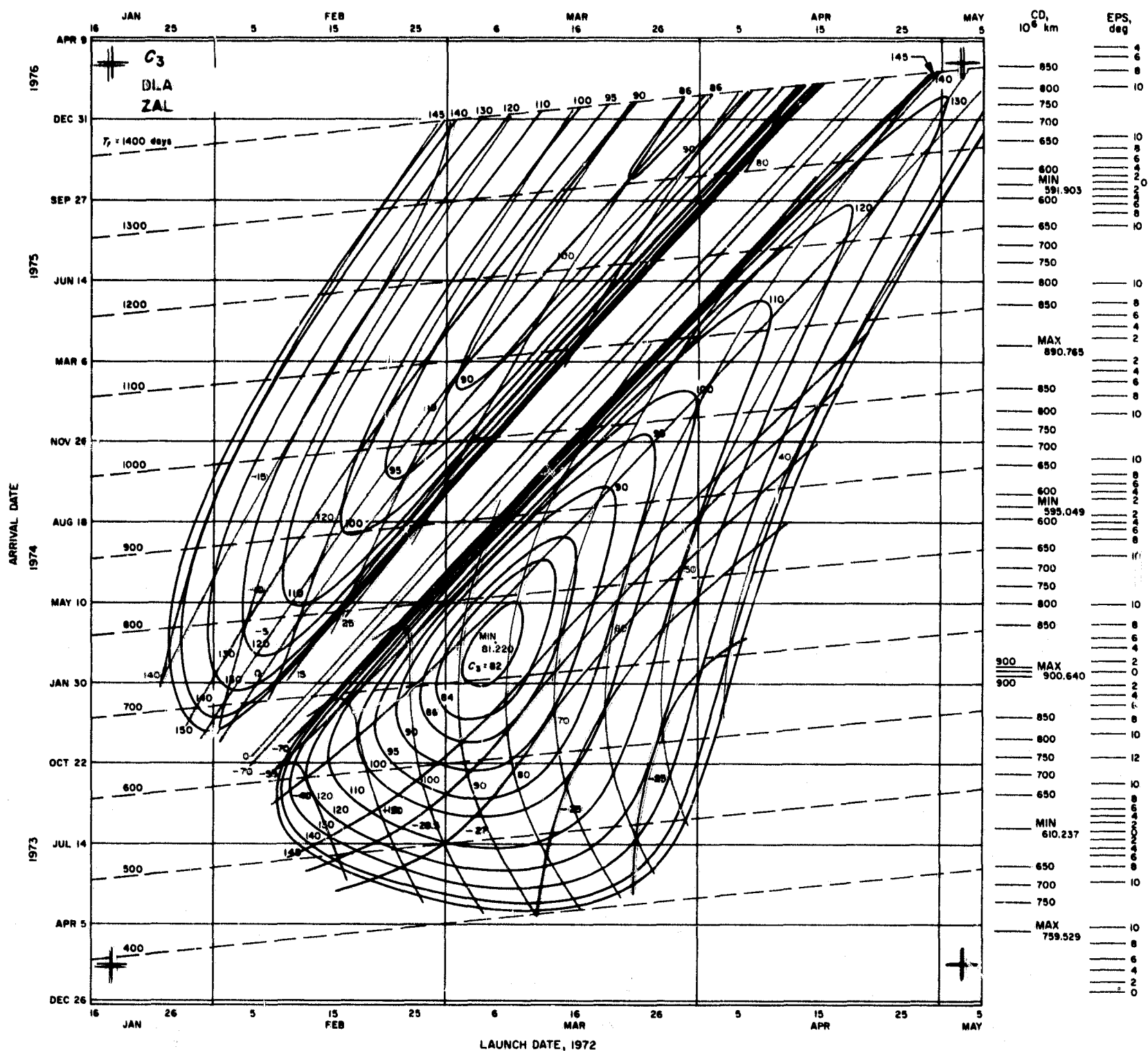


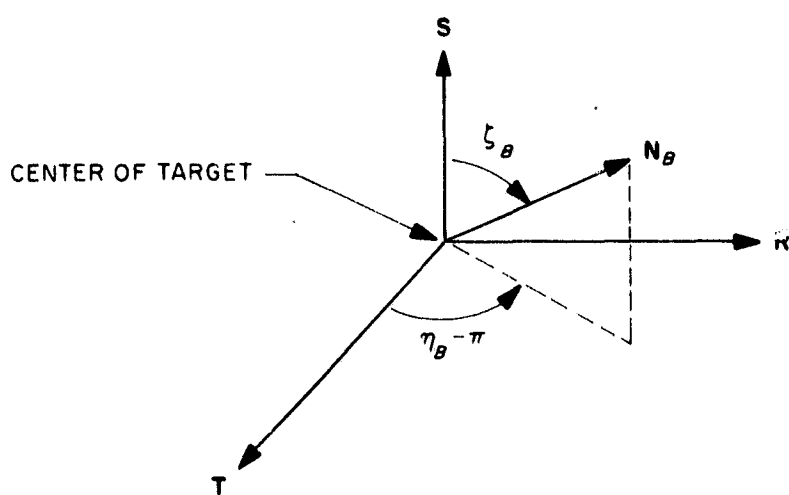
Fig. 4. Launch angles trajectory design chart: C_3 with DLA and ZAL as overlays

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ZAL is the Earth-probe-Sun angle a few days after launch and the contour plot of ZAL is shown on the *red* overlay to Fig. 4. If ZAL is less than 90 deg, the sub-spacecraft point on Earth is in the dark region; for ZAL greater than 90 deg, it is in a sunlit region. ZAL has a bearing on the solar panel-antenna configuration.

3. Arrival velocity: VHP. VHP is often termed the hyperbolic excess velocity or velocity at infinity (V_∞). VHP is the velocity on the Jupiter arrival asymptote and influences the flyby velocity at the planet or, in the case of an orbiter, the amount of propulsion required to retro into orbit. The contour plot of VHP is shown on the *red* overlay to Fig. 5.

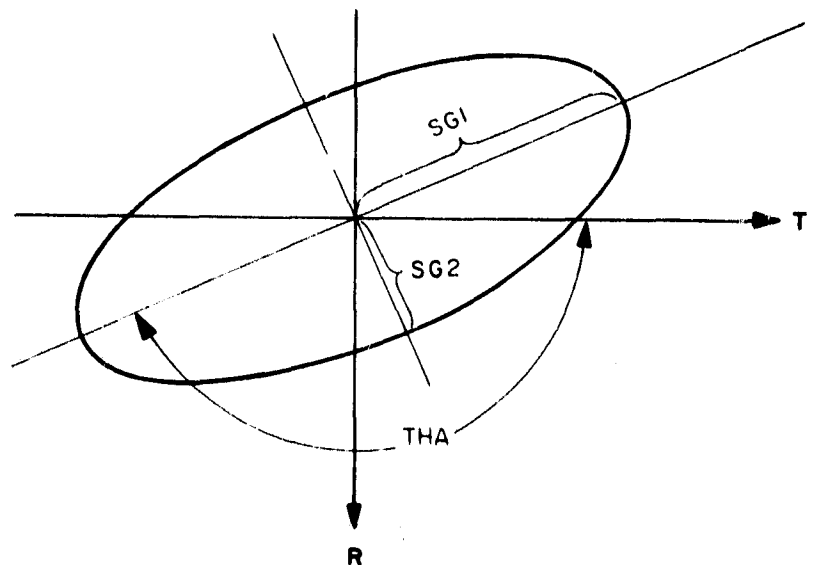
4. Arrival angles: ZAE, ETE, ZAS, and ETSP. These angles give the locations of the Sun and Earth relative to the incoming asymptote of the geocentric hyperbola. The angles are measured in the R-S-T coordinate system centered at Jupiter with the S-axis parallel to the incoming asymptote, the T-axis in a plane parallel to the ecliptic plane, and the R-axis completing the right-hand coordinate system. The angles are shown in following diagram.



Where ZAE and ZAS are ζ_B (N_B is the vector to the Sun and Earth, respectively), and ETE and ETSP are η_B . These arrival angles determine occultation zones. Contour plots of ZAE and ETE are shown on the *red* overlay to Fig. 6 and those of ZAS and ETSP on the *blue* overlay.

5. Arrival dispersions: SG1, SG2, and THA. These parameters relate to the midcourse execution errors and describe the geometry and orientation of the dispersion ellipse centered at Jupiter mapped on to the B-plane (the plane containing the R and T vectors, with S-axis into the paper, as shown in the following diagram) from

a spherically distributed 0.1-m/s velocity error at a few days past injection, i.e., at a first midcourse maneuver time.



SG1 is the semimajor axis of the dispersion ellipse, and SG2 the semiminor axis. THA is the angle measured clockwise in the B-plane from the T-axis to the major axis of the dispersion ellipse ($0 \leq \text{THA} \leq 180$ deg). The contour plots of SG1 and SG2 are shown on the *red* overlay to Fig. 7 and of THA on the *blue* overlay.

III. Trajectory Constraints

A. Launch Period

Launch periods from 20 to 30 days have been chosen in the past for reliability reasons. The possibility of two spacecraft launchings tends to lengthen the launch period. Studies are being conducted to determine if 10-day launch periods are feasible for one or two launchings (two launchings would normally require two launch pads). *Titan* launch statistics are required.

B. Arrival Date

Constant arrival dates have been chosen in the past for several reasons:

- (1) The approach geometry should be held constant for encounter experiments.
- (2) The Earth, Sun, and Canopus positions should vary little at arrival to simplify antenna pointing and communication system design and analysis.
- (3) The trajectory design problem is simplified.
- (4) The seasonal variations would not complicate encounter experiments.

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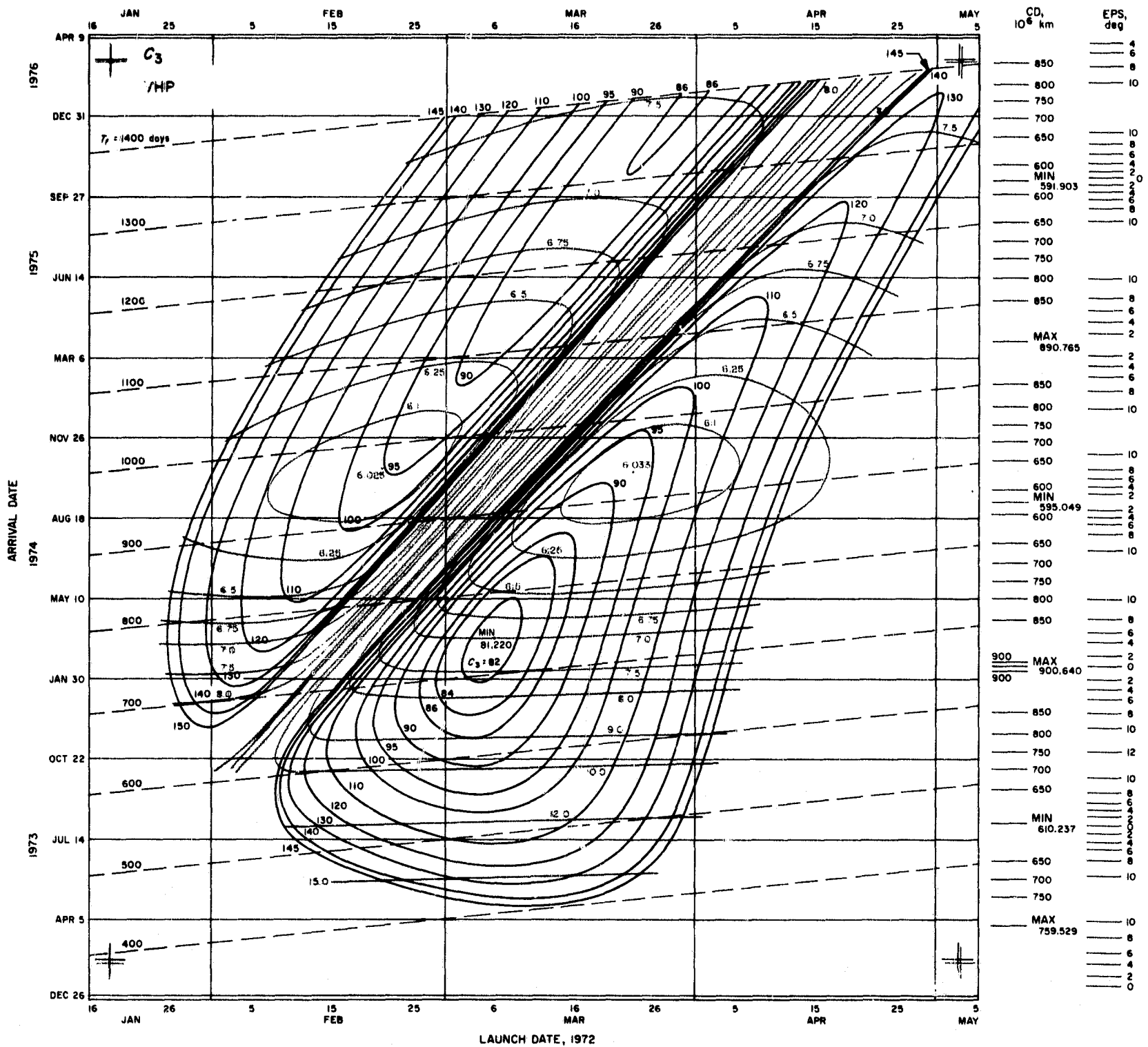


Fig. 5. Arrival velocity trajectory design chart: C₃ with VHP overlay

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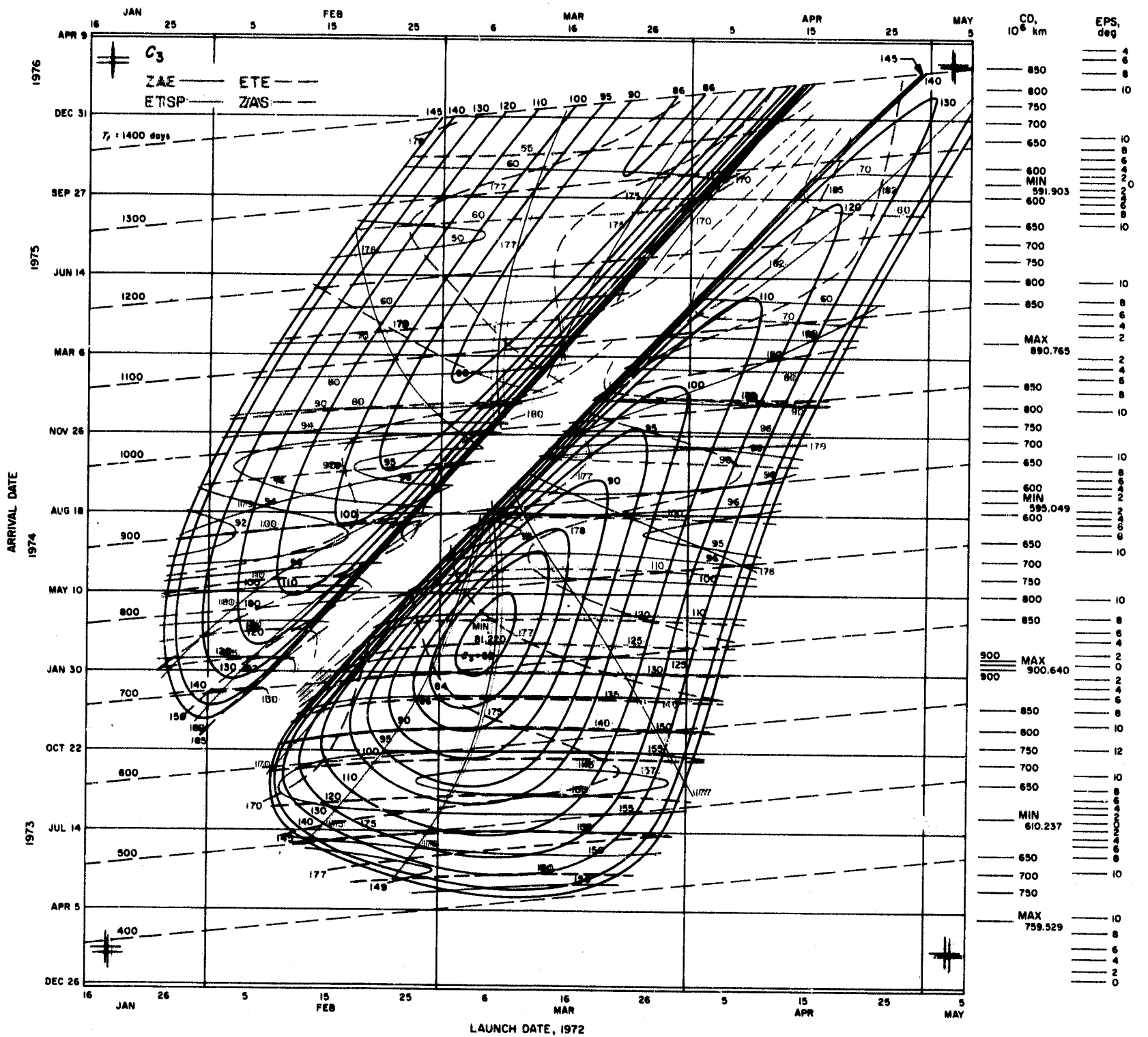


Fig. 6. Arrival angles trajectory design chart: C₃ with ZAE, ETE, ZAS, and ETSP as overlays

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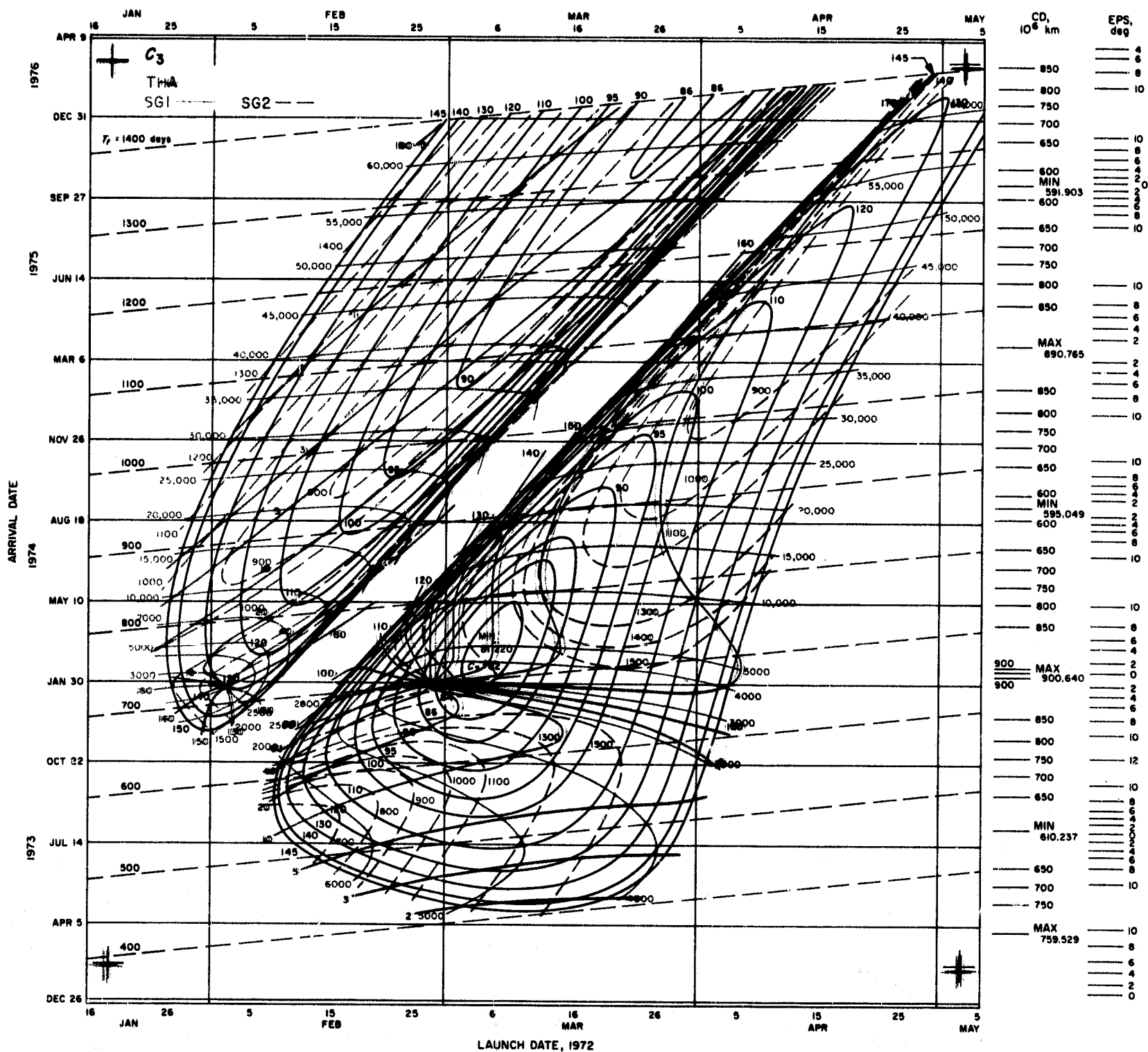


Fig. 7. Midcourse dispersions trajectory design chart: C₃ with SG1, SG2, and THA as overlays

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To a certain extent, arrival dates at Jupiter can be varied as much as 10 or 15 days without changing the approach geometry appreciably (see Figs. 5-7). Since the Jupiter rotation axis is inclined only 3 deg to its orbital plane, there should be little seasonal variation. The Earth and Jupiter will suffer relative position changes over a 10-day period, enough, perhaps, to complicate the communication system design.

A constant arrival date will be considered in this study, but based on the design charts, little change to the design trajectory would occur if the arrival date were changed by 10 days. Certainly, spacing arrival dates for two spacecraft launches within a launch period is not a difficult trajectory design matter.

C. Design C₃ and Launch Vehicle

Because the performance of a launch vehicle would have to remain fixed over a launch period, the highest C₃ required during a launch period must be used to determine the separated spacecraft payload. The minimum acceptable payload of 600 lb was used as previously recommended.* From Figs. 1 and 2, the *Titan III* vehicle with a *Burner II* addition is the "minimum" configuration required for a mission to Jupiter in 1972. To simplify the present study, two vehicles were selected for further payload studies: the *Titan III D/Centaur/Burner II* (1900) vehicle and the *Titan III C/Burner II* (1900) vehicle. These two launch vehicles represent two payload classes of interest.

D. Flight Times

Because of the much longer flight time required, Type II trajectories will not be considered in the remainder of this study. From a reliability standpoint flight times of less than two years are recommended.

E. Coast Time

No minimum coast time has been specified for the *Titan III C* vehicle. The *Centaur*, however, has a minimum coast time restriction of 2 min. Maximum coast time for the *Burner II* is a soft restriction. For every hour over 36 min, a 5.5-lb payload penalty is paid. The *Centaur* available in 1972, however, has a maximum coast time limitation of about 30 min.

*JPL internal document EPD 358(1966).

F. DLA Restrictions

The primary effect of large values of DLA is that launch corridors out of the usual range safety limits must be used, or long coast times must be accepted. The DLA restriction is sensitive, however, and each launch period must be reviewed. Some general comments for the 1972 Jupiter opportunity are applicable:

- (1) The lowest energy regions will incur high values of DLA.
- (2) As the flight time is decreased (i.e., movement towards the bottom of the chart), lower DLA ranges will be encountered. Both C₃ and VHP will increase, however.
- (3) In general, if low launch azimuths (northeast launches) are acceptable, 30-min launch windows are easily realized with little launch azimuth spread. Launch windows do not seem to be a problem for high-value DLA launches.

G. Approach Velocity

The value of VHP should be kept low for the following two reasons. For an orbiter, the approach velocity will have a measurable effect on system weight-in-orbit values. For a flyby, it would be desirable to spend as much time during the encounter as possible. However, a low VHP value would not be a primary consideration for a flyby mission with close approaches (two planetary radii), since the difference in periapsis velocities is small for a wide range in VHP.

H. Dispersions

The position accuracy can be treated as a dispersion, but it is a shrinking dispersion as the encounter time is approached. The midcourse execution dispersions given in Fig. 7, on the other hand, are dispersions that, if uncorrected, map into a fixed error in position. For orbiters, it is important that ΔV be available to correct for errors in periapsis distance. The sensitivity of ΔV with the closest approach, then, might have a constraining effect on orbit shape selection.

I. Communication Distance

The minimum and maximum communication distances between Jupiter and Earth are 600×10^6 and 900×10^6 km, respectively. The effect of high communication distance is lower information bit rate. Since

this rate varies as the inverse of the square of the communication distance ($\sim 1/R_c^2$), the bit rate for the minimum encounter distance is roughly twice the rate for maximum encounter distance.

J. Orbit Determination Accuracy

Orbit determination studies show that accuracy is approximately inversely proportional to the probe geocentric declination for small angles. A value of 5 deg is usually quoted as a minimum acceptable value. Very small values of heliocentric inclination on the transfer trajectory will also degrade orbit determination accuracy. The ecliptic inclination should be greater than 0.1 deg.

IV. Interplanetary Trajectory Selection and Characteristics

A. Trajectory Selection

Of the ten constraints discussed in Section III, five are particularly important when selecting interplanetary trajectories for a mission to Jupiter:

- (1) Launch period.
- (2) Design C_3 and launch vehicle.
- (3) Flight time.
- (4) DLA restrictions.
- (5) Communication distance.

The selection philosophy used in a study prior to this one had emphasized communication distance. The advantages of minimizing this parameter are the increase in information bit rate, the shortening of flight time, and the softening in the restrictions to launch azimuth corridors. Disadvantages of this choice are the increase in C_3 (decrease in payload for any specific vehicle) and a reduction in launch period.

Since an input into this study was a family of launch vehicles (Fig. 2), the trajectory selection is required to emphasize the C_3 -payload constraint. Also, 600 lb was considered the minimum acceptable spacecraft system weight.

A glance at Fig. 2 will show that a C_3 between 90 and 100 km²/s² is required if the *Titan III C/Burner II* combination is to be of any use for a Jupiter mission. Using Fig. 1 (absolute minimum energy plot) one can see that the *Titan III C* alone and the *Atlas/Centaur/Burner II* combination are not capable of launching a separated weight of more than 580 lb to Jupiter.

A trajectory selection has been made requiring a C_3 between 90 and 100 km²/s². This selection provides a reasonable Jupiter flyby probe using the *Titan/Burner II* combinations or a very good orbiter with the *Titan/Centaur* combinations.

The constraints are compared between the C_3 and communication distance emphases for trajectory selection in Table 2.

Table 2. Trajectory selection

Constraint	C_3 emphasis	Communication distance emphasis
Design C_3	95 km ² /s ²	104 km ² /s ²
Launch period	25 days	25 days
Communication distance at Jupiter arrival	850 × 10 ⁶ km	650 × 10 ⁶ km
Bit rate comparison at Jupiter arrival	1.0	1.7
Flight time	650 days	545 days
DLA minimum	-26 deg	-25 deg
DLA maximum	-39 deg	-32 deg
SGI	3000 to 4000 km	4000 to 6000 km
VHP	8.6 km/s	11.0 km/s
Launch dates	Feb 20 to Mar 16, 1972	Feb 20 to Mar 16, 1972
Arrival date	Dec 12, 1973	Sept 12, 1973

B. Trajectory Characteristics

Before discussing specific launch periods and arrival dates, some general trajectory characteristics can be analyzed considering only the launch energy range and DLA.

1. *Coast time and launch window.* Coast time is a strong function of the ascent profile and transfer injection of the launch vehicle. Since none of the *Titan* combinations supplied has been analyzed for a deep space mission, important design parameters were not available and estimates were made. These parameters with their assumed values for this study are given in Table 3.

The two coast time restrictions imposed by the *Centaur* vehicle are used as constraints; maximum and minimum coast times are 30 and 2 min, respectively. The allowable

Table 3. Launch vehicle trajectory parameters

Parameter	Value
Total geocentric burn angle	21.1 deg
Launch burn angle	14.1 deg
Injection burn angle	7.0 deg
Parking orbit altitude	100.0 nmi
Injection true anomaly	10.0 deg
Injection altitude	185.2 km

launch azimuth spread for these two limits is a function of the DLA for any launch day in question. The range of DLA for the 1972 Jupiter opportunity is from -45 to -23 deg for the Type I region of interest.

For *southeast* launchings, the opening of the window is determined by the minimum coast time constraint. Figure 8 is a plot of the opening launch azimuth for a minimum coast time of 2 min. Also shown is a curve of the *minimum* possible launch azimuth. When this azimuth is reached in the countdown, a reversal in azimuth occurs and the countdown proceeds until the maximum range-safety launch azimuth is reached.

The situation is reversed for *northeast* launchings, which have coast times greater than 10 min for the opening of the window at the high DLA values considered here. The opening launch azimuth for northeast launches will be determined by range-safety limits. In Fig. 9, a curve of *maximum* possible launch azimuths is shown. When the countdown reaches this value, a reversal occurs and the succeeding launch azimuths *decrease* till the 30-min coast time restriction is reached. Figure 9 shows a plot of terminal launch azimuth corresponding to the 30-min coast time constraint for northeast launches.

Launch windows for the high DLA values experienced during this opportunity do not seem to be a problem. For the DLA values higher than the launch latitude, a 1-deg launch azimuth spread affords launch windows of 30 min or more.

If range safety allows the extreme launch azimuths required by the high DLA values and AFETR can cover North African injections, coast time and launch windows do not seem to be a problem for the 1972 opportunity.

This analysis did not depend upon a specific launch period. The remainder of this section is devoted to the

characteristics for the trajectory selection with C_3 emphasis and launch dates from February 18, 1972 to March 18, 1972 and an arrival date of December 12, 1973. SPARC program printout is tabulated for all of the launch dates in the Appendix.

2. Injection loci. Figure 10 presents the injection loci for the selected trajectories.

3. Launch period and design launch C_3 . Figure 11 shows the constant arrival date launch period as a function of design launch C_3 . These data were taken directly from Fig. 4, the launch date-arrival date chart for C_3 . The data were chosen to *minimize* C_3 . Other curves, such as Fig. 10, could be generated for specific communication distances, DLA limits, etc.

4. Arrival date occultation zones. Figure 12 shows the orientation of the occultation zones for a Jupiter arrival date of December 12, 1972. The Canopus-probe-Jupiter angle was set equal to 36 deg to accommodate current constraints on the Canopus sensor field of view. The Sun occultation will occur if an Earth occultation aiming point is chosen. Although this plot is for one launch date, it is very close to that for any of the launch dates in a 30-day launch period centered on March 4, 1972, and for arrival dates that are 10 days before or after December 12, 1973.

5. Cruise cone and clock angles. The Earth and Canopus cone angles as a function of flight time are given in Fig. 13, and the Earth clock angle is given in Fig. 14.

6. Communication distance. Communication distance is given in Fig. 15. The maximum and succeeding minimum variation is due to the 12-yr orbital period of Jupiter with conjunction occurring every 400 days.

7. Heliocentric range. Figure 16 shows the variation of heliocentric range with time of flight. If entry into the asteroid belt occurs at 1.8 AU and exit occurs at 3.8 AU (Ref. 5), then cruise time in the asteroid belt will be 260 days.

8. Probe geocentric declination. In Section III, it was stated that orbit determination accuracy problems will exist if small values of probe geocentric declination are encountered. From Fig. 17 it can be seen that no such problems will occur for the trajectory design selected. All declination values are less than -15 deg.

