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INERTIAL GUIDANCE SYSTEM EVALUATION

TRAJECTORY RECONSTRUCTION (1)

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TRW SPACE TECHNOLOGY LABORATORIES

THOMPSON RAMO WOOLDRIDGE INC.

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GEMINI GT-3 INERTIAL GUIDANCE SYSTEM EVALUATION TRAJECTORY RECONSTRUCTION

4160-6047-TC000

17 May 1965

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1.0 INTRODUCTION

GEMINI flight GT-3 was successfully launched on 23 March 1965 from Complex 19 at Cape Kennedy, Florida. This was the first manned orbital flight and the second to carry an inertial guidance system in the GEMINI spacecraft.

The purpose of this report is to present the results of the inertial guidance system analysis performed during ascent and re-entry and to provide a trajectory reconstruction of the spacecraft during ascent and re-entry.

The contents of this report are as follows:

- Section 2.0 Provides a summary of the significant analysis results determined from this flight.
- Section 3.0 Provides a detailed description of the analysis performed during the ascent portion of flight. This includes a discussion of; a) inertial measurement unit (IMU) accelerometer and platform errors, b) the radio guidance - inertial guidance update procedure, and c) airborne computer computation errors.
- Section 4.0 Provides a description of the IMU error analysis performed during re-entry and the correlation between the ascent and the re-entry IMU analyses.

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- Section 5.0 Provides tabular listings of the trajectory reconstruction during ascent and re-entry.
- Section 6.0 Describes the external tracking system performance and quality.
 - Appendix Contains listings and plots of the thrust acceleration profile for ascent and reentry and plots of the ascent gimbal angles and attitude errors.



-COMMENTAL.

2.0 SUMMARY

The following is a brief summary of the major results from analysis of the data from this flight:

- 2.1 Excessive pitch type errors were noted during the ascent and re-entry modes of flight with magnitudes equivalent to the following constant pitch drift rates:
 - a. 1 deg/hr for the first 180 seconds of ascent.
 - b. 23 deg/hr after 180 seconds and at least until SECO.
 - c. 4.6 deg/hr during the entire post-retro phase of the re-entry mode.

Analyses of the observed errors and concurrent postflight tests on the GT-3 platform by Honeywell indicate the observed pitch errors are attributable to a malfunctioning Y gyro.

- 2.2 The major guidance system errors other than the pitch errors resulted from X and Z accelerometer scale factor errors of approximately 700 and 600 parts per million and bias errors of 340 and 180 ppm g respectively. Comparisons of calibration data indicated that the large scale factor errors would not have been present, resulting in considerable improvement in guidance velocity magnitude accuracy, had the latest preflight calibration data been used.
- 2.3 Analysis of the update procedure indicated negligible azimuth drifts during the ascent phase and successful accomplishment of the RGS/IGS update procedure.



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- 2.4 There was no evidence of an accelerometer count gain malfunction as observed on the GT-2 flight (see Reference 3).
- 2.5 The best estimate of the re-entry trajectory based upon corrected guidance data indicates that the spacecraft was 14 nautical miles North and 59 nautical miles West of the desired impact point at 799 seconds after retrofire. (This was at approximately 50,000 feet altitude and corresponds to the last available guidance or tracker trajectory point.) The IMU error while large made a relatively small contribution to the total impact miss.
- 2.6 In general, the quality of the tracking data was excellent. The quick look MISTRAM data was much improved compared to GT-2.

The principal discrepancy in the data received on this flight was a large systematic error, amounting to 2-3 feet per second in \dot{X} and 10-20 feet per second in \dot{Y} , noted between MISTRAM and GE Mod III late in flight.

Re-entry radar data was, in general, adequate with the exception of 3.18 data which exhibited very large systematic errors.



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3.0 ASCENT ANALYSIS

3.1 Introduction

Flight time history comparisons were made between guidance system telemetered quantities and external tracking data for the purpose of evaluating the Inertial Measurement Unit (IMU) accuracies and the navigation performance on GT-3. The IMU evaluation is based on thrust velocity comparisons (Figure 1) between the telemetered accumulated accelerometer count data properly scaled and biased and external tracking data converted to guidance thrust velocities (gravity removed). The guidance coordinate system is an inertial, orthogonal, right-handed system aligned with the launch site at inertial T_o and referenced to the center of the earth. The X and Z axes lie in a plane parallel to the geodetic tangent plane with the X axis defined by the launch azimuth positive downrange. The Y axis is positive down along the geodetic vertical and Z is directed so as to complete the right-handed X, Y, Z set.

Comparisons were also made between the telemetered total inertial position and velocity output of the airborne computer and external tracking data (Figures 2, and 3). These are called inertial or total comparisons and include airborne computer navigation errors such as caused by gravity approximations, truncation errors, etc. The difference between this set of comparisons and the thrust comparison set (DELTA-DELTA Comparisons, Figure 4) provides a measure of the airborne computer navigation error.



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Figure 4



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Comparisons were made using several sources of external tracking data including quick look MISTRAM I 10K and 100K, GE/Mod III/Final, GE Mod III/Burroughs, final MISTRAM, passive MISTRAM II and BET. The relative merits of these data sources are described in Section 6.0. The ascent analysis was based primarily on quick look MISTRAM I 100K data because of its superior quality. Details of the data processing required to obtain these comparisons are given in Reference 1.

The plots enclosed are referenced to liftoff which occurred 3.452 seconds after go inertial.

3.2 Guidance Error

The indicated guidance system error at SECO (334 seconds from liftoff) and equally valid at separation (359 seconds from liftoff) are given below. These values were obtained by examination of the position and velocity comparisons (Figures 1-4).

TABLE I

GUIDANCE ERROR AT SECO

| IMU Error | | Navigation Equation Errors | Total Guidance Error |
|-----------|------------------------|-------------------------------|-------------------------|
| ۵ż | 41.0 ± 1 | -3.7 ± .1 | 37.3 ± 1 |
| ΔŸ | -162.0 + 1.5 | + .50 + .1 | -161.5 + 1.5 |
| ۵ż | -2.5 <mark>+</mark> .1 | 15 [±] .1 | -2.6 + .1 |
| ΔX | 5100 ± 200 | 452 | 5552 ± 200 |
| ۵ч | -5200 + 50 | 111 | -5089 ± 50 |
| ΔZ | -1000 ± 50 | -568 | -1568 ± 50 |

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The column headed IMU ERROR represents the error contributed by the accelerometer and gyro sources, that headed NAVIGATION EQUATION ERRORS is the contribution due to various approximations within the airborne computer as observed from the Delta Delta Comparisons ^{*} and that titled TOTAL GUIDANCE ERROR is the sum of the two and represents the total IGS error. These total errors result in velocity magnitude and flight path angle errors at release of the following amounts

> $\Delta |V| = 12$ fps $\Delta r = .38$ deg

The following table is a comparison between the navigation errors observed on this flight and those predicted by preflight simulation.

TABLE II

GT-3 NAVIGATION ERRORS

| | Position (ft) | | | <u>v</u> | ft/sec) | |
|-----------|---------------|-----|------|----------|---------|------|
| | x | Y | Z | ż | Ŷ | ż |
| Actual | 452 | 111 | -568 | -3.7 | •5 | -1.5 |
| Simulated | 51 | 0 | -160 | -3.25 | 1.45 | 45 |

The observed differences are most likely attributable to computational errors caused by the large position errors observed on this flight.

• Level changes at 106 seconds in the X and Z curves are due to updating the initial earth rate conditions by the onboard computer as a result of the RGS/IGS update routine.

** The preflight simulation values were obtained by telephone from IBM.

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3.3 IMU Analysis

The thrust coordinate velocity comparison plots (Figures 5 and 6) indicate large steadily increasing X axis velocity errors throughout flight; and rapid negatively increasing Y velocity errors, beginning approximately 180 seconds from liftoff, abruptly reversing an increasing positive trend prior to that time. These anomalies are attributable primarily to excessive X and Z accelerometer bias and scale factor errors, and a pitch drift malfunction error occurring at approximately 180 seconds.

Preliminary observations of the data revealed that the major portion of the X error prior to 180 seconds could be attributable to an X accelerometer scale factor error; however, the velocity error trend beyond this period suggested the presence of an additional large magnitude error source. Since both the X and Y axis velocity comparisons indicated the presence of a large magnitude error source beginning mid-flight while the Z axis seemed unaffected, it was concluded that a pitch type malfunction must have occurred during the latter period of the ascent phase.

Because of this apparent malfunction it was necessary to perform a separate analysis before and after this occurrence. Table III summarizes the results of this analysis by listing error coefficients that could account for the ascent IMU error. This partitioning of the flight into time intervals lessened the accuracy with which the IMU errors could be isolated, but permitted the identification of the type of errors present (i.e., gyro versus accelerometer or drift versus measurement) and approximate equivalent magnitudes.



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TIME IN SECONDS FROM LIFT OFF



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TABLE III

ASCENT PHASE IMU ANALYSIS RECOVERED COEFFICIENTS

| Symbol | Error Source | Recovere | d Coefficient |
|----------------|---|----------|---------------|
| VOX | X accel initialization | 25 | fps |
| VOZ | Z accel initialization | -1.2 | fps |
| XSF | X accel scale factor | 687 | ppm |
| ZSF | Z accel scale factor | 522 | ppm |
| ^B x | X accel bias | 340 | ppm g |
| B y | Y accel bias | -22 | ppm g |
| Bz | Z accel bias | 180 | ppm g |
| YGCDR | Y gyro constant drift rate | 1.0 | deg/hr |
| DT | Time correlation error | 005 | Bec |
| YGCDR (180) | Y gyro constant drift rate initiated (180 seconds from go inertial) | 23 | deg/hr |



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3.3.1 Ascent Flight Prior to 180 Seconds

The first attempts at error source isolation involved the use of the Error Coefficient Recovery Program (ECRP) described in Reference 1. However, regressions using large error models such as that recommended in the GEMINI Accuracy Prediction Study, Reference 2, would not yield satisfactory results due to the similarity of error source propagations over this short time span. The usable data interval for regression which was very short (115 seconds) necessitated the making of a series of regressions using 5 to 10 term error models. The terms used in the regression were selected primarily because of their representative types of propagations. These included the following:^{*}

- 1. BX X accelerometer bias
- 2. BY Y accelerometer bias
- 3. BZ Z accelerometer bias
- 4. XSF X accelerometer scale factor
- 5. ZSF Z accelerometer scale factor
- 6. PHIY Platform misalignment about Y accel axis
- 7. PHIZ Platform misalignment about Z accel axis
- 8. YGCDR Y gyro constant drift rate
- 9. YGIAU Y gyro input axis unbalance
- 10. XQUAD X accelerometer quadratic non-linearity
- 11. ZXMSL Z accelerometer misalignment toward X
- 12. VOZ Z accelerometer initialization error

* Error source notations refer to the hardware definition of the axes which has the Y accelerometer and gyro along the negative Z computer direction; the Z accelerometer and gyro along the Y computer direction and the X accelerometer and gyro axes coinciding with the computer X axis.



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Figure 6 shows a fit obtained from one of the regression solutions. The error coefficients recovered from that solution which is typical of the regressions performed are indicated below.

| X accelerometer scale factor | 339 ppm |
|---|------------|
| Z accelerometer scale factor | 611 ppm |
| X accelerometer bias | 467 ppm g |
| Y accelerometer bias | 92 ppm g |
| Z accelerometer bias | -414 ppm g |
| Platform misalignment about Y accelerometer axes | 80 sec |
| Platform misalignment about Z accelerometer axes | -6.9 sec |
| Y gyro constant drift rate | 1.6 deg/hr |
| Z accelerometer initialization | .613 fps |

The above coefficients are similar to those recovered from other regressions with the exception of the X and Z accelerometer biases which varied between large positive and negative values with successive error model variations. This is attributable to their high correlation with the pitch type error sources. The above coefficients were used in the trajectory reconstruction discussed in Section 5 because they provided the best fit to the early data.

Most significant among the regressions was the consistent indications of X and Z accelerometer scale factor errors of approximately 500 and 600 ppm and Y gyro constant drift rates between 1 and 1.6 degrees per hour. Discussions of these results at the Honeywell Company revealed that the above scale factor errors were consistent with the differences noted between successive calibrations (see Section 3.5). It was also noted that the Y gyro demonstrated constant drift rates of approximately 1 degree per hour during postflight tests of the GT-3 platform.



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Based upon the above results, further attempts to isolate the IMU errors were accomplished by using what was considered to be the best available set of calibrations. These were the accelerometer scale factor and misalignment values of the Cape calibrations and the accelerometer biases obtained from the analysis of the free flight velocity errors. These velocity errors during portions of the catch-up and re-entry mode are shown in Figure 7.