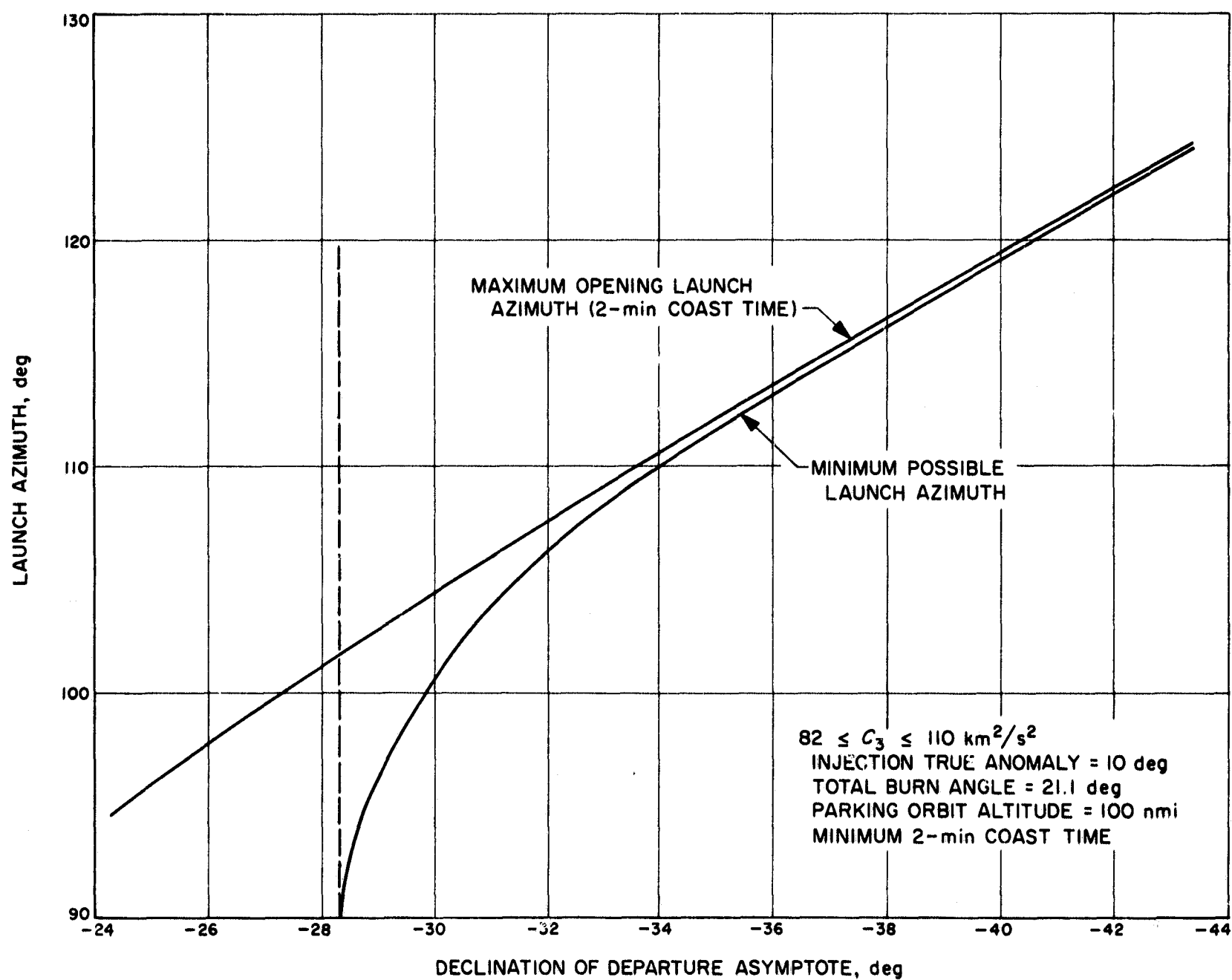


Fig. 8. Maximum opening and minimum possible launch azimuths—southeast launches

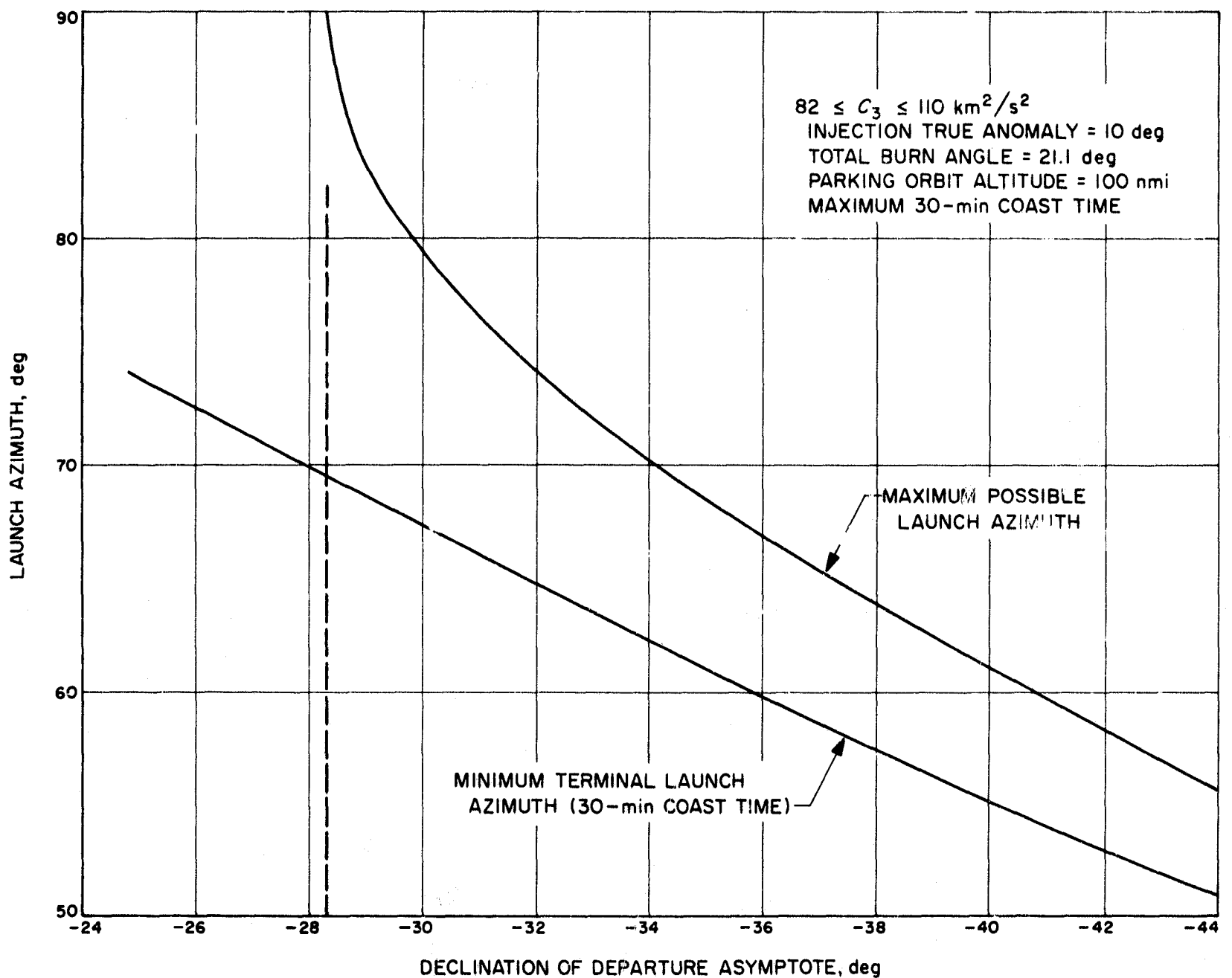


Fig. 9. Minimum terminal and maximum possible launch azimuths—northeast launches

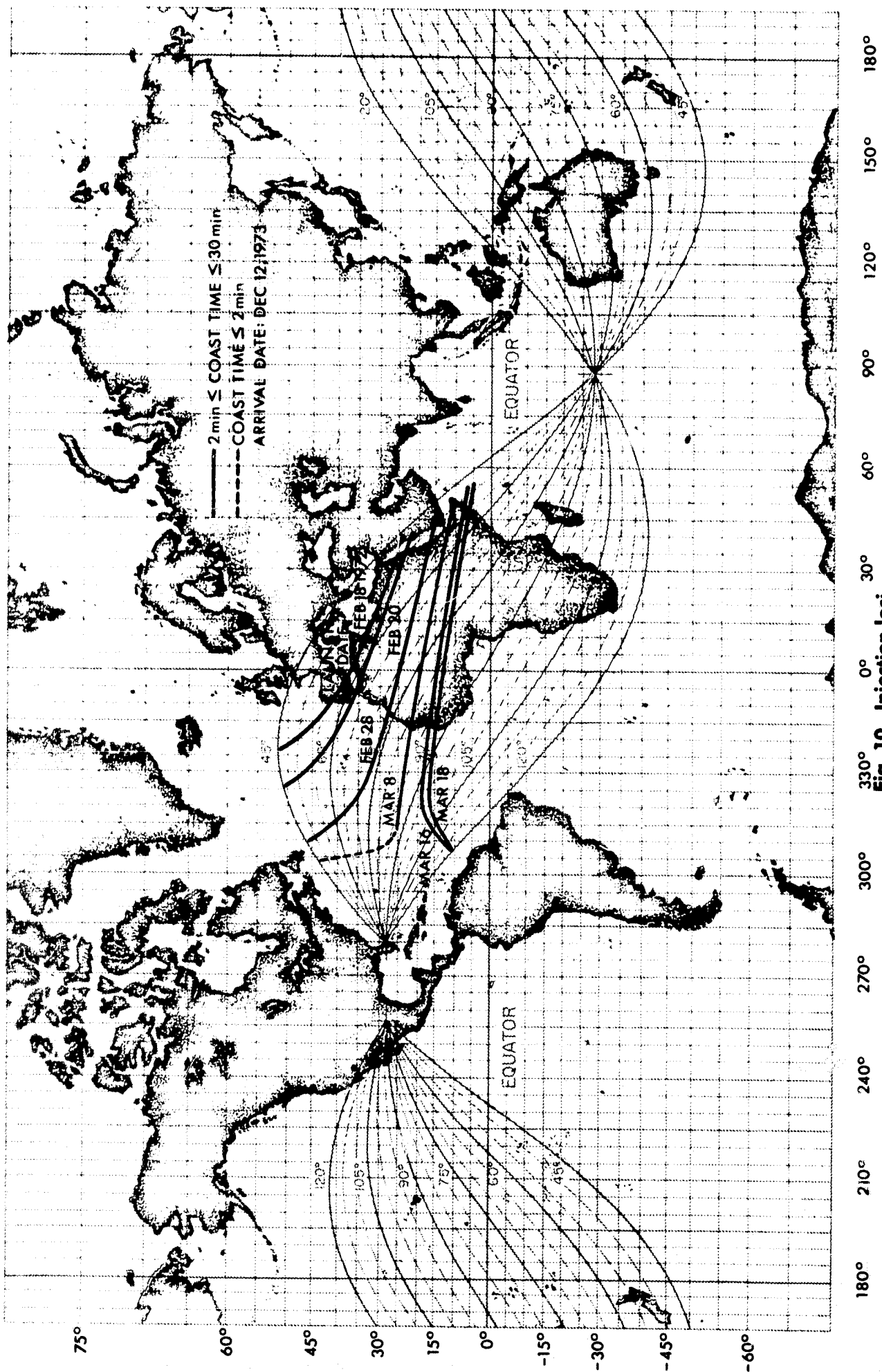


Fig. 10. Injection loci

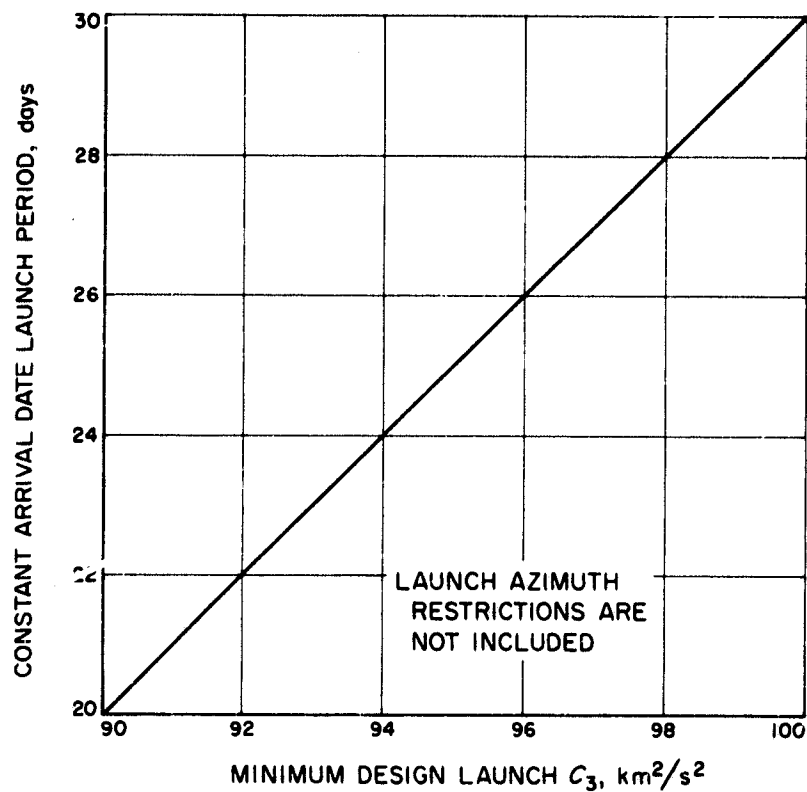
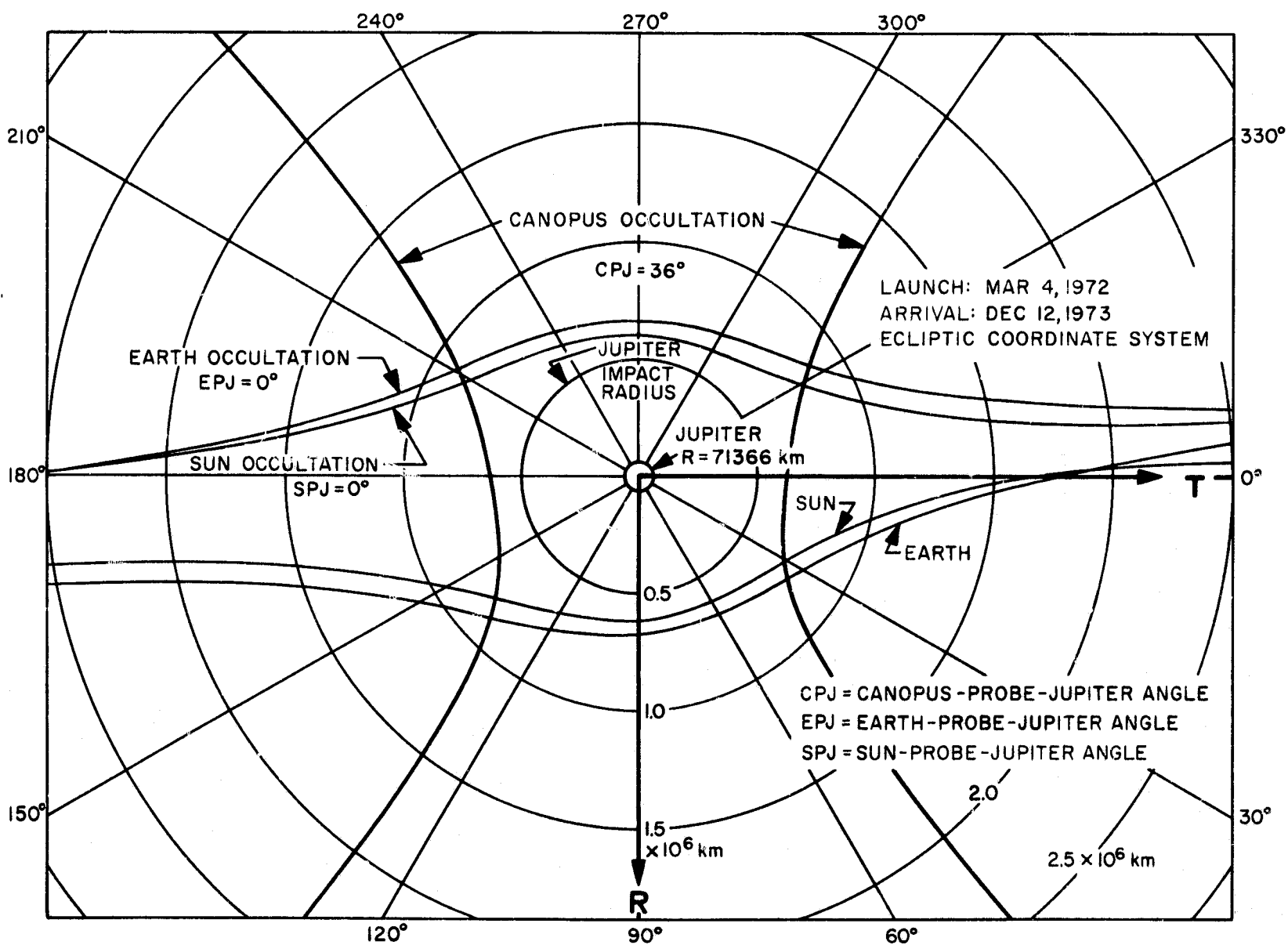


Fig. 11. Launch period vs minimum design launch C_3

Fig. 12. Occultation zones for a December 12, 1973 arrival date



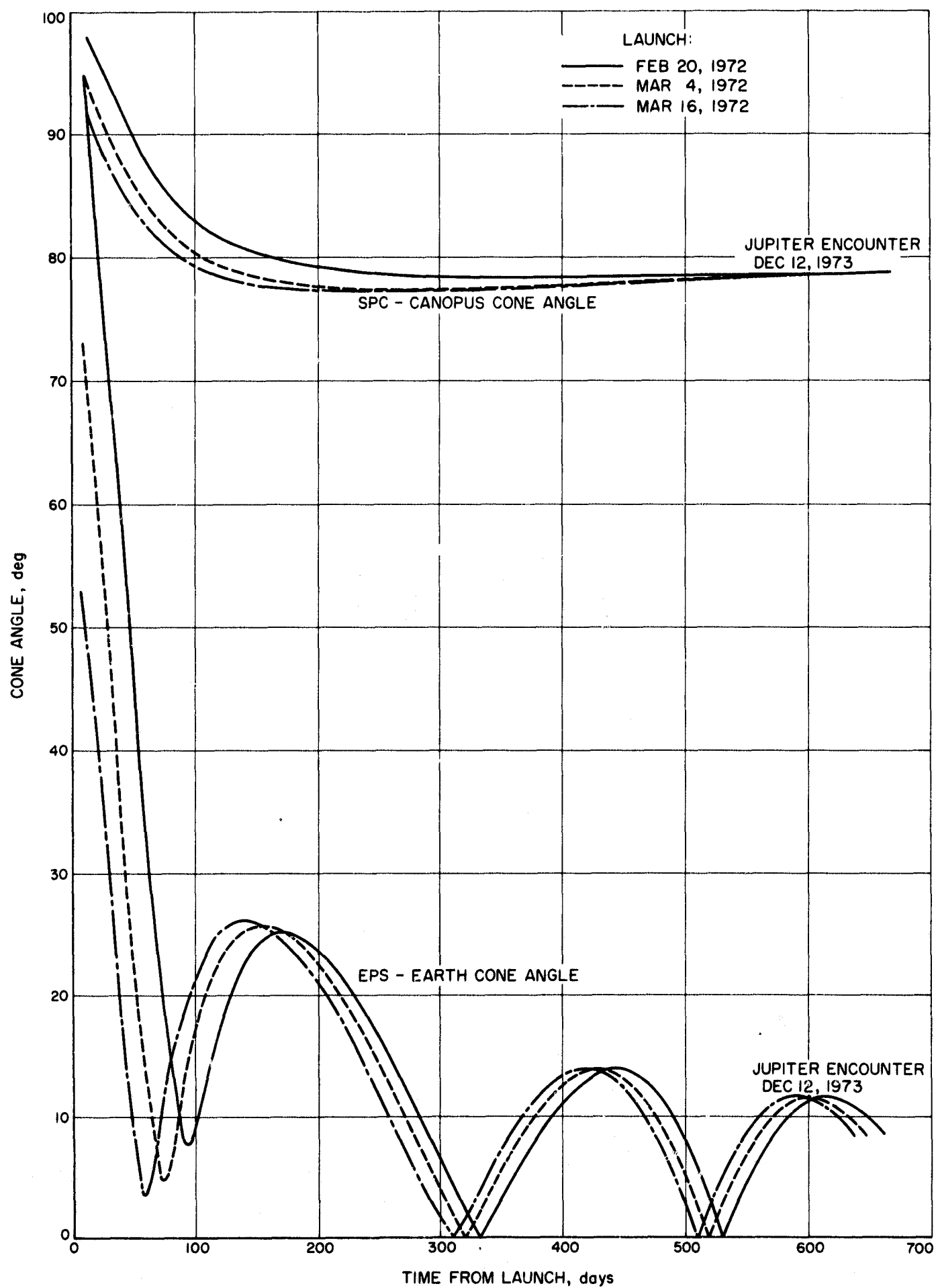


Fig. 13. Cruise cone angles

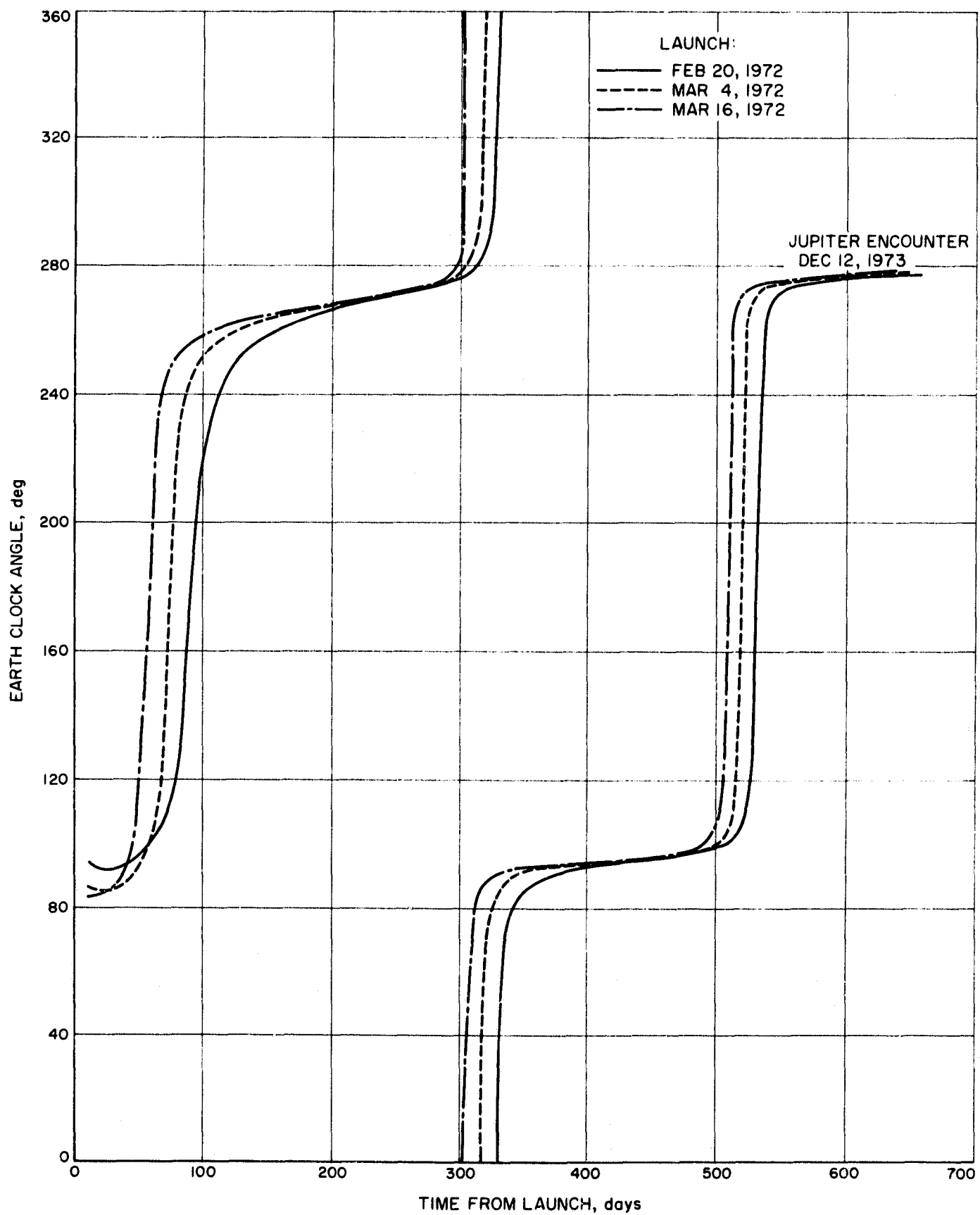


Fig. 14. Cruise clock angles

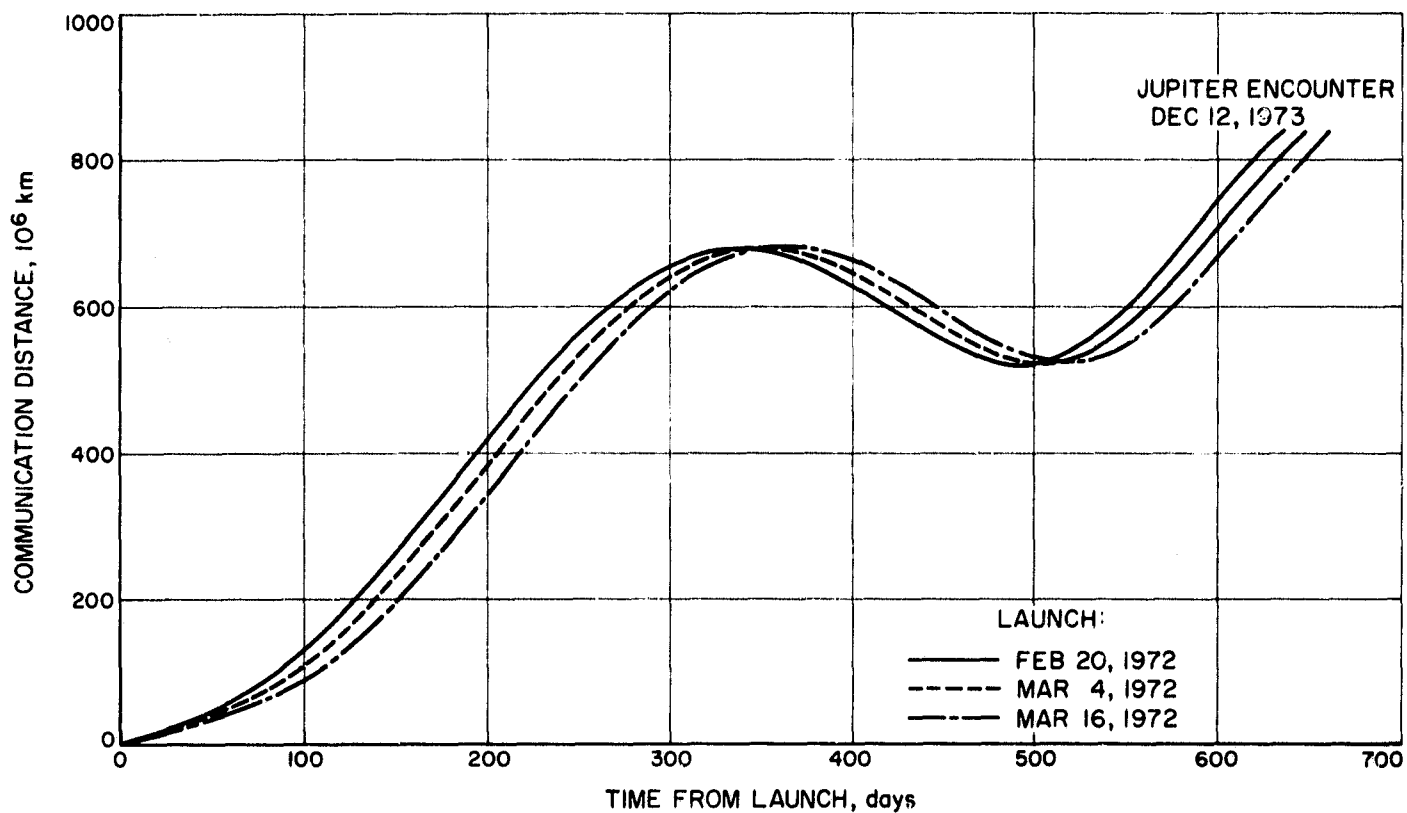


Fig. 15. Communication distance with flight time

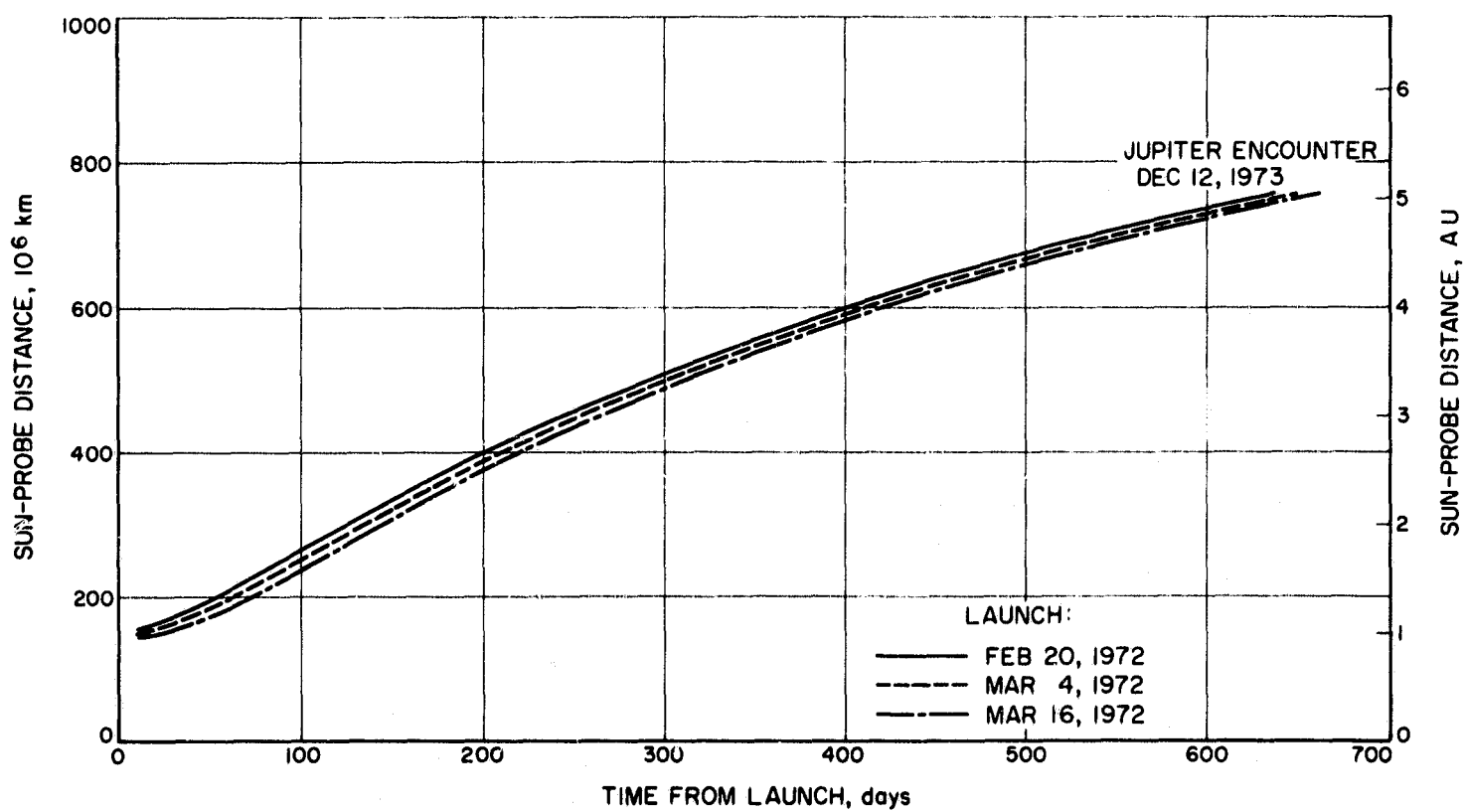


Fig. 16. Heliocentric range with flight time

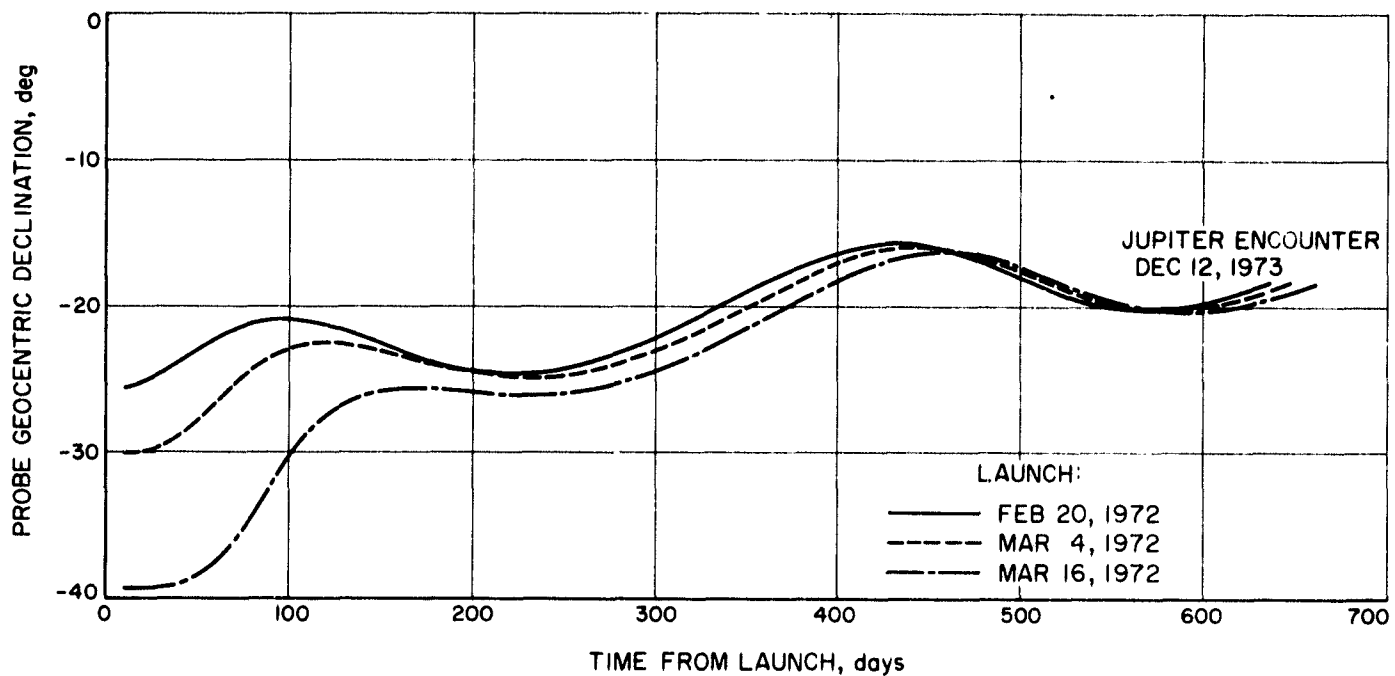


Fig. 17. Probe geocentric declination with flight time

V. Considerations for a Jupiter Orbiter

An orbiter has many scientific advantages over a simple flyby mission. Its one disadvantage is extra cost, due primarily to three factors:

- (1) More complicated spacecraft.
- (2) Longer operations time.
- (3) Choice of launch vehicles.

If, however, a total of 300 lb in orbit is acceptable, the following analysis will show that a *Titan III C/Burner II* combination is capable of launching an orbiter mission to Jupiter. If total orbiting weights of 1000 lb or more are desired, then some sort of *Titan III D/Centaur* combination is required.

In this analysis, all transfers from the flyby hyperbola to the orbiter ellipse are assumed to be periapsis to periapsis maneuver, which is the optimum type of maneuver from a ΔV standpoint. Unfortunately, for Jupiter arrivals of the type discussed in this study (fairly low energy launch trajectories), the periapsis to periapsis maneuver would take place in the dark region behind Jupiter as viewed from the Earth. To reorient the maneuver point so that it would be Earth-visible would require a ΔV penalty perhaps as much as or greater than 2 km/s. This value will depend on many factors, and time has not permitted an investigation into the possi-

bilities of changing the ellipse orientation with ΔV . Further analysis is required if an orbiter study is initiated.

A. Orbit Size Selection

The range in elliptical orbit sizes studied was influenced by two factors: ΔV required (and thus payload in orbit) and science objectives. Particular scientific interest has been expressed in the region about Jupiter from altitudes of 10,000 km out to altitudes of 20 planetary radii or more. For transfers from hyperbolas to ellipses, the more elliptical the final orbit is, the less ΔV is required. Thus, for the lowest possible ΔV , the final orbit would have a very close approach and a very distant farthest point (apoapsis). So the scientific and ΔV requirements are somewhat compatible.

Figure 18 shows the insertion ΔV required as a function of the closest approach altitude with apoapsis radius and VHP as parameters (VHP = 8.6 km/s for the launch period selected). The substantial savings for a low altitude of closest approach are evident. Arguments against low, closest approach altitudes depend on the errors that have resulted from the early midcourse correction to the interplanetary trajectory. At most, these errors (SG1) amount to about 3000 to 6000 km in the B-plane. These errors are mapped into lower figures at closest approach.

Figure 19 shows the insertion ΔV sensitivity to errors in closest approach radius. It would seem, from glancing at Fig. 19, that closest approach altitudes of 10,000 km are feasible.

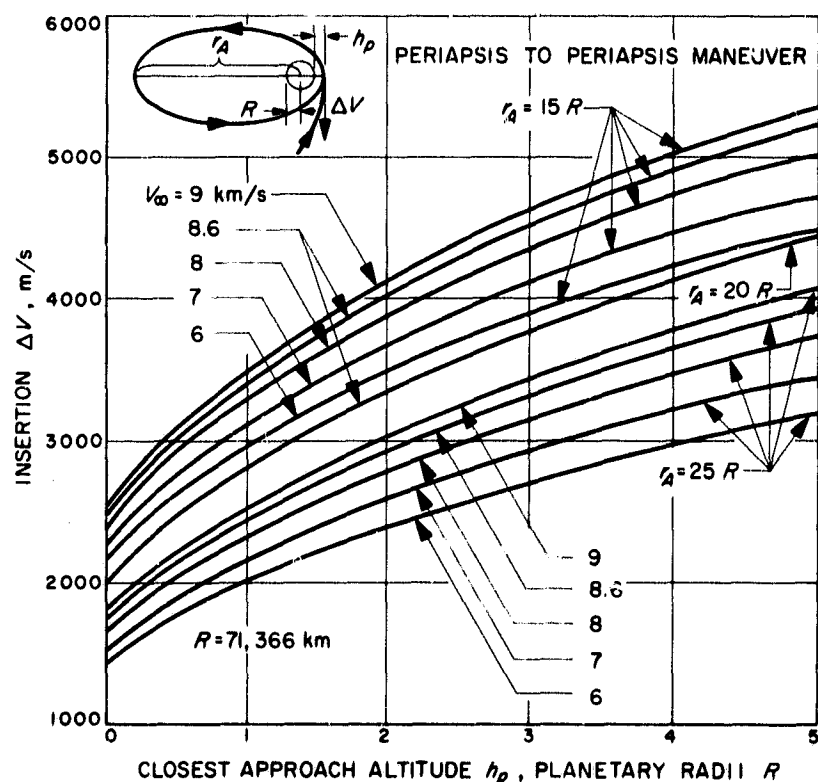


Fig. 18. Insertion ΔV at Jupiter

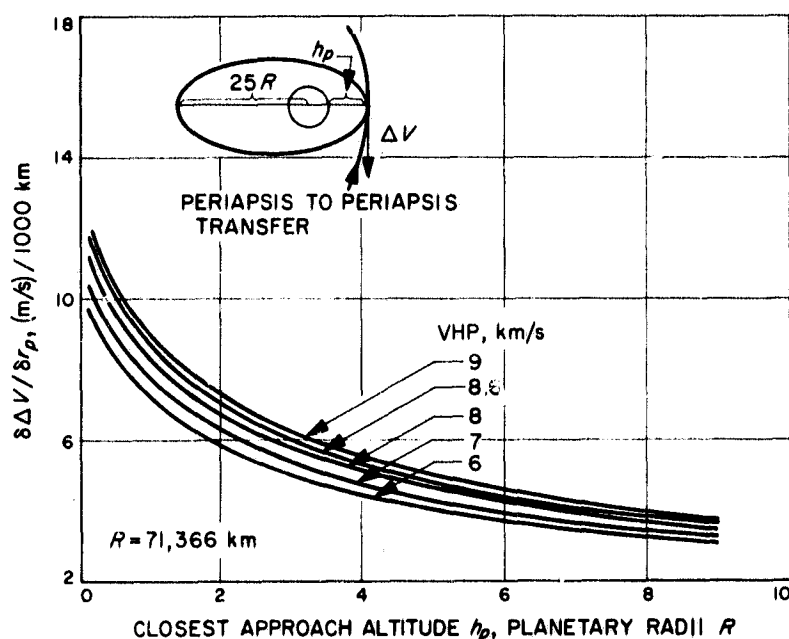


Fig. 19. Insertion ΔV sensitivity with closest approach altitude

B. Spacecraft System Weight in Orbit

Two classes of payload were studied corresponding to the *Titan III C/Burner II* (1900) and the *Titan III D/Centaur/Burner II* (1900) launch vehicles (Fig. 2). For a design C_3 of $95 \text{ km}^2/\text{s}^2$, these separated payloads are 700 and 2700 lb, respectively.

All maneuvers were assumed to have used a rocket engine with constant thrust, and gravity losses were neglected. Since gravity losses could be large if the burning time were extensive, the use of a high-thrust motor would be recommended.

Figures 20 and 21 show the total system weight inserted into orbit as a function of total separated payload at Earth injection with periapsis altitude and VHP as parameters. Data are given for the two launch vehicles chosen, and the C_3 and corresponding launch period are given as auxiliary scales. The weight difference in the two scales is due to fuel and propulsion system weight.

Figures 22 and 23 show the influence of two types of propulsion systems. In the planning stages, at the present time, is a system using a space-storable propellant. This is a high-energy ($\text{ISP} = 390 \text{ s}$) system, but it requires more engine weight than the lower-energy Earth-storable system ($\text{ISP} = 295 \text{ s}$). Again, the weight given is the total separated weight at Earth injection less fuel and propulsion system weight.

C. Orbital Velocity and Period

The velocity of the spacecraft in orbit is important to any surface picture-taking experiment. With the very high rate of rotation of Jupiter, some interesting sub-planet tracks should result, depending on how the orbit is oriented. Figure 24 shows the inertial velocity of an orbiter for various-sized ellipses as a function of its orbital altitude. This velocity, most of the time, will be in an almost radial direction to the planet.

The orbital periods for three apoapsis altitudes are shown in Fig. 25 as a function of the periapsis altitude. For all the ellipses discussed so far, the periods will be in excess of three days and as high as seven days.

D. Orbital Inclination

Nodal regression and apsidal precession rates are given in Figs. 26 and 27, respectively. By varying the design inclination and orbit size, interesting planet surface tracks are possible. However, an abundance of interesting planet features exist in the south tropical zone, and a design inclination of 35° or more may be desired.

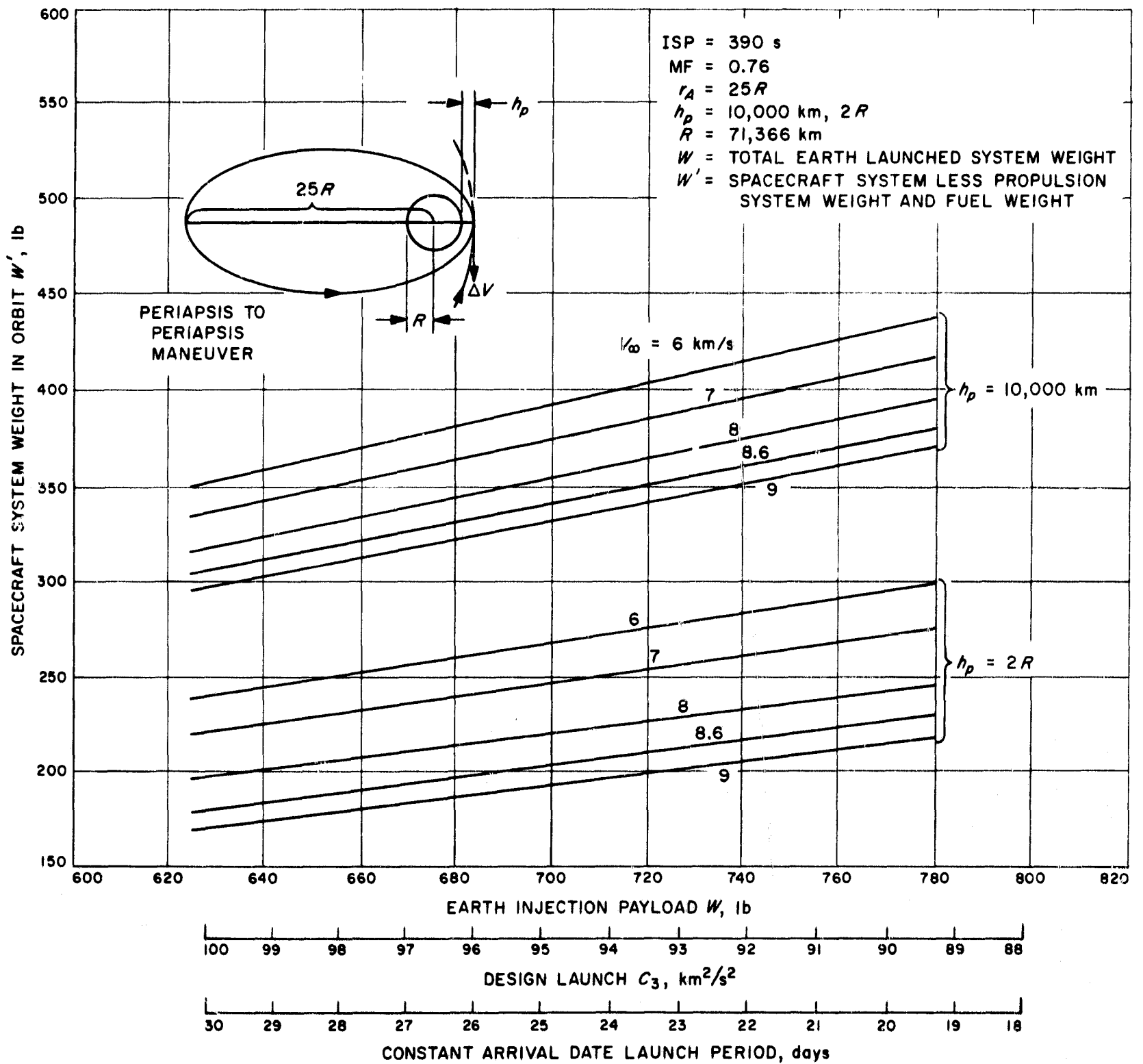


Fig. 20. Spacecraft system weight in orbit vs launch payload, Titan III C/Burner II (1900)

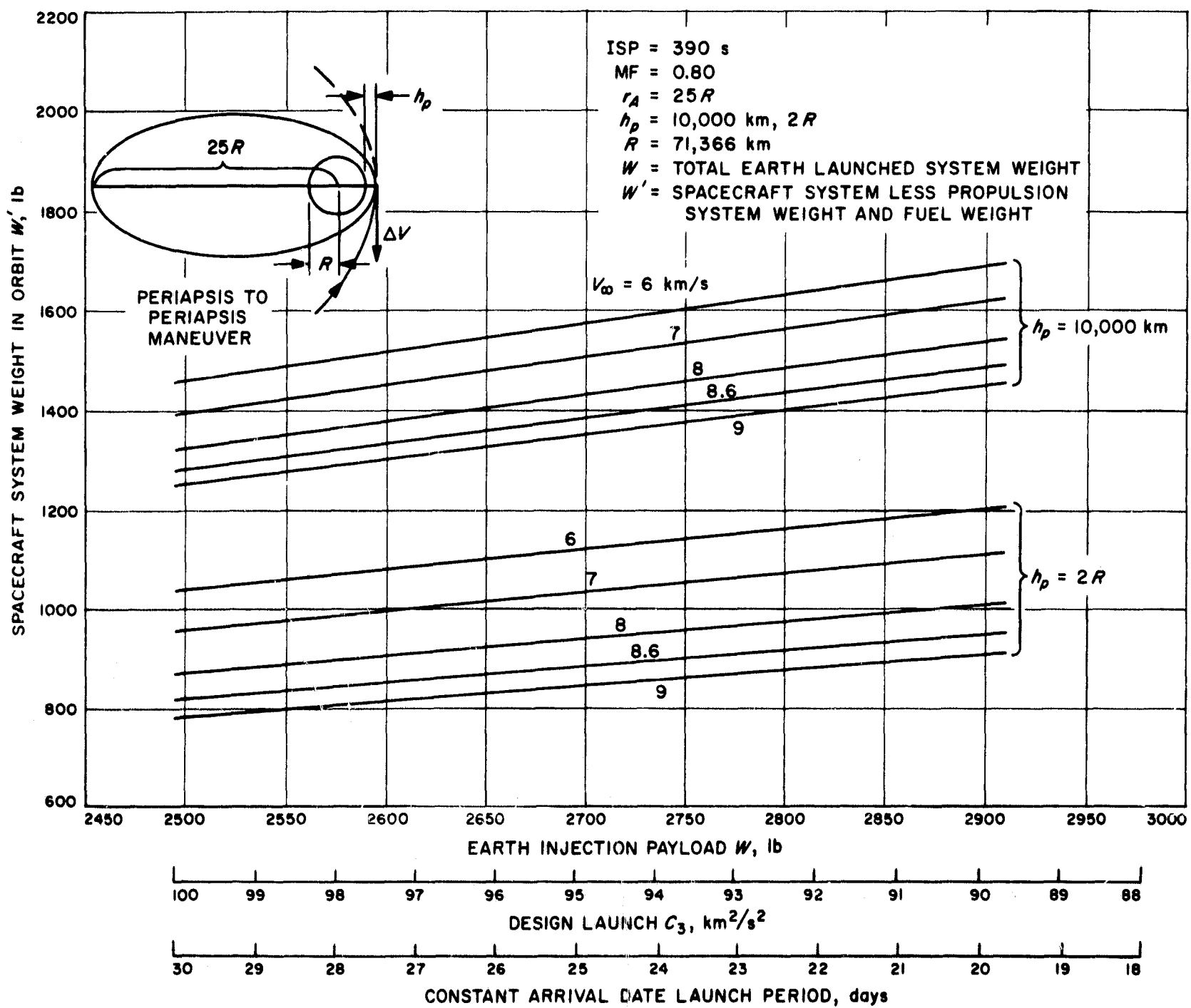


Fig. 21. Spacecraft system weight in orbit vs launch payload, Titan III D/Centaur/Burner II (1900)

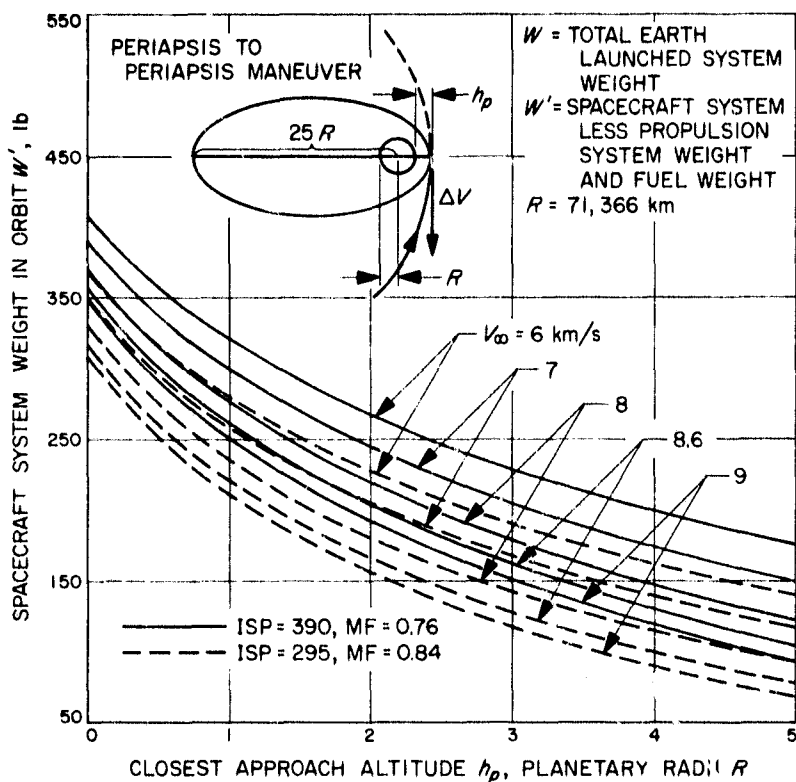


Fig. 22. Spacecraft system weight in orbit vs periapsis altitude, launch payload of 700 lb

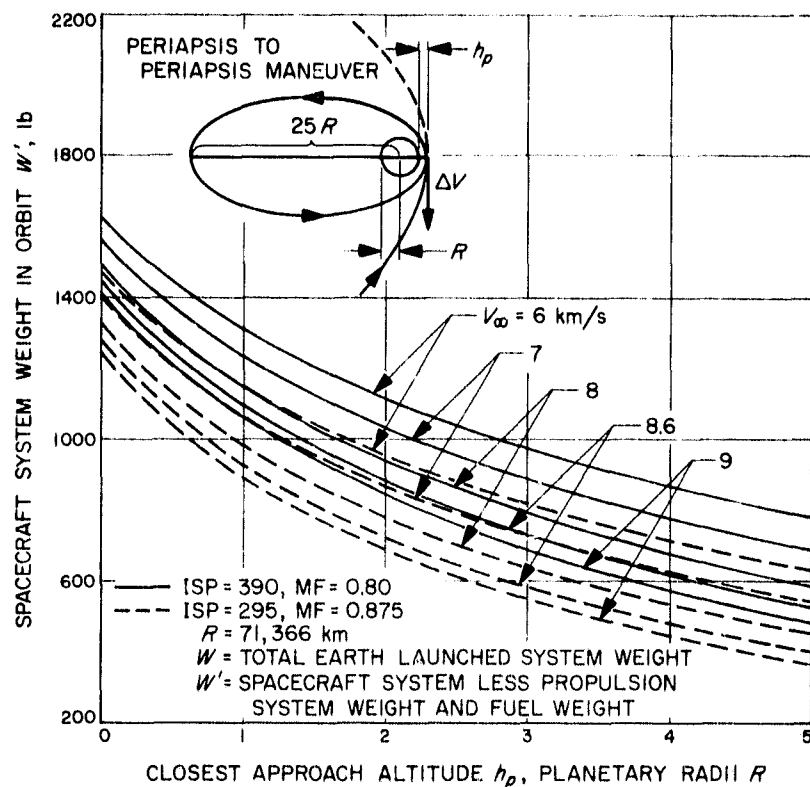


Fig. 23. Spacecraft system weight in orbit vs periapsis altitude, launch payload of 2700 lb

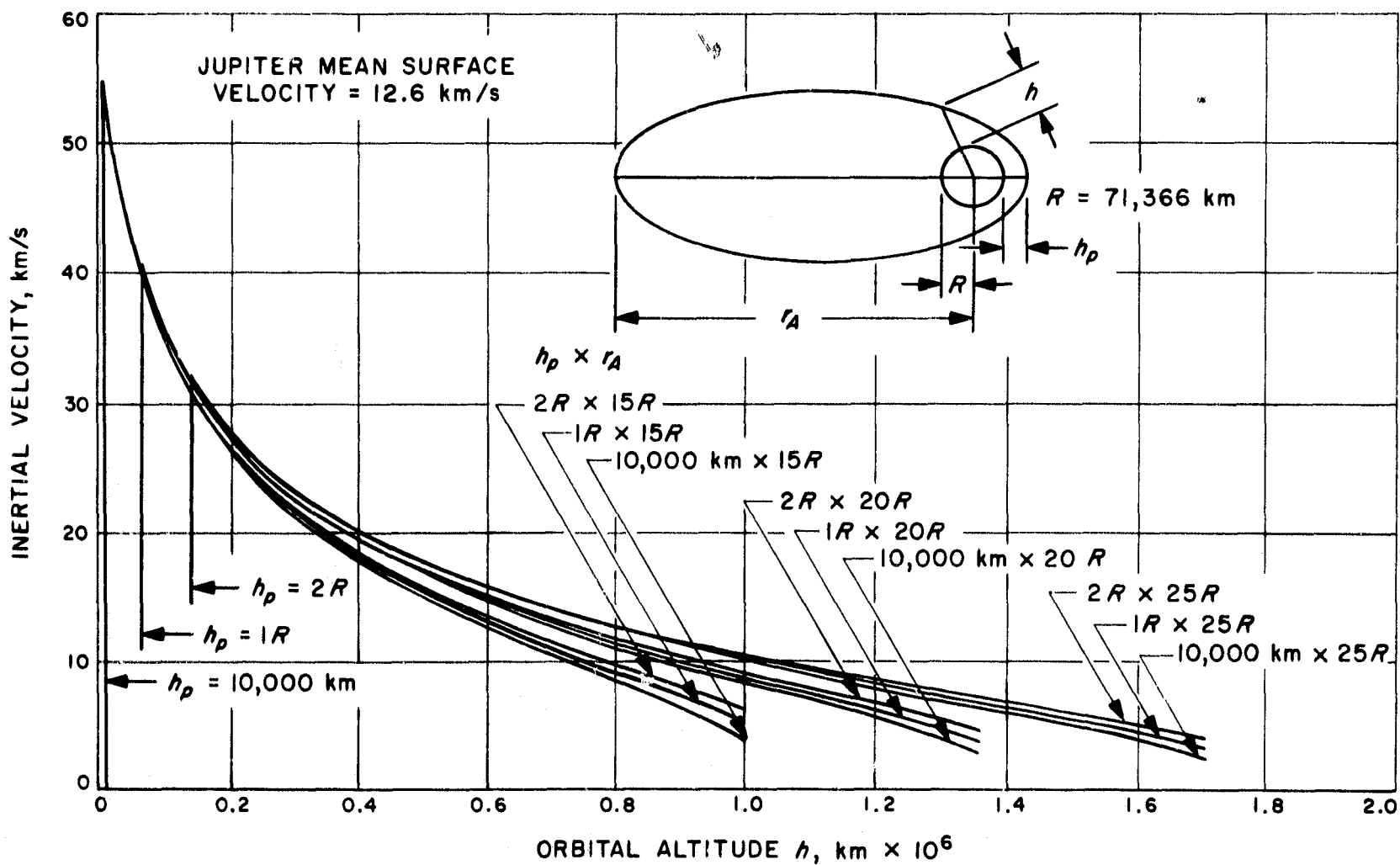


Fig. 24. Orbital velocity

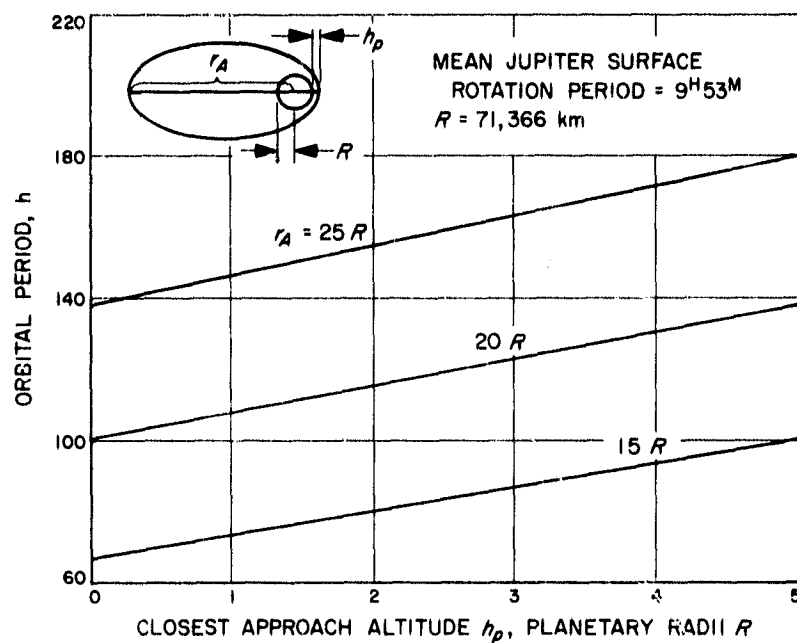


Fig. 25. Orbital period

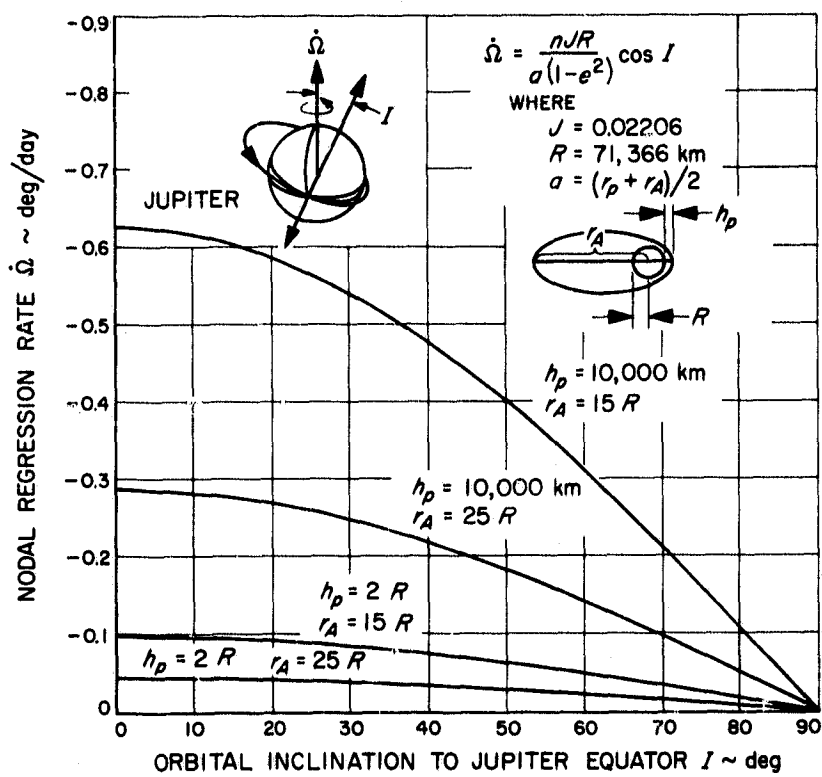


Fig. 26. Nodal regression rate

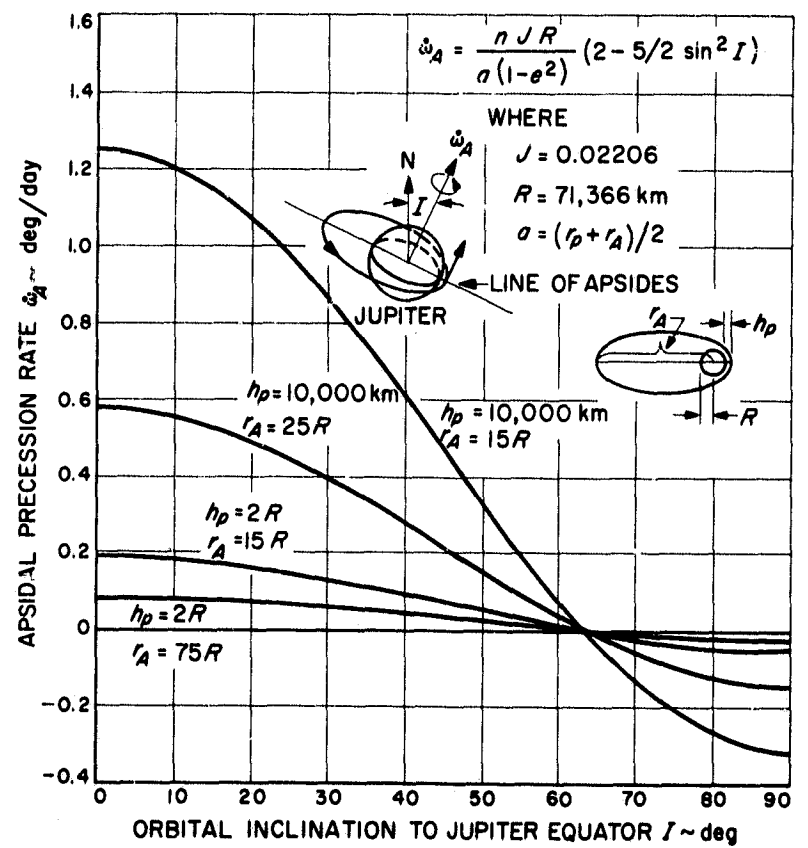


Fig. 27. Apisidal precession rate

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3. Brouwer, D., and Clemence, G. M., "Orbits and Masses of Planets and Satellites," in *Planets and Satellites*, pp. 60-73. University of Chicago Press, Chicago, Ill., 1961.
4. *Explanatory Supplement to the Astronomical Ephemeris and the American Ephemeris and Nautical Almanac*. Prepared jointly by the Nautical Almanac Offices of the United Kingdom and the United States of America. H. M. Stationery Office, London, 1961.
5. Narin, F., "Spatial Distribution and Motion of the Known Asteroids," Paper 66-149, presented at the AIAA Third Aerospace Science Meeting, New York, N. Y., Jan. 24-26, 1966.

Appendix Trajectory Printout

Table A-1. Description of printout (output) terms

Term	Definition	Unit
Departure planet parameters		
VHL	Departure hyperbolic excess speed	km/s
DAL	Declination of outgoing asymptote of departure hyperbola	deg
RAL	Right ascension of outgoing asymptote of departure hyperbola	deg
GL	Angle between departure asymptote and its projection on departure planet orbital plane	deg
CLL	Angle between projections of departure asymptote and planet-sun line on reference plane	deg
C3	Twice the total energy per unit mass	km ² /s ²
ZAS	} (see footnote "n")	deg
ETS		deg
ZAE		deg
ETE		deg
ZAC		deg
ETC		deg
Arrival planet parameters		
VHP	Arrival hyperbolic excess speed	km/s
DAP	Declination of incoming asymptote of arrival hyperbola	deg
RAP	Right ascension of incoming asymptote of arrival hyperbola	deg
GP	Angle between arrival asymptote and its projection on arrival planet orbital plane	deg
CLP	Angle between projections of arrival asymptote and planet-sun line on reference plane	deg
C3	Twice the total energy per unit mass	km ² /s ²
ZAS	} (see footnote "n")	deg
ETS		deg
ZAE		deg
ETE		deg
ZAC		deg
ETC		deg
Heliocentric parameters		
RL	Heliocentric radius to departure planet at departure time	km × 10 ⁶
LAL	Celestial latitude of departure planet at departure time	deg
LOL	Celestial longitude of departure planet at departure time	deg
VL	Heliocentric speed of probe at departure time	km/s

Term	Definition	Unit
Heliocentric parameters (contd)		
GAL	Heliocentric flight path angle of probe at departure time	deg
AZL	Heliocentric azimuth angle of probe at departure time	deg
TAL	Heliocentric true anomaly of probe at departure time	deg
V1	Heliocentric speed of departure planet at departure time	km/s
RP	Heliocentric radius to arrival planet at arrival time	km × 10 ⁶
LAP	Celestial latitude of arrival planet at arrival time	deg
LOP	Celestial longitude of arrival planet at arrival time	deg
VP	Heliocentric speed of probe at arrival time	km/s
GAL	Heliocentric flight path angle of probe at arrival time	deg
AZP	Heliocentric azimuth angle of probe at arrival time	deg
TAP	Heliocentric true anomaly of probe at arrival time	deg
V2	Heliocentric speed of arrival planet at arrival time	km/s
RC	Distance between departure and arrival planets at arrival time	km × 10 ⁶
HCA	Heliocentric central angle	deg
INC	Inclination of heliocentric transfer orbit	deg
APO	Aphelion distance of heliocentric transfer orbit	km × 10 ⁶
ECC	Eccentricity of heliocentric transfer orbit	—
SMA	Semimajor axis of heliocentric transfer orbit	km × 10 ⁶
TF	Flight time from departure to arrival	days
Parking orbit parameters		
LNCH AZMTH	Launch azimuth measured in a plane tangent to surface of launch planet at launch site, positive east of true north	deg
LNCH TIME	Launch time; for range of launch azimuths, launch time may cross 0 h, or midnight; launch date may be advanced to following day for times after midnight, or it may be retarded to previous day for times before midnight	h m s
L-I TIME	Launch-to-injection time	s
INJ LAT	Injection latitude (or declination)	deg

Table A-1 (contd)

Term	Definition	Unit
Parking orbit parameters (contd)		
INJ LONG	Injection longitude, measured positive east of Greenwich	deg
INJ RT ASC	Injection right ascension	deg
INJ AZMTH	Injection azimuth, or angle between projection of velocity vector on local horizontal plane and projection of true north on this plane, measured positive east of true north	deg
INJ TIME	Injection time; same comment applies to this quantity regarding launch date as applied to launch time; however, both times must be consistent	h m s
PO CST TIM	Coast time in parking orbit	s
IGN 2 LAT	Latitude of start of final burnout of parking orbit	deg
IGN 2 LONG	Longitude of start of final burnout of parking orbit	deg
RAD	Injection radius	km
VEL	Injection speed	km/s
PTH	Injection flight path angle	deg

*Following six quantities, all angles, have same general definition and are used in determining the aiming point for interplanetary flyby trajectories. The reference coordinate system for these angles is same target R-S-T system defined in the arrival angle diagram in Section II. A unit vector N_B is directed from target center to another celestial body. Angular quantity ζ_B is angle subtended at target center between incoming asymptote S and target-celestial body line N_B . Thus:

$$\cos \zeta_B = S \cdot N_B \quad (A-1)$$

$$0 \leq \zeta_B \leq \pi$$

Angle η_B is the supplement of angle between T direction and projection of N_B on R - T plane, defined by:

$$\sin \eta_B = \frac{-R \cdot N_B}{\sin \zeta_B} \quad (A-2)$$

$$\cos \eta_B = \frac{-T \cdot N_B}{\sin \zeta_B} \quad (A-3)$$

$$0 \leq \eta_B \leq 2\pi$$

These quantities are computed for three celestial bodies: Sun (ζ_s and η_s), Earth (ζ_E and η_E), and star Canopus (ζ_c and η_c); thus,

ZAS, ζ_s Sun-target-probe angle is useful to indicate direction of probe approach to target; if $\zeta_s < \pi/2$, probe approaches from target planet dark side; if $\zeta_s > \pi/2$, it approaches from light side

ETS, η_s defined similar to ZAS

ZAE, ζ_E Earth-target-probe angle is useful in locating Earth as probe approaches target

ETE, η_E defined similar to ZAS

ZAC, ζ_c Canopus-target-probe angle

ETC, η_c defined similar to ZAS

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL	9.9879 DAL	-42.3402 RAL	256.7277 GL	-19.3737 CLL	-68.7973 C3	99.7583
ZAS	70.0507 ETS	1.7770 ZAE	0.0000 ETE	0.0000 ZAC	83.5566 ETC	258.4727

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL	147.8387 LAL	0.0000 LOL	148.4345 VL	39.1793 GAL	-4.4643 AZL	94.8659 TAL	349.2599 V1	30.1373
RP	755.5436 LAP	-0.8146 LOP	318.8199 VP	9.5352 GAP	36.7207 AZP	85.2026 TAP	159.6112 V2	13.4461
RC	840.9304 HCA	170.3513 INC	4.8559 RCA	146.7616 APO	872.5952 ECC	0.7121 SMA	509.6784 TF	663.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP	8.5623 DAP	5.2915 RAP	275.7919 GP	5.1902 CLP	136.8455 C3	73.3127 LVI	-5.7672
ZAS	136.5955 EYS	173.1827 ZAE	145.1268 ETE	171.0640 ZAC	109.2897 ETC	267.7139	

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	18 21 4.1	1779.46	27.49	34.21	104.69	130.50	18 50 43.6	1179.46	31.90	28.36
50.00	22 49 32.7	1068.73	47.50	339.92	114.73	93.21	23 7 21.5	468.73	47.43	329.98
54.00	19 20 41.6	1626.83	30.63	22.64	107.43	124.12	19 47 48.5	1026.83	34.37	16.03
54.00	22 19 7.1	1146.70	43.59	346.56	114.06	100.45	22 38 13.8	546.70	44.45	337.31
57.09	21 2 12.1	1353.88	36.83	2.35	111.44	112.56	21 24 46.0	753.88	39.23	354.41
57.09	21 2 18.8	1353.57	36.84	2.33	111.45	112.55	21 24 52.4	753.57	39.23	354.39
122.91	4 15 6.6	5314.73	36.83	238.23	111.44	112.56	5 43 41.3	4714.73	39.23	230.30
122.91	4 15 6.6	5314.73	36.83	238.23	111.44	112.56	5 43 41.3	4714.73	39.23	230.30
			RAD	186.6498 VEL	66.1127 PTH	5.1135				

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3	0.6900 TDE	0.9290 TRA	-4.7253 BAU	2.1156 TVH	13.7839 TTL	-2.5682
RC3	1.4284 RDE	0.8688 RRA	-1.9054 FAU	1.3038 RVH	28.5328 RTL	1.6213
FC3	-11.3149 FDE	-11.5572 FRA	13.6817 BSP	8586. FVH	-226.0251 FTL	-5.4488
BC3	1.5863 BDE	1.2725 BRA	5.0950 FSP	-4049. BVH	31.6878 BTL	3.0372

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT	3953.8632 SGR	3252.1121 SG3	2232.3565
RRT	0.7483 RRF	-0.9937 RTF	-0.7208
SGB	5119.4987 R23	-0.4609 R13	-0.8810
SG1	4801.3549 SG2	1776.5857 THA	37.6383

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST	1223.3668 SR	672.6108 SS	5464.4538
CRT	0.9205 CRS	0.9610 CST	0.7823
LSA	5587.2564 MSA	768.4531 SSA	36.4703
EL1	1376.3852 EL2	233.6561 ALF	27.7099

LAUNCH DATE	FEB 18, 1972	0 HOURS	0 MIN	0 SEC	2441365.50000000
ARRIVAL DATE	DEC 12, 1973	0 HOURS	0 MIN	0 SEC	2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.8474 DAL -40.6877 RAL 256.2014 GL -17.7679 CLL -70.3912 C3 96.9704
 ZAS 71.3619 ETS 0.4861 ZAE 0.0000 ETE 0.0000 ZAC 85.0952 ETC 258.1954

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 147.8699 LAL 0.0000 LOL 149.4434 VL 39.1773 GAL -4.0734 AZL 94.4103 TAL 350.1999 V1 30.1310
 RP 755.5436 LAF -0.8146 LOP 318.8199 VP 9.5467 GAP 36.7619 AZP 85.6655 TAP 159.5456 V2 13.4461
 RC 840.9304 HCA 169.3457 INC 4.4105 RCA 146.9725 APO 873.2446 ECC 0.7119 SMA 510.1085 TF 662.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.5584 DAP 4.8816 RAP 275.8939 GP 4.7828 CLP 136.9568 C3 73.2467 LVI -5.8725
 ZAS 136.7436 ETS 173.5929 ZAE 145.2889 ETE 171.6160 ZAC 108.8842 ETC 267.7456

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	17 55 43.5	1832.09	25.14	37.00	102.58	131.84	18 27 15.6	1232.09	29.68	31.42
50.00	23 1 49.4	1009.28	47.57	334.18	112.80	88.79	23 18 38.7	409.28	46.96	324.31
54.00	18 47 13.2	1702.90	27.64	27.15	104.86	126.48	19 15 36.1	1102.90	31.64	20.96
54.00	22 40 31.6	1063.81	44.35	339.14	112.65	95.05	22 58 15.4	463.81	44.55	329.75
58.00	19 59 31.7	1508.07	31.45	12.65	107.67	118.92	20 24 39.8	908.07	34.62	5.62
58.00	22 0 37.8	1171.45	39.48	347.71	111.67	103.34	22 20 9.3	571.45	41.15	339.07
59.45	21 6 20.1	1322.42	35.55	358.99	109.97	111.26	21 28 22.5	722.42	37.81	351.14
59.45	21 6 29.7	1321.97	35.56	358.95	109.97	111.24	21 28 31.6	721.97	37.82	351.10
120.55	3 58 53.3	5339.43	35.55	239.74	109.97	111.25	5 27 52.7	4739.43	37.81	231.89
120.55	3 58 53.3	5339.43	35.55	239.74	109.97	111.25	5 27 52.7	4739.43	37.81	231.89
122.00	3 4 40.4	5490.17	31.45	250.39	107.67	118.92	4 36 10.5	4890.17	34.62	243.36
122.00	5 5 46.5	5153.56	39.88	225.45	111.67	103.34	6 31 40.1	4553.56	41.15	218.81

RAD 186.6490 VEL 66.0918 FTH 5.1104

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.7637 TDE 0.9471 TRA -4.7402 BAV 1.9370 TVH 15.0412 TTL -2.6724
 RC3 1.2842 RDE 0.6101 RRA -1.7070 FAU 1.2320 RVH 25.2918 RTL 1.3814
 FC3 -10.9992 FDE -10.7154 FRA 13.2733 BSP 8229. FVH -216.6254 FTL -4.6332
 BC3 1.4941 BDE 1.1266 BRA 5.0381 FSP -4060. BVH 29.4264 BTL 3.0083

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3974.3419 SGR 2870.2626 SG3 2137.1877
 RRT 0.7683 RRF -0.9908 RTF -0.7432
 SGB 4902.4281 R23 -0.4785 R13 -0.8680
 SG1 4643.3470 SG2 1572.6187 THA 33.3386

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1223.2574 SR 534.9712 SS 5156.5151
 CRT 0.9594 CRS 0.9283 CST 0.7970
 LSA 5273.6543 MSA 747.7506 SSA 40.4672
 EL1 1327.8647 EL2 139.0261 ALF 23.0285

LAUNCH DATE FEB 19, 1972 0 HOURS 0 MIN 0 SEC 2441366.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.7290 DAL -39.2892 RAL 255.6468 GL -16.4195 CLL -71.9901 C3 94.6543
 ZAS 72.7481 ETS 359.3493 ZAE 0.0000 ETE 0.0000 ZAC 86.3754 ETC 257.8915

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

JRL 147.9016 LAL 0.0000 LOL 150.4518 VL 39.1750 GAL -3.6813 AZL 94.0338 TAL 351.1430 V1 30.1246
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.5577 GAP 36.8024 AZP 86.0492 TAP 159.4830 V2 13.4461
 KC 840.9304 HCA 168.3400 INC 4.0339 RCA 147.1683 APO 873.8700 ECC 0.7117 SMA 510.5191 TF 661.0000

JEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.5568 DAP 4.5405 RAP 275.9868 GP 4.4438 CLP 137.0574 C3 73.2180 LVI -5.9679
 ZAS 136.8726 ETS 173.9358 ZAE 145.4289 ETE 172.0782 ZAC 108.5469 ETC 267.7738

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	17 37 2.9	1872.59	23.28	39.03	100.87	132.75	18 8 15.5	1272.59	27.93	33.67
50.00	23 9 12.7	963.03	47.41	329.72	110.99	85.36	23 25 15.7	363.03	46.39	320.00
54.00	18 22 37.8	1755.99	25.46	30.15	102.89	127.92	18 51 53.8	1155.99	29.62	24.22
54.00	22 52 49.6	1004.87	44.56	333.78	111.11	91.13	23 9 34.5	404.97	44.28	324.40
58.00	19 20 58.2	1598.93	28.31	18.42	105.13	121.99	19 47 37.2	998.93	31.84	11.05
58.00	22 26 53.9	1074.84	41.09	339.62	110.74	97.81	22 44 48.8	474.84	41.67	330.73
61.52	21 9 42.5	1202.68	34.45	355.96	108.65	110.19	21 31 15.1	692.68	36.60	348.19
61.52	21 9 49.3	1292.35	34.46	355.94	108.65	110.17	21 31 21.7	692.35	36.60	348.16
118.48	3 43 14.9	5363.36	34.46	241.26	108.65	110.18	5 12 38.3	4763.36	36.60	233.48
118.48	3 43 14.9	5363.36	34.46	241.26	108.65	110.18	5 12 38.3	4763.36	36.60	233.48
122.00	2 26 6.9	5581.03	28.31	256.16	105.13	121.99	3 59 7.9	4981.03	31.84	249.59
122.00	5 32 2.6	5056.94	41.09	217.36	110.74	97.41	6 53 19.5	4456.94	41.67	208.47

RAD 186.6482 VEL 66.0744 PTH 5.1079

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.5861 TDE 0.9520 TRA -4.7450 BAU 1.7031 TVH 11.4041 TTL -2.7785
 KC3 1.2115 RDE 0.4013 RRA -1.5318 FAU 1.2302 RVH 23.5735 RTL 1.1795
 FC3 -11.2515 FDE -10.0286 FRA 12.7522 BGF 7973. FVH -218.9334 FTL -3.7995
 DC3 1.3458 BDE 1.0331 BRA 4.9862 FSF -4050. BVH 26.1871 BTL 3.0185

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3827.6485 SGR 2640.3716 SG3 2131.0388
 RRT 0.6955 RRF -0.9876 RTF -0.6708
 SGD 4649.9952 R23 -0.5574 R13 -0.8156
 SG1 4338.2967 SG2 1673.8091 THA 30.6774

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1220.1407 SR 427.9403 SS 4892.0359
 CRT 0.9838 CRS 0.8688 CST 0.8034
 LSA 5005.6611 MSA 738.0611 SSA 50.1268
 EL1 1290.0743 EL2 72.5356 ALF 19.0993

LAUNCH DATE FEB 20, 1972 0 HOURS 0 MIN 0 SEC 2441367.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC REFERENCE PLANE IS EQUATOR
 VHL 9.6279 DAL -38.0861 RAL 255.0639 GL -15.2706 CLL -73.5992 C3 92.6935
 ZAS 74.1937 ETS 358.3311 ZAE 0.0000 ETE 0.0000 ZAC 87.4543 ETC 257.5649

HELIOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
 RL 147.9338 LAL 0.0000 LOL 151.4599 VL 39.1726 GAL -3.2878 AZL 93.7177 TAL 352.0894 '1 30.1181
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.5681 GAP 36.8416 AZP 86.3725 TAP 159.4237 V2 13.4461
 RC 840.9304 HCA 167.3343 INC 3.7176 RCA 147.3485 APO 874.4711 ECC 0.7116 SMA 510.9098 TF 660.0000

GEOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
 VHP 8.5565 DAP 4.2520 RAP 276.0720 GP 4.1575 CLP 137.1492 C3 73.2135 LVI -6.0552
 ZAS 136.9869 ETS 174.2269 ZAE 145.5519 ETE 172.4709 ZAC 108.2619 ETC 267.7992

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	17 20 13.6	1905.27	21.76	40.68	99.40	133.43	17 51 50.8	1305.27	26.48	35.43
50.00	23 13 31.1	925.41	47.15	326.13	109.30	82.61	23 28 56.5	325.41	45.80	316.56
54.00	18 2 37.8	1798.82	23.73	32.37	101.26	120.91	18 32 34.6	1198.82	28.00	26.62
54.00	23 0 18.7	959.21	44.54	329.60	109.61	88.06	23 16 17.9	359.21	43.89	320.29
58.00	18 54 25.1	1657.44	26.15	21.94	103.22	123.71	19 22 2.5	1057.44	29.88	15.64
58.00	22 40 56.1	1011.41	41.54	334.17	109.53	94.04	22 57 47.5	411.41	41.65	325.22
62.00	20 8 22.3	1449.35	29.80	6.66	105.61	116.38	20 32 31.7	849.35	32.70	359.62
62.00	22 3 9.4	1117.85	37.36	342.43	108.77	102.01	22 21 47.2	517.85	38.50	334.09
63.37	21 12 23.5	1264.50	33.50	353.21	107.44	109.30	21 33 28.0	664.50	35.55	345.50
63.37	21 12 30.4	1264.17	33.50	353.19	107.44	109.28	21 33 34.6	664.17	35.55	345.48
116.63	3 28 2.9	5386.62	33.50	242.77	107.44	109.29	4 57 49.5	4786.62	35.55	235.08
116.63	3 28 2.9	5386.62	33.50	242.77	107.44	109.29	4 57 49.5	4786.62	35.55	235.08
118.00	2 37 20.5	5533.10	29.80	253.04	105.61	116.38	4 9 33.6	4933.10	32.70	246.00
118.00	4 32 7.6	5201.60	37.36	228.81	108.77	102.01	5 58 49.2	4601.60	38.50	220.47
122.00	1 59 33.8	5639.54	26.15	259.68	103.22	123.71	3 33 33.3	5039.54	29.88	253.38
122.00	5 46 4.8	4993.51	41.54	211.91	109.53	94.04	7 9 18.3	4393.51	41.65	202.96

RAD 186.6476 VEL 66.0597 PTH 5.1057

DIFFERENTIAL CORRECTIONS REFERENCE PLANE IS ECLIPTIC
 TC3 0.7773 TDE 0.9745 TRA -4.7220 BAU 1.7931 TVH 14.9680 TTL -2.8831
 RC3 1.2203 RDE 0.2288 RRA -1.3764 FAU 1.2939 RVH 23.4987 RTL 1.0068
 FC3 -12.0843 FDE -9.4628 FRA 12.1527 BSP 7668. FVH -232.6935 FTL -2.9523
 BC3 1.4469 BDE 1.0010 BRA 4.9185 FSP -4023. BVH 27.8609 BTL 3.0538