Figure 7 is a plot of scaled and corrected thrust velocity during time intervals of flight where the spacecraft is in virtual free flight. Since there should be no net accelerometer velocity output, all the indicated trends were assessed to be incorrect accelerometer biases.

The velocity comparisons resulting from the new set of calibration data are shown in Figures 5 and 6 where the term CAPE CALIBRATIONS refers to the combined set mentioned above. With the removal of the apparent calibration errors, hand fits of the new comparison curves were accomplished. These resulted in the following error source coefficients.

| Z | accelerometer | initialization | -1.2 fps |
|---|---------------|----------------|------------|
| Y | gyro constant | drift rate | 1.0 deg/hr |
| X | accelerometer | initialization | 25 fps |
| X | accelerometer | scale factor | 267 ppm |

The residuals indicated in Figures 5 and 6 show approximately .6 fps difference between the hand fit curve and the data at 160 and 340 seconds. This difference is attributed to a 5 millisecond time correlation error. The hand fit results are not as exact a fit to the observed error as could be expected consistent with MISTRAM accuracies; however, they do substantiate the drift type errors recovered by the regression and also indicate the presence of additional X accelerometer scale factor error.

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3.3.2 Ascent Flight After 180 Seconds from Go-Inertial

The analysis of the later portion of the ascent flight consisted of determination of the time of malfunction occurrence, and isolation of the type of malfunction which caused the excessive Y axis velocity error.

Figure 6 which is a velocity comparison of the early portion of the ascent flight, shows a Y velocity error trend reversal beginning at approximately 180 seconds after go inertial. The X axis errors also show a rapid departure from the extension of the ECRP fit at this time. Observing the extension of the hand fit results between 180 and 200 seconds, it can be seen that the occurrence could have initiated at any time during that interval. Attempts to correlate this interval with flight events revealed only a rapid change in Y acceleration between 180 and 190 seconds from liftoff corresponding to the pitch down maneuver at that time (see Appendix I, Figure 19). Because of the uncertainties in establishing the exact time by visual means, the time the occurrence initiated was considered in the analysis to be between 165 and 200 seconds from go inertial with close establishment of the time to result from attempts to provide curve fits to the data.

* Honeywell is conducting studies to determine the behavior of the Y gyro response to the observed acceleration profile. Preliminary information indicates peculiar but not completely consistent gyro drift when the acceleration changes sign along the Y gyro spin axis.



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Efforts to isolate the type and magnitude of the malfunction were based upon the assumption that the malfunction could be approximated by a single stationary error source initiated at one instant of time. Therefore, based upon this assumption, the IMU error simulation program (see Reference 1) was modified to generate unit error propagations at discrete times after go inertial. Figure 8 presents plots of three of the error source propagations generated by the program. These are pitch type error sources including Y gyro constant drift rate, Y gyro input axis unbalance and platform misalignment about the Y accelerometer axis. These were considered the more probable based upon comparing their propagations with the observed flight X and Y axis velocity errors.

A composite hand fit to the Cape calibration velocity comparisons was accomplished resulting in the following recovered coefficients from the entire ascent phase.

| Z | accelerometer | initialization | -1.2 fps |
|----|-----------------|-------------------------------|-------------|
| Y | gyro constant | drift rate (from go inertial) | 1.0 deg/hr |
| x | accelerometer | initialization | 25 fps |
| X | accelerometer | scale factor | 267 ppm |
| Y | gyro constant | drift rate | 23 deg/hr |
| | beginning at | 177 seconds | |
| | (180 from go : | lnertial) | |
| T: | Ime correlation | a | 005 seconds |





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Figure 8





The hand fit curve shown in Figures 5 and 6 resulted from the above coefficients with the exclusion of time correlation error which accounts for the residuals at 160 and 340 seconds. The residual at 200 seconds undoubtedly is due to the non-stationary nature of the malfunction and is a direct measure of the inadequacy of the basic stationary error assumption.

3.4 Preflight Calibrations

With the exception of X accelerometer bias, the calibrations used during flight, were those obtained at Honeywell on 26 February 1965. Another set of calibrations were obtained at Cape Kennedy prior to flight. These calibrations showed all the scale factor and X accelerometer bias values considerably different from those of the earlier set; however, only the X accelerometer bias value of the original (2-26-65) set was changed. Later X axis accelerometer calibrations showed additional large shifts in the X accelerometer bias and although the latest value was not flown, it was used in the ground alignment of the platform. The Honeywell and Cape calibration bias and scale factor values are shown in Table IV which also presents the accelerometer bias values determined from the postflight analysis of free flight velocity errors (Figure 7).

Table IV also indicates the difference between the Cape and Flight values the most significant of which are large magnitude scale factor changes of the three accelerometers. The X accelerometer was modified during the period between calibrations in an attempt to prevent the recurrence of the accelerometer malfunction noted on the GT-2 mission. This modification may provide an explanation for the observed variations of X accelerometer bias and scale factor; however, there are no obvious explanations for the 500 and 650 ppm Y and Z accelerometer scale factor differences between measurements. (1 σ specification is 130 ppm).



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ACCELEROMETER BLAS AND SCALE FACTOR SUMMARY

77.6 ppm g 60 -36.2 ppm 657 ppm Flt-Cape 420 ppm 522 ppm 0 Not Determined Not Determined Not Determined FF Analysis -.1523 .223 .281 same as flt. .10005550 .09023550 007447700. .218250 .248254 3-12-65 Cape +.18 (approx.) same as flt. as flt. same as flt. same as flt. same as flt. Honeywell 2-26-65 same .09749790 fps/pulse .1000975J fps/pulse .09029480 fps/pulse -.2616580 pulse/sec .2300020 pulse/sec .2233280 pulse/sec Flight Z accel. bias X accel. bias Y accel. bias 5 Ы Z accel. SF X accel. accel. ×



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Except as otherwise noted, position and velocity comparisons were made by using the Flight calibrations. A set consisting of Cape calibration scale factors and misalignment terms and free flight determined biases was also used in the analysis of IMU performance. Figures 5 and 6 present velocity error curves resulting from the two sets of calibrations. These show a considerable decrease in the X axis velocity error due to using a later set of calibrations. A significant change in the early Y velocity error is also evident. Although the bias values used in generating the curves were obtained from postflight analyses, the major improvement in IMU errors is attributable to having the latest determined accelerometer scale factors. Table V shows the improvement in the error at SECO by using these Cape values.

TABLE V

| ERROR AT | SECO DUE TO CALIBRA | TIONS | VELOCITY | ERROR | AT SECO |
|-----------------------|-------------------------------------|-------------|----------------|-----------|-----------|
| Error at | SECO (Flight Calibr 2/26/65 | ations) | x 43 | ¥ -127 | Z -1.4 |
| X accel. | scale factor | -420 ppm | -10.4 | 0 | 0 |
| Y accel. | scale factor | -652 ppm | 0 | 0 | + .23 |
| Z accel. | scale factor | -522 ppm | о | +3.6 | 0 |
| X accel. | bias | 0 | 0 | 0 | 0 |
| Y accel. | bias | +36.6 ppm g | 0 | 0 | - •59 |
| Z accel. | bias | -77.6 ppm g | 0 | +84 | |
| Error at Calibrati | SECO (Ca pe ions) 3/12/65 | | 32.6 | -122.6 | - 1.77 |

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The improvements resulting from Cape calibrations correspond to 11 fps total velocity and negligible difference in flight path angle.

3.5 Azimuth Update

An azimuth alignment correction is calculated at three separate times by the onboard computer. On the first pass through the navigation equations after platform release, the roll gimbal.angle reading is compared with the desired value and the difference is used as a correction to the intended flight azimuth. This correction is called $\Delta \eta_x$ where a positive value implies that the platform is rotated clockwise from the desired azimuth.

The additional azimuth corrections are calculated during flight at 100 and 140 seconds after liftoff. These are calculated by comparing the crossrange (Z direction) velocity as measured by GE/Burroughs with that derived from the airborne system and attributing the residual to a platform misalignment.

The calculated updates are not telemetered; however, they are obtained quite accurately from the data analysis. Table VI summarizes the updates determined by the following methods:

- 1. Calculated by simulating the inflight calculations.
- 2. Calculated from the jumps in the inertial velocity comparisons or the DELTA DELTA curve.
- 3. Derived by IBM during their postflight simulation.



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TABLE VI

AZIMUTH UPDATE

| Time (sec) | Flt Calc. Simulation | DELTA DELTA | IBM | Units |
|------------------------|-------------------------|----------------|----------------|--------------------|
| 0 | .0004264 | .000176 | .000176 | radians |
| 100 | 009244 | 009182 | 009257 | radians |
| 140 | +.000164 | 0 | +.000106 | radians |
| Total (100 and 140) | 009080 .52 | 009182 .525 | 009151 .525 | radians degrees |

The calculated update values show agreement to within the .1 fps velocity least count accuracy which is equivalent to .00008 radians. The values indicated at 100 seconds include those at 0 seconds. The value for zero seconds in the DELTA DELTA column is that of IBM.

The Z axis velocities at 100 and 140 seconds were determined from the MISTRAM I data and compared to the GE/Burroughs telemetered values. The MISTRAM velocities were 348.39 and 198.55 at 100 and 140 seconds, respectively, which are in good agreement with the GE/ Burroughs values of 348.5 and 199.0 at the corresponding times. The net azimuth update corrections have been applied in all the plots included in this report.

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The history of initial alignment error is

GT-2 $\eta_x = -.29^\circ$ GT-3 $\eta_x = -.52^\circ$ $l \sigma(specification) \eta_x = .25^\circ$

It is understood that the major contribution to the specification value is due to the inaccuracy in slewing the platform to a new azimuth as a result of updating the Agena orbit. On these two non-rendezvous flights a fixed azimuth was flown and the misalignment angles reflect only the basic inability to align the inertial platform with the outside world, not the slewing error. Since the errors observed on these two flights are already as large or larger than would be expected, it appears that when the slewing error is added, the total alignment uncertainty will be considerably larger than the present specification value.



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4.0 RE-ENTRY ANALYSIS

4.1 Introduction

Analysis of the IMU performance during re-entry was based primarily on position comparisons in re-entry guidance coordinates. The guidance coordinate system, during re-entry is defined by the DCS inserted state vector (spacecraft position and velocity) valid at the intended time of retrofire. The guidance X axis is directed along the total inertial velocity vector, the Y axis is positive downward along the position vector from the earth's center and the Z axis completes the right handed set.

The tracking data, available for the analyses, were obtained from four C-band tracking radars. These covered the time interval between 455 and 800 seconds after retrofire or the whole atmospheric re-entry period. The lack of tracking data prior to this interval limited the isolation of re-entry mode initialization errors. It is expected that this problem will be solved on future flights by the timely arrival of high rate tracking data during intervals just prior to and following retrofire.

The method used in the analyses consisted of computing the guidance thrust velocities, as was done during the ascent data reduction. A re-entry trajectory reconstruction program was then used to generate the S/C trajectory using the guidance system output. This program has the capability of adjusting thrust data for gravity to form total inertial positions and velocities. These quantities were then compared with radar data to form the comparisons shown in Figures 9 and 10.

4.2 Impact Point Determination

Table VII shows the spacecraft position at 798.9 seconds as indicated from PCM telemetry, radar, STL reconstructed guidance data, and the STL reconstructed trajectory using corrected guidance data (see Sections 4.3 and



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5.0). The time chosen corresponds to the last available reconstructed trajectory data point. The intended impact point is also presented.

Table VII

INDICATED POSITION SUMMARY

| | | Deg. Latit | tude | Deg. Long. | Altitude |
|----|---|--------------|------------|------------|----------|
| | | (Geocentric) | (Geodetic) | (Geodetic) | (feet) |
| | T = 798.9 | | | | |
| 1. | Radar (7:18) | 22.364 | 22.499 | -70.840 | 51148 |
| 2. | Reconstructed Trajectory (Corrected) | 22.373 | 22,508 | -70.838 | 50270 |
| 3. | Guidance Telemetry | 22.355 | 22.490 | -70.848 | 359 |
| 4. | Reconstructed Trajectory (Uncorrected) | 22.369 | 22.504 | -70.880 | 12338 |
| 5. | Intended Impact | 21.89* | 22.025 | -69.88* | 0 |

*Obtained from Canarvon MDIU print.

The corrected trajectory (2) which provides the best estimate of the spacecraft position indicates that the difference between the spacecraft position at 799 seconds and the intended impact was .483 degrees in latitude and -.958 degrees in longitude. The altitude at this time was 50,270 feet. This difference corresponds to the following:



POSITION ERROR AT 799 SECONDS RELATIVE TO INTENDED IMPACT

| North | West | Downrange | Crossrange |
|---------------|---------------|----------------|-----------------|
| 29 ± .6 n.mi. | 53 ± .2 n.mi. | 59 n.mi. short | 13.6 n.mi. left |

The down and crossrange values are based upon a 115.7 degree heading from North which was that determined just prior to re-entry. The uncertainties assigned are combinations of the differences between the reconstructed trajectory and radar positions and rough estimates of radar accuracy.