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC
 SGT 3914.4792 SGR 2573.6045 SG3 2215.6205 ST 1218.8157 SR 347.8133 SS 4663.7658
 RRT 0.7258 RRF -0.9850 RTF -0.7063 CRT 0.9825 CRS 0.7640 CST 0.8128
 SGB 4684.7184 R23 -0.5330 R13 -0.8284 LSA 4777.9397 MSA 724.5958 SSA 58.7244
 SG1 4113.7344 SG2 1570.2023 THA 29.6254 EL1 1265.9373 EL2 62.3575 ALF 19.7014

LAUNCH DATE FEB 21, 1972 0 HOURS 0 MIN 0 SEC 2441368.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL	9.5407 DAL	-37.0360 RAL	254.4547 CL	-14.2789 CLL	-75.2207 C3	91.0245
ZAS	75.6872 ETS	357.4066 ZAE	0.0000 ETE	0.0000 ZAC	88.3736 ETC	257.2190

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL	147.9666 LAL	0.0000 LOL	152.4675 VL	39.1699 GAL	-2.8931 AZL	93.4485 TAL	353.0389 V1	30.1115
RP	755.5436 LAP	-0.8146 LOP	318.8199 VP	9.5779 GAP	36.8800 AZP	86.6490 TAP	159.3676 V2	13.4461
RC	840.9304 HCA	166.3286 INC	3.4488 RCA	147.5131 APO	875.0476 ECC	0.7115 SMA	511.2804 TF	659.0000

ZEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP	8.5573 DAP	4.0046 RAP	276.1507 GP	3.9118 CLP	137.2335 C3	73.2277 LVI	-6.1357
ZAS	137.0894 ETS	174.4773 ZAE	145.6614 ETE	172.8089 ZAC	108.0177 ETC	267.8223	

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	17 5 18.1	1932.53	20.48	42.01	98.08	133.95	17 37 30.6	1332.53	25.25	36.86
50.00	23 15 43.1	893.90	46.83	323.15	107.73	80.33	23 30 37.0	293.90	45.22	313.75
54.00	17 45 26.1	1829.89	22.30	34.13	99.83	129.65	18 15 56.0	1229.89	26.66	28.52
54.00	23 4 46.9	921.89	44.40	326.21	108.16	85.57	23 20 8.8	321.89	43.45	316.99
58.00	18 33 11.8	1701.37	24.47	24.49	101.62	124.88	19 1 33.2	1101.37	28.33	18.38
58.00	22 49 25.9	963.23	41.68	329.99	108.27	91.13	23 5 29.1	363.23	41.44	321.05
62.00	19 34 59.6	1527.60	27.33	11.70	103.60	118.94	20 0 27.3	927.60	30.54	5.01
62.00	22 23 48.5	1035.35	38.32	335.77	107.93	97.71	22 41 3.9	435.35	38.93	327.26
65.04	21 14 30.7	1237.60	32.65	350.67	106.30	108.54	21 35 8.3	637.60	34.62	343.02
65.04	21 14 40.5	1237.12	32.66	350.64	106.31	108.52	21 35 17.6	637.12	34.63	342.98
114.96	3 13 10.8	5409.34	32.66	244.28	106.31	108.53	4 43 20.1	4809.34	34.62	236.63
114.96	3 13 10.8	5409.34	32.66	244.28	106.31	108.53	4 43 20.1	4809.34	34.62	236.63
118.00	2 3 57.9	5611.35	27.33	258.08	103.60	118.94	3 37 29.2	5011.35	30.54	251.39
118.00	4 52 46.7	5119.10	38.32	222.15	107.93	97.71	6 18 5.4	4519.10	38.93	213.64
122.00	1 38 20.5	5683.47	24.47	262.22	101.62	124.88	3 13 4.0	5083.47	28.33	256.12
122.00	5 54 34.5	4945.33	41.68	207.73	108.27	91.13	7 16 59.9	4345.33	41.44	198.79
RAD 186.6471 VEL 66.0471 PTH 5.1038										

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3	0.6773 TDE	0.9780 TRA	-4.6999 BAV	1.5658 TVH	12.9229 TTL	-2.9863
RC3	1.0940 RDE	0.0732 RRA	-1.2457 FAU	1.2095 RVH	20.8753 RTL	0.8566
FC3	-11.5033 FDE	-8.9002 FRA	11.5712 BSP	7490. FVH	-219.4989 FTL	-2.0907
BC3	1.2867 BDE	0.9807 BRA	4.8622 FSP	-4030. BVH	24.5515 BTL	3.1067

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT	3810.0943 SGR	2288.6565 SG3	2091.7851
RRT	0.6923 RRF	-0.9784 RTF	-0.6752
SG8	1444.6335 R23	-0.5794 R13	-0.7884
SG1	4182.2516 SG2	1504.5059 THA	26.2290

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST	1213.1048 SR	291.3692 SS	4425.1542
CRT	0.0236 CRS	0.5794 CST	0.8174
LSA	4540.9713 MSA	716.9029 SSA	64.3257
EL1	1242.8331 EL2	109.0180 ALF	12.6084

LAUNCH DATE	FEB 22, 1972	0 HOURS	0 MIN	0 SEC	2441369.50000000
ARRIVAL DATE	DEC 12, 1973	0 HOURS	0 MIN	0 SEC	2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL	9.4652	DAL	-36.1075	RAL	253.8207	GL	-13.4132	CLL	-76.8561	C3	89.5909
ZAS	77.2208	ETS	356.5568	ZAE	0.0000	ETE	0.0000	ZAC	89.1643	ETC	256.8564

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL	147.9993	LAL	0.0000	LOL	153.4746	VL	39.1670	GAL	-2.4972	AZL	93.2167	TAL	353.9915	V1	30.1048
RP	755.5436	LAP	-0.8146	LOP	318.8199	VP	9.5872	GAP	36.9175	AZP	86.8880	TAP	159.3147	V2	13.4461
RC	840.9304	HCA	165.3232	INC	3.2168	RCA	147.6618	APC	875.5992	ECC	0.7114	SMA	511.6305	TF	658.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP	8.5589	DAP	3.7900	RAP	276.2236	GP	3.6989	CLP	137.3113	C3	73.2549	LVI	-6.2100
ZAS	137.1821	ETS	174.6951	ZAE	145.7599	ETE	173.1032	ZAC	107.8060	ETC	267.8435		

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	16 51 42.0	1955.84	19.38	43.12	96.87	134.36	17 24 17.9	1355.84	24.19	38.06
50.00	23 16 23.7	866.92	46.49	320.64	106.26	78.42	23 30 50.6	266.92	44.67	311.39
54.00	17 30 6.6	1857.62	21.09	35.57	98.53	130.23	18 1 4.2	1257.62	25.51	30.07
54.00	23 7 10.9	890.49	44.20	323.36	106.77	83.49	23 22 1.4	290.49	43.00	314.25
58.00	18 15 4.5	1736.63	23.08	26.48	100.20	125.74	18 44 1.1	1136.63	27.04	20.52
58.00	22 54 37.8	924.28	41.68	326.60	107.01	88.77	23 10 2.1	324.28	41.15	317.71
62.00	19 10 39.1	1580.40	25.55	14.96	101.97	120.50	19 36 59.5	980.40	28.94	8.49
62.00	22 35 13.7	978.87	38.74	331.12	106.89	94.67	22 51 32.6	378.87	38.97	322.55
66.00	20 36 58.8	1328.21	29.67	356.68	104.27	112.22	20 59 7.0	728.21	32.10	349.45
66.00	21 49 24.5	1112.94	34.20	341.14	105.99	103.48	22 7 57.4	512.94	35.54	333.19
66.58	21 16 12.7	1211.62	31.90	348.28	105.22	107.89	21 36 24.3	611.62	33.80	340.68
66.58	21 16 23.8	1211.06	31.91	348.24	105.23	107.87	21 36 34.9	611.06	33.81	340.64
113.42	2 58 32.7	5431.68	31.91	245.79	105.22	107.88	4 29 4.4	4831.68	33.80	238.18
113.42	2 58 32.7	5431.68	31.91	245.79	105.22	107.88	4 29 4.4	4831.68	33.80	238.18
114.00	2 25 26.5	5530.08	29.67	252.73	104.27	112.22	3 57 36.5	4930.08	32.10	245.49
114.00	3 37 52.1	5314.81	34.20	237.19	105.99	103.48	5 6 26.9	4714.81	35.54	229.23
118.00	1 39 37.2	5664.15	25.55	261.35	101.97	120.50	3 14 1.4	5064.15	28.94	254.87
118.00	5 4 11.9	5062.62	38.74	217.50	106.89	94.67	6 28 34.6	4462.62	38.97	208.93
122.00	1 20 13.1	5718.73	23.08	264.22	100.20	125.74	2 55 31.9	5118.73	27.04	258.26
122.00	5 59 46.5	4906.39	41.68	204.34	107.01	88.77	7 21 32.9	4306.39	41.15	195.45

RAD 186.6466 VEL 66.0363 PTH 5.1022

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3	0.7091	TDE	0.9896	TRA	-4.6687	BAU	1.5565	TVH	13.4233	TTL	-3.0859
RC3	1.0890	RDE	-0.0588	RAA	-1.1261	FAU	1.2547	RVH	20.6147	RTL	0.7249
FC3	-12.1242	FDE	-8.4520	FRA	10.9088	BSP	7274.	FVH	-229.5162	FTL	-1.2231
BC3	1.2995	BDE	0.9914	BRA	4.8028	FSP	-4004.	BVH	24.5998	BTL	3.1699

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT	3794.3430	SGR	2227.7311	SG3	2150.9211
RRT	0.6740	RRF	-0.9742	RTF	-0.6613
SG8	4399.9801	R23	-0.5930	R13	-0.7730
SG1	4152.3715	SG2	1511.0693	THA	25.1881

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST	1209.0306	SR	262.9766	SS	4226.2646
CRT	0.7762	CRS	0.3202	CST	0.8200
LSA	4344.9272	MSA	712.8468	SSA	75.3634
EL1	1226.4581	EL2	163.4385	ALF	9.7583

LAUNCH DATE	FEB 23, 1972	0 HOURS	0 MIN	0 SEC	2441370.50000000
ARRIVAL DATE	DEC 12, 1973	0 HOURS	0 MIN	0 SEC	2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC REFERENCE PLANE IS EQUATOR
VHL 9.4001 DAL -35.2765 RAL 253.1638 GL -12.6498 CLL -78.5058 C3 88.3620
ZAS 78.7885 ETS 355.7676 ZAE 0.0000 ETE 0.0000 ZAC 89.8498 ETC 256.4791

HELIOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
RL 148.0335 LAL 0.0000 LOL 154.4813 VL 39.1640 GAL -2.0999 AZL 93.0150 TAL 354.9473 V1 30.0981
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.5959 GAP 36.9540 AZP 87.0970 TAP 159.2652 V2 13.4461
RC 840.9304 MCA 164.3180 INC 3.0150 RCA 147.7943 APO 876.1257 ECC 0.7113 SMA 511.9600 TF 657.0000

TEOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
VHP 8.5610 DAP 3.6020 RAP 276.2912 GP 3.5125 CLP 137.3831 C3 73.2914 LVI -6.2787
ZAS 137.2662 ETS 174.8865 ZAE 145.8490 ETE 173.3619 ZAC 107.6207 ETC 267.8629

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	16 39 3.6	1976.18	18.41	44.08	95.73	134.70	17 11 59.8	1376.18	23.25	39.00
50.00	23 15 55.6	843.40	46.15	318.47	104.86	76.78	23 29 59.0	243.40	44.14	309.37
54.00	17 16 6.1	1881.46	20.04	36.79	97.32	130.69	17 47 27.5	1281.46	24.51	31.37
54.00	23 8 5.0	863.47	43.96	320.94	105.45	81.73	23 22 28.5	263.47	42.56	311.93
58.00	17 58 58.4	1706.11	21.90	28.11	98.91	126.41	18 28 24.5	1166.11	25.93	22.26
58.00	22 57 37.3	891.63	41.60	323.77	105.77	83.80	23 12 29.0	291.63	40.83	314.93
62.00	18 50 33.9	1621.10	24.12	17.41	100.53	121.59	19 17 35.0	1021.10	27.64	11.10
62.00	22 42 12.3	935.00	38.92	327.48	105.80	92.27	22 57 47.3	335.00	38.85	318.90
66.00	19 59 55.5	1418.68	27.19	2.71	102.38	115.27	20 23 34.2	818.68	29.99	355.82
66.00	22 13 21.3	1019.29	35.45	333.92	105.37	99.12	22 30 20.6	419.29	36.25	325.76
68.00	21 17 36.2	1186.25	31.22	346.01	104.18	107.32	21 37 22.5	586.25	33.06	338.45
68.00	21 17 44.9	1185.81	31.23	345.98	104.18	107.30	21 37 30.7	535.81	33.07	338.42
112.00	2 44 3.9	5453.81	31.23	247.30	104.18	107.31	4 14 57.7	4853.81	33.06	239.74
112.00	2 44 3.9	5453.81	31.23	247.30	104.18	107.31	4 14 57.7	4853.81	33.06	239.74
114.00	1 48 23.1	5620.55	27.19	258.75	102.38	115.27	3 22 3.7	5020.55	29.99	251.86
114.00	4 1 48.9	5221.16	35.45	229.97	105.37	99.12	5 28 50.1	4621.16	36.25	221.80
118.00	1 19 32.1	5704.84	24.12	263.79	100.53	121.59	2 54 37.0	5104.84	27.64	257.46
118.00	5 11 10.5	5018.74	38.92	213.86	105.80	92.27	6 34 49.2	4418.74	38.85	205.28
122.00	1 4 7.1	5748.21	21.90	265.85	98.91	126.41	2 39 55.3	5148.21	25.93	260.00
122.00	6 2 46.0	4873.73	41.60	201.51	105.77	86.80	7 23 59.7	4273.73	40.83	192.67

RAD 186.6462 VEL 66.0271 PTH 5.1008

DIFFERENTIAL CORRECTIONS REFERENCE PLANE IS ECLIPTIC
TC3 0.8690 TDE 1.0121 TRA -4.6226 BAU 1.6320 TVH 16.3382 TTL -3.1813
RC3 1.0740 RDE -0.1768 RRA -1.0198 FAU 1.2809 RVH 20.1907 RTL 0.6081
FC3 -12.5501 FDE -8.0482 FRA 10.2250 DSP 7057. FVH -235.9450 FTL -0.3477
BC3 1.3815 BDE 1.0274 BRA 4.7337 PSP -3984. BVH 25.9731 BTL 3.2389

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC
SGT 3888.0095 SGR 2160.5655 SG3 2184.1370 ST 1206.2368 SR 259.7354 SS 4038.5539
RRT 0.7012 RRF -0.9690 RTF -0.6947 CRT 0.5522 CRS 0.0264 CST 0.8248
SG8 4430.5237 R23 -0.5630 R13 -0.7889 LSA 4162.6180 HSA 705.6433 SSA 84.0519
SG1 4196.9312 SG2 1419.6158 THA 24.3545 EL1 1215.0116 EL2 214.9802 ALF 7.0011

LAUNCH DATE FEB 24, 1972 0 HOURS 0 MIN 0 SEC 2441371.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.3443 DAL -34.5249 RAL 252.4858 GL -11.9705 CLL -80.1693 C3 87.3151
 ZAS 80.3852 ETS 355.0265 ZAC 0.0000 ETE 0.0000 ZAC 90.4481 ETC 256.0894

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.0676 LAL 0.0000 LOL 155.4875 VL 39.1607 GAL -1.7015 AZL 92.8380 TAL 355.9059 V1 30.0912
 RP 755.5436 LAP -0.8146 LOP 318.8190 VP 9.6040 GAP 36.9898 AP 87.2813 TAP 159.2190 V2 13.4461
 RC 840.9304 HCA 163.3131 INC 2.8383 RCA 147.9105 APO 876.6268 ECC 0.7113 SMA 512.2687 TF 656.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.5036 DAP 3.4358 RAP 276.3537 GP 3.3477 CLP 137.4494 C3 73.3359 LVI -6.3423
 ZAS 137.3430 ETS 175.0562 ZAE 145.9299 ETE 173.5915 ZAC 107.4569 ETC 267.8808

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	16 27 8.3	1994.24	17.54	44.92	94.64	134.98	17 0 22.5	1394.24	22.41	39.99
50.00	23 14 34.6	822.61	45.80	316.58	103.53	75.36	23 28 17.2	222.61	43.64	307.62
54.00	17 3 3.4	1902.39	19.11	37.84	96.18	131.07	17 34 45.8	1302.39	23.62	32.50
54.00	23 7 51.3	839.81	43.71	318.84	104.17	80.20	23 21 51.1	239.81	42.13	309.93
58.00	17 44 17.2	1791.46	20.87	29.49	97.70	126.95	18 14 8.7	1191.46	24.96	23.74
58.00	22 59 2.2	063.55	41.46	321.34	104.57	85.11	23 13 25.8	203.55	40.49	312.57
62.00	18 33 2.3	1654.45	22.92	19.37	99.22	122.43	19 0 36.7	1054.45	26.53	13.18
62.00	22 46 27.6	898.62	38.97	324.48	104.70	90.28	23 1 26.5	290.92	38.66	315.91
66.00	19 34 47.1	1474.30	25.52	6.27	100.85	116.96	19 59 21.4	874.30	28.52	359.59
66.00	22 25 13.4	960.94	35.98	329.32	104.48	96.30	22 41 14.4	360.94	36.44	321.08
69.34	21 18 42.4	1161.50	30.60	343.84	103.17	106.82	21 38 3.9	561.50	32.39	336.32
69.34	21 18 53.7	1160.93	30.61	343.80	103.17	106.80	21 38 14.6	560.93	32.40	336.28
110.66	2 29 37.5	5476.03	30.61	248.83	103.17	106.82	4 0 53.5	4876.03	32.39	241.30
110.66	2 29 42.6	5475.77	30.61	248.81	103.17	106.81	4 0 58.4	4875.77	32.39	241.28
114.00	1 23 14.7	5676.17	25.52	262.31	100.85	116.96	2 57 50.9	5076.17	28.52	255.63
114.00	4 13 41.0	5162.81	35.98	225.37	104.48	96.30	5 39 43.8	4562.81	36.44	217.12
118.00	1 2 0.4	5738.20	22.92	265.75	99.22	122.43	2 37 38.7	5138.20	26.53	259.56
118.00	5 15 25.8	4982.67	38.97	210.86	104.70	90.28	6 38 28.5	4382.67	38.66	202.30
122.00	0 49 25.9	5773.57	20.87	267.23	97.70	126.95	2 25 39.5	5173.57	24.96	261.48
122.00	6 4 10.9	4845.65	41.46	199.08	104.57	85.11	7 24 56.5	4245.65	40.49	190.31

RAD 186.6459 VEL 66.0192 PTH 5.0997

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.8026 TDE 1.0172 TRA -4.5846 DAU 1.4848 TVH 14.9996 TTL -3.2724
 RC3 0.9868 RDE -0.2886 RRA -0.9285 FAU 1.2176 RVH 18.4423 RTL 0.5034
 FC3 -12.0723 FDE -7.6288 FRA 9.5634 BSP 6937. FVH -225.6131 FTL 0.5353
 DC3 1.2720 DDE 1.0574 BRA 4.6777 FSP -3985. BVH 23.7719 BTL 3.3109

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

SGT 3779.0535 SGR 1977.3798 SG3 2083.5709 ST 1199.5285 SR 278.1178 SS 3837.4068
 RRT 0.6710 RRF -0.9583 RTF -0.6698 CRT 0.3127 CRS -0.2410 CST 0.8252
 SGB 4265.1232 R23 -0.5888 R13 -0.7570 LSA 3967.1259 MSA 704.0407 SSA 90.2570
 SG1 4038.4071 SG2 1372.0583 THA 22.0175 EL1 1202.8373 EL2 263.4398 ALF 4.3568

LAUNCH DATE FEB 25, 1972 0 HOURS 0 MIN 0 SEC 2441372.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL	9.2970 DAL	-33.8383 RAL	251.7893 GL	-11.3611 CLL	-81.8462 C3	86.4342
ZAS	82.0070 ETS	354.3313 ZAE	0.0000 ETE	0.0000 ZAC	90.9736 ETC	255.6891

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL	148.1022 LAL	0.0000 LOL	156.4933 VL	39.1572 GAL	-1.3018 AZL	92.6815 TAL	356.8676 V1	30.0842
RP	755.5436 LAP	-0.8146 LOP	318.8199 VP	9.6116 GAP	37.0248 AZP	87.4452 TAP	159.1761 V2	13.4461
RC	840.9304 HCA	162.3085 INC	2.6815 RCA	148.0102 APO	877.1022 ECC	0.7112 SMA	512.5562 TF	655.0000

ZEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP	8.5666 DAP	3.2876 RAP	276.4115 GP	3.2009 CLP	137.5105 C3	73.3861 LVI	-6.4009
ZAS	137.4130 ETS	175.2079 ZAE	146.0035 ETE	173.7967 ZAC	107.3110 ETC	267.8971	

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	16 15 45.8	2010.52	16.76	45.67	93.59	135.22	16 49 16.3	1410.52	21.63	40.79
50.00	23 12 31.7	804.03	45.47	314.92	102.26	74.12	23 25 55.8	204.03	43.17	306.08
54.00	16 50 44.2	1921.08	18.27	38.77	95.09	131.40	17 22 45.3	1321.08	22.81	33.50
54.00	23 6 45.2	818.81	43.45	316.98	102.94	78.87	23 20 24.0	218.81	41.72	398.18
58.00	17 30 37.9	1813.76	19.95	30.68	96.55	127.40	18 0 51.6	1213.76	24.10	25.01
58.00	22 59 16.3	838.95	41.30	319.22	103.39	83.64	23 13 15.2	238.95	40.16	310.52
62.00	18 17 13.1	1682.83	21.87	21.00	98.00	123.10	18 45 15.9	1082.83	25.56	14.92
62.00	22 48 51.5	868.27	38.95	321.92	103.60	88.60	23 3 19.7	268.23	38.44	313.39
66.00	19 14 15.3	1516.45	24.20	8.90	99.50	118.14	19 39 31.7	916.45	27.34	2.37
66.00	22 32 19.9	916.48	36.25	325.78	103.52	94.10	22 47 36.4	316.48	36.44	317.51
70.00	20 39 57.2	1258.33	27.94	350.38	101.38	110.52	21 0 55.6	658.33	30.18	343.21
70.00	21 52 0.8	1038.10	32.19	334.67	102.82	102.14	22 9 18.9	438.10	33.39	326.89
70.62	21 19 39.5	1137.00	30.03	341.73	102.18	106.37	21 38 36.5	537.00	31.77	334.25
70.62	21 19 52.0	1136.36	30.05	341.69	102.18	106.35	21 38 48.4	536.36	31.78	334.20
109.38	2 15 11.9	5498.39	30.04	250.37	102.18	106.37	3 46 50.3	4898.39	31.77	242.89
109.38	2 15 22.2	5497.87	30.05	250.34	102.18	106.35	3 47 0.0	4897.87	31.78	242.85
110.00	1 43 1.9	5596.71	27.94	257.23	101.38	110.52	3 16 18.6	4996.71	30.18	250.06
110.00	2 55 5.5	5376.47	32.19	241.52	102.82	102.14	4 24 42.0	4776.47	33.39	233.74
114.00	1 2 42.9	5718.32	24.20	264.94	99.50	118.14	2 36 1.2	5118.32	27.34	258.41
114.00	4 20 47.5	5118.35	36.25	221.82	103.52	94.10	5 46 5.9	4518.35	36.44	213.55
118.00	0 46 11.3	5766.58	21.87	267.39	98.00	123.10	2 22 17.9	5166.58	25.56	231.31
118.00	5 17 49.7	4951.98	38.95	208.30	103.60	88.60	6 40 21.6	4351.98	38.44	199.77
122.00	0 35 46.5	5795.86	19.95	268.42	96.55	127.40	2 12 22.4	5195.86	24.10	262.75
122.00	6 4 24.9	4821.05	41.30	196.96	103.39	83.64	7 24 46.0	4221.05	40.16	188.26

RAD	186.6457 VEL	66.0126 PTH	5.0987
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DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3	0.6124 TDE	1.0263 TRA	-4.5406 RAU	1.3079 TVH	11.3862 TTL	-3.3589
RC3	0.9519 RDE	-0.3885 RRA	-0.8437 FAU	1.2211 RVH	17.7002 RTL	0.4090
FC3	-12.2305 FDE	-7.2802 FRA	8.8456 BSP	6747. FVH	-227.4143 FTL	1.4219
BC3	1.1319 BDE	1.0974 BRA	4.6183 FSP	-3956. BVH	21.0462 BTL	3.3837

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

SGT	3611.9796 SGR	1892.6539 SG3	2081.4631	ST	1192.7798 SR	308.8911 SS	3661.5013
RRT	0.5811 RRF	-0.9494 RTF	-0.5843	CRT	0.1090 CRS	-0.4373 CST	0.8221
SG8	4077.8102 R23	-0.6612 R13	-0.6824	LSA	3796.7357 MSA	706.2284 SSA	103.7656
SG1	3836.9597 SG2	1461.3670 THA	20.0073	EL1	1193.2887 EL2	306.9193 ALF	1.7317

LAUNCH DATE	FEB 26, 1972	0 HOURS 0 MIN 0 SEC	2441373.50000000
ARRIVAL DATE	DEC 12, 1973	0 HOURS 0 MIN 0 SEC	2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL	0.2573 DAL	-53.2054 RAL	251.0761 GL	-10.8102 CLL	-83.5356 C3	85.7072
ZAS	83.6508 ETS	353.6696 ZAE	0.0000 ETE	0.0000 ZAC	91.4372 ETC	255.2797

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL	148.1373 LAL	0.0000 LOL	157.4986 VL	39.1535 GAL	-0.9009 AZL	92.5421 TAL	357.8324 V1	30.0772
RP	755.5436 LAP	-0.8146 LOP	318.8199 VP	9.6186 GAP	37.0589 AZP	87.5919 TAP	158.1366 V2	13.4461
RC	840.9304 HCA	161.3042 INC	2.5421 RCA	148.0932 APO	877.5316 ECC	0.7112 SMA	512.8224 TF	654.0000

TEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP	8.5697 DAP	3.1547 RAP	276.4646 GP	3.0693 CLP	137.5666 C3	73.4401 LVI	-6.4548
ZAS	137.4768 ETS	175.3444 ZAE	146.0704 ETE	173.9815 ZAC	107.1801 ETC	267.9121	

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	16 4 48.9	2025.39	16.04	46.35	92.57	135.43	16 38 34.3	1425.39	20.96	41.51
50.00	23 9 55.3	787.24	45.15	313.43	101.04	73.01	23 23 2.5	187.24	42.73	304.72
54.00	16 38 58.7	1938.03	17.51	39.61	94.03	131.68	17 11 16.7	1338.03	22.08	34.39
54.00	23 4 57.4	799.94	43.19	315.33	101.75	77.68	23 18 17.3	199.94	41.33	306.63
58.00	17 17 45.1	1833.72	19.13	31.74	95.45	127.79	17 48 18.8	1233.72	23.31	26.14
58.00	22 58 35.6	817.07	41.11	317.35	102.24	82.35	23 12 12.7	217.07	39.82	308.72
62.00	18 2 36.9	1707.64	20.94	22.41	96.84	123.65	18 31 4.6	1107.64	24.70	16.42
62.00	22 49 54.3	841.50	38.89	313.69	102.51	87.13	23 3 55.8	241.50	38.20	311.20
66.00	18 56 20.7	1550.94	23.07	11.00	98.24	119.04	19 22 11.6	950.94	26.32	4.59
66.00	22 36 41.3	880.08	36.39	322.86	102.53	92.28	22 51 21.3	280.08	36.35	314.58
70.00	20 7 50.8	1335.71	25.99	355.54	99.80	113.01	20 30 6.5	735.71	28.54	348.62
70.00	22 10 33.9	958.80	33.17	328.70	102.15	98.74	22 26 32.7	358.80	33.95	320.77
71.86	21 20 34.0	1112.43	29.51	339.65	101.21	105.97	21 39 6.5	512.43	31.20	332.20
71.86	21 20 43.0	1111.97	29.52	339.62	101.21	105.95	21 39 15.0	511.97	31.21	332.17
108.14	2 0 50.9	5520.69	29.51	251.93	101.21	105.96	3 32 51.6	4920.69	31.20	244.47
108.14	2 0 50.9	5520.69	29.51	251.93	101.21	105.96	3 32 51.6	4920.69	31.20	244.47
110.00	1 10 55.5	5674.09	25.99	262.39	99.80	113.01	2 45 29.6	5074.09	28.54	255.47
110.00	3 13 38.6	5297.16	33.17	235.55	102.15	98.74	4 41 55.8	4697.16	33.95	227.82
114.00	0 44 48.2	5752.81	23.07	267.05	98.24	119.04	2 20 41.0	5152.81	26.32	260.64
114.00	4 25 8.9	5081.95	36.39	218.90	102.53	92.28	5 49 50.8	4481.95	33.35	210.63
118.00	0 31 35.1	5791.39	20.94	268.80	96.84	123.65	2 8 6.5	5191.39	24.70	262.80
118.00	5 18 52.5	4925.25	38.89	208.08	102.51	87.13	6 40 57.7	4325.25	38.20	197.58
122.00	0 22 53.8	5815.82	19.13	269.48	95.45	127.79	1 59 49.6	5215.82	23.31	263.88
122.00	6 3 44.3	4798.17	41.11	195.09	102.24	82.35	7 23 43.5	4199.17	39.82	186.46

RAD	186.6454 VEL	66.0071 PTH	5.0979
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DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3	0.8369 TDE	1.0342 TRA	-4.4952 BAV	1.4520 TVH	15.4965 TTL	-3.4399
RC7	0.9515 RDE	-0.4830 RRA	-0.7685 FAU	1.2568 RVH	17.6173 RTL	0.3231
FC3	-12.6950 FDE	-6.9375 FRA	8.1318 BSP	6583. FVH	-235.0556 FTL	2.3140
BC3	1.2672 BDE	1.1414 BRA	4.5604 FSP	-3937. BVH	23.4630 BTL	3.4550

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

SGT	3723.7708 SGR	1875.1403 SG3	2128.8870	ST	1186.0840 SR	348.1876 SS	3487.7056
RRT	0.6313 RRF	-0.9425 RTF	-0.6449	CRT	-0.0455 CRS	-0.5722 CST	0.8199
SG8	4169.2469 R23	-0.6021 R13	-0.7277	L3A	3630.2683 MSA	707.3923 SSA	113.4358
SG1	3937.3559 SG2	1371.0755 THA	20.2779	EL1	1186.1996 EL2	347.7939 ALF	179.1636

LAUNCH DATE	FEB 27, 1972	0 HOURS 0 MIN 0 SEC	2441374.50000000
ARRIVAL DATE	DEC 12, 1973	0 HOURS 0 MIN 0 SEC	2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL	9.2264 DAL	-32.6172 RAL	250.3487 GL	-10.3089 CLL	-85.2360 C3	05.1256
ZAS	85.3130 ETS	373.0389 ZAE	0.0000 ETE	0.0000 ZAC	91.8482 ETC	254.8632

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL	148.1728 LAL	0.0000 LOL	158.5034 VL	39.1496 GAL	-0.4987 AZL	92.4172 TAL	358.8001 V1	30.0700
RP	755.5436 LAP	-0.8146 LOP	318.8199 VP	9.6250 GAP	37.0924 AZP	87.7241 TAP	159.1005 V2	13.4461
RC	840.9304 HCA	160.3004 INC	2.4174 KCA	148.1592 APO	877.9749 ECC	0.7112 SMA	573.0371 TF	653.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP	8.5731 DAP	3.0347 RAP	276.5132 GP	2.9504 CLP	137.6180 C3	73.4982 LVI	-6.5041
ZAS	137.5340 ETS	175.4681 ZAE	146.1311 ETE	174.1490 ZAC	107.0619 ETC	267.9257	

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	15 54 12.6	2039.14	15.37	46.97	91.58	135.61	16 28 11.7	1439.14	20.31	42.17
50.00	23 6 51.5	771.95	44.84	312.09	99.85	72.02	23 19 43.5	171.95	42.31	303.49
54.00	16 27 39.7	1953.60	16.80	40.37	93.01	131.92	17 0 13.3	1353.60	21.40	35.20
54.00	23 2 36.3	782.83	42.93	313.85	100.59	76.62	23 15 39.1	102.83	40.95	305.24
58.00	17 5 28.7	1851.87	18.37	32.69	94.39	128.12	17 36 20.5	1251.87	22.59	27.15
58.00	22 57 12.0	797.38	40.92	315.68	101.12	81.19	23 10 29.4	197.38	39.50	307.11
62.00	17 48 55.3	1729.79	20.10	23.66	95.73	124.12	18 17 45.1	1129.79	23.91	17.74
62.00	22 49 55.8	817.82	38.79	317.73	101.44	85.83	23 3 33.7	217.82	37.94	309.28
66.00	18 40 8.8	1580.38	22.09	12.77	97.06	119.76	19 6 29.2	980.38	25.42	6.46
66.00	22 39 12.9	849.10	36.45	320.37	101.53	90.72	22 53 21.9	249.10	36.22	312.10
70.00	19 44 38.2	1386.33	24.60	358.82	98.46	114.50	20 7 44.5	786.33	27.33	352.06
70.00	22 20 6.4	906.65	33.63	324.71	101.31	96.42	22 35 13.1	306.65	34.13	316.71
73.06	21 21 26.4	1087.82	29.01	337.60	100.26	105.60	21 39 34.2	487.82	30.67	330.18
73.06	21 21 36.8	1087.28	29.02	337.57	100.26	105.58	21 39 44.1	487.28	30.67	330.14
106.94	1 46 15.2	5543.93	29.01	253.55	100.26	105.60	3 18 39.1	4943.93	30.67	246.13
106.94	1 46 20.4	5543.66	29.02	253.53	100.26	105.59	3 18 44.0	4943.66	30.67	246.11
110.00	0 47 42.9	5724.69	24.00	265.66	98.46	114.50	2 23 7.6	5124.69	27.33	258.91
110.00	3 23 11.1	5245.03	33.63	231.55	101.31	96.42	4 50 36.2	4645.03	34.13	223.58
114.00	0 28 36.5	5782.25	22.09	268.81	97.06	119.76	2 4 58.7	5182.25	25.42	262.50
114.00	4 27 40.5	5050.97	36.45	216.42	101.53	90.72	5 51 51.4	4450.97	36.22	208.15
118.00	0 17 53.5	5813.53	20.10	270.04	95.73	124.12	1 54 47.0	5213.53	23.91	264.12
118.00	5 18 54.0	4901.57	38.79	204.11	101.44	85.83	6 40 35.6	4301.57	37.94	195.68
122.00	0 10 37.3	5833.97	18.37	270.43	94.39	128.12	1 47 51.3	5233.97	22.59	264.89
122.00	6 2 20.7	4779.48	40.92	193.42	101.12	81.19	7 22 0.1	4179.48	39.50	184.85

RAD 186.6452 VEL 66.0028 PTH 5.0972

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3	0.5139 IDE	1.0422 TRA	-4.4457 BAU	1.1489 TVH	9.4828 TTL	-3.5290
RC3	0.8690 RDE	-0.5728 RRA	-0.7011 FAU	1.1887 RVH	16.0351 RTL	0.2429
FC3	-12.0887 FDE	-6.6027 FRA	7.4150 BSP	6451. FVH	-223.0661 FTL	3.2318
BC3	1.0096 BDE	1.1893 BRA	4.5006 FSP	-3926. BVH	18.6292 BTL	3.5374

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT	3472.9430 SGR	1721.9760 SG3	2015.7297
RRT	0.4991 RRF	-0.9244 RTF	-0.5150
SGB	3876.3763 R23	-0.7036 R13	-0.6028
SG1	3599.0495 SG2	1439.8389 THA	16.6367

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST	1177.5369 SR	391.0158 SS	3308.6347
CRT	-0.1659 CRS	-0.6711 CST	0.8148
LSA	3459.1138 MSA	710.2969 SSA	123.4349
EL1	1179.5353 EL2	384.9452 ALF	176.4700

LAUNCH DATE	FEB 28, 1972	0 HOURS	0 MIN	0 SEC	2441375.50000000
ARRIVAL DATE	DEC 12, 1973	0 HOURS	0 MIN	0 SEC	2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL	9.2024 DAL	-32.0665 RAL	249.6092 CL	-9.8500 CLL	-86.9462 C3	84.6834
ZAS	86.9912 ETS	352.4352 ZAE	0.0000 ETE	0.0000 ZAC	92.2139 ETC	254.4411

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL	148.2087 LAL	0.0000 LOL	159.5077 VL	39.1455 GAL	-0.0952 AZL	92.3048 TAL	359.7700 V1	30.0628
RP	755.5436 LAP	-0.8146 LOP	313.8199 VP	9.6308 GAP	37.1252 AZP	07.8439 TAP	159.0678 V2	13.4461
RC	840.9304 HCA	159.2969 INC	2.3049 RCA	148.2082 APO	878.3718 ECC	0.7113 SMA	513.2900 TF	652.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP	8.5766 DAP	2.9258 RAP	276.5575 GP	2.8425 CLP	137.6647 C3	73.5585 LVI	-6.5489
ZAS	137.5874 ETS	175.5808 ZAE	146.1860 ETE	174.3018 ZAC	106.9546 ETC	267.9382	

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	15 43 52.7	2051.99	14.74	47.55	90.61	135.78	16 18 4.7	1451.99	19.70	42.70
50.00	23 3 25.4	757.92	44.53	310.87	98.70	71.12	23 16 3.3	157.92	41.91	302.38
54.00	16 16 42.0	1658.07	16.14	41.07	92.01	132.14	16 49 30.1	1368.07	20.76	35.94
54.00	22 59 47.9	767.19	42.67	312.51	99.47	75.66	23 12 35.1	167.19	40.59	303.98
58.00	16 53 40.8	1608.58	17.66	33.56	93.36	128.41	17 24 49.5	1268.58	21.92	28.07
58.00	22 55 13.8	779.49	40.73	314.16	100.03	80.16	23 8 13.3	179.49	39.18	305.67
62.00	17 35 55.5	1749.88	19.33	24.77	94.66	124.53	18 5 5.4	1149.88	23.19	18.92
62.00	22 49 9.6	796.56	38.67	315.97	100.38	84.68	23 2 26.2	163.56	37.68	307.57
66.00	18 25 10.1	1606.27	21.21	14.30	95.93	120.37	18 51 56.3	1006.27	24.61	8.08
66.00	22 40 25.7	822.04	36.45	318.20	100.53	89.36	22 54 7.7	222.04	36.06	309.95
70.00	19 25 8.2	1425.83	25.46	1.32	97.22	115.59	19 48 54.0	825.83	26.32	354.69
70.00	22 25 50.4	865.97	33.90	321.56	100.42	94.58	22 40 16.4	265.97	34.17	313.54
74.00	20 59 17.3	1134.95	27.35	340.64	98.93	107.66	21 18 12.3	534.95	29.26	333.41
74.00	21 42 20.1	1000.60	29.76	331.16	99.68	102.85	21 59 0.7	400.60	31.08	323.60
74.25	21 22 25.0	1062.77	28.54	335.54	99.33	105.27	21 40 7.8	462.77	30.16	328.15
74.25	21 22 35.5	1062.22	28.55	335.50	99.33	105.25	21 40 17.7	462.22	30.17	328.11
105.75	1 31 29.4	5567.87	28.55	255.23	99.33	105.27	3 4 17.3	4967.87	30.17	247.83
105.75	1 31 36.8	5567.49	28.55	255.20	99.33	105.25	3 4 24.3	4967.49	30.17	247.81
106.00	1 11 43.2	5629.37	27.35	259.53	98.93	107.66	2 45 32.8	5029.57	29.26	252.30
106.00	1 54 46.0	5495.23	29.76	250.05	99.68	102.85	3 26 21.2	4895.23	31.08	242.49
110.00	0 28 12.9	5764.21	23.46	268.16	97.22	115.59	2 4 17.1	5164.21	26.32	261.54
110.00	3 28 55.2	5204.34	33.90	228.41	100.42	94.58	4 55 39.5	4604.34	34.17	220.39
114.00	0 13 37.7	5808.14	21.21	270.34	95.93	120.37	1 50 25.8	5208.14	24.61	264.12
114.00	4 28 53.3	5023.91	36.45	214.24	100.53	89.36	5 52 37.2	4423.91	36.06	205.99
118.00	0 4 53.7	5833.62	19.33	271.15	94.66	124.53	1 42 7.4	5233.62	23.19	265.30
118.00	5 18 7.8	4880.30	38.67	202.35	100.38	84.68	6 39 28.1	4280.30	37.68	193.95
122.00	23 55 5.0	5850.69	17.66	271.30	93.36	128.41	23 32 35.7	5250.69	21.92	265.81
122.00	6 0 22.4	4761.59	40.73	191.90	100.03	80.16	7 19 44.0	4161.59	39.18	183.41