The difference in Table VII between the reconstructed guidance (2) and the onboard computed value (3) is attributable to errors in either the airborne computations or the reconstruction initialization. Since the longitude difference was nearly constant over the entire time interval, an initialization error is suspected.

The altitude difference between the uncorrected sources (3 or 4) and the actual trajectory (1 or 2) is due primarily to the pitch error contained in the guidance data.

4.3 IMU Analysis

Figures 9 and 10 present comparisons of IGS data with positions and velocities obtained from the four radars. The following table gives the position and velocity errors at 455 and 800 seconds from retrofire as indicated by the comparisons. These times correspond approximately to the beginning and end of atmospheric re-entry (see Figure 21).

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INERTIAL GUIDANCE SYSTEM ERROR DURING RE-ENTRY

| | Pos | ition (ft | ;) | Veloci | ty (ft/ | sec) |
|------------------------------|--------|-----------|-------|--------|----------|------|
| Time From Retrofire (sec) | X | Y | Z | x | <u>Ý</u> | Ž |
| 455 | -4750 | -8000 | +7000 | 9 | -6.5 | 0 |
| 800 | -37500 | +17500 | -4500 | -300 | 200 | -120 |

The major portion of the error indicated at 455 seconds is due to one or more of the following causes:

- a. The initialization state vector, calculated on the ground and transmitted to the S/C is incorrect.
- b. The platform is incorrectly aligned, leading to a directional error in the retromaneuver impulse.
- c. There is a data processing error, the most likely of which is a time correlation error.

Figures 11 and 12 were obtained by initializing the guidance data, at the time of the first radar data point (455 seconds), with radar positions and velocities. These were generated in order to determine the secondary effects of initialization errors upon the gravity computations. Comparison of the data indicates that the secondary effects were minor relative to the total error.



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Figure 12



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The manner in which the errors increase after 455 seconds is indicative of guidance system IMU and/or alignment errors. A pitch type error was suggested by the approximately asymetric X and Y position error propagations. The philosophy involved in isolating the major contributing error sources was to first extract, from the error curves, the effects of those IMU errors which were considered as "known". These consisted of accelerometer bias and Z accelerometer scale factor errors recovered from the ascent analysis and verified somewhat by the preflight calibration differences. A fit to the residual position error was then accomplished from which a -4.6 degree per hour Y gyro constant drift rate was recovered as the major pitch error. An alternate hand fit was accomplished which recovered an initial pitch misalignment of -2900 sec as the major pitch error. Either of these recovered coefficients or combinations of the two could provide an explanation of the observed errors; however, isolation of the exact error source is difficult due to high correlation among error sources.

The drift rate error is considered the more probable because it and other recovered coefficients of the fit from which it was derived are somewhat closer in agreement with the ascent analysis results. The recovered coefficients from both fits are summarized in Table VIII.

Alternate fits were also accomplished for the Z axis error. However, both indicated a large initial platform misalignment about the X accelerometer axis as the major error source.

The fits to the re-entry data are tabulated in Table VIII. The coefficients labeled FIT 1 and FIT 2 are associated with the X and Y axes and those labeled FIT 3 and FIT 4 are associated with the Z axis error. The coefficient sets represented by FIT 1 and FIT 3 were used to compensate the IGS data for reconstruction of the re-entry trajectory. The position error propagation of these are shown as a dashed curve on the plots of Figure 11.

CONHDENTIAL

TABLE VIII

RE-ENTRY ANALYSIS RECOVERED ERROR SOURCE COEFFICIENTS

| (1) <u>X and</u> | d Y Axis Error Source | | <u>FIT 1</u> | FIT 2 | UNITS |
|------------------|---|--------------------|--------------|-------|--------|
| (A) | Knowns from Ascent Analysis | | | | |
| | X accelerometer bias | (B X) | 340 | 340 | ppm g |
| | Z accelerometer bias | (BZ) | 180 | 180 | ppm g |
| | Z accelerometer scale factor | (ZSF) | 611 | 611 | ppm |
| (B) | Recovered From Re-Entry Analysi | <u>.S</u> | | | |
| | Y gyro constant drift rate | (YGCDR) | -4.59 | - | deg/h: |
| | Platform misalignment about Y accelerometer axis | (PHIY) | - | -2920 | sec |
| | X accel scale factor | (XSF) | 712 | 455 | ppm |
| | Initial Errors at Retro | | | | |
| | X guidance position | (x o) | -7816 | -7870 | ft |
| | Y guidance position | (YO) | -4475 | -4475 | ft |
| | X guidance velocity | (v _{x0}) | 4.8 | 3•7 | fps |
| | Y guidance velocity | (V _{YO}) | -9.1 | -5.2 | fps |
| (2)Z <u>Axis</u> | Error Source | | FIT 3 | FIT 4 | UNITS |
| (A) | Known From Ascent Ascent Analy | sis | | | |
| | Y accelerometer bias | (BY) | -22 | -22 | ppm g |
| (B) | Recovered from Re-Entry Analys | <u>is</u> | | | |
| | Platform misalignment about X accelerometer axis | (PHIX) | -1080 | -886 | sec |
| | Platform misalignment about Z accelerometer axis | (PHIZ) | - | 200 | sec |
| | Initial Errors at Retro | | | | |
| | Z position | (ZO) | 4443 | 4443 | ft |
| | Z velocity | (v_{zo}) | -4.74 | -4.74 | fps |



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5.0 TRAJECTORY RECONSTRUCTION

This section provides a trajectory reconstruction for ascent from liftoff to 370 seconds (11 seconds after separation) and for re-entry from 462 seconds to 799 seconds after retro (16865 to 17202 seconds after liftoff).

The data is provided in an ECIG coordinate system which is a right-handed inertial Cartesian coordinate system with the origin at the center of the earth. The Z axis is the North polar axis, the X-Y plane is the equatorial plane with the X-Z plane containing the Greenwich meridian at Go Inertial $(14^{h} 23^{m} 56.612^{s})$ time for the ascent segment, and time of retrofire $(18^{h} 47^{m} 47.612^{s} \text{ GMT})$ for re-entry.

The ascent reconstruction consists of corrected guidance data from 0 to 86.687 seconds and quick look 100K MISTRAM data from 89.109 until 369.765 seconds. Section 3.0 provides a description of the corrections that were applied to the guidance data.

The re-entry reconstruction was derived from corrected guidance data. Section 4.0 provides a description of the corrections applied. Special parameters are also provided for the re-entry trajectory reconstruction. These consist of velocity magnitude, relative flight path angle, altitude and geodetic latitude and longitude. The first three special parameters are plotted in Figure 13.



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ASCENT TRAJECTORY RECONSTRUCTION



| | | | TIME IN SECON | CS FROM LIFTOF | u. | |
|--------|----------|-----------|------------------|----------------|----------|----------------|
| TIME | Y | ٨ | 1 | X-00T | 1-001 | |
| 2.484 | 3027992 | -18152002 | 9927987 | 1326.885 | 200.566 | 11.396 |
| 4.781 | 3031043 | -19151565 | 9928026 | 1329.632 | 180.405 | 22.494 |
| 7.515 | 3034634 | -18151105 | 9928107 | 1333.128 | 155.342 | 36.873 |
| 3.812 | 3037749 | -18150774 | 9928206 | 1336.440 | 133.107 | 49.839 |
| 12.124 | 3040843 | -18153493 | 9928337 | 1339.448 | 109.718 | 63.215 |
| 14.437 | 3043945 | -18150267 | 9928499 | 1342.911 | 85.502 | 77.408 |
| 16.755 | 3047075 | -18150096 | 9928696 | 1346.206 | 60.717 | 32.016 |
| 19.515 | 3050793 | -18149973 | 9928975 | 1350.367 | 29.136 | 110.694 |
| 21.823 | 3053909 | -18149937 | 6426266 | 1354.248 | 1.853 | 127.177 |
| 24-093 | 3056991 | -18143964 | 9929556 | 1358,389 | -26.010 | 144.052 |
| 25.433 | 3060257 | -14150063 | 9329925 | 1365.822 | | 162.950 |
| 28.906 | 3063556 | -18150235 | 9930342 | 1377.088 | -86.521 | 183.594 |
| 31.296 | 3066967 | -18150476 | 99308 <u>0</u> 8 | 1392.539 | -117.133 | 206.232 |
| 33.703 | 3070241 | -18150797 | 9931332 | 1412.670 | -147.399 | 229.416 |
| 36.109 | 3013661 | -18151191 | 6161666 | 1436.C96 | -179.037 | 253.863 |
| 33.494 | 3077109 | -18151653 | 9932546 | 1463.448 | -210.169 | 279.383 |
| 43.874 | 3080645 | -19152192 | 9933248 | 1495.249 | -241.092 | 307.595 |
| 43.265 | 3084252 | -18152805 | 934018 | 1531.444 | -271.128 | 335.416 |
| 45.624 | 3087922 | -14153480 | 934846 | 1571.629 | -301.384 | 366.372 |
| 43.015 | 3031731 | -18154237 | 9735761 | 1615.514 | -331.603 | 398.507 |
| 50.393 | 3.795624 | -18155361 | 9936747 | 1663.508 | -362.117 | 432.139 |
| 52.743 | 3093609 | -18155951 | 9937806 | 1715.720 | -392.065 | 466.037 |
| 55.124 | 3103751 | -18156917 | 9938954 | 1772.593 | -421.135 | 500.577 |
| 57.499 | 3108033 | -18157951 | 9940189 | 1834.178 | -448.922 | 539.479 |
| 53.906 | 3112527 | -18153061 | 9341534 | 1901.734 | -473.994 | 578.603 |
| 62.281 | 3117129 | -18160214 | 9942956 | 1973.939 | -497.443 | 618.390 |
| 64.587 | 3121970 | -18161439 | 4644466 | 2051.167 | -519.616 | 660.155 |
| 72.343 | 3138671 | -18165689 | 9950053 | 2325.759 | -588.052 | 795.163 |
| 74.718 | 3144329 | -18167106 | 9951995 | 2422.123 | -605.243 | 841.046 |
| 77.093 | 3150201 | -18168564 | 9954047 | 2523.341 | -621.711 | 383.857 |
| 73.484 | 3156357 | -18173069 | 9956235 | 2627.766 | -637.121 | 942.354 |
| 81.890 | 3162303 | -18171619 | 9958576 | 2735.290 | -650.043 | 1002.536 |
| 84.281 | 3169430 | -18173136 | 9961051 | 2847.167 | -661.448 | 1047.712 |
| | | | | | | |

| | | | TIME IN SECON | DS FROM LIFTOFI | u | |
|------------------|-----------|-----------|---------------|-----------------|----------|-------------------|
| TINE | | | 1 | X-D0T | Y-D0T | Z-D0T |
| | 102425 | -18176355 | 9366505 | 3090-277 | -679.151 | 1203.650 |
| 69.109 31.515 | 20001010 | 0001101- | 9969687 | 3219-434 | -686-421 | 1275+146 |
| | 2100166 | -18179670 | 9972665 | 3355.215 | -693.305 | 1349.392 |
| 106.66 | - 0014476 | 7219191- | 600366 | 3496.326 | -700.193 | 1424.980 |
| | 22021020 | -18187641 | 9978684 | 3608-523 | -703-706 | 1484.32C |
| 10100 | 1000000 | -18184350 | 9982375 | 3761.970 | -707.851 | 1563.739 |
| | 2222205 | -18186067 | 9986261 | 3922.407 | -709.511 | 1645.516 |
| 100.60 | C781762 | -18187775 | 6160666 | 4089-211 | -709.273 | 1728.228 |
| 168.61 | 2752022 | -18189504 | 9994636 | 4253.927 | -710.143 | 1814.295 |
| 10.000 | 2262565 | -18191226 | TE19999 | 4443-830 | -711.495 | 1902.349 |
| 047•01 | 2272492 | -18192946 | 10003820 | 4632-099 | -709.267 | 1390.389 |
| - 36 - 34 | DEDIACE | -18194645 | 10008749 | 4830.472 | -701.387 | 2030.419 |
| 12 521 | ACKADAC E | -18196319 | 10013865 | 5035.057 | -689.265 | 2172.344 |
| 10 052 | 2200266 | -18197970 | 10019241 | 5251 . 440 | -673-371 | 2267-675 |
| 27.276 | 112221 | -18199579 | 10024853 | 5475-004 | -654.238 | 2367.101 |
| 781 | 3335701 | -18261129 | 10030671 | 5705.528 | -634.446 | 2469 . 348 |
| 27.203 | 9089455 | -18202641 | 10036780 | 5946.483 | -613-630 | 2576.340 |
| 707 DC | 3364512 | -18204101 | 10.043153 | 6196-803 | -591.745 | 2687.034 |
| 120.01 | 2579755 | -18205497 | 10049755 | 6455+401 | -568.715 | 2301.181 |
| 34.453 | 3395692 | -18206846 | 10056683 | 6726.578 | -544.517 | 2920-578 |
| | 4020140 | -12702134 | 10063905 | 7009-513 | -518-945 | 3044-758 |
| | 34.29541 | -18209350 | 10071396 | 7303.112 | -491.903 | 3173.402 |
| 107.14 | 2447539 | -18210508 | 10079234 | 7511.552 | -463.391 | 3308.612 |
| 102 | 344422 | -18211594 | 10087416 | 7934-751 | -433-272 | 3449-806 |
| | 2446175 | -18212610 | 10096005 | 6275.750 | -400.567 | 3598 • 664 |
| 200.00 | 1506509 | -18213533 | 10104848 | 8628•445 | -365.902 | 3752.379 |
| | DAAAA | -12214820 | 10119702 | 9159-232 | -301-524 | 909-1195 |
| 51012 | 3540965 | -18215112 | 10123734 | 9182.355 | -275.256 | 3976.840 |
| 510.00 | 3571867 | -18215695 | 10133187 | 9262.441 | -215.075 | 3993.901 |
| 101-001 | 1504754 | -18216138 | 10142783 | 9345+355 | -153.133 | 3992-048 |
| | 2414443 | 16481581- | 10152399 | 9436.332 | -90.455 | 4000-459 |
| | | -18216572 | 10161973 | 9516.754 | -27.299 | 4009.273 |
| 102.745 | 101217 | -18216562 | 10171506 | 9604-327 | 35.720 | 4018-702 |
| | | | | | | |

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| | | | TIME IN SECO | NDS FROM LIFTOF | u. | |
|----------|---------|-----------|--------------|------------------|----------|-------------------|
| TIME. | × | 7 | 1 | X-D0T | Y-D0T | Z-00T |
| 70.499 | 3708039 | -18216096 | 10190580 | 9783.345 | 161.225 | 4039.317 |
| 72-906 | 3731743 | -18215626 | 10200311 | 7271-5 88 | 231-542 | 4047.922 |
| 75.312 | 3755626 | -18214975 | 10210058 | 9974.125 | 311.052 | 4052.910 |
| 77-718 | 3779744 | -18214121 | 10219812 | 10071.872 | 400.124 | 4053.577 |
| 80-124 | 3804098 | -18213042 | 10229562 | 10170-203 | 498.447 | -4049-890 |
| 32.593 | 3829330 | -18211676 | 10239551 | 10270.721 | 609.543 | 4041.100 |
| 35.046 | 3854648 | -18210039 | 10249449 | 10370.578 | 725.875 | 4 3 2 9 . 1 6 7 |
| 37-515 | 3880375 | -18208100 | 10259331 | 10472-015 | 845.195 | |
| .93.187 | 3897941 | -18206619 | 10266089 | 10541.427 | 926.693 | 400P.321 |
| 91.640 | 3923926 | -18204138 | 10275937 | 10644.452 | 1047.111 | 3996.173 |
| 601-10 | 3350334 | | 10285758 | 10749.454 | 1159.083 | 3984 . 348 |
| 36.562 | 3976833 | -18198445 | 10295518 | 10855.335 | 1291.061 | 3973.044 |
| 99.015 | 4003594 | -18195128 | 10305251 | 10952.731 | 1413.507 | 3452.301 |
| 31-434 | 4030794 | -18191485 | 10315021 | 11072.707 | 1537.535 | 1352.072 |
| 169.EC | 4058092 | -18187562 | 10324704 | 11183.698 | 1651.063 | 3942.559 |
| 36.436 | 4085342 | -18183307 | 10334426 | 11297.188 | 1785.933 | 3933.645 |
| 38.874 | 4113874 | -18178744 | 10344127 | 11412.557 | 1911.392 | 3925.315 |
| 11.329 | 4142013 | -18173901 | 10353746 | 11523.110 | 2036.661 | 3317.677 |
| 13.796 | 4170622 | -18168717 | 10363409 | 11649.329 | 2163.297 | 3910.616 |
| 16.249 | 4199344 | -18163255 | 10372995 | 11769.007 | 2289.959 | 3904 . 14P |
| 18-718 | 4228551 | -18157444 | 10382626 | 11892 492 | 2418-006 | 3å98.335 |
| 20.406 | 4248692 | -18153289 | 10389201 | 11976.159 | 2506.025 | 3894.67C |
| 22.874 | 4278419 | -18146942 | 10398810 | 12105.351 | 2635.573 | 3839.763 |
| 25-328 | 4308273 | -18140318 | 10408347 | 12234.014 | 2764.932 | 3235.528 |
| 27-796 | 4338633 | -18133331 | 10417934 | 12356.023 | 2895.983 | 3881.893 |
| 30.265 | 4369332 | -18126019 | 10427514 | 12500-517 | 3027.801 | 3878.851 |
| 32-718 | 4400164 | -18118430 | 10437026 | 12636-678 | 3159.753 | 3876.343 |
| 35.187 | 4431533 | -18110464 | 10446593 | 12776-500 | 3293.577 | 3874.475 |
| 37.640 | 4463048 | -18102220 | 10456096 | 12917.785 | 3427.715 | 3873.111 |
| 40-139 | 4495117 | -18093590 | 10465657 | 13062-576 | 3564.321 | 3872.202 |
| 42.562 | 4527341 | -18084678 | 10475155 | 13209.395 | 3701.594 | 3871.886 |
| 45.03L | 4560137 | -18975367 | 10484714 | 13359.904 | 3841.359 | 3871.979 |
| \$7-\$84 | 4593097 | -18065772 | 10494213 | 13512-431 | 9981.913 | 3672-702 |
| 60,171 | 68031A4 | -12052070 | 10500740 | 136 01361 | | |

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| | | | TIME IN SECON | IDS FROM LIFTOFF | 14 | |
|--------|--------------------|-----------------------|---|--------------------------|-----------------|----------|
| TIME | × | | 7 | X-D0T | Y-D0T | Z-00T |
| 1-640 | -4649806 | -18048721 | 10510313 | 13777.758 | 4223.989 | 3875-045 |
| 660.4 | 4683801 | -18038181 | 10519822 | 13938.727 | 4369-143 | 3977.224 |
| 6.562 | 4718416 | -18027212 | 10529397 | 14104.122 | 4517.642 | 3680.002 |
| 9.015 | 4753221 | -18015947 | 10538920 | 14272-053 | 4666.692 | 3883.622 |
| 1-484 | 4788667 | -18004239 | 10548513 | 14444.551 | 4818-793 | 3897.962 |
| 3.953 | 4824544 | -17992153 | 10558117 | 14621.113 | 4972.785 | 3393.C46 |
| 6.406 | 4860631 | -17979764 | 10567674 | 14800.589 | 5127.943 | 3898.932 |
| A_874 | 4897397 | -17966910 | 10577308 | 14965-450 | 5286.177 | 3305.758 |
| 1.328 | 4934388 | -17953746 | 10586898 | 15173-555 | 5446.037 | 3913.366 |
| 3.796 | 4972086 | -17940101 | 10596570 | 15367.515 | 5608.674 | 3922.154 |
| 6-249 | 5010026 | -17326141 | 10606203 | 15565.211 | 5773.287 | 3931.731 |
| 8.718 | 5048704 | -17911682 | 10615923 | 15769.384 | 5941.155 | 3942.758 |
| 0.390 | 5075186 | -17901653 | 10622521 | 15916.810 | 6056.373 | 3950.927 |
| 2.859 | 5114728 | -17886490 | 10632292 | 16124.452 | 5228.372 | 3964.213 |
| 5.312 | 5154550 | -17870999 | 10642034 | 16342.787 | 6401.707 | 3978.919 |
| 7.78[| 5195174 | -17854976 | 10651877 | 16568.771 | 5579•732 | 3934.965 |
| 0.234 | 5236102 | -17838615 | 10661698 | | 5759-420 | 4012.424 |
| 2-687 | C091125 | -1/87180- | 50C1/001 | 55555111 | 7122 7420 | 27691514 |
| 5.124 | 5319433 | -17804661 | 10681416 | 1/292.855 | 1121.945 | 4074 404 |
| 7.562 | 5361866 | 450/8//I- | 17616001 | CE1 +CEC/1 CE0 -CEC/1 | 101001C1 | 6008 71C |
| 486.6 | | | 10710017 | 1 8056 435 | 7700.758 | 4123.436 |
| | | 7011())1- 7212221- | 2 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | | 7897.547 | 4149.750 |
| | 2400700 5521446 | 06166111- | 11102201 | 18531-670 | 8089.375 | 4177.957 |
| 0.000 | 5574083 | -17695718 | 10739807 | 18874-566 | 8291.559 | 4207-915 |
| 7.37A | 5633078 | -17670042 | 10752694 | 19263.105 | 8565.054 | 4251.331 |
| | 5477078 | -17649987 | 10762565 | 19571-225 | 8781-103 | 4296.505 |
| 759-9 | 5723294 | -17629568 | 10772454 | 19889.937 | 8997.747 | 4325.673 |
| 9.249 | 5769674 | -17608502 | 10782506 | 20224.157 | 9224.165 | 4367.690 |
| 1.578 | 5817166 | -17586751 | 10792726 | 20575-512 | 9459.753 | 4413.167 |
| 3-874 | 5864837 | -17564753 | 10802919 | 20938.058 | 9697.551 | 4462.782 |
| 6.187 | 5913694 | -17542042 | 10813300 | 21320-131 | 9946.352 | 4516.316 |
| P. 499 | 5963457 | -17518747 | 10823811 | 21720-689 | 10204-293 | 4573-874 |
| | | | | | | |