RAD 186.6451 VEL 65.9994 PTH 5.0967

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3	-0.6876 TDE	1.0405 TRA	-4.4619 BAU	1.1241 TVH	-12.6551 TTL	-3.5810
RC3	0.7163 RDE	-0.6579 RRA	-0.6469 FAU	1.0302 RVH	13.1825 RTL	0.1727
EC3	-10.5324 FDE	-6.2908 FRA	6.7752 BFP	6623.5VH	-193.8458 FTL	4.1051
BC3	0.9929 BDE	1.2310 BRA	4.5085 FSP	-3947.3VH	18.2737 BTL	3.5057

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

SGT	3573.2627 SGR	1459.9430 SCS	1761.9720	ST	1178.2641 SR	435.5090 SS	3135.9878
RRT	-0.0720 RRF	-0.8839 RTF	0.0719	CRT	-0.2458 CRS	-0.7425 CST	0.7990
SG8	3859.9551 R23	0.8793 R13	-0.0905	LSA	3295.2604 MSA	731.3017 SSA	137.2917
SG1	3575.0615 SG2	1455.3998 THA	177.9803	EL1	1183.8654 EL2	420.0442 ALF	174.0349

LAUNCH DATE FEB 29, 1972 0 HOURS 0 MIN 0 SEC 2441376.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.1856 DAL -31.5475 RAL 248.8599 GL -9.4274 CLL -88.6646 C3 84.3757
ZAS 88.6826 ETS 351.8558 ZAE 0.0000 ETE 0.0000 ZAC 92.5403 ETC 254.0148

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.2450 LAL 0.0000 LOL 160.5115 VL 39.1412 GAL 0.3095 AZL 92.2030 TAL 0.7447 V1 30.0555
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6361 VAP 37.1572 AZP 87.9531 TAP 159.0386 V2 13.4461
RC 840.9304 HCA 158.2938 INC 2.2030 RCA 148.2398 APO 878.7422 ECC 0.7113 SMA 513.4910 TF 651.0000

ZEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.5803 DAP 2.8263 RAP 276.5974 GF 2.7439 CLP 137.7069 C3 73.6210 LVI -6.5893
ZAS 137.6347 ETS 175.6841 ZAE 146.2354 ETE 174.4419 ZAC 106.8567 ETC 267.9493

LNCH AZMTH	LNCH TIME	L-I TIME	INJ LAT	INJ LONG	INJ RT ASC	INJ AZMTH	INJ TIME	PO CST TIME	IGN 2 LAT	IGN 2 LONG
50.00	15 33 46.7	2064.13	14.15	48.09	89.66	135.93	16 8 10.8	1464.13	19.12	43.36
50.00	22 59 40.8	744.97	44.24	309.77	97.59	70.31	23 12 5.8	144.97	41.54	301.37
54.00	16 6 2.0	1081.65	15.52	41.73	91.03	132.33	16 39 3.7	1381.65	20.16	36.64
54.00	22 56 37.3	752.80	42.42	311.28	98.37	74.79	23 9 10.1	152.80	40.24	302.84
58.00	16 42 16.6	1884.15	17.00	34.37	92.35	128.66	17 13 40.7	1284.15	21.29	28.92
58.00	22 52 47.5	763.10	40.53	312.79	98.96	79.22	23 5 30.6	163.10	38.87	304.36
62.00	17 23 29.1	1768.36	18.62	25.79	93.62	124.88	17 52 57.4	1168.36	22.51	19.99
62.00	22 47 45.5	777.26	38.53	314.38	99.35	83.63	23 0 42.7	177.26	37.43	306.02
66.00	18 11 5.8	1629.51	20.40	15.66	94.84	120.89	18 38 15.3	1029.51	23.87	9.51
66.00	22 40 39.3	797.98	36.41	316.26	99.54	88.16	22 53 57.3	197.98	35.87	308.04
70.00	19 7 48.5	1458.89	22.47	3.37	96.06	116.44	19 32 7.4	858.89	25.44	356.85
70.00	22 29 19.5	832.10	34.05	318.93	98.51	93.03	22 43 11.6	232.10	34.13	310.90
74.00	20 23 19.7	1225.76	25.33	346.77	97.41	110.55	20 43 45.5	625.76	27.60	339.79
74.00	22 4 27.1	908.98	30.96	324.45	99.11	99.26	22 19 36.1	308.98	31.83	316.73
75.44	21 23 36.9	1036.94	28.10	333.45	98.41	104.96	21 40 53.8	436.94	29.69	326.08
75.44	21 23 44.4	1036.54	28.11	333.42	98.41	104.95	21 41 0.9	436.54	29.69	326.05
104.56	1 16 28.4	5592.81	28.10	256.99	98.41	104.96	2 49 41.2	4992.81	29.69	249.62
104.56	1 16 35.9	5592.42	28.11	256.96	98.41	104.95	2 49 48.3	4992.42	29.69	249.59
106.00	0 35 45.6	5720.38	25.33	265.66	97.41	110.55	2 11 6.0	5120.38	27.60	258.68
106.00	2 16 53.0	5403.60	30.96	243.34	99.11	99.26	3 46 56.6	4803.60	31.83	235.62
110.00	0 10 53.3	5797.26	22.47	270.22	96.06	116.44	1 47 30.5	5197.26	25.44	263.70
110.00	3 32 24.2	5170.47	34.05	225.78	99.51	93.03	4 58 34.7	4570.47	34.13	217.74
114.00	23 55 48.8	5831.38	20.40	271.70	94.84	120.89	25 33 0.2	5231.38	23.87	265.55
114.00	4 29 6.9	4999.85	36.41	212.31	99.54	88.16	5 52 26.8	4399.85	35.87	204.08
118.00	23 48 42.7	5852.10	18.62	272.17	93.62	124.88	25 26 14.8	5252.10	22.51	266.38
118.00	5 16 43.7	4861.00	38.53	200.76	99.35	83.63	6 37 44.7	4261.00	37.43	192.41
122.00	23 43 40.6	5866.26	17.00	272.11	92.35	128.66	25 21 26.9	5266.26	21.29	266.66
122.00	5 57 56.2	4745.21	40.53	190.53	98.96	79.22	7 17 1.4	4145.21	38.87	182.10

RAD 186.6450 VEL 65.9971 PTH 5.0964

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 1.0980 TDE 1.0779 TRA -4.3340 BAU 1.5927 TVH 20.1719 TTL -3.6442
RC3 0.8876 RDE -0.7369 RRA -0.5827 FAU 1.2823 RVH 16.3067 RTL 0.1059
FC3 -13.1871 FDE -6.0204 FRA 5.9241 BSP 6038. FVH -241.7124 FTL 5.0074
BC3 1.4119 BDE 1.3058 BRA 4.3730 FSP -3869. BVH 25.9388 BTL 3.6458

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

SGT 3818.8826 SGR 1747.0673 SG3 2146.3953 ST 1166.7805 SR 479.6412 SS 2994.8272
RRT 0.6495 RRF -0.9110 RTP -0.6855 CRT -0.3294 CRS -0.7867 CST 0.8076
SG8 4199.5367 R23 -0.5371 R13 -0.7461 LSA 3167.3331 MSA 711.9618 SSA 146.7418
SG1 4003.8222 SG2 1267.0896 THA 18.4629 EL1 1179.2614 EL2 448.0793 ALF 170.9748

LAUNCH DATE MAR 1, 1972 0 HOURS 0 MIN 0 SEC 2441577.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.1760 DAL -31.0554 RAL 248.1031 GL -9.0363 CLL -90.3895 C3 84.1994
ZAS 90.3847 ETS 351.2984 ZAE 0.0000 ETE 0.0000 ZAC 92.8325 ETC 253.5861

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.2817 LAL 0.0000 LOL 161.5149 VL 39.1367 GAL 0.7156 AZL 92.1105 TAL 7.7216 V1 30.0482
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6407 GAP 37.1886 AZP 88.0530 TAP 156.0128 V2 13.4461
RC 840.9304 HCA 157.2952 INC 2.1106 RCA 148.2538 APO 879.0860 ECC 0.7114 SMA 513.6609 T3 650.0000

TEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.5840 DAP 2.7351 RAP 276.6330 GP 2.6536 CLP 137.7446 C3 73.6851 LVI -6.6254
ZAS 137.6770 ETS 175.7793 ZAE 146.2796 ETE 174.5709 ZAC 106.7668 ETC 267.9594

LNCH AZMTH	LNCH TIME	L-I TIME	INJ LAT	INJ LONG	INJ RT ASC	INJ AZMTH	INJ TIME	PO CST TIME	IGN 2 LAT	IGN 2 LONG
50.00	15 23 52.3	2075.67	13.59	48.61	98.72	136.06	15 58 28.0	1475.67	18.57	43.91
50.00	22 55 41.0	732.95	43.96	308.75	96.50	69.56	23 7 54.0	132.95	41.18	300.44
54.00	15 55 36.8	1994.51	14.93	42.34	90.00	132.51	16 28 51.3	1394.51	19.59	37.29
54.00	22 53 8.4	739.46	42.18	310.16	97.30	74.00	23 5 27.8	139.46	39.91	301.79
58.00	16 31 11.6	1808.80	16.38	35.12	91.37	128.90	17 2 50.4	1298.80	20.69	29.72
58.00	22 49 58.3	747.99	40.33	311.92	97.91	78.36	23 2 26.3	147.99	38.58	303.16
62.00	17 11 29.6	1785.56	17.94	26.73	92.61	125.20	17 41 15.2	1185.56	21.83	20.98
62.00	22 45 50.7	759.59	38.39	312.93	98.33	82.69	22 58 30.3	159.59	37.17	304.32
66.00	17 57 43.9	1050.72	19.66	16.89	93.79	121.34	18 25 14.6	1050.72	23.18	10.80
66.00	22 40 7.1	773.30	36.35	314.52	93.56	87.07	22 53 3.4	176.30	35.68	306.32
70.00	18 51 55.3	1457.54	21.59	3.14	94.95	117.15	19 16 44.0	837.64	24.64	358.70
70.00	22 31 7.5	582.37	34.13	316.65	98.59	91.68	22 44 40.4	202.87	34.05	308.62
74.00	19 53 35.0	1273.72	24.01	500.25	96.15	112.09	20 20 55.7	678.78	26.47	343.42
74.00	22 14 15.0	855.48	31.48	320.46	98.35	97.07	22 28 31.3	255.48	32.08	312.37
76.65	21 25 5.2	1010.18	27.68	331.30	97.51	104.68	21 41 55.4	410.18	29.23	323.96
76.65	21 25 14.5	1009.70	27.69	331.27	97.51	104.66	21 42 4.2	409.70	29.24	323.92
103.35	1 1 6.0	5619.09	27.68	258.84	97.51	104.68	2 34 45.1	5019.09	29.24	251.10
103.35	1 1 11.4	5318.81	27.68	258.82	97.51	104.67	2 34 50.2	5018.81	29.24	251.08
106.00	0 12 2.8	5773.41	24.01	269.14	96.15	112.09	1 48 16.2	5173.41	26.47	262.31
106.00	2 26 41.7	5350.11	31.48	239.35	98.35	97.07	3 55 51.8	4750.11	32.07	231.56
110.00	23 51 10.4	5826.02	21.59	271.99	94.95	117.15	25 28 22.6	5226.02	24.64	265.55
110.00	3 34 22.3	5141.25	34.13	223.50	98.59	91.68	5 0 3.5	4541.25	34.05	215.47
114.00	23 42 20.9	5852.59	19.66	272.93	93.79	121.34	25 19 59.5	5252.59	23.18	266.85
114.00	4 28 34.7	4978.17	36.35	210.57	98.56	87.07	5 51 32.9	4378.17	35.68	202.37
118.00	23 36 43.2	5859.30	17.94	273.11	92.61	125.20	25 14 32.5	5259.30	21.88	267.36
118.00	5 14 48.9	4043.33	38.39	199.31	98.33	82.69	6 35 32.3	4243.33	37.17	191.00
122.00	23 32 35.7	5880.90	16.38	272.86	91.37	128.90	25 10 36.6	5280.90	20.69	267.46
122.00	5 55 6.9	4730.09	40.33	189.26	97.91	78.36	7 13 57.0	4130.09	38.58	180.90

RAD 186.6449 VEL 65.9958 HTH 5.0962

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 1.1090 TDE 1.0934 TRA -4.2908 BAV 1.6735 TVH 20.3525 TTL -3.7002
RC3 0.8509 RDE -0.8155 RRA -0.5336 FAU 1.2655 RVH 15.6158 RTL 0.0438
FC3 -13.0119 FDE -5.7303 FRA 5.1090 BSP 5940. FVH -238.7941 FTL 5.9130
BC3 1.3978 BDE 1.3640 BRA 4.3236 FSP -3860. BVH 25.6530 BTL 3.7004

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3793.2155 SGR 1687.9160 SG3 2111.7481
ARR 0.6320 ARF -0.8954 RTF -0.6784
SG8 4151.8121 R23 -0.5317 R13 -0.7349
SG1 3958.0516 SG2 1253.5436 THA 17.5225

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1161.9194 SR 524.4990 SS 2834.6228
CRT -0.3862 CRS -0.8260 CST 0.8001
LSA 3020.2757 MSA 716.8131 S6A 157.4332
EL1 1182.9281 EL2 475.2232 ALF 168.1770

LAUNCH DATE MAR 2, 1972 0 HOURS 0 MIN 0 SEC 2441378.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR
 VHL 9.1734 DAL -30.5863 RAL 247.3414 GL -8.6726 CLL -92.1191 C3 84.1521
 ZAS 92.0948 ETS 350.7615 ZAE 0.0000 ETE 0.0000 ZAC 93.0947 ETC 253.1564

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC
 RL 148.3188 LAL 0.0000 LOL 162.9177 VL 39.1319 GAL 1.1230 AZL 92.0261 TAL 2.7015 V1 30.0407
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6448 GAP 37.2194 AZP 88.1448 TAP 158.9905 V2 13.4461
 RC 840.9304 HCA 156.2890 INC 2.0261 PCA 148.2503 APO 879.4028 ECC 0.7115 SMA 513.8265 TF 649.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC
 VHP 8.5878 DAP 2.6511 RAP 276.6644 GP 2.5703 CLP 137.7779 C3 73.7507 LVI -8.6573
 ZAS 137.7144 ETS 175.8673 ZAE 146.3187 ETE 174.6904 ZAC 106.6840 ETC 267.9682

LNCH AZMTH	LNCH TIME	L-I TIME	INJ LAT	INJ LONG	INJ RT ASC	INJ AZMTH	INJ TIME	PO CST TIME	IGN 2 LAT	IGN 2 LONG
50.00	15 14 8.1	2086.75	13.04	49.10	87.81	136.18	15 48 54.9	1486.75	18.04	44.42
50.00	22 51 20.6	721.75	43.69	307.80	95.44	68.88	23 3 30.4	121.75	40.84	299.58
54.00	15 45 24.4	2006.79	14.36	42.93	89.14	132.67	16 18 51.2	1406.79	19.04	37.90
54.00	22 49 24.2	727.06	41.94	309.12	96.26	73.27	23 1 31.3	127.06	39.59	300.83
58.00	16 20 23.2	1912.69	15.78	35.82	90.41	129.11	16 52 15.9	1312.69	20.12	30.46
58.00	22 46 50.1	733.97	40.13	310.36	96.09	77.57	22 59 4.1	133.97	38.29	302.06
62.00	16 59 52.7	1801.72	17.31	27.60	91.62	125.48	17 29 54.5	1201.72	21.27	25.90
62.00	22 43 31.1	743.30	38.24	311.60	97.33	81.82	22 55 54.4	143.30	36.92	303.34
66.00	17 44 56.0	1670.34	18.96	18.01	92.78	121.73	18 12 46.3	1070.34	22.53	11.98
66.00	22 38 58.4	756.56	36.27	312.94	97.59	86.08	22 51 35.0	156.56	35.48	304.77
70.00	18 37 7.6	1513.33	20.70	6.69	93.89	117.75	19 2 20.9	913.33	23.91	0.34
70.00	22 32 9.7	777.06	34.17	314.64	97.67	90.49	22 45 6.7	177.06	33.94	306.61
74.00	19 39 54.9	1319.58	22.95	352.87	95.00	113.21	20 1 54.5	719.58	25.54	346.16
74.00	22 20 1.2	814.56	31.78	317.38	97.52	95.37	22 33 35.8	214.56	32.17	309.56
77.88	21 27 1.5	981.93	27.27	329.03	96.62	104.42	21 43 23.5	381.93	28.80	321.74
77.88	21 27 12.4	981.36	27.28	329.02	96.62	104.40	21 43 33.7	381.36	28.81	321.70
102.12	0 45 11.2	5647.32	27.27	260.84	96.62	104.42	2 19 18.5	5047.32	28.80	253.52
102.12	0 45 18.9	5646.92	27.28	260.81	96.62	104.40	2 19 25.8	5046.92	28.80	253.49
106.00	23 48 36.2	5814.20	22.95	271.76	95.00	113.21	25 25 30.4	5214.20	25.54	265.05
106.00	2 32 27.1	5309.19	31.78	236.27	97.52	95.37	4 0 56.3	4709.19	32.17	228.45
110.00	23 36 27.7	5851.70	20.79	273.54	93.89	117.75	25 13 59.4	5251.70	23.91	267.18
110.00	3 35 14.4	5115.44	34.17	221.49	97.67	90.49	5 0 29.8	4515.44	33.94	213.46
114.00	23 29 39.0	5872.21	18.96	274.05	92.78	121.73	25 7 31.2	5272.21	22.53	268.03
114.00	4 27 26.0	4958.43	36.27	208.99	97.59	86.08	5 50 4.5	4358.43	35.48	200.82
118.00	23 25 6.3	5885.47	17.31	273.98	91.62	125.48	25 3 11.8	5285.47	21.27	268.29
118.00	5 12 29.3	4827.04	38.24	197.98	97.33	81.82	6 32 56.3	4227.04	36.92	189.72
122.00	23 21 47.3	603.25	15.78	295.67	90.41	129.11	23 31 50.5	3.25	20.12	290.31
122.00	5 51 58.8	4716.07	40.13	188.10	96.89	77.57	7 10 34.9	4116.07	38.29	179.80

RAD 186.6450 VEL 65.9954 PTH 5.0961

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC
 TC3 1.1293 TDE 1.1098 TRA -4.2446 BAV 1.5803 TVH 20.7191 TTL -3.7490
 RC3 0.8353 RDE -0.8912 RRA -0.4880 FAU 1.2811 RVH 15.3258 RTL -0.0140
 FC3 -13.1799 FDE -5.4601 FRA 4.4535 BSP 5950. FVH -241.8103 FTL 6.8198
 BC3 1.4047 BDE 1.4233 BRA 4.2726 FSP -3846. BVH 25.7714 BTL 3.7491

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3775.8745 SGR 1668.5258 SG3 2128.3047
 RRT 0.6159 RRF -0.8833 RTF -0.6711
 SGB 4128.0996 R23 -0.5280 R13 -0.7263
 SG1 3930.1583 SG2 1262.9576 THA 17.0363

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1156.6867 SR 568.5071 SS 2685.1153
 CRT -0.4331 CRS -0.8564 CST 0.7895
 LSA 2884.2839 MSA 722.5916 SSA 172.4410
 EL1 1188.4479 EL2 498.7144 ALF 185.3451

LAUNCH DATE MAR 3, 1972 0 HOURS 0 MIN 0 SEC 2441379.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.1778 DAL -30.1373 RAL 246.5770 GL -8.3330 CLL -93.8515 C3 84.2321
ZAS 93.8107 ETS 350.2438 ZAE 0.0000 ETE 0.0000 ZAC 93.3305 ETC 252.7272

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.3563 LAL 0.0000 LOL 163.5200 VL 39.1270 GAL 1.5317 AZL 91.9488 TAL 3.6844 V1 30.0332
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 0.6483 GAP 37.2496 AZP 88.2296 TAP 158.9717 V2 13.4461
RC 840.9304 HCA 155.2873 INC 1.9489 RCA 148.2288 APO 879.6928 ECC 0.7116 SMA 513.9608 TF 648.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.5917 DAP 2.5735 RAP 276.6917 GP 2.4933 CLP 137.8069 C3 73.8174 LVI -6.6849
ZAS 137.7471 ETS 175.9492 ZAE 146.3529 ETE 174.8016 ZAC 106.6073 ETC 267.9759

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	15 4 30.1	2007.44	12.52	49.57	00.00	106.30	15 39 30.5	1407.44	17.53	44.92
50.00	22 47 5.9	711.28	43.43	303.93	94.42	68.25	22 50 57.2	111.28	40.51	298.79
54.00	15 39 23.2	2018.59	13.82	43.43	88.22	132.81	16 9 1.8	1418.59	18.51	38.49
54.00	22 45 27.6	715.47	41.71	308.16	95.25	72.59	22 57 23.1	115.47	39.29	299.93
58.00	16 9 49.2	1925.97	15.21	36.49	89.47	129.30	16 41 55.1	1325.97	19.57	31.17
58.00	22 43 26.4	720.90	39.93	309.28	95.89	76.84	22 55 37.3	120.90	38.01	301.04
62.00	16 48 35.1	1817.04	16.70	28.42	90.66	125.74	17 18 52.2	1217.04	20.70	22.77
62.00	22 40 50.9	728.19	38.09	310.37	93.35	81.02	22 52 59.1	128.19	36.68	302.15
66.00	17 32 36.1	1688.68	18.30	19.05	91.79	122.09	18 0 44.8	1088.68	21.91	13.08
66.00	22 37 20.5	738.42	36.18	311.49	95.64	85.18	22 49 38.0	138.42	35.23	303.36
70.00	18 23 7.6	1536.70	20.04	8.09	92.86	118.27	18 48 44.3	936.70	23.22	1.80
70.00	22 32 11.9	753.90	34.17	312.83	95.76	89.42	22 44 45.8	153.90	33.81	304.82
74.00	19 22 26.6	1353.68	22.01	355.03	93.90	114.00	19 45 0.2	753.68	24.72	348.41
74.00	22 23 31.8	780.67	31.96	314.82	96.68	93.94	22 36 32.4	180.67	32.18	306.98
78.00	20 39 50.0	1109.99	24.70	337.79	95.04	108.56	20 58 20.0	509.99	26.75	330.78
79.00	22 2 8.2	848.11	29.10	319.50	93.29	99.72	22 16 16.3	248.11	30.05	311.94
79.18	21 29 38.1	951.55	26.27	326.68	95.75	104.18	21 45 29.6	351.55	28.38	319.38
79.18	21 29 50.3	950.90	26.89	326.64	95.76	104.16	21 45 41.2	350.90	28.39	319.33
100.82	0 28 30.2	5677.95	26.88	263.02	95.75	104.17	2 3 14.2	5077.95	28.38	255.72
100.82	0 28 43.9	5677.54	26.88	262.99	95.75	104.16	2 3 21.5	5077.54	28.39	255.69
102.00	23 52 31.4	5780.86	24.70	269.98	95.04	108.56	25 28 52.3	5180.86	26.75	262.97
102.00	1 18 34.2	5518.99	29.10	251.69	93.29	99.72	2 50 33.2	4918.99	30.05	244.13
106.00	23 31 7.9	5848.30	22.01	273.92	93.90	114.09	25 8 36.2	5248.30	24.72	267.30
106.00	2 35 57.6	5275.30	31.96	233.71	96.68	93.94	4 3 52.9	4675.30	32.18	225.87
110.00	23 22 27.7	5875.08	20.04	274.94	92.86	118.27	25 0 22.8	5275.08	23.22	268.65
110.00	3 35 16.6	5092.27	34.17	219.68	96.76	89.42	5 0 8.9	4492.27	33.81	211.67
114.00	23 17 19.2	5890.55	18.30	275.00	91.79	122.09	24 55 29.7	5290.55	21.91	269.12
114.00	4 25 48.1	4940.29	36.18	207.54	96.64	85.18	5 48 8.4	4340.29	35.28	199.40
118.00	23 13 48.7	609.24	16.70	296.91	90.66	125.74	23 23 58.0	9.24	20.70	291.26
118.00	5 9 49.1	4811.93	38.09	196.75	96.35	81.02	6 30 1.0	4211.93	36.68	188.53
122.00	23 11 13.2	616.52	15.21	296.34	89.47	129.30	23 21 29.8	16.52	19.57	291.01
122.00	5 48 35.0	4703.01	39.93	187.02	95.89	76.84	7 6 58.0	4103.01	38.01	178.78

RAD 186.6449 VEL 65.9960 PTH 5.0962

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 1.0072 IDE 1.1101 TRA -4.2142 BAU 1.4400 TVH 18.4879 TTL -3.7907
RC3 0.7878 RDE -0.9676 RRA -0.4491 FAU 1.2451 RVH 14.4612 RTL -0.0682
FC3 -12.7974 FDE -5.1552 FRA 3.7431 BSP 5710. FVH -234.9038 FTL 7.7295
BC3 1.2787 BDE 1.4726 BRA 4.2380 FSP -3831. BVH 23.4719 BTL 3.7914

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3626.6155 SCR 1600.3978 SG3 2061.7879
RRT 0.5584 RRF -0.8615 RTF -0.6226
SG8 3964.0400 R23 -0.5568 R13 -0.6792
SG1 3750.3984 SG2 1283.7932 THA 15.7344

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1147.2543 SR 613.4004 SS 2518.5883
CRT -0.4653 CRS -0.8816 CST 0.7731
LSA 2732.2047 MSA 732.9322 SSA 183.3214
EL1 1191.2298 EL2 522.8998 ALF 162.5559

LAUNCH DATE MAR 4, 1972 0 HOURS 0 MIN 0 SEC 2441380.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC REFERENCE PLANE IS EQUATOR
 VHL 9.1890 DAL -29.7057 RAL 245.8122 GL -8.0146 CLL -95.5848 C3 84.4384
 ZAS 95.9301 ETS 349.7442 ZAE 0.0000 ETE 0.0000 ZAC 93.5430 ETC 252.3000

HELIOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
 RL 148.3941 LAL 0.0000 LOL 164.5219 VL 39.1219 GAL 1.9417 AZL 91.8778 TAL 4.6704 V1 30.0256
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6512 GAP 37.2793 AZP 88.3081 TAP 158.9564 V2 13.4461
 RC 840.9304 HCA 154.2860 INC 1.0777 RCA 148.1892 APO 879.9555 ECC 0.7117 SMA 514.0724 TF 647.0000

GEOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
 VHP 8.5956 DAP 2.5014 RAP 276.7147 GP 2.4218 CLP 137.8316 C3 73.8851 LVI -6.7083
 ZAS 137.7751 ETS 176.0255 ZAE 146.3823 ETE 174.9053 ZAC 108.5362 ETC 267.9825

LNCH AZMTH	LNCH TIME	L-I TIME	INJ LAT	INJ LONG	INJ RT ASC	INJ AZMTH	INJ TIME	PO CST TIME	IGN 2 LAT	IGN 2 LONG
50.00	14 55 6.3	2107.82	12.01	50.02	86.02	136.40	15 30 14.2	1507.82	17.02	45.40
50.00	22 42 34.6	701.45	43.18	306.12	93.42	67.66	22 54 16.0	101.45	40.21	298.05
54.00	15 25 32.2	2030.00	13.29	44.02	87.32	132.95	15 59 22.2	1430.00	18.01	39.06
54.00	22 41 20.6	704.60	41.49	307.26	94.26	71.97	22 53 5.2	104.60	38.91	299.10
58.00	15 59 27.9	1938.74	14.66	37.14	88.56	129.48	16 31 46.6	1338.74	19.04	31.84
58.00	22 39 49.6	708.68	39.74	308.28	94.92	76.16	22 51 38.3	108.68	37.74	300.09
62.00	16 37 34.2	1831.67	16.12	29.20	89.73	125.88	17 8 5.9	1231.67	20.14	23.59
62.00	22 37 53.8	714.11	37.93	309.23	95.40	80.28	22 49 47.9	114.11	36.44	301.06
66.00	17 20 40.0	1706.00	17.67	20.03	90.83	122.42	17 49 6.0	1106.00	21.32	14.10
66.00	22 35 18.5	721.66	36.07	310.16	95.72	84.35	22 47 20.2	121.66	35.08	302.05
70.00	18 9 46.3	1958.29	19.34	9.37	91.87	118.74	18 35 44.6	058.29	22.58	3.15
70.00	22 31 35.1	732.87	34.14	311.19	95.86	88.45	22 43 48.0	132.87	33.66	303.19
74.00	19 6 26.4	1383.44	21.18	356.89	92.80	114.82	19 29 29.9	783.44	23.97	350.35
74.00	22 25 33.9	751.46	32.08	312.60	95.84	92.70	22 38 5.3	151.46	32.14	304.75
78.00	20 14 58.4	1167.69	23.40	341.61	93.85	110.21	20 34 26.1	567.69	25.65	334.74
78.00	22 13 1.8	790.96	29.68	315.33	95.59	97.55	22 26 12.7	190.96	30.36	307.70
80.57	21 33 13.7	918.05	26.49	324.08	94.90	103.95	21 48 31.7	318.05	27.97	316.81
84.57	21 33 26.0	917.39	26.50	324.04	94.91	103.93	21 48 43.4	317.39	27.98	316.76
99.43	0 11 1.6	5712.06	26.49	265.44	94.90	103.95	1 46 13.6	5112.06	27.97	258.17
99.43	0 11 11.1	5711.55	26.50	265.41	94.90	103.93	1 46 22.7	5111.55	27.98	258.13
102.00	23 27 39.8	5838.57	23.40	273.80	93.85	110.21	25 4 58.4	5238.57	25.65	266.93
102.00	1 29 27.7	5461.83	29.68	247.52	95.59	97.55	3 0 29.6	4861.83	30.36	239.88
106.00	23 15 7.7	5878.07	21.18	275.78	92.86	114.82	24 53 5.8	5278.07	23.97	269.24
106.00	2 37 59.8	5246.09	32.08	231.49	95.84	92.70	4 5 25.8	4846.09	32.14	223.64
110.00	23 9 6.4	605.11	19.34	298.33	91.87	118.74	23 19 11.5	5.11	22.58	292.10
110.00	3 34 39.8	5071.24	34.14	218.04	95.86	88.45	4 59 11.1	4471.24	33.66	210.04
114.00	23 5 23.0	616.32	17.67	298.17	90.83	122.42	23 15 39.4	16.32	21.32	292.25
114.00	4 23 46.1	4923.53	36.07	206.20	95.72	84.35	5 45 49.7	4323.53	35.08	198.10
118.00	23 2 47.8	623.87	16.12	297.69	89.73	125.98	23 13 11.7	23.87	20.14	292.08
118.00	5 6 52.0	4797.86	37.93	195.61	95.40	80.28	6 26 49.8	4197.86	36.44	187.44
122.00	23 0 51.9	629.29	14.66	296.98	88.56	129.48	23 11 21.2	29.29	19.04	291.69
122.00	5 44 58.3	4690.78	39.74	186.02	94.92	76.16	7 0 9.1	4090.78	37.74	177.83

RAD 186.6430 VEL 65.9976 RTH 5.0964

DIFFERENTIAL CORRECTIONS REFERENCE PLANE IS ECLIPTIC
 TC3 1.0450 TDE 1.1148 TRA -4.1799 BAU 1.4771 TVH 19.2059 TTL -3.8250
 RC3 0.7874 RDE -1.0412 RRA -0.4123 FAU 1.2852 RVH 14.4718 RTL -0.1190
 FC3 -13.1774 FDE -4.8819 FRA 3.0025 BSP 5573. FVH -242.1749 FTL 8.6395
 BC3 1.3085 BDE 1.5254 BRA 4.2002 FSP -3805. BVH 24.0479 BTL 3.8268

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC
 SGT 3629.8192 SGR 1613.5074 SG3 2117.0610 ST 1138.7757 SR 656.6366 SS 2373.2408
 RRT 0.5492 RRF -0.8526 RTE -0.6195 CRT -0.4932 CRS -0.8993 CST 0.7529
 SGB 3972.2781 R23 -0.5502 R13 -0.6760 LSA 2600.9188 HSA 744.5568 SSA 202.9178
 SG1 3751.9568 SG2 1304.5358 THA 15.6592 EL1 1196.9338 EL2 543.5047 ALF 159.7810

LAUNCH DATE MAR 5, 1972 0 HOURS 0 MIN 0 SEC 2441381.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.2071 DAL -29.2894 RAL 245.0493 GL -7.7151 CLL -97.3172 C3 84.7701
ZAS 97.2506 ETS 349.2621 ZAE 0.0000 ETE 0.0000 ZAC 93.7348 ETC 251.8760

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.4323 LAL 0.0000 LOL 165.5232 VL 39.1166 GAL 2.3531 AZL 91.8123 TAL 5.6595 VI 30.0179
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6535 GAP 37.3084 AP 88.3811 TAP 158.0447 V2 13.4461
RC 840.9304 HCA 153.2852 INC 1.8124 RCA 148.1314 APO 880.1912 ECC 0.7119 SMA 514.1613 TF 646.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.5996 DAP 2.4344 RAP 276.7336 GP 2.3552 CLP 137.8520 C3 73.9533 LVI -6.7275
ZAS 137.7985 ETS 176.0970 ZAE 146.4070 ETE 175.0025 ZAC 106.4698 ETC 267.9879

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	14 45 47.4	2117.94	11.51	50.47	85.16	136.50	15 21 5.3	1517.94	16.54	45.86
50.00	22 37 56.4	692.21	42.94	305.37	92.45	67.12	22 49 28.6	92.21	39.90	297.37
54.00	15 15 50.6	2041.09	12.70	44.54	86.44	133.08	15 49 51.7	1441.09	17.50	39.60
54.00	22 37 5.0	694.40	41.27	306.43	93.30	71.30	22 48 39.4	94.40	38.71	298.33
58.00	15 49 18.2	1951.00	14.13	37.75	87.67	129.65	16 21 49.2	1351.00	18.52	32.49
58.00	22 36 2.2	697.22	39.55	307.35	93.97	75.54	22 47 39.4	97.22	37.48	299.21
62.00	16 26 48.2	1845.72	15.55	29.94	88.82	126.20	16 57 33.9	1215.72	19.60	24.37
62.00	22 34 42.6	700.95	37.78	308.16	94.47	79.60	22 46 23.5	100.95	36.20	300.04
66.00	17 9 4.5	1722.45	17.07	20.95	89.90	122.71	17 37 47.0	1122.45	20.75	15.07
66.00	22 32 56.9	708.09	35.96	308.92	94.81	83.59	22 44 43.0	106.09	34.88	300.85
70.00	17 56 57.1	1578.44	18.67	10.56	90.91	119.15	18 23 15.6	978.44	21.97	4.39
70.00	22 30 27.2	713.60	34.09	309.69	94.98	87.56	22 42 20.8	113.60	33.11	301.71
74.00	18 51 30.2	1410.13	20.41	358.54	91.86	115.44	19 15 0.4	810.13	23.27	352.07
74.00	22 26 32.9	725.65	32.15	310.64	95.00	91.60	22 38 38.6	125.65	32.07	302.79
78.00	19 54 52.2	1210.67	22.36	344.30	92.77	111.37	20 15 2.9	610.67	24.75	337.63
78.00	22 19 10.8	748.86	30.02	312.22	94.84	95.92	22 31 39.7	148.86	30.49	304.55
82.00	21 26 17.7	918.43	25.55	323.84	93.91	104.90	21 41 36.1	318.43	27.15	316.65
82.00	21 48 41.5	846.46	26.71	318.85	94.23	102.56	22 2 48.0	246.46	28.02	311.52
82.12	21 38 20.8	879.71	26.12	321.15	94.07	103.74	21 53 0.5	279.71	27.58	313.89
82.12	21 38 30.4	879.19	26.13	321.11	94.07	103.72	21 53 9.6	279.19	27.59	313.85
97.88	23 48 14.1	5751.22	26.12	268.24	94.07	103.74	25 24 5.3	5151.22	27.58	260.98
97.88	23 48 23.7	5750.70	26.13	268.20	94.07	103.72	25 24 14.4	5150.70	27.59	260.94
98.00	23 38 2.9	5783.94	25.55	270.49	93.91	104.90	25 14 20.9	5183.94	27.15	263.30
98.00	0 4 11.4	5711.98	26.71	265.49	94.23	102.56	1 39 23.3	5111.98	28.02	258.17
102.00	23 7 33.6	5881.55	22.36	276.58	92.77	111.37	24 45 35.2	5281.55	24.75	269.82
102.00	1 35 36.8	5419.74	30.02	244.41	94.84	95.92	3 5 56.5	4819.74	30.49	236.74
106.00	23 11.5	613.21	20.41	299.53	91.86	115.44	23 10 24.7	13.21	23.27	293.07
106.00	2 38 58.8	5220.28	32.15	229.53	95.00	91.60	4 5 59.1	4620.28	32.07	221.68
110.00	22 56 17.2	625.26	13.67	299.51	90.91	119.15	23 6 42.5	25.26	21.97	293.34
110.00	3 33 31.9	5051.97	34.09	216.54	94.98	87.56	4 57 43.9	4451.97	33.51	208.56
114.00	22 53 47.5	632.77	17.07	299.09	89.90	122.71	23 4 20.3	32.77	20.75	293.22
114.00	4 21 24.5	4907.96	35.96	204.80	94.81	83.59	5 43 12.5	4307.96	34.88	196.89
118.00	22 52 1.8	637.91	15.55	298.43	88.82	126.20	23 2 39.7	37.91	19.60	292.86
118.00	5 3 40.8	4784.69	37.78	194.55	94.47	79.60	6 23 25.5	4184.69	36.20	186.42
122.00	22 50 42.2	641.64	14.13	297.60	87.67	129.65	23 1 23.9	41.64	18.52	292.34
122.00	5 41 10.9	4679.32	39.55	185.09	93.97	75.54	6 59 10.2	4079.32	37.48	176.95