| TIME X V=D01 Z=D01 11ME X Y Z X=D01 Z=D01 11ME X Y Z Z=Z454.65 10832.83 4507.530 11ME X 10811469 Z=2130.653 10832.843 4607.150 11ME X Z Z Z Z Z 11ME Z Z Z Z Z Z< | 1000 1000 1000 | 100% 0110 8024 | | GEMINI TRAJ | ECTORY IN ECIG | | PAGE | 5 |
|---|----------------------|--------------------|-----------|--------------|-----------------|---------------|------------|-----|
| THE X Z X-DOT Z-DOT Z-DOT 1.1918 600565 -174,00860 1034314 22734,4501 10982,493 4736,403 1.1918 610565 -174,00860 1034134 22734,4501 10982,493 4507,4303 1.703 6195635 -174,00860 1034134 22734,4501 10982,493 4507,4303 1.703 6195635 -174,00476 1081144 22715,118 110982,493 4508,731 1.703 6190201 10391404 22715,118 110982,493 4508,731 1.703 6190210 -11736023 10892,225 2205,230 11034,451 1.704 6400210 -11736043 10936,443 2264,453 11226,495 1.205 660170 10936443 22817,536 1104,411,7 4263,463 1.205 660170 10956953 110968443 2264,0,510 11274,498 1.205 661703 100956954 22817,556 11640,413 4157,201 1.205 6994500 11794,498 4157,201 4265,463 1.205 61945056 110956958 22440,5512 11640,413 1.205 61945056 110005688 22640,5512 11694,413 | | | | TIME IN SECU | NCS FROM LIFTOF | щ | | |
| -722 -7234.015 103596.52 4756.302 1111 6035687 -1740086 1034371 22734.015 10932.842 1111 6133473 -17400876 10871.455 10932.842 4577.350 1111 6133473 -17400476 10871.455 10932.842 4573.455 1111 6133473 -1736672 10871.455 10932.845 4583.735 1111 6133431 -1736672 10932.845 22655.720 110932.845 1111 613311 -1736672 10342515 22655.730 11265.987 1111 603131 -17266.987 11001.823 4580.731 1111 61331.51 11256.687 4786.791 4580.731 1111 6133.51 11266.987 4787.967 4497.545 1111 6133.515 11266.987 4397.567 4580.510 1111 6111 22561.575 11264.117 4497.567 1111 64111 22561.575 11264.555 4397.567 1111 64111 22561.555 11643.550 4397.567 1111 64111 6494.556 111643.550 11656.651 1111 64111 6494.565 11166.6559 4397.567 <th>IME</th> <th>×</th> <th>></th> <th>1</th> <th>X-00T</th> <th>Y-D0T</th> <th>2-001</th> <th></th> | IME | × | > | 1 | X-00T | Y-D0T | 2-001 | |
| 1136.19 1143102 10853701 22166.55 10914.55 4507.050 178 6192689 11760714 2210153 10982.843 4507.051 188 6240967 11760521 10982.843 4507.01 188 6240967 11266.20 10914942 22150.120 4587.97 198 6403105 11266.20 10914942 22553.730 11226.987 4517.657 199 6403105 11261.20 22553.730 11226.987 4518.657 4518.657 109 6403105 11226.11 22553.730 11226.182 4518.657 4518.657 1015 651715 11274.117 2255.11 2255.11 4518.657 456.718 1015 651715 11224.825 10935516 22567.259 11264.107 4535.657 1025 651715 11224.825 11224.825 11264.117 4535.656 105 651715 11224.825 11264.117 4535.656 1055 65174 10995.948 22540.552 11604.117 1055 65175 11694.117 4535.666 4155.2601 1058568 1170915 11606598 22440.515 11794.498 1058576 11095.0569 | .998 | 6085685 | -17460860 | 10349374 | 22734.015 | 10858.632 | 4736.303 | |
| | -187 | 6135479 | =17437029 | 10859701 | 22746.550 | 10918.353 | 4677.050 | |
| -1736677 10881334 22715.718 11055.290 4428.957 -818.6731 -17366220 10914049 22653.730 11226.987 4512.032 -914 640315 -1720422 22653.730 11226.987 4512.032 -17306420 10914049 22655.751 1134210.20 4440.511 -173056053 10935694 22651.751 113421.02 -1724525 10946443 22551.512 113421.02 -17254525 10946443 22551.549 116403.556 4452.185 -1719714 1093155 4459.549 -1711274 1093559 -17112794 488 4153.530 -17056053 11008588 22440.515 11794.488 4153.201 -17556053 11008588 22440.515 11794.488 4153.201 -1755.691 -17056053 11008588 22440.515 11794.488 4153.201 -17056053 11008588 22440.515 11794.488 4153.201 -1255.691 -17056053 11008588 22440.515 11794.488 4153.201 -1255.691 -17056053 11008588 22440.515 11794.488 4153.201 -17056053 11098588 22440.515 11794.488 4153.201 -17056053 11098588 22440.515 11794.488 4153.201 -17056053 11098588 22440.515 11794.488 4153.201 -17056053 11008588 254 22440.515 11794.488 4153.201 -17056053 11098588 254 22440.515 11794.488 4153.201 -17056053 11008588 254 22440.515 11058588 4153.201 -17056053 11098588 4153.201 -17056053 11008588 4158 -17056053 11098588 4158 -17056053 11098588 4158 -17056053 11098588 4158 -17056053 11088588 4158 -17056053 11058588 4158 -17056053 11058588 -17056058 -170560 | • 703 | 6192683 | -17409476 | 10871469 | 22730.853 | 10982.843 | 4669.210 | |
| | .828 | 6240969 4208087 | -17366072 | 10881334 | 22715.718 | 11035.293 | 4628.957 | |
| | 986 | 6403313 | -17306420 | 10914049 | 22653-730 | 11226-987 | 4517.582 | |
| -912 -1724678 10936576 22605.751 11344.092 4436.657 -5249 651673 -17124451 22564.459 11403.517 4309.2451 -666 6621973 -17196740 1095694 225564.453 11403.517 4309.2451 -666 6621963 -1710219 100988243 225564.498 4255.637 -725 6894506 -17056053 110088588 22440.515 11794.488 4255.637 -725 6894506 -17056059 110088588 22440.515 11794.488 4255.637 -725 6894506 -17056059 110088588 22440.515 11794.488 4255.637 -726 6894506 -17056059 110088588 22440.515 211794.488 4255.637 -726 6894506 -17056059 110088588 22440.515 211794.488 4255.637 -726 6894506 -17056059 11008588 22440.515 2140.515 2140.515 21056059 11008588 245 22440.515 21056059 11008588 245 224406.515 21056059 11008588 245 22440.515 21056059 11008588 245 224506 256 245 245 245 245 245 245 245 245 245 245 | . 499 | 6460276 | -17278123 | 10925361 | 22633.532 | 11271.120 | 4480.314 | |
| | 015 | 6517182 | -17249678 | 10936576 | 22605.751 | 11344-092 | 4436.857 | |
| | .249 | 6567673 | -17224252 | 10946443 | 22587.259 | 11404.117 | 4309.545 | |
| -1112794 109821915 22490-555 464 -1112794 10988243 22490-515 11794-4988 41522-201 -17056053 11008588 22440-515 11794-4988 41522-201 -17056053 11008588 22440-515 11794-4888 41522-201 | .656 | 6621996 | -17196740 | 10956984 | 22564.495 | 11463.536 | 4362.185 | |
| -12517112794 109884-3 22440-515 11794.488 4152.201 -1705-049 4152.201 -1705-0533 11008588 22440-515 11794.488 | 499 | 9111619 | -17140915 | 10377915 | 22512-519 | 11610-074 | 4269-463 | |
| -45- 102:021 - 45- 1008:01 - 224:0-91 - 45- 1008:01 - 224:0-91 - 45- - 45- | .921 | 6785679 | -17112794 | 10988243 | 22490.552 | 11659.948 | 4235 . 637 | |
| | . 765 | 6894506 | <u> </u> | 11008588 | 616.04422 | 11 / 94 • 488 | 4152.201 | |
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· COMPACENT Z

4160-6047-тсооо -46-

RE-ENTRY TRAJECTORY RECONSTRUCTION



| TIME X VOIT LOORDINATE SYSTEM 11ME KT COMDINATE X X00T 200T 200T 155 KT FT F X X00T 200T 155 KT FT F X X00T 200T 200T 455.237 2443579.07 -10612290.05 918115.37 73334.55 144.55 -7233.45 455.237 2443579.07 -10612290.05 918115.37 2434.45 15.55 -7233.45 476.7001 253375.00 -1061231.00 933713.00 24333.55 13.3.05 -7233.45 476.7001 2722.517 713414.61 2.4236.75 2436.95 -7344.65 476.7001 2722.517 713414.61 2.4236.95 345.66 -7470.66 476.7001 2722.517 71314.46 2.422.65 7134.66 -7470.66 476.7001 2722.517 7131.113 2722.516 7131.75 7134.75 7134.75 7134.75 7134.75 7134.75 | | | TON LATORATIN | ALE ALEHT AND REI | ENTRY RECONSTRUCT | IO | |
|---|-----------------|--------------|---|-------------------------|----------------------|----------|----------------------|
| THE X XDOT YODT 2001 FT/5EC1 FT/5FC1 | | | EART | H CENTERED INERTIA | AL GREENNICH STEM | | |
| (FT) (FT) (FT) (FT) (FT) (FT) (FT) 46.5. 274375.00 -1861379.00 9838713.00 24377.34 14.53 -7279.3 46.5.374 2749379.67 -1861313.25 9838713.00 24375.42 10.78 -7279.3 46.5.374 274931.91 -1861313.25 9984715.00 24335.42 10.778 -7219.3 47.20132 2506371.28 -1861313.25 974846.125 24319.26 7744.16 7744.16 47.7017 772754 774444.16 7743.16 7744.16 7744.16 7744.16 7744.16 47.7017 7724.16 7744.16 7764.16 313.20 7744.16 7769.16 7744.16 7769.16 47.7017 7775.46 77111.13 30704.9 1860370.00 964334.25 2441.6 7756.46 7756.16 49.1713 30704.9 -1860370.00 96434.16 7756.46 7756.46 7756.46 7756.46 7756.46 7756.46 7756.46 7756.46 7756.46 | TINE | × | > | ~ | XDOT | YDOT | 2007 |
| 462.4; 2374.275.00 -1861.3300.00 98.38713.01 24334.55 -7235.55 -7225.55 465.3275 2555917.87 -1861.3270.25 980.4151.37 778335.50 24334.55 107.76 -7279.35 470.0372 255501.28 -1861.311.75 978335.00 24319.47 107.76 -7214.61 470.0372 255501.28 -1861.311.75 978335.00 24319.46 2441.62 716.67 7729.31 470.0372 265501.28 -1861.131.25 974344.61.12 24319.45 216.65 7447.68 470.037 79741.61.12 7744.61.12 242.84.96 313.20 71342.61 7134.51 470.044 7712.11.61 -18607316.75 97434.61.12 2441.95 314.76 7147.86 470.044 2701211.61 -18607316.75 97434.61.12 2441.95 314.76 7157.19 481.233 30749.56 -18607316.75 954173.61 24119.55 340.66 -7470.81 7757.81 481.233 30749.56 -18607316.75 954174.81 24119.55 2441.95 7695.61 7757.81 481.213 | (SEC) | (FT) | (FT) | (FT) | (FT/SEC) | (FT/SEC) | (FT/SEC) |
| 46. 377 2443579.817 -10613379.7 9918115.37 243352.42 101.718 -7375.77 47. 0502 2559618.91 -10612313.00 7783392.42 104.51 -7344.66 -7375.71 47. 0502 2559511.26 -10612313.00 7783392.42 104.51 -7344.66 -7375.71 47. 0502 2559510.28 -1061371.57 9744146.12 24291.9 313.2.6 -734.46 47. 0503 259710.20 -10607316.75 9713025.75 24291.9 313.2.66 -734.46 47. 0503 29711.01 -10607316.75 9713025.75 24291.9 313.2.66 -754.66 47. 0503 29711.01 -10607316.75 9713025.75 24291.9 544.46 -7517.8 491.7175 2907440.55 97314.60.17 756.61 364.46 -764.76 -7517.8 491.7175 2907470.56 791.71 251.00 966.30 979.60 -7517.65 491.755 319510.57 31950.51 797.75 24032.61 970.66 -7756.66 491.755 3199.70 74175.77 24015.27 2403.90 75175 | 462.4 | 2374275-00 | -18613390.00 | 9838713.00 | 24377.34 | 14-53 | -7233.43 |
| 476.2933 5590018.91 -1161131.75 970411.00 24332.55 100.778 -7719.3 470.0932 2559011.90 -1601131.75 9713915.00 24335.15 1184.51 -7314.65 470.0932 2559011.90 -1601131.175 9713415.00 24395.15 236.56 -734.66 470.0532 2605311.60 -1601031.25 971341.617 272816.55 -734.66 -734.66 470.655 771 971341.52 24281.05 9417261.52 24281.05 944.60 -7409.41 470.656 771 2911.087 7110.61 964.00 -751.68 -751.68 481.233 277556.17 71312.57 24113.50 24113.59 749.52 -751.68 491.171 307074.56 -186057.57 9560791.05 955617.61 95617.61 7596.31 491.211 307074.56 -1860501.00 955617.57 95627.62 9567.61 7596.30 491.171 307074.56 749.52 24095.20 24013.52 7596.30 7596.31 491.211 3070776.57 9560790.30 24013.52 24056.50 | 465.3275 | 2443579.87 | -18613290.25 | 9818115.37 | 24364.56 | 55.56 | -7252.75 |
| 47.0.0932 256.9614.91 -186.1231.05 9783355.00 238.56 -734.66 47.0.0932 2559014.91 -186.1531.25 9734146.12 22.261.06 34.86 -749.06 47.0.656 267501.26 -186.1531.25 9734146.12 22.2261.06 34.86 -749.06 47.6.070 27912116.87 -18607316.75 9734146.12 22.2261.06 34.46.60 -7547.66 48.407 27912116.87 -18607316.75 9734146.12 22.2261.06 34.46.60 -7547.66 48.407 27912116.87 -18607316.75 9547261.75 22.2261.06 34.46.60 -7547.66 48.1713 3072462.37 -18607316.75 9570764.50 24.173.25 870.52 7593.66 49.1713 307242.91 -18607316.75 9567764.75 24.173.25 24.173.60 -7609.31 49.1113 307242.91 -18607316.75 9567764.57 24.173.24 24.175.61 -7693.61 49.1113 307242.91 -18607316.75 9567764.57 24.175.47 24.175.47 7663.41 49.1113 3072422.17 314.974.91 24.175.47 | 467.2494 | + 2490393.84 | -18613133.25 | 9804151-00 | 24352.42 | 107.78 | -7279.31 |
| 472.0150 2605311.50 18611311.00 9169304.75 24396.99 313.20 7183.43 474.057 275501.50 1861081.75 9734148.12 24264.16 344.86 7409.47 476.7807 275501.26 1861081.75 9734148.12 24264.16 364.86 7409.47 476.7807 2722186.66 1861081.75 9734148.12 24219.55 569.42 7510.93 487.2338 2775568.75 1861081.05 9641319.50 96559.17 24172.39 644.60 7547.61 498.1713 302245 18602855.25 95615678 24172.39 644.60 7547.61 491.2113 3027656 18602855.25 9561578 24172.39 644.60 7557.61 491.2113 3027656.31 18602855.25 9561578 960298.00 24112.29 749.52 7596.75 491.2113 3027765 18602855.25 9561578 24017.29 940.31 7756.45 491.213 319514.21 18962867.25 951076.52 240172.39 1075.20 7756.45 501.499 319301.09 966799.17 951076.52 <td>470-0932</td> <td>2559618.91</td> <td>-18612717.75</td> <td>9783395.00</td> <td>24333.35</td> <td>184.51</td> <td>-7318.35</td> | 470-0932 | 2559618.91 | -18612717.75 | 9783395.00 | 24333.35 | 184.51 | -7318.35 |
| 7.4.7691 267501.26 -18611051 7441601.25 24284.16 364.66 -7409.45 476.6244 2791211.67 -18610873.25 9517361.75 24261.06 441.45 -7471.66 476.6244 2791211.67 -18605601.00 955761.75 24192.65 564.66 -7409.45 484.467 -18605601.00 955761.75 24192.65 544.66 -749.66 487.475 -113 307749.56 -18605601.00 955761.75 24192.65 -7596.70 487.239 7755416 -18605601.00 956719.51 24119.52 644.66 -763761 487.239 307749.56 7156416 715.64 749.20 799.2172.81 487.251 3195068.91 -1869737.25 9520417.87 24015.22 441.95 -7596.51 501.4775 319608.91 -1859737.20 970759.12 24095.22 1021.00 7756.41 501.4775 319608.91 -185975.20 97079.91 24037.02 7775.41 501.4775 319608.91 -185975.77 94074.95 12726.45 7756.41 501.497 51148.7 | 472-0150 | 0 2606371.50 | -18612313.00 | 9769304.75 | 24319.76 | 236.58 | -7344.60 |
| 479.624 27.232 34.486 36.48 -7400.46 479.624 277.2401 36.44 36.48 -7510.49 479.624 277.2401 1860731.5 97134148.12 24219.55 569.42 -7510.49 489.4757 2975566.5 957566.5 955397.75 24113.39 696.42 -7547.81 491.171 3070749.56 -18607310.07 965447.87 24113.59 696.43 -7598.76 491.171 3070749.56 -1860730.00 965447.87 24113.52 895.61 -7598.76 491.275 314506.91 640.462 185076.90 955470.02 24113.52 2400.39 -7598.76 491.251 319506.91 185072.75 957079.00 9547000 7414.62 10075.20 -7598.76 501.499 319606.91 185972.66 954709.00 9547000.29 960.31 -7598.75 501.499 319607.10 185972.66 94.744.80 2401.90 1075.20 -7715.66 501.499 319910.07 9547001.31 24007.90 29072.72 94071.75 1990.67 501.499 <td>474-8566</td> <td>3 2675501.28</td> <td>-18611531.25</td> <td>9748363.25</td> <td>24298.99</td> <td>313.20</td> <td>-7383+51</td> | 474-8566 | 3 2675501.28 | -18611531.25 | 9748363.25 | 24298.99 | 313.20 | -7383+51 |
| 48.4.057 271201-01 -1860791.0.27 911302.2.7 911302.2.17 24131-30 -1444.0 -1547.4 481.4.057 277568.75 -1860750.0 965767.17 24131-39 064.40 -1547.8 491.1713 3072442-37 -1860750.0 96556.25 9641319.50 24132.39 644.60 -1557.7 491.1713 3072442-37 -1860750.0 965640.0 96556.25 9641319.50 24132.39 664.60 -1557.8 494.2175 3195142.01 -18901850.25 9602698.00 24119.52 830.99 -1637.61 968.2577 3195142.01 -18991530.00 9586799.12 24096.29 840.31 -75696.3 968.4715 500.9500.00 9586799.12 24096.29 24097.20 940.31 -7756.61 968.561 1018.97 241394.02 24097.20 24097.20 12120.00 -7756.61 -7756.61 501.4775.47 31950.47 250.9177.55 9470005.37 24097.37 24097.20 10129.10 -7756.61 -7756.61 -7756.61 -7756.61 -7756.61 -7756.61 -7756.61 -7756.61 | 416-180 | 2722186.66 | -18610879.75 | 9734148.12 | 24284.16 | 364.86 | -7409.48 |
| 491.1713 3022523.37 -1060500.00 965564.75 24172.39 696.30 -7572.61 491.1713 3072564.75 -10605001.00 9641319.50 24152.79 696.30 -7572.61 491.1713 3072565.37 -10604301.00 9641319.50 24152.79 696.30 -7572.61 494.2491 314504.366 -10604301.00 9641319.50 24096.29 885.61 -7693.63 494.2491 314504.36 -10604301.00 956179.47 24072.22 24096.29 885.61 -7693.63 498.213 314504.37 -10694301.00 9547076.57 24007.49 940.31 -7693.63 503.5775 319504.97 -1085917.75 9530917.75 24007.99 1075.20 -7751.54 503.5775 319505.72 949119.25 249017.75 24007.99 1075.20 -7751.54 503.5775 3493191.07 -10859127.05 947448.00 23971.16 11290.16 -7751.54 503.5775 3493191.22 -1859127.05 947448.00 23971.16 1075.20 -7751.54 510.68275 3493131.22 -1859130.75 | 414°0°414 | 19-117161 | - 18609133.22 | 9/13022-75 | 24261-06 | 441-45 | -7447.89 |
| 491.1713 3072450.37 -10604301.00 965147.87 24152.79 696.30 -759.40 494.2713 3070449.56 -18604301.00 965147.87 24152.79 149.52 759.30 494.2713 3070449.56 -18602855.25 962048.00 24152.79 149.52 759.30 494.2713 317450-31 -1859630.00 9567045.50 24112.22 830.99 -756.31 498.4213 3245569.37 -18596320.00 9547005.50 24012.29 840.31 -7669.53 501.4794 3195063.91 -18593709.00 9547005.37 24012.29 940.31 -7669.53 501.5775 3195063.91 -18593709.00 9547005.37 24012.29 940.31 -775.41 501.5775 3199063.91 -18593709.00 9547006.37 24012.29 940.31 -775.45 501.5775 3199063.91 -18593709.00 9547006.37 24012.29 940.31 -775.45 501.577 3199028.72 -189916.77 24017.95 1075.20 1021.00 775.45 501.577 31991.07 -18991.07 -18961.77 24901.39< | | 10.011005 | -18001318-13 | CJ •1071106 | CC*61747 | 24-695 | -1210-94 |
| +91.1713 3070749.56 -18602855.25 9626147.87 24152.79 749.52 -7598.66 +94.275 3145049.66 -18600422.75 962698.00 24012.29 830.99 -7663.56 +94.275 3145049.63 -189966727.00 9560799.12 24012.29 830.99 -7663.56 +94.4213 3245566.37 -189966727.00 9560799.12 24012.29 830.69 -7726.66 +94.4213 3245566.37 -189966727.00 9570766.12 24017.29 830.61 -7726.66 503.577 319608.91 -18936727.50 9547000.37 24007.99 1075.20 -7726.66 503.577 319608.91 -18931.00 -1859159.01 7953001.77 29001.77 29001.77 29001.76 7775.41 503.757 3493139.22 -1859157.05 949148.00 23937.16 1205.20 -77814.45 7775.41 512.00775 374418.00 23905.77 23905.77 23915.71 1226.22 -7814.45 7775.41 -7761.44 576.24 596.27 596.27 596.27 596.27 596.27 596.24 597.34 586.27 | 489-1713 | 3022423-37 | -18604301-00 | 9641319.50 | 24172.50 | 000 | - 1541-81 |
| 494.2494 3145043.66 -18600422.75 9602698.00 24119.52 830.99 -7637.61 496.3275 3195142.01 -18596153.00 9560799.12 24092.29 885.61 -7653.55 508.4375 319608.91 -18596726.50 9560776.55 24092.29 885.61 -7653.55 503.5775 319608.91 -18599709.00 9547000.57 24037.62 1021.00 -7751.34 503.5775 319608.91 -18599704.25 951017.75 24007.99 1075.20 -7751.34 503.5775 3419391.09 -18598150.75 9440186.00 23930.39 11229.16 -7834.65 513.68773 34193191.09 -18588540.25 9440186.50 23980.39 11229.16 -7751.61 512.0057 3592869.64 -18586940.25 947418.00 23990.72 1266.16 -7751.61 512.0057 3592869.64 -18586047.25 947418.00 23921.15 1393.23 -7861.66 -7857.64 512.0057 3592869.64 -18586047.25 947418.00 23921.15 1393.23 -7961.66 -7961.66 518.017.72 186244. | 491.1713 | 3070749-56 | -18602855-25 | 9626147-87 | 24152.79 | 749.52 | -7598-76 |
| 496.3275 3195142.91 -1859659.00 956799.12 24096.29 885.61 -7669.50 501.5775 3245566.37 -18596727.50 9570726.50 24072.29 940.31 -7669.50 501.5775 339556.19 -18593709.00 9547007.55 24097.96 10721.00 -775.47 501.5775 3419391.09 -18593709.05 9547017.75 24097.96 1075.20 1775.47 505.6557 3419391.09 -18599540.25 9514784.37 2393716 10721.00 -7775.47 505.6557 3419391.09 -18599240.25 9514784.37 2393716 1129.16 -7775.47 508.7338 3493130.22 -1858937.72 9458113.25 23937.16 1220.61 -7755.20 512.9057 3744.91 103 23926.61 1656217.00 9458113.25 2392.61 775.71 -7932.23 -7931.25 7844.95 7775.47 512.9057 3764.91 105 2392.161 16562.20 -7735.73 -7931.45 7775.74 512.2005 37831.61 10572.01 12857.34 2392.51.34 -7931.25 7744.93 | 494.2494 | 3145043.66 | -18600422.75 | 9602698.00 | 24119-52 | 830.99 | - 7637.67 |