RAD 186.6401 VEL 66.00001 PTH 5.0968

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 1.0240 TDE 1.1254 TRA -4.1381 BAU 1.4333 TVH 18.8556 TTL -3.8515
RC3 0.7453 RDE -1.1147 RRA -0.3796 FAU 1.2517 RVH 13.7246 RTL -0.1670
FC3 -12.7836 FDE -4.5930 FRA 2.2727 BSP 5428. FVH -235.3990 FTL 9.5528
BC3 1.2665 BDE 1.5840 BRA 4.1555 FSP -3792. BVH 23.3216 BTL 3.8552

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3572.6509 SGR 1561.4737 SG3 2053.5704
RRT 0.5201 RRF -0.8289 RTF -0.6027
SGB 3898.9787 R23 -0.5456 R13 -0.6555
SG1 3677.4164 SG2 1297.6214 THA 14.6688

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1130.8026 SR 699.6474 SS 2217.2156
CRT -0.5202 CRS -0.9168 CST 0.7329
LSA 2463.8277 MSA 753.6814 SSA 212.9028
EL1 1205.7602 EL2 560.2776 ALF 156.8913

LAUNCH DATE MAR 6, 1972 0 HOURS 0 MIN 0 SEC 2441382.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL	9.2319 DAL	-28.8870 RAL	244.2908 GL	-7.4325 CLL	-99.0466 C3	85.2273
ZAS	98.9700 ETS	348.7970 ZAE	0.0000 ETE	0.0000 ZAC	93.9083 ETC	251.4566

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL	148.4708 LAL	0.0000 LOL	186.5240 VL	39.1111 GAL	2.7639 AZL	91.7518 TAL	6.6516 VI	30.0102
RP	755.5436 LAP	-0.8146 LOP	318.8199 VP	9.6553 GAP	37.3370 AZP	88.4491 TAP	158.9366 V2	13.4461
RC	840.9304 HCA	152.2849 INC	1.7518 RCA	148.0552 APO	880.3996 ECC	0.7121 SMA	514.2274 TF	649.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP	8.8036 DAP	2.3717 RAP	276.7483 GP	2.2929 CLP	137.8681 C3	74.0223 LVI	-6.7425
ZAS	137.8174 ETS	176.1643 ZAE	146.4271 ETE	175.0940 ZAC	106.4077 ETC	267.9923	

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	14 36 36.0	2127.85	11.02	50.90	84.31	136.59	15 12 3.9	1527.85	16.06	46.32
50.00	22 33 12.7	683.51	42.71	304.66	91.51	66.62	22 44 36.2	83.51	39.62	206.73
54.00	15 6 17.9	2051.91	12.27	45.05	85.89	133.20	15 40 29.9	1451.91	17.01	40.13
54.00	22 32 42.6	684.79	41.06	305.64	92.37	70.85	22 44 7.4	84.79	38.44	297.61
58.00	15 39 19.3	1963.00	13.60	38.35	83.80	129.80	18 12 2.4	1363.08	18.02	33.12
58.00	22 32 6.0	686.44	39.36	306.47	93.05	74.95	22 43 32.4	86.44	37.23	268.39
62.00	16 13 15.9	1859.28	15.01	30.66	87.93	126.40	16 47 15.2	1259.28	19.08	25.12
62.00	22 31 19.8	688.60	37.62	307.17	93.57	78.96	22 42 48.4	88.60	35.97	299.09
66.00	16 57 47.3	1738.20	16.49	21.82	89.00	122.98	17 26 45.5	1138.20	20.20	15.98
66.00	22 30 19.0	691.56	35.04	307.77	93.92	82.88	22 41 50.6	91.56	34.68	299.73
70.00	17 44 35.2	1597.43	18.04	11.67	89.98	119.52	18 11 12.6	997.43	21.38	5.54
70.00	22 28 54.1	695.82	34.03	308.31	94.12	86.75	22 40 29.9	95.82	33.35	300.35
74.00	18 37 23.5	1434.52	19.69	0.03	90.90	115.99	19 1 18.0	834.52	22.62	353.63
74.00	22 26 44.6	702.48	32.18	308.87	94.17	90.61	22 38 27.1	102.48	31.98	301.03
78.00	19 37 11.9	1246.27	21.46	346.67	91.75	112.27	19 57 58.2	646.27	23.98	340.00
78.00	22 22 56.1	714.48	30.23	309.67	94.07	94.56	22 34 50.6	114.48	30.54	301.98
82.00	20 47 36.6	1021.33	23.58	330.79	92.58	107.97	21 4 38.0	421.33	25.55	323.83
82.00	22 13 27.5	744.78	28.01	311.62	93.77	99.04	22 25 52.2	144.78	28.88	304.13
83.95	21 46 4.4	833.02	25.76	317.61	93.26	103.54	21 59 57.5	233.02	27.20	310.37
83.95	21 46 12.3	832.60	25.77	317.58	93.27	103.53	22 0 4.9	232.60	27.20	310.34
90.05	23 26 37.0	5799.02	25.76	271.66	93.26	103.54	25 3 16.0	5199.02	27.20	264.43
96.05	23 26 44.9	5798.60	25.77	271.63	93.27	103.53	25 3 23.5	5198.60	27.20	264.40
98.00	22 58 21.9	5886.84	23.56	277.44	92.58	107.97	24 37 28.7	5286.84	25.55	270.48
98.00	0 28 57.3	5610.30	28.01	258.27	93.77	99.04	2 2 27.6	5010.30	28.88	250.78
102.00	22 49 53.3	625.60	21.46	300.96	91.75	112.27	23 0 18.9	25.60	23.98	294.29
102.00	1 39 22.1	5385.35	30.23	241.86	94.07	94.56	3 9 7.4	4785.35	30.54	234.17
106.00	22 46 4.8	637.59	19.69	301.02	90.90	115.99	22 56 42.4	37.59	22.62	294.62
106.00	2 39 10.5	5197.11	32.18	227.76	94.17	90.61	4 5 47.6	4597.11	31.98	219.92
110.00	22 43 55.3	644.25	18.04	300.62	89.98	119.52	22 54 39.6	44.25	21.38	294.50
110.00	3 31 58.8	5034.19	34.03	215.15	94.12	86.75	4 55 52.9	4434.19	33.35	207.20
114.00	22 42 30.3	648.52	16.49	299.97	89.00	122.98	22 53 18.9	48.52	20.20	294.13
114.00	4 18 46.6	4893.43	35.84	203.81	93.92	82.88	5 40 20.1	4293.43	34.68	185.77
118.00	22 41 29.5	651.47	15.01	299.15	87.93	126.40	22 52 21.0	51.47	19.08	293.61
118.00	5 0 18.0	4772.34	37.62	193.56	93.57	78.96	6 19 50.4	4172.34	35.97	185.47
122.00	22 40 43.4	653.64	13.60	298.19	86.80	129.80	22 51 37.0	53.64	18.02	292.98
122.00	5 37 14.7	4668.54	39.36	184.21	93.05	74.95	6 55 3.2	4068.54	37.23	176.13

RAD 186.6453 VEL 66.0035 PTH 5.0973

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3	0.9982 TDE	1.1336 TRA	-4.1095 BAU	1.4058 TVH	18.3934 TTL	-3.8705
RC3	0.7279 RDE	-1.1869 RRA	-0.3502 FAU	1.2616 RVH	13.4389 RTL	-0.2123
FC3	-12.8157 FDE	-4.3200 FRA	1.5431 BSP	5306. FVH	-236.6262 FTL	10.4667
BC3	1.2338 BDE	1.6413 BRA	4.1244 FSP	-3772. BVH	22.7798 BTL	3.8764

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT	3516.1566	SGR	1552.5070	SG3	2059.7015
RRT	0.4903	RRF	-0.8132	RTF	-0.5798
SG8	3843.6487	R23	-0.5513	R13	-0.6329
SG1	3610.7566	SG2	1317.6010	THA	14.1373

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST	1123.2440	SR	741.4787	SS	2076.0802
CRT	-0.5414	CRS	-0.9281	CST	0.7052
LSA	2340.6867	MSA	768.1979	SSA	229.4248
EL1	1216.6451	EL2	975.5379	ALF	154.1427

LAUNCH DATE	MAR 7, 1972	0 HOURS	0 MIN	0 SEC	2441383.50000000
ARRIVAL DATE	DEC 12, 1973	0 HOURS	0 MIN	0 SEC	2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.2633 DAL 226.4970 RAL 243.5382 GL -7.1550 CLL -100.7712 C3 85.8095
 ZAS 100.6861 ETS 248.3484 ZAE 0.0000 ETE 0.0000 ZAC 94.0654 ETC 251.0431

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.5097 LAL 0.0000 LOL 167.5243 VL 39.1054 GAL 3.1801 AZL 91.6957 TAL 7.6469 V1 30.0024
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6564 GAP 37.3652 AZP 88.5127 TAP 158.9311 V2 13.4461
 RC 840.9304 HCA 151.2851 INC 1.6958 RCA 147.9603 APO 880.5808 ECC 0.7123 SMA 514.2705 TF 644.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6077 DAP 2.3131 RAP 276.7590 GP 2.2345 CLP 137.8801 C3 74.0919 LVI -6.7534
 ZAS 137.8319 ETS 176.2277 ZAE 146.4426 ETE 175.1803 ZAC 106.3495 ETC 267.9956

LNCH AZMTH	LNCH TIME	L-I TIME	INJ LAT	INJ LONG	INJ RT ASC	INJ AZMTH	INJ TIME	PO CST TIME	IGN 2 LAT	IGN 2 LONG
50.00	14 27 32.0	2137.58	10.54	51.32	83.49	136.68	15 3 9.6	1537.58	15.59	46.76
50.00	22 28 34.6	675.32	42.48	304.00	90.59	68.15	22 39 39.9	75.32	39.35	296.13
54.00	14 58 53.8	2032.50	11.78	45.54	84.75	133.31	15 31 16.1	1462.50	16.53	40.65
54.00	22 28 14.6	675.74	40.85	304.91	91.47	70.34	22 30 30.4	75.74	38.19	296.93
58.00	15 29 30.6	1074.78	13.09	38.93	85.95	129.95	16 2 25.4	1374.78	17.52	33.72
58.00	22 28 2.5	673.28	30.18	305.20	92.16	74.41	22 39 18.8	76.28	36.99	297.62
62.00	16 5 50.3	1872.42	14.48	31.35	87.07	126.59	16 37 8.7	1272.42	18.57	25.84
62.00	22 27 47.4	676.90	37.46	308.25	92.69	78.36	22 39 4.4	76.99	35.75	298.21
66.00	16 46 46.7	1753.33	15.92	22.66	88.12	123.23	17 16 0.0	1153.33	19.67	16.86
66.00	22 27 27.5	677.97	35.72	306.69	93.06	82.22	22 38 45.5	77.96	34.43	298.69
70.00	17 32 37.0	1615.46	17.43	12.71	89.09	119.85	17 59 32.4	1015.46	20.81	6.64
70.00	22 27 0.1	679.33	33.96	307.03	93.28	85.99	22 38 19.5	79.33	33.19	299.09
74.00	18 23 56.6	1457.10	19.01	1.39	89.97	116.47	18 48 13.7	857.10	22.00	355.05
74.00	22 26 19.3	681.43	32.18	307.27	93.36	89.71	22 37 40.8	81.43	31.88	299.43
78.00	19 21 5.1	1277.26	20.65	348.62	90.78	113.02	19 42 22.3	677.26	23.24	342.03
78.00	22 25 10.8	685.03	30.37	307.48	93.30	93.40	22 36 35.8	85.03	30.54	299.78
82.00	20 24 25.1	1074.95	22.39	334.32	91.51	109.43	20 42 20.0	474.95	24.56	327.48
82.00	22 22 46.9	692.69	28.51	307.85	93.11	97.15	22 34 19.6	92.69	29.15	300.31
86.00	21 30 42.4	832.06	24.59	317.21	92.25	105.01	21 53 34.5	232.06	26.21	310.09
86.00	22 12 17.8	726.56	26.24	309.92	92.68	101.68	22 24 24.4	126.56	27.45	302.60
86.51	22 0 9.8	765.84	25.41	312.59	92.48	103.35	22 12 55.7	165.84	26.83	305.37
86.51	22 0 15.5	765.53	25.41	312.57	92.48	103.34	22 13 1.0	165.53	26.83	305.35
93.49	22 58 41.7	5867.63	25.41	276.60	92.48	103.35	24 36 29.4	5267.63	26.83	269.39
93.49	22 53 47.4	5867.33	25.41	276.58	92.48	103.34	24 36 34.7	5267.33	26.83	269.36
94.00	22 46 39.4	615.05	24.59	301.33	92.25	105.01	22 56 54.5	15.05	26.21	294.21
94.00	23 19 14.8	5801.10	26.24	271.94	92.68	101.68	24 55 55.9	5201.10	27.45	264.62
98.00	22 38 10.3	648.92	22.39	303.08	91.51	109.43	22 46 59.2	48.92	24.56	296.24
98.00	0 38 16.8	5558.21	28.51	254.50	93.11	97.15	2 10 55.0	4958.21	29.15	246.96
102.00	22 33 46.5	656.58	20.65	302.92	90.78	113.02	22 44 43.1	56.58	23.24	296.33
102.00	1 41 36.7	5355.90	30.37	239.67	93.30	93.40	3 10 52.6	4755.90	30.54	231.97
106.00	22 32 37.9	660.18	19.01	302.39	89.97	116.47	22 43 38.1	60.18	22.00	296.05
106.00	2 38 45.2	5176.06	32.18	226.16	93.36	89.71	4 5 1.3	4576.06	31.88	218.32
110.00	22 31 57.1	662.28	17.43	301.66	89.09	119.86	22 42 59.4	62.28	20.81	295.59
110.00	3 30 4.8	5017.71	33.96	213.87	93.28	85.99	4 53 42.6	4417.71	33.19	205.94
114.00	22 31 29.7	663.65	15.92	300.80	88.12	123.23	22 42 33.4	63.65	19.67	295.01
114.00	4 15 55.1	4879.83	35.72	202.74	93.06	82.22	5 37 15.0	4279.83	34.48	194.73
118.00	22 31 9.9	664.62	14.48	299.84	87.07	126.59	22 42 14.5	64.62	18.57	294.33
118.00	4 56 45.6	4760.74	37.46	192.63	92.69	78.36	6 16 6.3	4160.74	35.75	184.59
122.00	22 30 54.7	665.33	13.09	298.77	85.95	129.95	22 42 0.0	65.33	17.52	293.57
122.00	5 33 11.2	4658.39	39.18	183.40	92.16	74.41	6 50 49.6	4058.39	36.99	175.36

RAD 186.6455 VEL 66.0079 PTH 5.0980

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 1.0366 TDE 1.1419 TRA -4.0784 BAU 1.4360 TVH 19.2040 TTL -3.8814
 RC3 0.7017 RDE -1.2594 RRA -0.3241 FAU 1.2531 RVH 12.9999 RTL -0.2553
 FC3 -12.6424 FDE -4.0353 FRA 0.8191 BSP 5164. FVH -234.2219 FTL 11.3821
 BC3 1.2517 BDE 1.7000 BRA 4.0913 FSP -3756. BVH 23.1903 BTL 3.8898

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3525.0156 SGR 1532.5663 SG3 2035.7442
 RRT 0.4815 RRF -0.7930 RTF -0.5827
 SGB 3843.7604 R23 -0.5313 R13 -0.6318
 SG1 3613.5185 SG2 1310.3349 THA 13.6523

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1115.1947 SR 782.9181 SS 1932.6665
 CRT -0.5600 CRS -0.9363 CST 0.6736
 LSA 2218.0249 NSA 783.1398 SSA 242.6457
 EL1 1228.8856 EL2 588.6088 ALF 151.4092

LAUNCH DATE MAR 8, 1972 0 HOURS 0 MIN 0 SEC 2441384.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.3015 DAL -28.1185 RAL 242.7944 GL -6.9112 CLL -102.4889 C3 86.5172
ZAS 102.3967 ETS 347.9162 ZAE 0.0000 ETE 0.0000 ZAC 94.2080 ETC 250.6366

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.5489 LAL 0.0000 LOL 168.5240 VL 39.0995 GAL 3.5056 AZL 91.6436 TAL 8.6451 V1 29.9945
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6569 GAP 37.3931 AP 88.5724 TAP 158.9309 V2 13.4461
RC 840.9304 HCA 150.2850 INC 1.6436 RCA 147.8466 APO 880.7346 ECC 0.7125 SMA 514.2906 TF 643.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6118 DAP 2.2580 RAP 276.7655 GP 2.1796 CLP 137.8878 C3 74.1622 LVI -6.7602
ZAS 137.8420 ETS 176.2876 ZAE 146.4537 ETE 175.2620 ZAC 106.2946 ETC 267.9978

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	14 18 35.3	2147.17	10.03	51.73	82.69	153.76	14 54 22.5	1547.17	15.12	47.19
50.00	22 23 33.3	667.59	42.27	303.38	20.71	25.71	22 34 40.0	67.59	39.09	295.57
54.00	14 47 38.1	2072.90	11.29	43.32	83.94	153.42	15 22 11.0	1472.90	16.05	41.15
54.00	22 23 42.3	607.20	43.55	304.23	20.59	26.87	22 34 49.5	67.20	37.94	296.30
58.00	13 10 51.0	1903.21	12.50	59.40	85.13	130.08	15 52 58.1	1386.21	17.04	34.31
58.00	22 23 53.3	663.71	30.00	304.80	91.30	73.90	22 35 0.0	66.71	36.75	296.90
62.00	15 55 48.6	1385.21	13.95	32.01	85.24	128.77	16 27 13.8	1285.21	18.07	26.54
62.00	22 24 7.0	666.07	37.31	305.38	91.84	77.81	22 35 13.1	66.07	35.53	297.38
66.00	16 36 1.4	1767.95	15.38	23.46	87.27	123.47	17 5 29.4	1167.95	19.15	17.70
66.00	22 24 24.8	665.20	35.60	305.60	92.22	81.60	22 35 30.0	65.20	34.39	297.72
70.00	17 20 00.0	1632.67	16.85	13.70	88.22	120.18	17 48 12.7	1032.67	20.26	7.67
70.00	22 24 49.1	663.99	33.88	305.83	92.46	85.29	22 35 53.1	63.99	33.33	297.92
74.00	18 11 3.1	1478.24	18.36	2.53	89.59	116.90	18 35 41.4	878.24	21.11	-3.63
74.00	22 25 24.7	662.15	32.16	305.80	92.57	88.88	22 35 26.9	62.15	31.76	297.98
78.00	19 6 5.6	1305.02	19.90	350.35	99.85	113.65	19 27 50.7	705.02	22.37	343.83
78.00	22 25 22.2	657.14	30.40	305.55	92.55	92.35	22 37 21.3	59.14	30.50	297.84
82.00	20 5 12.7	1116.18	21.44	333.99	90.52	110.40	20 23 48.9	516.18	23.73	330.25
82.00	22 28 11.3	653.33	28.81	304.98	92.41	95.70	22 39 4.6	53.33	29.27	297.41
86.00	21 5 25.5	921.97	22.87	323.25	91.05	107.59	21 20 47.5	321.97	24.81	316.31
86.00	22 32 46.8	638.51	27.31	303.68	92.20	98.70	22 43 25.3	38.51	28.15	296.24
90.00	21 54 25.2	763.18	23.65	311.89	91.31	108.01	22 7 8.3	163.18	25.40	301.85
90.00	22 50 44.1	5871.34	26.50	277.16	92.05	100.32	24 28 35.9	5271.84	27.54	269.81
94.00	22 12 22.5	704.97	22.87	307.37	91.05	107.59	22 24 7.4	104.97	24.81	300.44
94.00	23 39 43.2	5713.05	27.31	255.70	92.20	98.70	25 14 56.8	5113.05	28.15	258.26
98.00	22 16 53.0	690.15	21.44	305.75	90.52	110.49	22 28 28.1	90.15	23.73	299.00
98.00	0 43 41.1	5518.84	28.81	251.63	92.41	95.70	2 15 40.0	4918.84	29.27	244.06
102.00	22 18 47.0	684.34	19.90	304.65	89.85	113.66	22 30 11.4	84.34	22.57	298.13
102.00	1 42 45.2	5330.01	30.46	237.74	92.55	92.36	3 11 38.2	4730.01	30.50	230.03
106.00	22 19 44.5	681.32	18.36	303.66	89.09	116.90	22 31 5.9	81.32	21.41	297.37
106.00	2 37 50.6	5156.78	32.16	224.69	92.57	88.88	4 3 47.4	4556.78	31.76	216.87
110.00	22 20 20.1	679.49	16.85	302.65	88.22	120.18	22 31 39.6	79.49	20.26	296.62
110.00	3 27 53.8	5002.36	33.88	212.68	92.46	85.29	4 51 16.2	4402.36	33.03	204.77
114.00	22 20 44.4	672.27	15.38	301.61	87.27	123.47	22 32 2.7	78.27	19.15	295.84
114.00	4 12 52.4	4867.07	35.60	201.73	92.22	81.60	5 33 59.5	4267.07	34.29	193.76
118.00	22 21 2.2	677.40	13.96	300.50	86.24	126.77	22 32 19.6	77.40	18.07	295.03
118.00	4 53 5.2	4749.12	37.31	191.76	91.84	77.81	6 12 15.0	4149.82	35.53	183.76
122.00	22 21 15.9	676.76	12.59	299.34	85.13	130.08	22 32 32.7	76.76	17.04	294.16
122.00	5 29 1.9	4648.82	39.00	182.63	91.30	73.90	6 46 30.8	4048.82	36.75	174.84

RAD 186.6457 VEL 66.0132 PTH 5.0988

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.8607 TOE 1.1509 TRA -4.0558 BAV 1.3623 TVH 17.8715 TTL -3.8843
RC3 0.6814 ROE -1.3311 RRA -0.3007 FAU 1.2573 RVH 12.6755 RTL -0.2081
FC3 -12.5813 FOE -3.7630 FRA 0.0929 DSP 5032. FVH -234.0495 FTL 12.2980
BC3 1.1778 BOE 1.7597 BRA 4.0669 FSP -3735. BVH 21.9102 BTL 3.8955

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

SGT 3423.4895 SGR 1524.1651 SG3 2032.0881 ST 1107.9861 SR 823.2339 SS 1802.1419
RRT 0.4367 RRF -0.7749 RTF -0.5422 CRT -0.5764 CRS -0.9392 CST 0.6320
SGB 3747.4471 R23 -0.5484 R13 -0.5926 LSA 2107.2572 MSA 803.8728 SSA 257.5224
SG1 3499.1068 SG2 1341.4957 THA 12.9368 EL1 1243.3569 EL2 599.4880 ALF 148.8050

LAUNCH DATE MAR 9, 1972 0 HOURS 0 MIN 0 SEC 2441385.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.3462 DAL -27.7506 RAL 242.0609 GL -0.6699 CLL -104.1981 C3 87.3507
ZAS 104.1000 ETS 347.5000 ZAE 0.0000 ETE 0.0000 ZAC 94.3377 ETC 250.2381

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.5884 LAL 0.0000 LOL 169.5232 VL 39.0934 GAL 4.0126 AZL 91.5951 TAL 9.6465 V1 29.9886
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6568 GAP 37.4204 A2P 88.6285 TAP 158.9335 V2 13.4461
RC 840.9304 HCA 140.2870 INC 1.5951 RCA 147.7140 APO 880.8612 ECC 0.7128 SMA 514.2876 TF 642.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6158 DAP 2.2061 RAP 276.7679 GP 2.1278 CLP 137.8914 C3 74.2329 LVI -6.7628
ZAS 137.8477 ETS 176.3445 ZAE 146.4603 ETE 175.3396 ZAC 106.2429 ETC 267.9990

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	14 9 46.0	2156.63	9.59	52.14	81.91	136.84	14 45 42.6	1556.63	14.66	47.62
50.00	22 18 39.6	660.31	42.06	302.81	88.86	65.30	22 29 39.9	60.31	38.84	295.05
54.00	14 38 30.8	2083.13	10.82	46.49	83.16	133.51	15 13 13.9	1483.13	15.58	41.65
54.00	22 19 6.7	659.16	40.46	303.59	89.75	69.43	22 30 5.8	59.16	37.70	295.71
58.00	13 10 22.8	1997.42	12.10	40.04	84.53	150.21	15 43 40.2	1397.42	16.56	34.89
58.00	22 10 59.4	657.69	33.83	304.17	90.47	73.43	22 30 37.1	57.69	36.53	296.23
62.00	15 45 52.5	1897.68	13.45	32.66	85.43	126.93	16 17 30.2	1297.68	17.58	27.21
62.00	22 20 20.1	655.78	37.16	304.56	91.02	77.29	22 31 15.9	55.78	35.32	296.60
66.00	16 25 30.5	1782.11	14.84	24.23	86.45	123.68	16 55 12.6	1182.11	18.64	18.50
66.00	22 21 12.7	653.22	35.48	304.75	91.42	81.02	22 32 5.9	53.22	34.10	296.81
70.00	17 9 42.3	1649.18	16.28	14.64	87.39	120.46	17 37 11.5	1049.18	19.73	8.65
70.00	22 22 23.8	649.66	33.80	304.73	91.67	84.64	22 33 13.5	49.66	32.86	296.84
74.00	17 58 38.7	1498.19	17.74	3.85	88.23	117.30	18 23 36.9	898.19	20.84	-2.39
74.00	22 24 6.2	644.39	32.13	304.45	91.80	88.12	22 34 50.6	44.39	31.64	296.84
78.00	18 51 58.1	1330.37	19.20	351.92	88.97	114.22	19 14 8.5	730.37	21.94	345.46
78.00	22 26 46.7	635.97	30.51	303.82	91.81	91.44	22 37 22.6	35.97	30.44	296.11
82.00	19 48 10.2	1150.86	20.59	339.21	89.60	111.34	20 7 21.0	550.86	22.09	332.54
82.00	22 31 30.8	620.83	29.00	302.60	91.72	94.48	22 41 51.6	20.83	29.31	295.01
86.00	20 43 4.6	973.77	21.76	326.65	90.05	108.96	20 59 18.3	373.77	23.88	319.82
86.00	22 41 24.7	5880.44	27.77	278.01	91.58	96.96	24 19 25.1	5280.44	28.39	270.52
90.00	21 26 45.3	832.21	22.28	316.48	90.24	107.91	21 40 37.5	232.21	24.27	309.59
90.00	23 4 40.9	5805.00	27.22	272.41	91.50	98.04	24 41 25.9	5205.00	27.98	264.98
94.00	21 50 1.5	756.77	21.76	310.77	90.05	108.96	22 2 38.3	156.77	23.88	303.95
94.00	23 48 21.6	5663.44	27.77	262.14	91.58	96.96	25 22 45.1	5063.44	28.39	254.63
98.00	21 59 55.4	724.83	20.53	307.97	89.60	111.34	22 12 0.2	124.83	22.99	301.30
98.00	0 47 0.6	5486.35	29.00	249.25	91.72	94.48	2 18 27.0	4886.35	29.31	241.66
102.00	22 4 39.5	709.69	19.20	306.22	88.97	114.22	22 16 29.2	109.69	21.94	299.76
102.00	1 43 12.7	5306.84	30.51	236.01	91.81	114.44	3 11 39.5	4706.84	30.44	228.30
106.00	22 7 20.0	701.27	17.74	304.84	88.23	117.30	22 19 1.3	101.27	20.84	298.61
106.00	2 36 32.1	5139.02	12.13	223.33	91.80	88.12	4 2 11.1	4539.02	31.64	215.53
110.00	22 9 2.4	696.00	16.28	303.59	87.39	120.46	22 20 38.4	96.00	19.73	297.60
110.00	3 25 28.5	4988.03	33.80	211.57	91.67	84.64	4 48 36.5	4388.03	32.86	203.68
114.00	22 10 13.5	692.43	14.84	302.38	86.45	123.68	22 21 46.0	92.43	18.64	296.69
114.00	4 9 40.3	4855.09	35.48	200.79	91.42	91.02	5 30 35.4	4255.09	34.10	192.85
118.00	22 11 6.1	689.88	13.45	301.15	85.43	126.93	22 22 36.0	89.88	17.58	293.70
118.00	4 49 18.3	4739.53	37.16	190.94	91.02	77.29	6 0 17.8	4139.53	35.32	182.98
122.00	22 11 46.8	687.97	12.10	299.89	84.33	130.21	22 23 14.8	87.97	16.56	294.73
122.00	5 24 48.0	4639.79	38.83	181.91	90.47	73.43	6 42 7.8	4039.79	36.53	173.97

PAD 188.6459 VEL 66.0195 PTH 5.0997

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TCS 1.0201 TDE 1.1604 TRA -4.0333 BAU 1.4228 TVH 19.0673 TTL -3.8787
RC3 0.8663 RDE -1.4031 RRA -0.2800 FAU 1.2693 RVH 12.4539 RTL -0.3349
FC3 -12.5803 FDE -3.4868 FRA -0.6295 BSP 4888. FVH -235.1559 FTL 13.2148
BC3 1.2184 BDE 1.8208 BRA 4.0430 FSP -3715. BVH 22.7742 BTL 3.8931

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

SGT 3456.5433 SGR 1525.9367 SGI 2040.4713 ST 1100.8553 SR 862.9355 SS 1678.4553
RRT 0.4369 RRF -0.7593 RTF -0.5530 CRT -0.5906 CRS -0.9353 CST 0.5847
SGB 3778.3825 R23 -0.5258 R13 -0.6005 LSA 2003.7599 MSA 827.1901 SSA 272.8643
SG1 3531.4748 SG2 1343.4508 THA 12.8009 EL1 1259.3533 EL2 608.7441 ALF 146.3039

LAUNCH DATE MAR 10, 1972 0 HOURS 0 MIN 0 SEC 2441386.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.3974 DAL -27.3929 RAL 241.3398 GL -6.4400 CLL -105.8969 C3 88.3104
ZAS 105.7940 ETS 347.0997 ZAE 0.0000 ETE 0.0000 ZAC 94.4558 ETC 249.8488

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.6281 LAL 0.0000 LOL 170.5219 VL 39.0871 GAL 4.4310 AZL 91.5499 TAL 10.6510 V1 29.9788
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6561 GRP 37.4475 AZP 88.6814 TAP 158.9396 V2 13.4461
RC 840.9304 HCA 148.2886 INC 1.5500 RCA 147.5623 APO 880.9605 ECC 0.7131 SMA 514.2614 TF 641.0000

TEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6200 DAP 2.1572 RAP 276.7662 GP 2.0788 CLP 137.8908 C3 74.3043 LVI -6.7614
ZAS 137.8491 ETS 176.3987 ZAE 146.4626 ETE 175.4134 ZAC 106.1939 ETC 267.9990

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	TIME	LAT	LONG
50.00	14 1 4.1	2165.99	9.13	52.54	81.15	136.91	14 37 10.1	1565.99	14.20	48.03	
50.00	22 13 44.3	653.46	43.87	302.27	88.05	64.92	22 24 37.8	53.46	38.61	294.56	
54.00	14 29 31.8	2003.82	10.34	46.96	82.40	133.61	15 4 25.0	1493.22	15.12	42.13	
54.00	22 14 28.5	651.57	40.70	312.98	88.94	69.02	22 25 20.1	51.57	37.48	295.16	
58.00	15 1 3.2	2008.42	11.62	40.58	83.57	130.33	15 34 31.6	1400.42	16.09	35.45	
58.00	22 15 21.8	649.18	38.66	303.49	89.66	72.98	22 26 11.0	49.18	36.31	295.60	
62.00	15 36 7.6	1909.88	12.95	33.29	84.66	127.09	16 7 57.5	1309.88	17.10	27.87	
62.00	22 16 27.9	646.09	37.01	303.79	90.23	76.80	22 27 14.0	46.09	35.12	295.87	
66.00	16 15 13.3	1795.88	14.32	24.94	85.67	123.88	16 45 9.2	1195.88	18.14	19.28	
66.00	22 17 52.7	641.96	35.36	303.87	90.64	80.49	22 28 34.7	41.96	33.91	295.96	
70.00	16 58 42.4	1665.08	15.73	15.54	86.59	120.73	17 26 27.5	1065.08	19.21	9.59	
70.00	22 19 46.5	636.25	33.71	303.69	90.91	84.03	22 30 22.8	36.25	32.70	295.83	
74.00	17 46 39.8	1517.14	17.15	4.97	87.41	117.66	18 11 56.9	917.14	20.29	-1.22	
74.00	22 22 28.0	627.95	32.09	303.19	91.06	87.42	22 32 56.0	27.95	31.51	295.40	
78.00	18 38 32.9	1353.84	18.54	353.36	88.13	114.72	19 1 6.7	753.84	21.34	346.95	
78.00	22 26 34.8	614.99	30.54	302.25	91.09	90.59	22 36 49.8	14.99	30.36	294.55	
82.00	19 32 33.8	1181.32	19.83	341.13	88.72	112.05	19 52 15.1	581.32	22.32	334.54	
82.00	22 33 30.1	5884.43	29.14	278.44	91.03	93.43	24 11 34.5	5284.43	29.32	270.84	
86.00	20 24 23.3	1014.17	20.85	329.26	89.14	109.97	20 41 17.4	414.17	23.08	322.52	
86.00	22 46 28.9	5842.54	28.05	275.27	90.93	95.60	24 23 51.4	5242.54	28.50	267.75	
90.00	21 6 1.0	879.25	21.26	319.55	89.30	109.13	21 20 40.2	279.25	23.40	312.76	
90.00	23 11 48.1	5760.46	27.61	269.21	90.88	96.48	24 47 48.6	5160.46	28.17	261.73	
94.00	21 31 20.2	797.17	20.85	313.39	89.14	109.97	21 44 37.4	197.17	23.08	306.65	
94.00	23 53 25.8	5625.54	28.05	259.39	90.93	95.60	25 27 11.4	5025.54	28.50	251.88	
98.00	21 44 19.0	755.28	19.83	309.89	88.72	112.05	21 56 54.3	155.28	22.32	303.29	
98.00	0 48 59.9	5458.39	29.14	247.20	91.03	93.43	2 19 58.3	4858.39	29.32	239.60	
102.00	21 51 14.3	733.17	18.54	307.66	88.13	114.72	22 3 27.4	133.17	21.34	301.25	
102.00	1 43 0.8	5285.87	30.54	234.44	91.09	90.59	3 11 6.7	4685.87	30.36	226.74	
106.00	21 55 21.1	720.21	17.15	305.96	87.41	117.66	22 7 21.3	120.21	20.29	299.77	
106.00	2 34 53.9	5122.57	32.09	222.08	91.06	87.42	4 0 16.5	4522.57	31.51	214.29	
110.00	21 58 2.6	711.91	15.73	304.50	86.59	120.73	22 9 54.5	111.91	19.21	298.55	
110.00	3 22 51.2	4974.63	33.71	210.54	90.91	84.03	4 45 45.9	4374.63	32.70	202.67	
114.00	21 59 56.4	706.20	14.32	303.12	85.67	123.88	22 11 42.6	106.20	18.14	297.43	
114.00	4 6 20.4	4843.83	35.36	199.91	90.64	80.49	5 27 4.2	4243.83	33.91	192.00	
118.00	22 1 21.2	702.07	12.95	301.78	84.66	127.09	22 13 3.3	102.07	17.10	296.36	
118.00	4 45 26.1	4729.83	37.01	190.18	90.23	76.80	6 4 15.9	4129.83	35.12	182.25	
122.00	22 2 27.3	698.98	11.62	300.42	83.57	130.33	22 14 6.2	98.98	16.09	295.29	
122.00	5 20 30.5	4631.28	38.66	181.23	89.66	72.98	6 37 41.8	4031.28	36.31	173.34	

RAD 186.6463 VEL 66.0267 PTH 5.1008

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.9574 TDE 1.1678 TRA -4.0179 BAU 1.3578 TVH 17.9932 TTL -3.8646
RC3 0.6373 RDE -1.4758 RRA -0.2622 FAU 1.2538 RVH 11.9784 RTL -0.3719
FC3 -12.2917 FDE -3.2023 FRA -1.3414 BSP 4754. FVH -231.0192 FTL 14.1322
BC3 1.1501 BDE 1.8819 BRA 4.0264 FSP -3699. BVH 21.6157 BTL 3.8824

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3370.0083 SGR 1508.9197 SG3 2004.7022
RRT 0.3955 RRF -0.7255 RTF -0.5169
SCB 3692.3968 R23 -0.5330 R13 -0.5634
SG1 3432.5713 SG2 1360.6060 THA 11.9472

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1093.1482 SR 902.1151 SS 1556.6079
CRT -0.6023 CRS -0.9264 CST 0.5247
LSA 1902.6236 MSA 856.0511 SSA 281.5336
EL1 1276.0149 EL2 616.9040 ALF 143.8943

LAUNCH DATE MAR 11, 1972 0 HOURS 0 MIN 0 SEC 2441387.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC REFERENCE PLANE IS EQUATOR
 VHL 9.4550 DAL -27.0448 RAL 240.6327 GL -6.2206 CLL -107.5836 C3 89.3972
 ZAS 107.4787 ETS 346.7152 ZAE 0.0000 ETE 0.0000 ZAC 94.5636 ETC 249.4693

HELIOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
 RL 148.6882 LAL 0.0000 LOL 171.5201 VL 39.0806 GAL 4.8508 AZL 91.5076 TAL 11.6586 V1 29.9706
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6549 GAP 37.4743 .7P 88.7314 TAP 158.9494 V2 13.4461
 RC 840.6304 HCA 147.2908 INC 1.5075 RCA 147.3912 APO 881.0326 ECC 0.7134 SMA 514.2119 TF 640.0000

GEOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
 VHP 8.6242 DAP 2.1109 RAP 276.7604 GP 2.0324 CLP 137.8861 C3 74.3760 LVI -6.7558
 ZAS 137.8462 ETS 176.4503 ZAE 146.4605 ETE 175.4839 ZAC 106.1475 ETC 267.9980