| 498.4213 3245569.37 -1059677.50 9570726.50 9570726.50 9570726.50 940.31 -7765.43 503.1575 3309508.91 -185915300.00 9547000.00 9530917.75 24007.492 1021.000 -7755.66 503.6577 3419391.09 -185915300.00 9547700.00 9547700.00 9530917.75 24007.492 1021.000 -7755.20 -7755.41 503.6577 3419391.09 -18589240.25 9474418.00 23937.16 1208.61 -7795.20 -771675.20 510.8275 3543224.72 -185893055.75 9474418.00 23991.16 1208.61 -7890.50 510.8275 3543624.12 -18576235.75 9456113.25 23621.40 1393.23 -7991.55 512.8055 3765135.75 9450871.37 23783.12 1395.23 -7991.55 512.8055 3765135.75 9450871.31 23783.12 1445.77 -7911.55 518.0775 3765135.75 9450871.35 23621.40 0775.31 1445.77 -7911.55 518.0172 18570177.25 94506871.37 23783.172 1445.77 -7911.55 1445.77 | 496.3275 | 3195142.91 | -18598639.00 | 9586799.12 | 24096.29 | 885.61 | -7663.58 |
| 501-4994 3319608.91 -18593709.00 9547000.37 24034.62 1021.00 -7726.68 503-577 3399371.09 -10591530.75 9530917.75 24007.99 1075.20 -7751.34 505-577 3419391.09 -10591530.75 9530917.75 23900.39 11229.16 -775.47 505-577 3419391.09 -18589240.25 9490796.50 239937.16 1208.61 -7810.66 512-9057 3543224.72 -18583055.75 9474418.00 239937.16 1208.61 -7814.45 512-9057 3543224.12 -18583055.75 9474418.00 23905.72 1205.05 -7834.45 512-9057 354324.16 -18560377.25 9458113.25 23821.15 1315.70 -7857.35 512-9057 376416110.50 -18570177.25 9400811.37 23783.17 1495.77 -7911.56 512-9167 37644.45 1676.61 -18570177.25 940081.35 23644.42 1573.45 -7961.77 512-3119 38674.45 1676.61 18570177.25 940081.35 1474.45 -793.45 -7991.45 525.3119 3867665.41 <td>498-4213</td> <td>1 3245569.37</td> <td>-18596727.50</td> <td>9570726-50</td> <td>24072-29</td> <td>940.31</td> <td>-7689.30</td> | 498-4213 | 1 3245569.37 | -18596727.50 | 9570726-50 | 24072-29 | 940.31 | -7689.30 |
| 503.5775 3369526.19 -18591530.75 9530917.75 24007.99 1075.20 -7751.34 505.657 3419391.09 -18589240.25 9514784.37 23980.39 1129.16 -7710.61 505.657 3419391.09 -18589240.25 9514784.37 23980.39 1220.61 -7710.61 510.8275 3419391.09 -18589240.25 9474418.00 23905.72 1262.20 -7810.60 510.8275 354324.72 -185783055.75 9474418.00 23905.72 1262.20 -7657.34 512.9057 3592869.84 -18578205.75 945113.25 23821.15 1395.77 -7857.33 512.9057 3566274.16 -18578205.75 94513.45 23821.15 1395.77 -7911.55 520.1557 3766274.16 -18578205.75 94400871.37 23821.15 1393.23 -7990.20 520.1557 3766274.1 -18578205.75 947334.50 23821.15 1445.77 -7932.41 520.1557 376655.41 -18562127.00 93765335.50 23844.42 1573.45 -7932.41 527.3900 3936777.00 -1855649.55 9400 | 501-4994 | 3319608.91 | -18593709-00 | 9547000.37 | 24034.62 | 1021-00 | -7726.68 |
| 505.6557 3419391.09 -18589240.25 9514784.37 23980.39 1129.16 -7775.47 510.6577 3419391.09 -18585642.25 9490796.50 23937.16 11262.20 -7810.66 511.9575 3543124.72 -18583055.75 9474418.00 239055.72 1262.20 -7810.66 512.9057 3592869 -18580377.25 9458113.25 23873.03 1315.70 -7890.23 512.9057 3592869 -18576203.00 943876.87 23873.03 1315.70 -7897.34 515.9057 3716110.50 -18576203.00 943876.87 23873.03 1393.57 -7991.56 515.9057 3716110.50 -1857235.75 9400871.37 23783.03 1497.81 -7932.41 520.1557 3765495.75 -1857235.75 9400871.37 23784.42 1573.45 -7941.56 520.1557 3765495.75 -1857235.75 940371.31 23784.42 1597.81 -7932.41 520.1557 37655.61 23864.42 1573.46 -7932.41 -7932.41 -7932.41 521.37055.5167.50 934338.87 23544.62 23644.42 <td>503.5775</td> <td>3369528.19</td> <td>-18591530.75</td> <td>9530917.75</td> <td>24007-99</td> <td>1075.20</td> <td>-7751.34</td> | 503.5775 | 3369528.19 | -18591530.75 | 9530917.75 | 24007-99 | 1075.20 | -7751.34 |
| 508.7338 3493139.22 -18985642.25 9470496.50 23937.16 1266.20 -7810.60 512.9057 3543224.72 -18583055.75 9474418.00 23905.72 1265.20 -7834.45 512.9057 3592869.84 -18560377.25 9476418.00 23905.72 1265.20 -7834.45 512.9057 376110.50 -1857629.00 9458113.25 73821.15 1393.23 -7990.20 515.9057 376510.50 -18570177.25 94.00871.37 23821.15 1497.07 -7932.41 520.1557 3765495.75 -18570177.25 9400871.37 23744.97 1573.45 -7991.06 520.2187 3838121.94 -1856474.50 9376533.50 23644.42 1573.45 -7991.01 523.2182 3838176.65.41 -18565474.50 9376533.50 23644.42 1573.45 -7961.01 523.2182 383817.00 -18565474.50 9376533.50 23644.42 1573.45 -7961.01 523.3119 38876655.41 -18565476.50 9376533.50 23644.42 1573.45 -7961.01 527.3900 3935777.00 165694.31.50 < | 505-6553 | 3419391.09 | -18589240.25 | 9514784.37 | 23980.39 | 1129-16 | -7775.47 |
| 0.10.0017 0.710.011 0.710.011 0.711 | 508-1336 | 5445134°22 | <pre></pre> | 9490196.50 | 23937.16 | 1208.61 | -7810.60 |
| 515.9838 3666274.16 -18576209.00 9433876.67 23821.15 1393.23 -7991.50 516.0775 3716110.50 -18573235.75 9417334.37 23783.72 1495.77 -7911.55 520.1557 3765495.75 -18570235.75 9410871.37 23783.72 1497.81 -7931.55 520.1557 3765495.75 -1857027.35 9400871.37 23784.4.93 1497.81 -7931.55 520.1557 3765495.75 -1857027.25 9400871.37 23784.4.93 1497.81 -7931.56 520.1557 3765495.75 18670.69 9376533.50 23640.69 1597.4.56 -7981.01 5223.3119 388765.61 16562127.00 9359843.50 235940.69 16274.15 -7981.01 5221.3100 3957733.62 -18555167.50 9326596.88 235940.69 16274.54 -7981.01 5229.4682 3987747.00 -18555167.50 9326596.88 23549.25 1674.60 -7991.01 5229.4682 3987733.62 -18555167.25 9326596.88 23476.56 1724.54 -80016.91 5229.4663 4058109.31 -18554977.25 | 51 20 0 1 C | 1 2507260 26 | -105030303. (7 | 94 1441 8. 00 | 21.00462 | 02.2021 | -1834.45 -7057 34 |
| 518.0775 3716110.50 -18573235.75 9417334.37 23783.72 1445.77 -7911.55 520.1557 3765495.75 -18570177.25 9400871.37 23783.72 1497.81 -7911.55 520.1557 3765495.75 -18570177.25 9400871.37 23783.72 1497.81 -7911.55 520.1557 3765495.75 -18570177.25 9400871.37 23640.69 1573.45 -7961.77 523.2119 38876655.41 -18552127.00 9376533.50 23640.69 1624.15 -7981.01 525.3119 38876655.41 -185562127.00 9359943.50 23640.69 1624.15 -7981.01 527.3900 3936777.00 -18558699.25 9343238.87 235995.75 1674.60 -7981.01 5229.4682 3985733.62 -18558167.50 9326596.87 23549.25 1674.66 -7991.01 5229.4682 3995773.01 -18558167.25 9326596.87 23549.62 17724.54 -80016.91 5229.5463 40581099.31 -18559167.25 9301681.62 23476.56 17724.54 -80016.91 532.5463 40581099.31 -18559167.25 | 515.0838 | 3666274.16 | - 1 85 763 08 - 00 | 023876.87 0433876.87 | 20001003 | 01.0101 | |
| 520.1557 3765495.75 -18570177.25 9400871.37 23744.93 1497.81 -7932.47 523.2182 3838121.94 -18565474.50 9376533.50 23684.42 1573.45 -7961.70 523.2182 38876655.41 -18565474.50 9376533.50 23684.42 1573.45 -7961.01 525.3119 38876655.41 -1856699.25 934533.50 23640.69 1627.15 -7981.01 525.3119 38876655.41 -18558699.25 9343236.87 23595.75 1674.60 -7999.39 527.3900 3936747.00 -18558699.25 9343236.87 23595.75 1674.60 -7999.39 529.4682 3986733.62 -18558679.29 9326596.87 23549.25 1724.54 -80016.91 529.4682 3905733.62 -18555167.50 9326596.87 235476.52 1724.54 -80016.91 529.4682 4058109.31 -18555167.50 9326596.87 235476.52 1724.54 -80016.91 529.4682 4058109.31 -18959971.25 9326596.87 235476.52 1724.54 -80041.76 532.5463 4058109.31 -189549747.25 <td>518-0775</td> <td>3716110-50</td> <td>-18573235.75</td> <td>9417334.37</td> <td>23783.72</td> <td>1445.77</td> <td>- 7911-58</td> | 518-0775 | 3716110-50 | -18573235.75 | 9417334.37 | 23783.72 | 1445.77 | - 7911-58 |
| 523.2182 388121.94 -18565474.50 9376533.50 23684.42 1573.45 -7961.70 525.3119 3887665.41 -18565127.00 9359843.50 23640.69 1624.15 -7981.01 525.3119 3887665.41 -1856699.25 9343236.87 23640.69 1674.60 -7991.01 527.3900 3936747.00 -18556699.25 9343236.87 23595.75 1674.60 -7999.39 529.4682 3985733.62 -18555167.50 9326596.87 23549.25 1724.54 -8016.91 532.5463 4058109.31 -18555167.25 9301881.62 23476.58 17716.54 -8016.91 | 520.1557 | 3765495.75 | -18570177.25 | 9400871.37 | 23744.93 | 1497.81 | -7932.47 |
| <u>525.3119 3887665.41 -18562127.00 9359843.50 23640.69 1624.15 -7991.01</u> 527.3900 3936747.00 -18558699.25 9343238.87 23595.75 1674.60 -7999.39 529.4682 3985733.62 -18555167.50 9326596.87 23549.25 1724.54 -8016.91 532.5463 4058109.31 -18549747.25 9301881.62 23476.58 1797.15 -8041.74 | 523.2182 | 3838121.94 | -18565474.50 | 9376533.50 | 23684.42 | 1573.45 | -7961.70 |
| 527.3900 3936747.00 -18558699.25 9343238.87 23595.75 1674.60 -7999.39 529.4682 3985733.62 -18555167.50 9326596.87 23549.25 1724.54 -8016.91 532.5463 4058109.31 -18549747.25 9301881.62 23476.58 1797.15 -8041.76 | 525.3119 | 3887665.41 | -18562127.00 | 9359843.50 | 23640.69 | 1624-15 | -7981.01 |
| 529-4682 3985733.62 -18555167.50 93265%.87 23549.25 1724.54 -8016.91 532.5463 4058109.31 -18549747.25 9301881.62 23476.58 1797.15 -8041.76 | 527.3900 | 3936747-00 | -18558699.25 | 9343238.87 | 23595.75 | 1674.60 | -7999.39 |
| 5325463 405810931 -1854974725 930188162 2347658 179715 -604176 | 529-4682 | 3985733.62 | -18555167.50 | 9326596.87 | 23549.25 | 1724.54 | -8016.91 |
| | | 16.0018004 | C7 • 1 • 1 6 • C8 1 - | 29-1991066 | 23476.58 | 1797-15 | -8041.76 |
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| | | | COORDINATE SYS | TEN CREATION | | |
|-----------|------------|--------------|----------------|--------------|-----------|----------|
| TIME | × | > | 2 | XDOT | YDQT | 2001 |
| (SEC) | (FT) | (FT) | (FT) | (FT/SEC) | (FT/SEC) | (FT/SEC) |
| 534-6244 | 4106843-03 | -18545961.50 | 9285153•50 | 23425-03 | 1846.41 | -8057.40 |
| 536.7025 | 4155467.75 | -18542074-50 | 9268393.62 | 23371.69 | 1894.30 | -8072.47 |
| 539.7963 | 4227645.69 | -18536104.50 | 9243387.00 | 23288.81 | 1965.15 | -8093.40 |
| 541.8744 | 4275981.25 | -18531971.75 | 9226554.75 | 23229.61 | 2012-14 | -8106.01 |
| 543.9525 | 4324190.56 | -18527742.50 | 9209694.87 | 23167.37 | 2058.09 | -8120-12 |
| 547.0463 | 4395710.06 | -18521273.75 | 9184548.87 | 23067.47 | 2125-69 | -8135.87 |
| 549.1244 | 4443573.56 | -18516807.50 | 9167631.25 | 22995.66 | 2169.71 | -8145.70 |
| 551.2025 | 4491286.75 | -19512254.25 | 9150695.00 | 22922.79 | 2212-54 | -8153.83 |
| 554.2963 | 4562024.44 | -18505310.75 | 9125453.37 | 22806.64 | 2276.21 | -8164.03 |
| 556.3900 | 4609690.06 | -18500501.75 | 9108353.12 | 22724.66 | 2317.26 | -8170.57 |
| 558-4682 | 4655825.81 | -13495642.75 | 9091370.12 | 22639.11 | 2359.14 | -8173.95 |
| 561-5463 | 4725309-50 | -18483293.50 | 9066199.87 | 22507.64 | 2416.08 | -8180.27 |
| 563-6400 | 4773335.50 | -18483194.50 | 9049072.25 | 22412.70 | 2454 • 44 | -8180.47 |
| 565-7182 | 4919807.62 | -18478055.00 | 9032071.00 | 22312.34 | 2491.96 | -8181.70 |
| 568.7963 | 4888247.75 | -18470302.50 | 9006890.62 | 22156-40 | 2545.26 | -8179.11 |
| 570-8900 | 4934523.31 | -18464937.75 | 8989769.50 | 22047.13 | 2579.12 | -8175.40 |
| 572.9838 | 4980565.19 | -18459501.75 | 8972658.25 | 21933.17 | 2613.57 | -8169.65 |
| 575-0619 | 5026024.75 | -14454039.75 | 9955689.62 | 21817.39 | 2643.01 | -8161.06 |
| 578-1400 | 5092904.62 | -18445832.25 | 8930591.50 | 21637.53 | 2689.75 | -8146.34 |
| 580-2182 | 5137737.19 | -18440212-25 | E913673.12 | 21509.60 | 2719.09 | -8136.01 |
| 582-2963 | 5182301.31 | -18434533.75 | 8896780.50 | 21379.20 | 2746.04 | -8121.66 |
| 585-3744 | 5247799.75 | -18426019.50 | 8871814.25 | 21178.14 | 2786.02 | -8100-02 |
| 587-4682 | 5291991.87 | -13420156.00 | 8854871.37 | 21035.25 | 2814.96 | -8084.17 |
| 589-5463 | 5335554.62 | -18414282.50 | 8838096.87 | 20889.82 | 2837.62 | -8069.34 |
| 592.6244 | 5399506.56 | -18405489.75 | 8813293.62 | 20662.72 | 2876.11 | -8039.99 |
| 594, 7025 | 5442279.12 | -18399489.00 | A796609.50 | 20501-85 | 2898-14 | -8017.87 |
| 506. 7807 | 5484712-00 | -18393444.00 | 8779970.25 | 20335.77 | 2919.46 | -1994.97 |
| 500. R588 | 5546916-56 | -18384415.75 | 8755426.62 | 20081.43 | 2945.98 | -7952.11 |
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4160-6047-тсооо