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	13 52 29.9	2175.25	8.67	52.94	80.43	136.98	14 28 45.2	1575.25	13.75	48.45
50.00	22 8 48.2	647.01	41.68	301.76	87.26	64.57	22 19 35.2	47.01	38.38	294.11
54.00	14 20 41.2	2103.17	9.87	47.41	81.66	133.69	14 55 44.4	1503.17	14.06	42.60
54.00	22 9 48.7	644.43	40.11	302.42	88.16	68.64	22 20 33.2	44.43	37.26	294.64
58.00	14 51 53.1	2019.25	11.14	41.11	82.83	130.45	15 25 32.4	1419.25	15.63	36.00
58.00	22 11 1.5	641.17	38.50	302.86	88.90	72.57	22 21 42.7	41.17	36.10	295.01
62.00	15 26 33.7	1921.82	12.46	33.90	83.91	127.23	15 58 35.5	1321.82	16.63	28.51
62.00	22 12 31.4	636.95	36.87	303.08	89.47	76.35	22 23 8.4	36.95	34.92	295.19
66.00	16 5 9.4	1809.28	13.81	25.70	84.91	124.07	16 35 18.7	1209.28	17.66	20.04
66.00	22 14 26.3	631.37	35.23	303.04	89.89	79.98	22 24 57.7	31.37	33.73	295.16
70.00	16 47 59.4	1680.45	15.19	16.41	85.82	120.98	17 15 59.8	1080.45	18.70	10.50
70.00	22 16 56.2	623.70	33.61	302.72	90.18	83.47	22 27 22.9	23.70	32.54	294.88
74.00	17 35 3.9	1535.22	16.57	6.03	86.63	117.99	18 0 39.1	935.22	19.75	-0.12
74.00	22 20 33.5	612.67	32.04	302.03	90.34	86.77	22 30 46.2	12.67	31.38	294.26
78.00	18 25 43.3	1375.80	17.91	354.70	87.33	115.16	18 48 39.1	775.80	20.76	348.34
78.00	22 25 54.1	5887.40	30.54	278.71	90.39	89.83	24 4 1.5	5287.40	30.27	271.02
82.00	19 18 0.0	1208.77	19.12	342.85	87.89	112.66	19 38 9.7	608.77	21.68	336.32
82.00	22 34 32.6	5359.79	29.22	276.63	90.36	92.49	24 12 12.3	5259.79	29.29	269.02
86.00	20 7 44.8	1048.37	20.03	331.44	88.28	110.79	20 25 13.2	448.37	22.38	324.78
86.00	22 49 36.9	5811.15	28.24	272.99	90.29	94.46	24 26 28.1	5211.15	28.55	265.45
90.00	20 48 12.1	317.26	20.40	322.00	88.42	110.05	21 3 29.4	317.26	22.65	315.29
90.00	23 16 6.6	5725.26	27.85	266.67	90.25	95.23	24 51 31.9	5125.26	28.26	259.17
94.00	21 14 41.8	831.37	20.03	315.57	88.28	110.79	21 28 33.2	231.37	22.38	308.91
94.00	0 0 18.5	5594.15	28.24	257.11	90.29	94.46	1 33 32.7	4994.15	28.55	249.58
98.00	21 29 46.2	782.73	19.12	311.61	87.89	112.66	21 42 48.9	182.73	21.68	305.07
98.00	0 50 2.4	5433.75	29.22	245.39	90.36	92.49	2 20 36.1	4833.75	29.29	237.78
102.00	21 38 24.7	755.12	17.91	308.90	87.33	115.16	21 50 59.8	155.12	20.76	302.63
102.00	1 42 20.1	5266.73	30.54	233.01	90.39	89.83	3 10 6.8	4666.73	30.27	225.31
106.00	21 43 45.2	738.30	16.57	307.02	86.63	117.99	21 56 3.5	138.30	19.75	300.88
106.00	2 32 59.4	5107.30	32.04	220.92	90.34	86.77	3 58 6.7	4507.30	31.38	213.15
110.00	21 47 19.5	727.27	15.19	305.36	85.82	120.98	21 59 26.8	127.27	18.70	299.45
110.00	3 20 3.9	4962.07	33.61	209.57	90.18	83.47	4 42 46.0	4362.07	32.54	201.73
114.00	21 49 52.4	719.60	13.81	303.85	84.91	124.07	22 1 52.0	119.60	17.66	298.18
114.00	4 2 53.9	4833.24	35.23	199.09	89.89	79.98	5 23 27.2	4233.24	33.73	191.21
118.00	21 51 47.3	714.02	12.46	302.39	83.91	127.23	22 3 41.3	114.02	16.63	297.00
118.00	4 41 29.6	4720.70	36.87	189.46	89.47	76.35	6 0 10.3	4120.70	34.92	181.57
122.00	21 53 17.2	709.81	11.14	300.95	82.83	130.45	22 5 7.0	109.81	15.63	295.84
122.00	5 18 10.2	4623.27	38.50	180.60	88.90	72.57	6 33 13.4	4023.27	36.10	172.75

RAD 186.6466 VEL 66.0349 PTH 5.1020

DIFFERENTIAL CORRECTIONS REFERENCE PLANE IS ECLIPTIC
 TC3 0.9665 TDE 1.1771 TRA -4.0029 BAU 1.3769 TVH 18.2765 TTL -3.8417
 RC3 0.6270 RDE -1.5482 RRA -0.2459 FAU 1.2765 RVH 11.8566 RTL -0.4073
 FC3 -12.3622 FDE -2.9320 FRA -2.0657 BSP 4608. FVH -233.7695 FTL 15.0488
 BC3 1.1521 BDE 1.9448 BRA 4.0104 FSP -3674. BVH 21.7855 BTL 3.8632

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC
 SGT 3358.5453 SGR 1521.1654 SG3 2029.2303 ST 1085.9907 SR 940.1781 SS 1457.5524
 RRT 0.3826 RRF -0.7226 RTF -0.5095 CRT -0.6133 CRS -0.9043 CST 0.4525
 SGB 3685.1514 R23 -0.5263 R13 -0.5557 LSA 1818.1602 MSA 891.6518 SSA 294.9907
 SG1 3416.7356 SG2 1380.6732 THA 11.7884 EL1 1294.2499 EL2 623.0794 ALF 141.6363

LAUNCH DATE MAR 12, 1972 0 HOURS 0 MIN 0 SEC 2441388.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.5190 DAL -26.7061 RAL 239.9414 GL -6.0109 CLL -109.2566 C3 90.6119
ZAS 100.1466 ETS 346.3462 ZAE 0.0000 ETE 0.0000 ZAC 94.6623 ETC 240.1006

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.7085 LAL 0.0000 LOL 172.5177 VL 39.0740 GAL 5.2721 AZL 91.4680 TAL 12.6692 V1 29.9623
RP 55.5436 LAP -0.8146 LOP 318.8199 VP 9.6530 GAP 37.5007 AZP 88.7787 TAP 158.9628 V2 13.4461
RC 840.9304 HCA 146.2936 INC 1.4681 RCA 147.2006 APO 881.0775 ECC 0.7137 SMA 514.1391 TF 639.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6284 DAP 2.0670 RAP 276.7505 GP 1.9883 CLP 137.8772 C3 74.4485 LVI -6.7460
ZAS 137.8390 ETS 176.4997 ZAE 146.4540 ETE 175.5514 ZAC 106.1033 ETC 267.9960

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	13 44 3.4	2184.42	8.21	53.33	79.73	137.04	14 20 27.9	1584.42	13.30	48.85
50.00	22 3 51.8	640.97	41.50	301.29	86.51	64.24	22 14 32.7	40.97	38.17	293.69
54.00	14 11 59.2	2113.01	9.41	47.86	80.96	133.78	14 47 12.2	1513.01	14.21	43.07
54.00	22 5 7.9	637.72	39.94	301.89	87.42	68.28	22 15 45.6	37.72	37.05	294.16
58.00	14 42 52.6	2029.91	10.67	41.62	82.11	130.55	15 16 42.5	1429.91	15.17	36.53
58.00	22 6 39.2	633.63	38.34	302.27	88.16	72.18	22 17 12.8	33.63	35.91	294.45
62.00	15 17 10.7	1033.54	11.97	34.50	83.19	127.37	15 49 24.2	1333.54	16.16	29.13
62.00	22 8 31.6	628.36	36.73	302.40	88.74	75.92	22 18 59.9	28.36	34.74	294.55
66.00	15 55 18.3	1822.36	13.31	26.40	84.18	124.25	16 25 40.7	1222.36	17.18	20.77
66.00	22 10 54.5	621.41	35.11	302.27	89.18	79.51	22 21 15.9	21.41	33.56	294.42
70.00	16 37 32.3	1695.33	14.67	17.25	85.08	121.21	17 5 47.6	1095.33	18.21	11.36
70.00	22 14 3.4	611.94	33.52	301.82	89.48	82.94	22 24 15.4	11.94	32.30	294.00
74.00	17 23 49.2	1552.55	16.02	7.04	85.88	118.29	17 49 41.8	952.55	19.23	0.93
74.00	22 18 25.3	5890.01	31.98	278.85	89.65	86.17	23 56 35.3	5290.01	31.25	271.09
78.00	18 13 24.6	1398.49	17.31	355.94	86.56	115.57	18 36 41.1	796.49	20.21	349.03
78.00	22 24 49.9	5869.83	30.53	277.40	89.72	89.12	24 2 39.7	5269.83	30.17	269.71
82.00	19 4 18.2	1233.94	18.45	344.41	87.11	113.20	19 24 52.1	633.94	21.08	337.94
82.00	22 34 52.5	5837.74	29.28	275.00	89.71	91.65	24 12 10.2	5237.74	29.24	267.40
86.00	19 52 29.3	1078.53	19.30	333.35	87.47	111.47	20 10 27.8	478.53	21.72	326.76
86.00	22 51 29.6	5784.12	28.36	271.02	89.66	93.48	24 27 53.7	5184.12	28.56	263.47
90.00	20 32 9.4	949.96	19.62	324.08	87.61	110.81	20 47 59.4	349.96	21.97	317.44
90.00	23 18 46.4	5695.69	28.02	264.52	89.64	94.17	24 53 42.1	5095.69	28.30	257.00
94.00	20 59 26.3	861.52	19.30	317.48	87.47	111.47	21 13 47.8	261.52	21.72	310.88
94.00	0 2 11.1	5567.12	28.36	255.14	89.66	93.48	1 34 58.3	4967.12	28.56	247.60
98.00	21 16 3.4	807.90	18.45	313.17	87.11	113.20	21 29 31.3	207.90	21.08	306.69
98.00	0 50 22.3	5411.71	29.28	243.76	89.71	91.65	2 20 34.0	4811.71	29.24	236.15
102.00	21 26 6.0	775.81	17.31	310.24	86.56	115.57	21 39 1.8	175.81	20.21	303.93
102.00	1 41 15.8	5249.16	30.53	231.09	89.72	89.12	3 8 45.0	4649.16	30.17	224.01
106.00	21 32 30.5	755.63	16.02	308.03	85.88	118.29	21 45 6.2	155.63	19.23	301.93
106.00	2 30 51.2	5093.09	31.98	219.84	89.65	86.17	3 55 44.3	4493.09	31.25	212.09
110.00	21 36 52.4	742.16	14.67	306.20	85.08	121.21	21 49 14.6	142.16	18.21	300.32
110.00	3 17 8.1	4950.31	33.52	208.67	89.48	82.94	4 39 38.5	4350.31	32.39	200.85
114.00	21 40 1.3	732.68	13.31	304.55	84.18	124.25	21 52 14.0	132.68	17.18	298.92
114.00	3 59 22.1	4823.28	35.11	198.31	89.18	79.51	5 19 45.4	4223.28	33.56	190.46
118.00	21 42 24.3	725.73	11.97	302.99	83.19	127.37	21 54 30.0	125.73	16.16	297.62
118.00	4 37 29.8	4712.11	36.73	188.79	88.74	75.92	5 56 1.9	4112.11	34.74	180.93
122.00	21 44 16.7	720.47	10.67	301.47	82.11	130.55	21 56 17.1	120.47	15.17	296.38
122.00	5 11 47.8	4615.73	38.34	180.01	88.16	72.18	6 28 43.6	4015.73	35.91	172.19

RAD 188.6470 VEL 66.0440 PTH 5.1033

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.9430 TDE 1.1861 TRA -3.9942 BAU 1.3519 TVH 17.9524 TTL -3.8100
RC3 0.5968 RDE -1.6220 RRA -0.2329 FAU 1.2549 RVH 11.3625 RTL -0.4412
FC3 -11.9896 FDE -2.6431 FRA -2.7659 BSP 4466. FVH -228.2579 FTL 15.9665
BC3 1.1160 BDE 2.0094 BRA 4.0010 FSP -3659. BVH 21.2461 BTL 3.8354

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3312.8904 SGR 1506.2502 SG3 1583.4788
RRT 0.3537 RRF -0.6967 RTF -0.4878
SCB 3639.2351 R23 -0.5195 R13 -0.5311
SG1 3364.4471 SG2 1387.2735 THA 11.0359

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1079.0724 SR 978.0002 SS 1356.7920
CRT -0.6227 CRS -0.8742 CST 0.3672
LSA 1733.6006 MSA 931.4402 SSA 298.0162
EL1 1313.6712 EL2 628.6091 ALF 139.4949

LAUNCH DATE MAR 13, 1972 0 HOURS 0 MIN 0 SEC 2441389.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.5893 DAL -26.3765 RAL 239.2675 GL -5.8102 CLL -110.9143 C3 91.9544
 ZAS 110.8019 ETS 345.9927 ZAE 0.0000 ETE 0.0000 ZAC 94.7529 ETC 248.7434

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.7491 LAL 0.0000 LOL 173.5147 VL 39.0671 GAL 5.6948 AZL 91.4309 TAL 13.6829 V1 29.9544
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6505 GAP 37.5270 AZP 88.8235 TAP 158.9798 V2 13.4461
 RC 840.9304 HCA 145.2968 INC 1.4309 RCA 146.9904 APO 801.0953 ECC 0.7141 SMA 514.0429 TF 638.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6326 DAP 2.0254 RAP 276.7365 GP 1.9464 CLP 137.8641 C3 74.5216 LVI -6.7322
 ZAS 137.8276 ETS 176.5471 ZAE 146.4433 ETE 175.6162 ZAC 106.0612 ETC 267.9929

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	TIME	LAT	LONG
50.00	13 35 45.0	2193.30	7.76	53.72	79.06	137.10	14 12 18.5	1593.50	12.85	49.26	
50.00	21 58 55.7	635.31	41.33	300.85	85.80	63.93	22 9 31.0	35.31	37.98	293.29	
54.00	14 3 25.9	2522.72	8.95	48.30	80.28	133.65	14 38 48.6	1522.72	13.76	43.53	
54.00	22 0 26.7	631.43	39.78	301.40	83.72	67.95	22 10 58.1	31.43	36.86	293.70	
58.00	14 34 1.7	2040.42	10.20	42.13	81.43	130.65	15 8 2.2	1440.42	14.71	37.06	
58.00	22 2 15.5	620.55	38.19	301.72	87.46	71.82	22 12 42.1	26.55	35.72	293.93	
62.00	15 7 53.5	1045.04	11.50	35.09	82.50	127.50	15 40 23.6	1345.04	15.70	29.74	
62.00	22 4 29.2	620.29	36.59	301.77	88.05	75.53	22 14 49.4	20.29	34.56	293.95	
66.00	15 45 39.9	1835.14	12.82	27.09	83.49	124.42	16 16 15.1	1235.14	16.71	21.48	
66.00	22 7 18.4	612.06	35.00	301.55	88.50	79.08	22 17 30.4	12.06	33.39	293.72	
70.00	16 27 20.6	1709.78	14.16	18.05	84.38	121.43	16 55 50.4	1109.78	17.72	12.20	
70.00	22 11 0.6	600.91	33.42	300.97	88.81	82.45	22 21 1.5	0.91	32.23	293.18	
74.00	17 12 54.5	1569.22	15.48	8.01	85.16	118.57	17 39 3.7	969.22	18.73	1.93	
74.00	22 16 5.6	5876.78	31.91	277.85	88.99	85.61	23 54 2.4	5276.78	31.11	270.10	
78.00	18 1 33.6	1416.10	16.73	357.12	85.83	115.94	18 25 9.7	816.10	19.68	350.85	
78.00	22 23 26.3	5853.64	30.51	276.19	89.08	88.47	24 0 60.0	5253.64	30.07	268.51	
82.00	18 51 16.9	1257.30	17.82	345.85	86.36	113.68	19 12 14.2	657.30	20.51	339.42	
82.00	22 34 39.2	5817.81	29.31	273.53	89.09	90.89	24 11 37.0	5217.81	29.18	265.93	
86.00	19 38 15.8	1105.76	18.61	335.06	86.71	112.06	19 56 41.6	505.76	21.11	328.52	
86.00	22 52 28.5	5760.31	28.45	269.28	89.06	92.60	24 28 28.8	5160.31	28.53	261.73	
90.00	20 17 21.5	979.05	18.91	325.91	86.84	111.46	20 33 40.6	379.05	21.33	319.34	
90.00	23 20 19.8	5670.02	28.13	262.65	89.04	93.24	24 54 49.8	5070.02	28.30	255.13	
94.00	20 45 12.8	888.76	18.61	319.18	86.71	112.06	21 0 1.6	288.76	21.11	312.65	
94.00	0 3 10.1	5543.31	28.45	253.40	89.06	92.60	1 35 33.4	4943.31	28.53	245.85	
98.00	21 3 2.1	831.26	17.82	314.60	86.36	113.68	21 16 53.4	231.26	20.51	308.18	
98.00	0 50 9.1	5391.77	29.31	242.29	89.09	90.89	2 20 0.8	4791.77	29.18	234.68	
102.00	21 14 15.0	795.42	16.73	311.41	85.83	115.94	21 27 30.4	195.42	19.68	305.15	
102.00	1 39 52.3	5232.97	30.51	230.48	89.08	88.47	3 7 5.3	4632.97	30.07	222.81	
106.00	21 21 35.7	772.29	15.48	309.00	85.16	118.57	21 34 28.0	172.29	18.73	302.93	
106.00	2 28 31.5	5079.85	31.91	218.84	88.99	85.61	3 53 11.3	4479.85	31.11	211.10	
110.00	21 26 40.7	756.61	14.16	307.01	84.38	121.43	21 39 17.3	156.61	17.72	301.16	
110.00	3 14 5.3	4939.29	33.42	207.82	88.81	82.45	4 36 24.6	4339.29	32.23	200.03	
114.00	21 30 23.0	745.46	12.82	305.23	83.49	124.42	21 42 48.4	145.46	16.71	299.63	
114.00	3 55 46.0	4813.93	35.00	197.59	88.50	79.08	5 15 59.9	4213.93	33.39	189.77	
118.00	21 33 12.2	737.23	11.50	303.58	82.50	127.50	21 45 29.4	137.23	15.70	298.23	
118.00	4 33 27.4	4704.03	36.59	180.16	88.05	75.53	5 51 51.4	4104.03	34.56	180.34	
122.00	21 35 25.8	730.97	10.20	301.98	81.43	130.65	21 47 36.8	130.97	14.71	296.91	
122.00	5 7 24.2	4608.65	38.19	179.46	87.46	71.82	6 24 12.6	4008.65	35.72	171.67	

RAD 186.6474 VEL 66.0541 PTH 5.1048

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.9116 TDE 1.1956 TRA -3.9909 BAU 1.3306 TVH 17.4825 TTL -3.7693
 RC3 0.5836 RDE -1.6957 RRA -0.2213 FAU 1.2716 RVH 11.1927 RTL -0.4736
 FC3 -11.9717 FDE -2.3710 FRA -3.4759 BSP 4336. FVH -229.6007 FTL 16.8828
 BC3 1.0824 BDE 2.0748 BRA 3.9971 FSP -3639. BVH 20.7585 BTL 3.7989

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3263.6265 SGR 1516.9162 SG3 1997.5892
 RRT 0.3284 RRF -0.6821 RTF -0.4636
 SGB 3598.9294 R23 -0.5221 R13 -0.5069
 SG1 3310.0834 SG2 1412.6713 THA 10.6383

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1072.7094 SR 1014.6802 SS 1284.3291
 CRT -0.6309 CRS -0.3259 CST 0.2668
 LSA 1665.8664 HSA 980.7390 SSA 304.6679
 EL1 1333.9688 EL2 633.0844 ALF 137.5203

LAUNCH DATE MAR 14, 1972 0 HOURS 0 MIN 0 SEC 2441390.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

CARTH-JUPITER

GEOCENTRIC CONIC
VHL 9.6657 DAL
ZAS 112.4412 ETS

REFERENCE PLANE IS EQUATOR
-26.0561 RAL 238.6121 GL -5.6180 CLL -112.5555 C3 93.4267
345.6545 ZAE 0.0000 ETE 0.0000 ZAC 94.8363 ETC 248.3981

HELIOCENTRIC CONIC
RL 148.7899 LAL
RP 755.5436 LAP
RC 840.9304 HCA

REFERENCE PLANE IS ECLIPTIC
0.0000 LOL 174.5113 VL 39.0601 GAL 6.1191 ARL 91.3961 TAL 14.6998 V1 29.9462
-0.8146 LOP 318.8199 VP 9.6474 GAP 37.5530 AZP 88.8562 TAP 159.0004 V2 13.4461
144.3006 INC 1.3962 RCA 141.7605 APO 881.0862 ECC 0.7144 SMA 513.9233 TF 637.0000

TEOCENTRIC CONIC
VHP 8.6369 DAP
ZAS 137.8119 ETS

REFERENCE PLANE IS ECLIPTIC
1.9857 RAP 276.7184 GP 1.9063 CLP 137.8470 C3 74.5954 LVI -6.7143
176.5925 ZAE 146.4283 ETE 175.6784 ZAC 108.0209 ETC 267.9887

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
ARZMTH	TIME	TIME	LAT	LONG	RT ASC	ARZMTH	TIME	TIME	LAT	LONG
50.00	13 27 34.7	2202.51	7.31	54.10	78.41	137.16	14 4 17.2	1602.51	12.41	49.65
50.00	21 54 0.4	630.02	41.18	300.45	85.12	63.65	22 4 30.4	30.02	37.79	292.92
54.00	13 55 1.4	2152.33	8.50	48.74	79.64	133.93	14 30 33.7	1532.33	13.32	43.98
54.00	21 50 45.5	625.54	39.03	300.95	86.05	67.64	22 6 11.1	25.54	36.68	293.28
58.00	14 25 20.5	2050.78	9.75	42.62	80.70	150.75	14 59 31.3	1450.78	14.26	37.58
58.00	21 07 31.1	619.91	38.05	301.20	80.80	71.48	22 8 11.0	19.91	35.54	293.45
62.00	14 53 57.3	1956.34	11.00	55.06	81.85	127.62	15 31 33.6	1356.34	15.24	30.34
62.00	22 0 24.8	612.71	36.46	301.19	87.40	75.16	22 10 37.5	12.71	34.38	293.40
66.00	15 36 14.0	1847.64	12.34	27.75	82.83	124.57	16 7 1.7	1247.64	16.24	22.17
66.00	22 3 38.6	603.29	34.88	300.87	87.85	78.67	22 13 41.9	3.29	33.23	293.07
70.00	16 17 23.8	1723.83	13.66	18.83	83.71	121.63	16 46 7.7	1123.83	17.25	13.01
70.00	22 7 51.7	5882.14	33.33	278.08	88.17	81.99	23 45 53.9	5282.14	32.08	270.31
74.00	17 2 18.4	1585.28	14.95	8.93	84.49	118.83	17 28 43.7	985.28	17.23	2.90
74.00	22 13 36.0	5834.43	31.84	276.91	88.37	85.09	23 51 20.5	5264.43	30.98	269.19
78.00	17 50 7.7	1434.79	16.17	358.23	85.14	116.27	18 14 2.5	834.79	19.16	352.01
78.00	22 21 46.7	5838.69	30.48	275.07	88.47	87.87	23 59 5.3	5238.69	29.97	267.40
82.00	18 38 51.0	1279.17	17.22	347.18	85.66	114.10	19 0 10.2	679.17	19.96	340.81
82.00	22 33 59.4	5799.66	29.32	272.19	88.49	90.20	24 10 39.1	5199.66	29.10	264.59
86.00	19 24 51.7	1130.77	17.96	336.61	86.00	112.58	19 43 42.5	530.77	20.52	330.13
86.00	22 52 47.0	5739.03	28.51	267.72	88.47	91.82	24 28 26.0	5139.03	28.49	260.17
90.00	20 3 30.9	1005.49	18.24	327.56	86.12	112.02	20 20 16.4	405.49	20.73	321.04
90.00	23 21 4.8	5647.30	28.21	261.00	88.46	92.41	24 55 12.1	5047.30	28.27	253.47
94.00	20 31 48.7	913.76	17.96	320.73	86.00	112.58	20 47 2.5	313.76	20.52	314.25
94.00	0 3 28.6	5522.03	28.51	251.84	88.47	91.82	1 35 30.6	4922.03	28.49	244.30
98.00	20 50 36.3	853.13	17.22	315.94	85.66	114.10	21 4 49.4	253.13	19.96	309.56
98.00	0 49 29.3	5373.63	29.32	240.96	88.49	90.20	2 19 2.9	4773.63	29.10	233.35
102.00	21 2 49.0	814.11	16.17	312.53	85.14	116.27	21 16 23.1	214.11	19.16	306.30
102.00	1 38 12.6	5218.01	30.48	229.36	88.47	87.87	3 5 10.6	4618.01	29.97	221.70
106.00	21 10 59.7	788.36	14.95	309.93	84.49	118.83	21 24 8.0	188.36	18.23	303.89
106.00	2 26 1.9	5067.51	31.84	217.91	88.37	85.09	3 50 29.4	4467.51	30.98	210.18
110.00	21 16 44.0	770.65	13.66	367.79	83.71	121.63	21 29 34.6	170.65	17.25	301.97
110.00	3 10 56.4	4928.97	33.33	207.03	88.17	81.99	4 33 5.4	4328.97	32.08	199.26
114.00	21 20 57.0	757.96	12.34	305.90	82.83	124.57	21 33 35.0	157.96	16.24	300.32
114.00	3 52 6.3	4805.16	34.88	196.91	87.85	78.67	5 12 11.4	4205.16	33.23	189.12
118.00	21 24 10.9	748.53	11.03	304.15	81.85	127.62	21 36 39.4	148.53	15.24	298.83
118.00	4 29 23.0	4696.46	36.46	187.57	87.40	75.16	5 47 39.4	4096.46	34.38	179.78
122.00	21 26 44.6	741.33	9.75	302.48	80.79	130.75	21 39 5.9	141.33	14.26	297.43
122.00	5 2 59.7	4602.01	38.05	178.94	86.80	71.48	6 19 41.7	4002.01	35.54	171.19
			RAD 186.6478 VEL		66.0652 PTH		5.1065			

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.9254 TDE 1.2080 TRA -3.9910 BAV 1.3518 TVH 17.8899 TTL -3.7192
RC3 0.5611 RDE -1.7707 RRA -0.2122 FAU 1.2647 RVH 10.8471 RTL -0.5048
FC3 -11.7193 FDE -2.0877 FRA -4.1709 BSP 4179. FVH -226.5510 FTL 17.7990
BC3 1.0822 BDE 2.1434 BRA 3.9966 FSP -3621. BVH 20.9215 BTL 3.7533

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3263.0997 SCR 1515.8673 SG3 1974.6872
RRT 0.3149 RRF -0.6607 RTF -0.4582
SGB 3598.0096 R23 -0.5071 R13 -0.4988
SG1 3305.8967 SG2 1420.1126 THA 10.2305

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1067.5748 SR 1050.9362 SS 1220.5065
CRT -0.6387 CRS -0.7630 CST 0.1548
LSA 1603.3527 MSA 1034.3058 SSA 305.4342
EL1 1356.0713 EL2 636.5952 ALF 135.7044

LAUNCH DATE MAR 15, 1972 0 HOURS 0 MIN 0 SEC 2441391.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.7483 DAL -25.7447 RAL 237.9767 GL -5.4336 CLL -114.1786 C3 85.0293
ZAS 114.0631 ETS 345.3313 ZAE 0.0000 ETE 0.0000 ZAC 94.9135 ETC 248.0654

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.8310 LAL 0.0000 LOL 175.5072 VL 39.0529 GAL 6.5448 AZL 91.3633 TAL 15.7197 V1 29.9380
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6456 GAP 37.5789 AZP 88.9068 TAP 159.0246 V2 13.4461
RC 140.9304 HCA 143.3049 INC 1.3673 RCA 146.5106 APO 881.0503 ECC 0.7148 SMA 513.7804 TF 636.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6412 DAP 1.9480 HAP 276.6962 GP 1.8681 CLP 137.8257 C3 74.6700 LVI -6.6923
ZAS 137.7921 ETS 176.6363 ZAC 146.4090 ETE 175.7384 ZAC 105.9824 ETC 267.9835

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	TIME	LAT	LONG
50.00	13 19 32.7	2211.43	6.87	54.48	77.80	137.21	13 56 24.2	1611.43	11.97	50.04	
50.00	21 49 6.2	625.12	41.03	300.07	84.48	63.39	21 59 31.3	25.12	37.61	292.58	
54.00	13 46 45.9	2141.84	8.05	49.17	79.02	133.99	14 22 27.7	1541.84	12.88	44.43	
54.00	21 51 4.9	620.06	39.48	300.52	85.41	67.36	22 1 25.0	20.06	36.51	292.90	
58.00	14 16 49.2	2070.99	9.29	43.12	80.17	130.83	14 51 10.2	1460.99	13.82	38.09	
58.00	21 53 26.4	613.71	37.92	300.72	86.17	71.17	22 3 40.1	13.71	35.37	293.00	
62.00	14 50 6.9	1937.44	10.57	36.23	81.23	127.74	15 22 54.4	1367.44	14.80	30.62	
62.00	21 56 19.1	605.62	36.34	300.64	83.78	74.81	22 6 24.7	5.62	34.22	292.88	
66.00	15 27 0.5	1859.87	11.87	28.40	82.20	124.72	15 58 0.4	1259.87	15.79	22.84	
66.00	21 59 56.1	5880.02	34.77	273.13	87.24	78.20	23 38 2.7	5280.62	33.07	270.36	
70.00	16 7 41.6	1737.50	13.17	19.59	83.00	121.82	16 36 39.1	1137.50	16.78	13.80	
70.00	22 4 37.9	5872.40	30.24	277.34	87.57	81.56	23 42 30.4	5272.49	31.94	269.59	
74.00	16 52 0.2	1000.80	14.44	9.82	83.84	119.08	17 18 41.0	1000.80	17.75	3.82	
74.00	22 10 58.1	5822.93	31.77	276.04	87.78	84.60	23 48 31.1	5252.93	30.86	268.34	
78.00	17 39 4.8	1452.65	15.63	359.29	84.49	116.58	18 3 17.5	852.65	18.65	-6.90	
78.00	22 19 53.4	5824.84	30.44	274.03	87.89	87.32	23 56 58.2	5224.84	29.86	266.38	
82.00	18 26 56.4	1299.78	16.64	348.43	85.00	114.49	18 48 36.2	699.78	19.43	342.10	
82.00	22 32 57.9	5783.08	29.32	270.97	87.92	89.57	24 9 21.0	5183.08	29.02	263.37	
86.00	19 12 8.9	1153.98	17.35	338.04	85.32	113.04	19 31 22.8	553.98	19.97	331.60	
86.00	22 52 33.8	5719.83	28.54	266.31	87.92	91.11	24 27 57.3	5119.83	28.44	258.77	
90.00	19 50 26.7	1029.85	17.61	329.07	85.44	112.52	20 7 36.3	429.85	20.17	322.60	
90.00	23 21 12.9	5026.96	28.25	259.51	87.91	91.67	24 54 59.8	5026.96	28.23	251.98	
94.00	20 19 5.8	936.98	17.35	322.17	85.32	113.04	20 34 42.8	336.98	19.97	315.73	
94.00	0 3 15.3	5502.83	28.54	250.44	87.92	91.11	1 34 58.2	4902.83	28.44	242.89	
98.00	20 38 41.7	873.75	16.64	317.10	85.00	114.49	20 53 15.4	873.75	19.43	310.85	
98.00	0 48 27.8	5357.03	29.32	239.72	87.92	89.57	2 17 44.8	4757.03	29.02	232.13	
102.00	20 51 46.2	831.97	15.63	313.58	84.49	116.58	21 5 38.2	231.97	18.65	307.40	
102.00	1 36 19.4	5204.16	30.44	228.33	87.89	87.32	3 3 3.5	4604.16	29.86	220.68	
106.00	21 0 41.5	803.88	14.44	310.82	83.84	119.08	21 14 5.4	203.88	17.75	304.81	
106.00	2 23 24.0	5056.01	31.77	217.04	87.78	84.60	3 47 40.0	4456.01	30.86	209.33	
110.00	21 7 1.7	784.32	13.17	308.54	83.08	121.82	21 20 6.0	184.32	16.78	302.75	
110.00	3 7 42.6	4919.31	33.24	206.29	87.57	81.56	4 29 41.9	4319.31	31.94	198.54	
114.00	21 11 43.5	770.19	11.87	306.55	82.20	124.72	21 24 33.7	170.19	15.79	300.99	
114.00	3 48 23.7	4796.94	34.77	196.28	87.24	78.29	5 8 20.6	4196.94	33.07	188.51	
118.00	21 15 20.5	759.64	10.57	304.71	81.23	127.74	21 28 0.2	159.64	14.80	299.41	
118.00	4 25 17.3	4689.37	36.34	187.02	86.78	74.81	5 43 26.7	4089.37	34.22	179.26	
122.00	21 18 13.2	751.55	9.29	302.97	80.17	130.83	21 30 44.8	151.55	13.82	297.93	
122.00	4 58 35.0	4595.82	37.92	178.46	86.17	71.17	6 15 10.8	3995.82	35.37	170.74	

RAD 186.6484 VEL 66.0772 PTH 5.1083

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.8897 TDE 1.2187 TRA -3.9982 BAU 1.3237 TVH 17.3455 TTL -3.6599
RC3 0.5423 RDE -1.8463 RRA -0.2049 FAU 1.2665 RVH 10.5728 RTL -0.5347
FC3 -11.5378 FDE -1.8103 FRA -4.8644 BSP 4039. FVH -224.9481 FTL 18.7140
BC3 1.0419 BDE 2.2123 BRA 4.0035 FSP -3601. BVH 20.3138 BTL 3.6988

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3213.7897 SGR 1520.9518 SG3 1964.9567
RRT 0.2875 RRF -0.6419 RTF -0.4310
SG8 3555.5223 R23 -0.5069 R13 -0.4704
SG1 3250.8020 SG2 1440.1475 THA 9.6623

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1062.2707 SR 1086.3693 SS 1179.1413
CRT -0.6449 CRS -0.6828 CST 0.0310
LSA 1551.3240 MSA 1095.4023 SSA 304.1029
EL1 1378.0565 EL2 639.9824 ALF 134.0039

LAUNCH DATE MAR 16, 1972 0 HOURS 0 MIN 0 SEC 2441392.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.8368 DAL -25.4424 RAL 237.3622 GL -5.2567 CLL -115.7627 C3 96.7634
ZAS 115.6663 ETS 345.0229 ZAE 0.0000 ETE 0.0000 ZAC 94.9852 ETC 247.7456

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.8722 LAL 0.0000 LOL 176.5027 VL 39.0455 GAL 6.9720 AZL 91.3325 TAL 16.7426 VI 29.9200
RP 755.5436 LAP -0.0146 LOP 318.8199 VP 9.6393 GAP 37.6047 AZP 88.9455 TAP 159.0524 V2 13.4461
RC 840.9304 HCA 142.3098 INC 1.3324 RCA 146.2406 APO 880.9877 ECC 0.7153 SMA 513.6141 TF 635.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6455 DAP 1.9119 RAP 276.6700 GP 1.8314 CLP 137.8002 C3 74.7454 LVI -6.6662
ZAS 137.7680 ETS 176.6706 ZAE 146.3855 ETE 175.7963 ZAC 105.9455 ETC 267.9772

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
ARMTN	TIME	TIME	LAT	LONG	RT ASC	AZUTH	TIME	TIME	LAT	LONG
50.00	13 11 39.3	2220.28	6.42	54.85	77.22	137.25	13 48 39.6	1620.28	11.54	50.43
50.00	21 44 13.6	620.57	40.89	299.72	83.88	67 15	21 54 34.2	20.57	37.45	292.27
54.00	13 53 39.5	2151.23	7.61	49.60	78.44	134.03	14 14 30.8	1551.23	12.44	40.87
54.00	21 46 23.2	614.03	39.35	300.13	84.82	67.10	21 56 40.2	14.96	36.35	292.54
58.00	14 8 27.7	2071.07	8.84	43.00	79.53	130.02	14 42 58.8	1471.07	13.38	38.59
58.00	21 49 1.8	607.04	37.79	300.27	85.58	70.80	21 59 9.7	7.94	35.21	292.59
62.00	14 41 27.4	1978.30	10.11	33.78	80.64	127.34	15 14 25.8	1378.36	14.35	31.49
62.00	21 52 12.5	5890.55	36.22	278.02	86.20	74.40	23 30 23.1	5290.56	34.07	270.29
66.00	15 17 59.3	1871.85	11.40	29.03	81.61	124.86	15 49 11.1	1271.85	15.34	23.50
66.00	21 56 11.3	5878.95	34.66	277.54	86.66	77.93	23 34 10.2	5278.95	32.02	269.80
70.00	15 58 13.6	1750.82	12.69	20.32	82.48	121.99	16 27 24.4	1150.82	16.32	14.56
70.00	22 1 19.8	5863.48	33.14	276.65	87.00	81.17	23 39 3.3	5263.48	31.80	268.92
74.00	16 41 59.1	1615.82	13.94	10.68	83.24	119.30	17 8 55.0	1015.82	17.28	4.71
74.00	22 8 13.1	5842.22	31.70	275.23	87.22	84.15	23 45 35.3	5242.22	30.73	267.54
78.00	17 28 23.6	1469.77	15.10	0.30	83.88	116.87	17 52 53.4	869.77	18.17	-5.86
78.00	22 17 48.6	5812.02	30.39	273.08	87.34	86.81	23 54 40.6	5212.02	29.76	265.44
82.00	18 15 29.9	1319.32	16.08	319.61	84.37	114.85	18 37 29.2	719.32	18.92	343.32
82.00	22 31 38.4	5767.83	29.30	269.84	87.39	88.93	24 7 46.2	5167.83	28.94	262.26
86.00	19 0 1.5	1175.71	16.77	339.37	84.69	113.46	19 19 37.2	575.71	19.44	332.98
86.00	22 51 50.1	5702.40	28.55	265.04	87.39	90.46	24 26 57.5	5102.40	28.38	257.49
90.00	19 38 1.9	1052.53	17.01	330.47	84.80	112.93	19 55 34.4	452.53	19.63	324.05
90.00	23 20 51.7	5608.59	28.28	258.17	87.39	91.00	24 54 20.3	5008.59	28.18	250.64
94.00	20 6 58.5	958.71	16.77	323.51	84.69	113.46	20 22 57.2	358.71	19.44	317.10
94.00	0 2 36.7	5485.40	28.55	249.16	87.39	90.46	1 34 2.1	4885.40	28.38	241.62
98.00	20 27 15.2	893.29	16.08	318.37	84.37	114.85	20 42 8.5	293.29	18.92	312.07
98.00	0 47 8.2	5341.79	29.30	238.60	87.39	88.98	2 16 10.0	4741.79	28.94	231.01
102.00	20 41 5.0	849.09	15.10	314.59	83.88	116.87	20 55 14.1	249.09	18.17	308.44
102.00	1 34 14.5	5191.34	30.39	227.37	87.34	86.81	3 0 45.9	4591.34	29.76	219.73
106.00	20 50 40.4	819.90	13.94	311.67	83.24	119.30	21 4 19.3	218.90	17.28	305.70
106.00	2 20 39.0	5045.29	31.70	216.23	87.22	84.15	3 44 44.3	4445.29	30.73	208.54
110.00	20 57 33.7	797.64	12.69	309.28	82.48	121.99	21 10 51.4	197.64	16.32	303.51
110.00	3 4 24.5	4910.30	33.14	205.61	87.00	81.17	4 26 14.8	4310.30	31.80	197.88
114.00	21 2 42.3	782.17	11.40	307.18	81.61	124.86	21 15 44.4	182.17	15.34	301.65
114.00	3 44 38.9	4789.27	34.66	195.69	86.66	77.93	5 4 20.2	4189.27	32.92	187.94
118.00	21 6 41.0	770.56	10.11	305.27	80.64	127.84	21 19 31.6	170.56	14.35	299.98
118.00	4 21 10.7	4682.75	36.22	186.51	86.20	74.49	5 39 13.5	4082.75	34.07	178.78
122.00	21 9 51.8	761.62	8.84	303.45	79.58	130.92	21 23 33.4	161.62	13.38	298.43
122.00	4 54 10.5	4590.04	37.79	178.01	85.58	70.88	6 10 40.5	3990.04	35.21	170.33

RAD 186.6489 VEL 66.0902 PTH 5.1102

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.8589 TDE 1.2304 TRA -4.0109 BAU 1.3017 TVH 16.8979 TTL -3.5911
RC3 0.5241 RDE -1.9230 RRA -0.1994 FAU 1.2690 RVH 10.3119 RTL -0.5634
FC3 -11.3538 FDE -1.5329 FRA -5.5524 BSP 3897. FVH -223.3709 FTL 19.6272
BC3 1.0062 BDE 2.2829 BRA 4.0158 FSP -3581. BVH 19.7958 BTL 3.6350

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGV 3172.0610 SGR 1527.8735 SG3 1956.0958
RRV 0.2626 RRF -0.6237 RTF -0.4055
SG3 3520.8477 R23 -0.5050 R13 -0.4435
SG1 3204.0706 SG2 1459.5372 THA 9.1144

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1057.6032 SR 1121.1404 SS 1157.3584
CRT -0.6504 CRS -0.5876 CST -0.0977
LSA 1508.5107 MSA 1161.4034 SSA 300.8257
EL1 1400.7187 EL2 643.0143 ALF 132.4356

LAUNCH DATE MAR 17, 1972 0 HOURS 0 MIN 0 SEC 2441393.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHI 9.9313 DAL -25.1492 RAL 236.7697 GL -5.0868 CLL -117.3665 C3 92.6300
 TAS 117.2498 ETS 344.7292 ZAC 0.0000 ETE 0.0000 ZAC 95.0321 ETC 247.4392

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

HI 148.9137 LAL 0.0000 LOL 177.4975 VL 39.0379 GAL 7.4008 AZL 91.3034 TAL 17.7687 V1 29.9215
 HP 755.5436 LAP -9.8146 LOP 318.8199 VP 9.6343 GAP 37.6304 AZP 88.9825 TAP 159.0838 V2 13.4461
 HC 840.9304 HCA 141.3152 INC 1.3033 RCA 145.9503 APO 880.8986 ECC 0.7157 SMA 513.4245 TF 634.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6500 DAP 1.0775 RAP 276.6306 GP 1.7063 CLP 137.7707 C3 74.8218 LVI -6.6361
 TAS 137.7397 ETS 176.7194 ZAC 146.3578 ETE 175.8523 ZAC 105.9099 ETC 267.9700

INCH	INCH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	TIME	LAT	LONG
50.00	13 3 54.6	2229.04	5.99	55.23	76.67	137.30	13 41 3.6	1629.04	11.10	50.81		
50.00	21 39 32.8	616.40	40.76	299.41	83.32	62.93	21 49 39.2	16.40	37.30	291.98		
54.00	13 30 42.2	2169.53	7.17	50.62	77.89	134.12	14 6 43.0	1560.53	12.01	45.30		
54.00	21 41 40.6	616.25	38.22	299.77	84.26	66.26	21 51 57.0	10.26	36.20	292.70		
58.00	14 0 14.2	2261.01	8.49	44.03	79.03	130.99	14 34 57.2	1481.01	12.95	39.08		
58.00	21 42 37.8	609.59	37.67	299.10	85.03	70.61	21 54 40.3	2.59	35.06	292.20		
62.00	14 32 58.9	1989.10	9.65	37.32	80.09	127.94	15 6 8.0	1389.10	13.02	32.00		
62.00	21 48 5.5	5884.41	36.10	277.55	85.65	74.20	23 26 9.9	5284.41	33.92	269.84		
66.00	15 9 10.2	1883.58	10.95	29.65	81.05	124.99	15 40 33.8	1283.58	14.90	24.14		
66.00	21 52 24.8	5871.80	34.56	276.99	85.13	77.60	23 30 16.6	5271.80	32.70	269.27		
70.00	15 48 59.6	1763.00	12.22	21.03	81.92	122.16	16 18 23.4	1153.80	15.88	15.30		
70.00	21 57 50.3	5855.00	33.05	276.01	86.47	80.30	23 35 33.4	5255.00	31.67	268.31		
74.00	16 32 14.7	1630.37	13.46	11.51	82.67	119.51	16 59 25.1	1030.37	16.82	5.56		
74.00	22 5 22.0	5832.25	31.63	274.48	83.70	83.74	23 42 34.3	5232.25	30.61	266.81		
78.00	17 18 2.8	1486.23	14.59	1.26	83.30	117.13	17 42 49.0	803.23	17.69	-4.86		
78.00	22 15 33.8	5800.15	30.34	272.19	86.83	86.34	23 52 14.0	5200.15	29.65	264.57		
82.00	18 4 29.1	1337.91	15.55	350.73	83.79	115.17	18 26 47.0	737.91	18.42	344.47		
82.00	22 30 3.7	5753.83	29.28	268.81	86.89	88.45	24 5 57.5	5153.83	28.85	261.23		
86.00	18 48 25.6	1196.19	16.21	340.62	84.10	113.84	19 8 21.8	596.19	18.92	334.27		
86.00	22 50 55.5	5686.52	28.56	263.87	86.90	89.87	24 25 42.0	5086.52	28.31	256.33		
90.00	19 26 11.2	1073.80	16.45	331.77	84.21	113.76	19 44 5.0	473.80	19.11	325.39		
90.00	23 20 6.9	5591.90	28.30	256.95	86.90	90.38	24 53 18.8	4991.90	28.11	249.43		
94.00	19 55 22.5	879.18	16.21	324.74	84.10	113.84	20 11 41.7	379.18	18.92	318.39		
94.00	0 1 37.1	5469.51	28.56	248.00	86.90	89.87	1 32 46.6	4869.51	28.31	240.46		
98.00	20 16 14.3	911.88	15.55	319.48	83.79	115.17	20 31 26.2	311.88	18.42	313.22		
98.00	0 45 33.4	5327.79	29.28	237.56	86.89	88.45	2 14 21.3	4727.79	28.85	229.99		
102.00	20 30 44.2	865.55	14.59	315.55	83.30	117.13	20 45 9.8	265.55	17.69	309.44		
102.00	1 31 59.8	5179.47	30.34	226.49	86.83	86.34	2 58 19.3	4579.47	29.65	218.86		
106.00	20 40 56.0	833.45	13.46	312.50	82.67	119.51	20 54 49.4	233.45	16.82	306.56		
106.00	2 17 47.9	5035.33	31.63	215.48	86.70	83.74	3 41 43.3	4435.33	30.61	207.81		
110.00	20 48 19.7	810.62	12.22	309.99	81.92	122.16	21 1 50.4	210.62	15.88	304.25		
110.00	3 1 3.0	4901.90	33.05	204.97	86.47	80.80	4 22 44.9	4301.90	31.67	197.26		
114.00	20 53 53.3	793.90	10.95	307.80	81.05	124.99	21 7 7.2	193.90	14.90	302.29		
114.00	3 40 52.4	4782.12	34.56	195.14	86.13	77.60	5 0 34.5	4182.12	32.78	187.42		
118.00	20 58 12.5	781.29	9.66	305.87	80.09	127.94	21 11 13.8	181.29	13.92	300.54		
118.00	4 17 3.7	4676.60	36.10	186.03	85.65	74.20	5 35 0.3	4076.60	33.92	178.33		
122.00	21 1 40.3	771.56	8.40	303.92	79.03	130.99	21 14 31.8	171.56	12.95	298.93		
122.00	4 49 46.4	4584.69	37.67	177.60	85.03	70.61	6 6 11.1	3984.69	35.06	169.94		

RAD 186.6495 VEL 66.1042 PTH 5.1123

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.8384 TDE 1.2429 TRA -4.0279 SAV 1.2918 TVH 16.6527 TTL -3.5125
 RC3 0.5069 RDE -2.0008 RRA -0.1956 FAU 1.2730 RVH 10.0674 RTL -0.5912
 FC3 -11.1737 FDE -1.2546 FRA -6.2346 BSP 3747. FVH -221.9374 FTL 20.5389
 BC3 0.9797 BDE 2.3554 BRA 4.0327 FSP -3561. BVH 19.4594 BTL 3.5619

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

SOT 3142.8673 SOR 1536.6935 S03 1949.0343 ST 1053.4832 SR 1155.2602 SS 1154.9652
 RRT 0.2420 RRF -0.6062 RTF -0.3847 CRT -0.6552 CRS -0.4817 CST -0.2247
 S06 3494.4342 R23 -0.5003 R13 -0.4211 LSA 1475.9016 MSA 1229.7632 SSA 296.3801
 S01 3170.8883 S02 1477.7916 TRA 8.6381 EL1 1423.9170 EL2 645.7245 ALF 130.9875

LAUNCH DATE MAR 18. 1972 0 HOURS 0 MIN 0 SEC 2441394.00000000
 ARRIVAL DATE DEC 12. 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.3974 DAL -27.3929 RAL 241.3398 GL -6.4400 CLL -105.8969 C3 88.3104
 ZAS 105.7940 ETS 347.0997 ZAE 0.0000 ETE 0.0000 ZAC 94.4558 ETC 249.8488

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.6281 LAL 0.0000 LOL 170.5219 VL 39.0871 GAL 4.4310 AZL 91.5499 TAL 10.6510 V1 29.9788
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6561 GAP 37.4475 AZP 88.6814 TAP 158.9396 V2 13.4461
 RC 840.9304 HCA 148.2886 INC 1.5500 RCA 147.5623 APO 880.9605 ECC 0.7131 SMA 514.2614 TF 641.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6200 DAP 2.1572 RAP 276.7662 GP 2.0788 CLP 137.8908 C3 74.3043 LVI -6.7614
 ZAS 137.8491 ETS 176.3987 ZAE 146.4626 ETE 175.4134 ZAC 106.1939 ETC 267.9990

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	TIME	LAT	LONG
50.00	14 1 4.1	2165.99	9.13	52.54	81.15	136.91	14 37 10.1	1565.99	14.20	48.03	
50.00	22 13 44.3	653.46	41.87	302.27	88.05	64.92	22 24 37.8	53.46	38.61	294.56	
54.00	14 29 31.8	2093.02	10.34	46.96	82.40	133.61	15 4 25.0	1493.22	10.12	42.13	
54.00	22 14 28.5	651.57	40.28	302.98	88.94	69.02	22 25 20.1	51.57	37.48	295.16	
58.00	15 1 3.2	2008.42	11.62	40.58	83.57	130.33	15 34 31.6	1400.42	16.09	35.45	
58.00	22 15 21.8	649.18	38.66	303.49	89.66	72.98	22 26 11.0	49.18	36.31	295.60	
62.00	15 36 7.6	1909.88	12.95	33.29	84.66	127.09	16 7 57.5	1309.88	17.10	27.87	
62.00	22 16 27.9	646.09	37.01	303.79	90.23	76.80	22 27 14.0	46.09	35.12	295.87	
66.00	16 15 13.3	1795.88	14.32	24.99	85.67	123.88	16 45 9.2	1195.88	18.14	19.28	
66.00	22 17 52.7	641.96	35.36	303.87	90.64	80.49	22 28 34.7	41.96	33.91	295.96	
70.00	16 58 42.4	1665.08	15.73	15.54	86.59	120.73	17 26 27.5	1065.08	19.21	9.59	
70.00	22 19 46.5	636.25	33.71	303.69	90.91	84.03	22 30 22.8	36.25	32.70	295.83	
74.00	17 46 39.8	1517.14	17.15	4.97	87.41	117.66	18 11 56.9	917.14	20.29	-1.22	
74.00	22 22 28.0	627.95	32.09	303.19	91.06	87.42	22 32 56.0	27.95	31.51	295.40	
78.00	18 38 32.9	1353.84	18.54	353.36	88.13	114.72	19 1 6.7	753.84	21.34	346.95	
78.00	22 26 34.8	614.99	30.54	302.25	91.09	90.59	22 36 49.8	14.99	30.36	294.55	
82.00	19 32 33.8	1181.32	19.83	341.13	88.72	112.05	19 52 15.1	581.32	22.32	334.54	
82.00	22 33 30.1	5884.43	29.14	278.44	91.03	93.43	24 11 34.5	1284.43	29.32	270.84	
86.00	20 24 23.3	1014.17	20.85	329.26	89.14	109.97	20 41 17.4	414.17	23.08	322.52	
86.00	22 46 28.8	5842.54	28.05	275.27	90.93	95.60	24 23 51.4	1242.54	28.50	267.75	
90.00	21 6 1.0	879.25	21.26	319.55	89.30	109.13	21 20 40.2	279.25	23.40	312.76	
90.00	23 11 48.1	5760.46	27.61	269.21	90.88	96.48	24 47 48.6	5160.46	28.17	261.73	
94.00	21 31 20.2	797.17	20.85	313.39	89.14	109.97	21 44 37.4	197.17	23.08	306.65	
94.00	23 53 25.8	5625.54	28.05	259.39	90.93	95.60	25 27 11.4	5025.54	28.50	251.88	
98.00	21 44 19.0	755.28	19.83	309.89	88.72	112.05	21 56 54.3	155.28	22.32	303.29	
98.00	0 48 59.9	5458.39	29.14	247.20	91.03	93.43	2 19 58.3	4858.39	29.32	239.60	
102.00	21 51 14.3	733.17	18.54	307.66	88.13	114.72	22 3 27.4	133.17	21.34	301.25	
102.00	1 43 0.8	5285.87	30.54	234.44	91.09	90.59	3 11 6.7	4685.87	30.36	226.74	
106.00	21 55 21.1	720.21	17.15	305.96	87.41	117.66	22 7 21.3	120.21	20.29	299.77	
106.00	2 34 53.9	5122.57	32.09	222.08	91.06	87.42	4 0 16.5	4522.57	31.51	214.29	
110.00	21 58 2.6	711.91	15.73	304.50	86.59	120.73	22 9 54.5	111.91	19.21	298.55	
110.00	3 22 51.2	4974.63	33.71	210.54	90.91	84.03	4 45 45.9	4374.63	32.70	202.67	
114.00	21 59 56.4	706.20	14.32	303.12	85.67	123.88	22 11 42.6	106.20	18.14	297.43	
114.00	4 6 20.4	4843.83	35.36	199.91	90.64	80.49	5 27 4.2	4243.83	33.91	192.00	
118.00	22 1 21.2	702.07	12.95	301.78	84.66	127.09	22 13 3.3	102.07	17.10	296.36	
118.00	4 45 26.1	4729.83	37.01	190.18	90.23	76.80	6 4 15.9	4129.83	35.12	182.25	
122.00	22 2 27.3	698.98	11.52	300.42	83.57	130.33	22 14 6.2	98.98	16.09	295.29	
122.00	5 20 30.5	4631.28	38.66	181.23	89.66	72.98	6 37 41.8	4031.28	36.31	173.34	
RAD			186.6463	VEL	66.0267	PTH	5.1008				

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.9574 TDE 1.1678 TRA -4.0179 BAU 1.3578 TVH 17.9932 TTL -3.8646
 RC3 0.6373 RDE -1.4758 RRA -0.2622 FAU 1.2538 RVH 11.9784 RTL -0.3719
 FC3 -12.2917 FDE -3.2023 FRA -1.3414 BSP 4754. FVH -231.0192 FTL 14.1322
 BC3 1.1501 BDE 1.8819 BRA 4.0264 FSP -3699. BVH 21.6157 BTL 3.8824

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3370.0083 SGR 1508.9197 SG3 2004.7022
 RRT 0.3955 RRF -0.7255 RTF -0.5169
 SGB 3692.3968 R23 -0.5330 R13 -0.5634
 SG1 3432.5713 SG2 1360.6060 THA 11.9472

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1093.1482 SR 902.1151 SS 1556.6079
 CRT -0.6023 CRS -0.9264 CST 0.5247
 LSA 1902.6236 MSA 856.0511 SSA 281.5336
 EL1 1276.0149 EL2 616.9040 ALF 143.8943

LAUNCH DATE MAR 11, 1972 0 HOURS 0 MIN 0 SEC 2441387.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC REFERENCE PLANE IS EQUATOR
 VHL 9.4550 DAL -27.0448 RAL 240.6327 GL -6.2206 CLL -107.5836 C3 89.3972
 ZAS 107.4767 ETS 346.7192 ZAE 0.0000 ETE 0.0000 ZAC 94.5836 ETC 249.4693

HELIOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
 RL 148.6822 LAL 0.0000 LOL 171.5201 VL 39.0806 GAL 4.8508 AZL 91.5076 TAL 11.6586 V1 20.9706
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6549 GAP 37.4743 AP 88.7314 TAP 158.9494 V2 13.4461
 RC 840.0304 HCA 147.2908 INC 1.5075 RCA 147.3912 APO 881.0326 ECC 0.7134 SMA 514.2119 TF 640.0000

GEOCENTRIC CONIC REFERENCE PLANE IS ECLIPTIC
 VHP 8.6242 DAP 2.1109 RAP 276.7604 GP 2.0324 CLP 137.8861 C3 74.3760 LVI -6.7558
 ZAS 137.8462 ETS 176.4503 ZAE 146.4605 ETE 175.4839 ZAC 106.1475 ETC 267.9980

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
ARZMTH	TIME	TIME	LAT	LONG	RT ASC	ARZMTH	TIME	TIME	TIME	LAT	LONG
50.00	13 52 29.9	2175.25	8.67	52.94	80.43	136.98	14 28 45.2	1575.25	13.75	48.45	
50.00	22 8 48.2	647.01	41.68	301.76	87.26	64.57	22 19 35.2	47.01	38.38	294.11	
54.00	14 20 41.2	2103.17	9.87	47.41	81.66	133.69	14 55 44.4	1503.17	14.06	42.60	
54.00	22 9 48.7	644.43	40.11	302.42	88.16	68.64	22 20 33.2	44.43	37.26	294.64	
58.00	14 51 53.1	2019.25	11.14	41.11	82.83	130.45	15 25 32.4	1419.25	15.63	36.00	
58.00	22 11 1.5	641.17	38.50	302.86	88.90	72.57	22 21 42.7	41.17	36.10	295.01	
62.00	15 26 33.7	1921.82	12.46	33.90	83.91	127.23	15 58 35.6	1321.82	16.63	28.51	
62.00	22 12 31.4	636.05	36.87	303.08	89.47	76.35	22 23 8.4	36.95	34.92	295.19	
66.00	16 5 9.4	1809.28	13.81	25.70	84.91	124.07	16 35 18.7	1209.28	17.66	20.04	
66.00	22 14 26.3	631.37	35.23	303.04	89.89	79.98	22 24 57.7	31.37	33.73	295.16	
70.00	16 47 59.4	1680.45	15.19	16.41	85.82	120.98	17 15 59.8	1080.45	18.70	10.50	
70.00	22 16 59.2	623.70	33.61	302.72	90.18	83.47	22 27 22.9	23.70	32.54	294.88	
74.00	17 35 3.9	1535.22	16.57	6.03	86.63	117.99	18 0 39.1	935.22	19.75	0.12	
74.00	22 20 33.5	612.67	32.04	302.03	90.34	86.77	22 30 46.2	12.67	31.38	294.26	
78.00	18 25 43.3	1375.80	17.91	354.70	87.33	115.16	18 48 39.1	775.80	20.76	348.34	
78.00	22 25 54.1	5887.40	30.54	278.71	90.39	89.83	24 4 1.5	5287.40	30.27	271.02	
82.00	19 18 0.0	1208.77	19.12	342.85	87.89	112.66	19 38 9.7	608.77	21.68	336.32	
82.00	22 34 32.6	5359.79	29.22	276.63	90.36	92.49	24 12 12.3	5259.79	29.29	269.02	
86.00	20 7 44.8	1048.37	20.03	331.44	88.28	110.79	20 25 13.2	448.37	22.38	324.78	
86.00	22 49 36.9	5811.15	28.24	272.99	90.29	94.46	24 26 28.1	5211.15	28.55	265.45	
90.00	20 48 12.1	317.26	20.40	322.00	88.42	110.05	21 3 29.4	317.26	22.65	315.29	
90.00	23 16 6.6	5725.26	27.85	266.67	90.25	95.23	24 51 31.9	5125.26	28.26	259.17	
94.00	21 14 41.2	831.37	20.03	315.57	88.28	110.79	21 28 33.2	231.37	22.38	308.91	
94.00	0 0 18.5	5594.15	28.24	257.11	90.29	94.46	1 33 32.7	4994.15	28.55	249.58	
98.00	21 29 46.2	722.73	19.12	311.61	87.89	112.66	21 42 48.9	182.73	21.68	305.07	
98.00	0 50 2.4	5433.75	29.22	245.39	90.36	92.49	2 20 36.1	4833.75	29.29	237.78	
102.00	21 38 24.7	755.12	17.91	308.90	87.33	115.16	21 50 59.8	155.12	20.76	302.63	
102.00	1 42 20.1	5266.73	30.54	233.01	90.39	89.83	3 10 6.8	4666.73	30.27	225.31	
106.00	21 43 45.2	738.30	16.57	307.02	86.63	117.99	21 56 3.5	138.30	19.75	300.88	
106.00	2 32 59.4	5107.30	32.04	220.92	90.34	86.77	3 58 6.7	4507.30	31.38	213.15	
110.00	21 47 19.5	727.27	15.19	305.36	85.82	120.98	21 59 26.8	127.27	18.70	299.45	
110.00	3 20 3.9	4962.07	33.61	209.57	90.18	83.47	4 42 46.0	4362.07	32.54	201.73	
114.00	21 49 52.4	719.60	13.81	303.85	84.91	124.07	22 1 52.0	119.60	17.66	298.18	
114.00	4 2 53.9	4833.24	35.23	199.09	89.89	79.98	5 23 27.2	4233.24	33.73	191.21	
118.00	21 51 47.3	714.02	12.46	302.39	83.91	127.23	22 3 41.3	114.02	16.63	297.00	
118.00	4 41 29.6	4720.70	36.87	189.46	89.47	76.35	6 0 10.3	4120.70	34.92	181.57	
122.00	21 53 17.2	709.81	11.14	300.95	82.83	130.45	22 5 7.0	109.81	15.63	295.84	
122.00	5 16 10.2	4623.27	38.50	180.60	88.90	72.57	6 33 13.4	4023.27	36.10	172.75	

RAD 186.6466 VEL 66.0349 PTH 5.1020

DIFFERENTIAL CORRECTIONS REFERENCE PLANE IS ECLIPTIC
 TC3 0.9665 TDE 1.1771 TRA -4.0029 BAU 1.3769 TVH 18.2765 YTL -3.8417
 RC3 0.6270 RDE -1.5482 RRA -0.2459 FAU 1.2765 RVH 11.8566 RTL -0.4073
 FC3 -12.3622 FDE -2.9320 FRA -2.0657 BSP 4608. FVH -233.7695 FTL 15.0488
 BC3 1.1521 BDE 1.9448 BRA 4.0104 FSP -3674. BVH 21.7855 BTL 3.8632

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC
 SGT 3356.5453 SGR 1521.1654 SG3 2029.2303 ST 1085.9907 SR 940.1781 SS 1457.5524
 RRT 0.3826 RRF -0.7226 RTF -0.5095 CRT -0.6133 CRS -0.9043 CST 0.4525
 SGB 3685.1514 R23 -0.5263 R13 -0.5557 LSA 1818.1602 MSA 891.6518 SBA 294.9907
 SG1 3416.7356 SG2 1380.6732 THA 11.7884 EL1 1294.2499 EL2 623.0794 ALF 141.6363

LAUNCH DATE MAR 12, 1972 0 HOURS 0 MIN 0 SEC 2441388.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

ARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.5190 DAL -26.7061 RAL 239.9414 GL -6.0109 CLL -101.2566 C3 90.6119
ZAS 100.1466 ETS 346.3462 ZAE 0.0000 ETE 0.0000 ZAC 94.3623 ETC 249.1006

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.7085 LAL 0.0000 LOL 172.5177 VL 39.0740 GAL 5.2721 AZL 91.4680 TAL 12.6692 V1 29.9625
RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6530 GAP 37.5007 AZP 48.7787 TAP 158.9628 V2 13.4481
RC 840.9304 HCA 146.2936 INC 1.4681 RCA 147.2006 APO 881.0775 ECC 0.7137 SMA 514.1391 TF 639.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6284 DAP 2.0670 RAP 276.7505 GP 1.9883 CLP 137.8772 C3 74.4485 LVI -6.7460
ZAS 137.8390 ETS 176.4997 ZAE 146.4540 ETE 175.3514 ZAC 106.1033 ETC 267.9960

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	LAT	LONG
50.00	13 44 3.4	2184.42	8.21	53.33	79.73	137.04	14 20 27.9	1584.42	13.30	48.85
50.00	22 3 51.8	640.97	41.50	301.29	86.51	64.24	22 14 32.7	40.97	38.17	293.68
54.00	14 11 59.2	2115.01	9.41	47.86	80.96	133.78	14 47 12.2	1513.01	14.21	43.07
54.00	22 5 7.9	637.72	39.94	301.89	87.42	68.28	22 15 45.6	37.72	37.05	294.16
58.00	14 42 52.6	2020.91	10.67	41.62	82.11	130.55	15 16 42.5	1429.91	15.17	36.53
58.00	22 0 39.2	633.63	38.34	302.27	88.16	72.18	22 17 12.8	33.63	35.91	294.45
62.00	15 17 10.7	1033.54	11.97	34.50	83.19	127.37	15 49 24.2	1333.54	16.16	29.13
62.00	22 8 31.6	628.36	36.73	302.40	88.74	75.92	22 18 59.9	28.36	34.74	294.55
66.00	15 55 18.3	1822.36	13.31	26.40	84.18	124.25	16 25 40.7	1222.36	17.18	20.77
66.00	22 10 54.5	621.41	35.11	302.27	89.18	79.51	22 21 15.9	21.41	33.56	294.42
70.00	16 37 32.3	1695.33	14.67	17.25	85.08	121.21	17 5 47.6	1095.33	18.21	11.36
70.00	22 14 3.4	611.94	33.52	301.82	89.48	82.94	22 24 15.4	11.94	32.30	294.00
74.00	17 23 49.2	1552.55	16.02	7.04	85.88	118.29	17 49 41.8	952.55	19.23	0.93
74.00	22 18 25.3	5890.01	31.98	278.85	89.65	86.17	23 56 35.3	5290.01	31.25	271.09
78.00	18 13 24.6	1396.49	17.31	355.94	86.56	115.57	18 36 41.1	796.49	20.21	349.03
78.00	22 24 49.9	5869.83	30.53	277.40	89.72	89.12	24 2 39.7	5269.83	30.17	269.71
82.00	19 4 18.2	1233.94	18.45	344.41	87.11	113.20	19 24 52.1	633.94	21.08	337.94
82.00	22 34 52.5	5837.74	29.28	275.00	89.71	91.66	24 12 10.2	5237.74	29.24	267.40
86.00	19 52 29.3	1078.53	19.30	333.35	87.47	111.47	20 10 27.8	478.53	21.72	326.76
86.00	22 51 29.6	5784.12	28.36	271.02	89.66	93.48	24 27 53.7	5184.12	28.56	263.47
90.00	20 32 9.4	949.96	19.62	324.08	87.61	110.81	20 47 59.4	349.96	21.97	317.44
90.00	23 18 46.4	5695.69	28.02	264.52	89.64	94.17	24 53 42.1	5095.69	28.30	257.00
94.00	20 59 26.3	861.52	19.30	317.48	87.47	111.47	21 13 47.8	261.52	21.72	310.88
94.00	0 2 11.1	5567.12	28.36	255.14	89.66	93.48	1 34 58.3	4967.12	28.56	247.60
98.00	21 16 3.4	807.90	18.45	313.17	87.11	113.20	21 29 31.3	207.90	21.08	306.69
98.00	0 50 22.3	5411.71	29.28	243.76	89.71	91.66	2 20 34.0	4811.71	29.24	230.15
102.00	21 26 6.0	775.81	17.31	310.24	86.56	115.57	21 39 1.8	175.81	20.21	303.93
102.00	1 41 15.8	5249.16	30.53	231.09	89.72	89.12	3 8 45.0	4649.16	30.17	224.01
106.00	21 32 30.5	755.63	16.02	308.03	85.88	118.29	21 45 6.2	155.63	19.23	301.93
106.00	2 30 51.2	5093.09	31.98	219.84	89.65	86.17	3 55 44.3	4493.09	31.25	212.09
110.00	21 36 52.4	742.16	14.67	306.20	85.08	121.21	21 49 14.6	142.16	18.21	300.32
110.00	3 17 8.1	4950.31	33.52	208.67	89.48	82.94	4 39 38.5	4350.31	32.39	200.85
114.00	21 40 1.3	732.68	13.31	304.55	84.18	124.25	21 52 14.0	132.68	17.18	298.92
114.00	3 59 22.1	4823.28	35.11	198.31	89.18	79.51	5 19 45.4	4223.28	33.56	190.46
118.00	21 42 24.3	725.73	11.97	302.99	83.19	127.37	21 54 30.0	125.73	16.16	297.62
118.00	4 37 29.8	4712.11	36.73	188.70	88.74	75.92	5 56 1.9	4112.11	34.74	180.93
122.00	21 44 16.7	720.47	10.67	301.47	82.11	130.55	21 56 17.1	120.47	15.17	296.38
122.00	5 11 47.8	4615.73	38.34	180.01	88.16	72.18	6 28 43.6	4015.73	35.91	172.19
			RAD 186.6470 VEL		66.0440 PTH		5.1033			

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.9430 TDE 1.1861 TRA -3.9942 BAU 1.3519 TVH 17.9524 TTL -3.8100
RC3 0.5968 RDE -1.6220 RRA -0.2329 FAU 1.2549 RVH 11.3625 RTL -0.4412
FC3 -11.9898 FDE -2.6431 FRA -2.7659 BSP 4466. FVH -228.2579 FTL 15.9665
BC3 1.1160 BDE 2.0094 BRA 4.0010 FSP -3659. BVH 21.2461 BTL 3.8354

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

SGT 3312.8904 SGR 1506.2502 SCS 1983.4788 ST 1079.0724 SR 978.0002 SS 1356.7920
RRT 0.3537 RRF -0.6967 RTF -0.4878 CRT -0.6227 CRS -0.8742 CST 0.3672
SCB 3639.2351 R23 -0.5195 R13 -0.5311 LSA 1733.6006 MSA 921.4402 SSA 298.0162
SG1 3364.4471 SG2 1387.2735 TMA 11.0359 EL1 1313.6712 EL2 628.6091 ALF 139.4949

LAUNCH DATE MAR 13, 1972 0 HOURS 0 MIN 0 SEC 2441389.50000000
ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000

EARTH-JUPITER

GEOCENTRIC CONIC

REFERENCE PLANE IS EQUATOR

VHL 9.5893 DAL -26.3765 RAL 239.2675 GL -5.8102 CLL -110.9143 C3 91.9544
 ZAS 110.8019 ETS 345.9927 ZAE 0.0000 ETE 0.0000 ZAC 94.7529 ETC 248.7434

HELIOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

RL 148.7491 LAL 0.0000 LOL 173.5147 VL 39.0671 GAL 5.6948 AZL 91.4309 TAL 13.6829 V1 29.9544
 RP 755.5436 LAP -0.8146 LOP 318.8199 VP 9.6505 GAP 37.5270 AZP 88.8235 TAP 158.9798 V2 13.4461
 RC 840.9304 HCA 145.2968 INC 1.4309 ACA 146.9904 APO 801.0953 ECC 0.7141 SMA 514.0429 TF 638.0000

GEOCENTRIC CONIC

REFERENCE PLANE IS ECLIPTIC

VHP 8.6326 DAP 2.0254 RAP 276.7365 GP 1.9464 CLP 137.8641 C3 74.5216 LVI -6.7322
 ZAS 137.8276 ETS 176.5471 ZAE 146.4433 ETE 175.6162 ZAC 106.0612 ETC 267.9929

LNCH	LNCH	L-I	INJ	INJ	INJ	INJ	INJ	INJ	PO CST	IGN 2	IGN 2
AZMTH	TIME	TIME	LAT	LONG	RT ASC	AZMTH	TIME	TIME	TIME	LAT	LONG
50.00	13 35 45.0	2193.50	7.76	53.72	79.06	137.10	14 12 18.5	1593.50	12.85	49.26	
50.00	21 58 55.7	635.31	41.33	300.85	85.80	63.93	22 9 31.0	35.31	37.98	293.29	
54.00	14 3 25.9	2322.72	8.95	48.30	80.28	103.65	14 38 48.6	1522.72	13.76	43.53	
54.00	22 0 26.7	631.43	39.78	301.40	85.72	67.95	22 10 58.1	31.43	36.86	293.70	
58.00	14 34 1.7	2040.42	10.20	42.13	81.43	100.65	15 8 2.2	1440.42	14.71	37.06	
58.00	22 2 15.5	620.56	38.19	301.72	87.46	71.82	22 12 42.1	26.55	35.72	293.93	
62.00	15 7 53.6	1045.04	11.50	35.09	82.50	127.50	15 40 23.6	1345.04	15.70	29.74	
62.00	22 4 29.2	620.29	36.59	301.77	88.05	75.53	22 14 49.4	20.29	34.56	293.95	
66.00	15 45 39.9	1835.14	12.82	27.09	83.49	124.42	16 16 15.1	1235.14	16.71	21.48	
66.00	22 7 18.4	612.06	35.00	301.55	88.50	79.08	22 17 30.4	12.06	33.39	293.72	
70.00	16 27 20.6	1709.78	14.16	18.05	84.38	121.43	16 55 50.4	1109.78	17.72	12.20	
70.00	22 11 0.6	600.91	33.42	300.97	88.81	82.45	22 21 1.5	0.91	32.23	293.18	
74.00	17 12 54.5	1569.22	15.48	8.01	85.16	118.57	17 39 3.7	969.22	18.73	1.93	
74.00	22 16 5.6	5876.78	31.91	277.85	88.99	85.61	23 54 2.4	5276.78	31.11	270.10	
78.00	18 1 33.6	1416.10	16.73	357.12	85.83	115.94	18 25 9.7	816.10	19.68	350.85	
78.00	22 23 26.3	5853.64	30.51	276.19	89.08	88.47	24 0 60.0	5253.64	30.07	268.51	
82.00	18 51 16.9	1257.30	17.82	345.85	86.36	113.68	19 12 14.2	657.30	20.51	339.42	
82.00	22 34 39.2	5817.81	29.31	273.53	89.09	90.89	24 11 37.0	5217.81	29.18	265.93	
86.00	19 38 15.8	1105.76	18.61	335.06	86.71	112.06	19 56 41.6	505.76	21.11	328.52	
86.00	22 52 28.5	5760.31	28.45	269.28	89.06	92.60	24 28 28.8	5160.31	28.53	261.73	
90.00	20 17 21.5	979.05	18.91	325.91	86.84	111.46	20 33 40.6	379.05	21.33	319.34	
90.00	23 20 19.8	5670.02	28.13	262.65	89.04	93.24	24 54 49.8	5070.02	28.30	255.13	
94.00	20 45 12.8	888.76	18.61	319.18	86.71	112.06	21 0 1.6	288.76	21.11	312.65	
94.00	0 3 10.1	5543.31	28.45	253.40	89.06	92.60	1 35 33.4	4943.31	28.53	245.08	
98.00	21 3 2.1	831.26	17.82	314.60	86.36	113.68	21 16 53.4	231.26	20.51	308.18	
98.00	0 50 9.1	5391.77	29.31	242.29	89.09	90.89	2 20 0.8	4791.77	29.18	234.68	
102.00	21 14 15.0	795.42	16.73	311.41	85.83	115.94	21 27 30.4	195.42	19.68	305.15	
102.00	1 39 52.3	5232.97	30.51	230.48	89.08	88.47	3 7 5.3	4632.97	30.07	222.81	
106.00	21 21 35.7	772.29	15.48	309.00	85.16	118.57	21 34 28.0	172.29	18.73	302.93	
106.00	2 28 31.5	5079.85	31.91	218.84	88.99	85.61	3 53 11.3	4479.85	31.11	211.10	
110.00	21 26 40.7	756.61	14.16	307.01	84.38	121.43	21 39 17.3	156.61	17.72	301.16	
110.00	3 14 5.3	4939.29	33.42	207.82	88.81	82.45	4 36 24.6	4339.29	32.23	200.03	
114.00	21 30 23.0	745.46	12.82	305.23	83.49	124.42	21 42 48.4	145.46	16.71	299.63	
114.00	3 55 46.0	4813.93	35.00	197.59	88.50	79.08	5 15 59.9	4213.93	33.39	189.77	
118.00	21 33 12.2	737.23	11.50	303.58	82.50	127.50	21 45 29.4	137.23	15.70	298.23	
118.00	4 33 27.4	4704.03	36.59	188.16	88.05	75.53	5 51 51.4	4104.03	34.56	180.34	
122.00	21 35 25.8	730.97	10.20	301.98	81.43	130.65	21 47 36.8	130.97	14.71	296.91	
122.00	5 7 24.2	4608.65	38.19	179.46	87.46	71.82	6 24 12.8	4008.65	35.72	171.67	

RAD 186.6474 VEL 66.0541 PTH 5.1048

DIFFERENTIAL CORRECTIONS

REFERENCE PLANE IS ECLIPTIC

TC3 0.9116 TDE 1.1956 TRA -3.9909 BAU 1.3306 TVH 17.4825 TTL -3.7693
 RC3 0.5836 RDE -1.6957 RRA -0.2213 FAU 1.2716 RVH 11.1927 RTL -0.4736
 FC3 -11.9717 FDE -2.3710 FRA -3.4759 BSP 4336. FVH -229.6007 FTL 16.8828
 BC3 1.0824 BDE 2.0748 BRA 3.9971 FSP -3639. BVH 20.7585 BTL 3.7989

MIDCOURSE EXECUTION ERRORS REF. PLANE IS ECLIPTIC

SGT 3263.6265 SGR 1516.9162 SG3 1997.5892
 RRT 0.3284 RRF -0.6821 RTF -0.4636
 SGB 3598.9294 R23 -0.5221 R13 -0.5069
 SG1 3310.0834 SG2 1412.6713 THA 10.6383

ORBIT DETERMINATION ACCURACY REF. PLANE IS ECLIPTIC

ST 1072.7094 SR 1014.6802 SS 1284.3291
 CRT -0.6309 CRS -0.3259 CST 0.2668
 LSA 1665.8664 MSA 980.7390 SSA 304.6679
 EL1 1333.9688 EL2 633.0944 ALF 137.5203

LAUNCH DATE MAR 14, 1972 0 HOURS 0 MIN 0 SEC 2441390.50000000
 ARRIVAL DATE DEC 12, 1973 0 HOURS 0 MIN 0 SEC 2442028.50000000