| INE X Y Z X YODT ZDDT LECI (FT) (FT) (FT) (FT) 2007 LECI (FT) (FT) (FT) (FT) 2007 LECI (FT) (FT) (FT) (FT) 2007 LOISO 5629643-69 -1837116-25 867255-57 19724-22 2971.42 -7878.40 LOISO 5730559-94 -18356672 872255-57 19724-22 2996.610 -77164.35 L2650 5730569-10 18334911.75 8642556.81 19257.65 3014.44 -7578.416 L2650 5825059-5 8642556.81 18769.69 3014.410 -7578.16 L471 5826575-37 183676.82 3014.410 -7578.416 -77164.22 L4575 5826509.50 18375.53 18369.58 3014.410 -7578.205 L4575 5805700.56 18375.53 18375.55 18367.52 3027.47 -7420.42 L4575 59169.40 18376.55 <td< th=""><th></th><th></th><th>EART</th><th>H CENTERED INERTIA COORDINATE SYS</th><th>AL GREENWICH STEM</th><th></th><th></th></td<> | | | EART | H CENTERED INERTIA COORDINATE SYS | AL GREENWICH STEM | | |
|--|----------|--|--------------|--------------------------------------|----------------------|----------|----------|
| IEC (FT) | IME | × | > | 2 | XDOT | YDOT | ZDOT |
| 4.0150 5629643.69 -18372116.25 872252.75 7 19724.22 2971.42 -7878.00 7.1086 5490260.50 -1833667.75 8692364.87 19257.75 2988.01 -7715.05 7.2050 5770278.31 -18336674.75 86982364.75 19257.75 3004.16 -7715.05 1.2575 592860.31 -18334001.75 8642556.87 19356.52 3014.46 -7756.10 1.5775 5905665.31 -18334911.75 8642555.37 19356.52 3023.41 7715.05 1.5775 5905665.31 -18319321.55 851757.37 1816.65.72 3023.41 7762.092 2.5775 5909801.87 -1831027.75 8557321.31 17617.40 3023.41 7715.00 2.6705 5905665.75 1831367.75 85573121.31 17617.40 3023.41 7716.21 2.7138 6573121.31 17617.40 3023.41 7716.21 7716.20 2.6709.06 618065.75 8573121.31 17074.36 3034.31 77160.20 2.6160.205 </th <th>SEC)</th> <th>(FT)</th> <th>(FT)</th> <th>(FT)</th> <th>(FT/SEC)</th> <th>(FT/SEC)</th> <th>(FT/SEC)</th> | SEC) | (FT) | (FT) | (FT) | (FT/SEC) | (FT/SEC) | (FT/SEC) |
| 7,1088 5600240.50 -19362897.75 6682068.87 19257.95 2998.01 -7576.15 1.2650 577057.94 -18356473.75 86682068.87 19055.495 2996.65 -7765.35 1.2650 5770576.35 86682068.87 18566.57 3004.16 -7576.16 1.2575 59828505.94 -1831411.75 8662357.62 18566.52 3014.46 -7557.82 1.2575 5991699.50 -18314931.75 8642358.87 18566.52 3014.46 -7552.82 1.5775 5991699.50 -18319321.50 858755.37 18366.52 3024.47 -7520.22 1.5775 5991699.50 -18207432.25 8573525.37 118369.62 3027.47 -7520.22 1.5775 599181.75 1830677.22 3027.47 -7520.22 $-752.202.205.205$ $1.7595.05$ 690578.75 182067.25 8573179.317 17074.30 3032.94 -7160.221 $1.7595.05$ 6205797.95 85573179.317 17074.20 3032.94 -7720.22 $1.7595.05$ 620778.75 85573179.317 17074.30 3032.94 -7720.22 $1.7525.5517$ 6211327.94 -1827474.22 846460.12 16281.47 5009.57 -6929.40 $1.7525.5517$ 6211327.94 -182747.25 84702490.61 $16281.999.57$ -0929.44 $-6122.4021.7555.7551755.175620776.10182747.2516281.470009.73-6928.421.7555109.9751.1006207450.104.01505629643.69-18372116.258722525•7519724.222971.42-7878.00$ | 4.0150 | 5629643.69 | -18372116.25 | 8722525•75 | 19724.22 | 2971.42 | -7878.00 |
| 0.1060 5770576-94 -10356679-25 6665706.87 19055.49 2996.65 7716.35 1.2260 5770278.31 -10356479.25 6665794.75 19065.49 3014.46 -7578.16 1.2265 5807300.56 -10334911.75 8645350.62 18756.65 3014.46 -7578.16 1.4755 5961599.50 -10334911.75 8642056.87 18756.65 3014.46 -7578.16 1.4755 5991699.50 -10313921.50 858175.37 18956.53 3024.64 -7582.05 1.5773 5991699.50 -103190.77.75 8557325.37 17617.91 3023.64 -7352.05 1.5773 5991699.60 -18319321.50 8557321.37 17617.91 3023.65 -7352.05 1.5773 5991699.67 -18319307.75 8557321.37 17617.45 3033.67 -7352.05 2.5955 5990981.87 -18319307.75 8557321.37 17617.45 3033.65 -7352.05 2.7955 5910739.57 17714.76 17714.36 3034.31 -7080.48 2.91230.51 875255.37 16847.20 3034.31 -7080.40 | 7.1088 | 5690240.50 | -18362897.75 | 8698254.25 | 19449.48 | 2988.01 | -7812.65 |
| $ \begin{array}{c} 1-2505 577278.31 & -18341180.775 & 8655984.75 & 19065.49 & 3004.16 & -7755.08 \\ -4.713 5867300.56 & -18344110.75 & 8650550.81 & 18566.52 & 3018.81 & -7758.16 \\ -7517 590568.31 & -18319321.50 & 8610865.75 & 18566.52 & 3018.81 & -7758.16 \\ -7517 5905818.75 & -18319321.50 & 8610865.75 & 18667.32 & 3025.47 & -7420.92 \\ -18319321.50 & -18319321.50 & 8610865.75 & 17633.62 & 3025.47 & -7420.92 \\ -182057 599881.87 & -18319321.50 & 8610865.75 & 17633.62 & 3025.94 & -7260.38 \\ -17325.095 & 6035818.25 & -18319327.55 & 8577555.37 & 17633.62 & 3025.94 & -7260.38 \\ -182945 & 6035818.25 & -18291739.55 & 8557351.37 & 17617.91 & 3022.94 & -7260.38 \\ -182956 & 6035818.25 & -18291729.75 & 8557351.37 & 17617.91 & 3032.57 & 3035.31 & -7169.21 \\ -1009.16 & 03239.37 & -18291739.50 & 8476213.50 & 16684.20 & 3035.31 & 0.00 & -6795.79 \\ -26195 & 6120399.44 & -18275529.50 & 8476213.50 & 16684.20 & 3035.31 & 0.00 & -6795.79 \\ -26195 & 6120399.44 & -18275529.50 & 8476213.50 & 16684.20 & 3035.57 & -6421.40 \\ -260150 & 621327.94 & -1825934.75 & 847221.20 & 16618.89 & 3031.00 & 3025.67 & -6931.21 \\ -260150 & 621327.94 & -1825934.75 & 847221.20 & 16618.89 & 3031.00 & 3025.67 & -6931.20 \\ -26196 & 6110.30 & 877024.50 & 87924.35 & 17074.40 & 3005.73 & -6626.20 \\ -26104 & 6110.30 & 877024.50 & 83954.35 & 01464.60 & 127779.2990.88 & -60110.30 \\ -2614 & 64994.31 & -1827939.70 & 83954.36 & 14473.86 & 2996.88 & -60110.30 \\ -2614 & 64994.31 & -1827932.75 & 8396434.62 & 14486.21 & 2993.64 & -6110.30 \\ -2612 & 627936.94 & -1822934.75 & 83954.46 & 13770.3 & 2996.38 & -6024.40 \\ -2612 & 62994.31 & -1827932.75 & 8308951.44 & 1443.86 & 2996.88 & -6024.40 \\ -2612 & 62994.31 & -1827932.69 & 83954.34.62 & 14473.86 & 2996.88 & -6024.40 \\ -2612 & 62994.31 & -1827932.75 & 8396434.45 & 13770.3 & 2996.88 & -6024.40 \\ -2612 & 62994.31 & -1827932.75 & 8390454.31 & 13279.26 & 2998.88 & -6024.40 \\ -2612 & 62994.31 & -1827932.75 & 8308454.31 & 13279.26 & 2998.88 & -6024.40 & -60110.30 \\ -2705 & 62994.69 & -181922455 & 8301466.81 & 13779.26 & 2998.88 & -6024.40 &$ | 9.1869 | 5730459.94 | -18356679.25 | 8682068.87 | 19257-95 | 2996.85 | -7764.35 |
| • | 1.2650 | 5770278.31 | -18350443.75 | 8665984.75 | 19063.49 | 3004.16 | -7715.03 |
| 6.47135966730.56-18334011.758620666.7518956.523018.81-7578.166.47235905666.31-18326633.758610865.7518047.223023.17-7520.351.57755998981.87-18313027.75857255.3718047.223023.17-7720.355.5775998981.87-18313027.75857255.3717617.913023.66-77520.355.77336035818.25-18319327.55857255.3717617.913023.66-7750.315.77336035818.25-18204736.258553195.3717074.353034.31-71809.215.77336035818.25-18204736.258553195.3717074.353034.31-7780.925.97556160239.37-18204736.2085705729.5016844.60.1210514.763034.11-7009.165.99756160239.37-18204737.908470249.0016514.763034.11-7009.165.37756160239.31-182047576847251.2516514.763035.05-6529.165.3775650774-1826953.008442351.2516514.763019.03-6502.165.377563607140016514.763019.03009.03-6502.165.3775636071401824450.008442351.2515609.573019.03-6502.465.37756360714016646.0012614.763019.03-6502.46009.165.37756360714016646.0012614.763019.03-6502.460109.165.3775630714.400 <td>4.3432</td> <td>5828505.94</td> <td>-18341180.75</td> <td>8642358.87</td> <td>18769-69</td> <td>3014.46</td> <td>-7635.82</td> | 4.3432 | 5828505.94 | -18341180.75 | 8642358.87 | 18769-69 | 3014.46 | -7635.82 |
| B.5775 59016995.01 10231.7 77732 3023.47 77420.923 5.7733 6019278.75 3023.667 3023.647 -7420.923 5.77338 6009578.87 3032.94 -7420.923 5.77338 6009578.87 17833.65 3023.647 -7780.38 5.77338 6009578.87 18717.91 3032.94 -7780.23 5.77338 6009578.55 1787.55 855732.37 1707.43 3033.94 -7780.23 5.7953 600239.37 -18291129.75 855037.37 1707.43 3034.31 -7009.11 5.0150 6100239.37 -18275529.50 846217.55 16514.76 3035.61 -7099.15 5.00150 6110239.37 -18275529.50 846213.50 16514.76 3035.67 -6171.96 6.01711.96 6718996.44 -18264057.00 8472751.25 16514.76 3019.03 -61729.03 6.01750 65718996.44 -182647374.25 842215.25 16909.57 -0110.30 -6528.26 6.01750 6718996.44 -18244137.25 16046.012 15435.4.70 3019.03 -65129.16 | 6.4213 | 5867300.56 | -18334911.75 | 8626550.62 | 18566.52 | 3018-81 | -7578.16 |
| 1.5775 5961699.50 -18319321.50 856732.37 18047.22 3027.47 -7420.92 3.6557 5998081.87 -18306728.25 857325.37 17617.43 3025.64 -7780.38 3.795 6089278.75 -18306728.25 855732.37 17617.436 3032.94 -7780.38 3.795 6089278.75 -18204129.75 855737.37 17617.436 3034.31 -7169.21 3.8755 6124990.69 -18204129.75 8505729.50 8567279.50 16644.20 3034.31 -7089.87 2.90157 6124990.69 -18275529.50 8470249.00 16514.76 3034.31 -7099.16 2.90157 6245405.75 -18275520.50 8470249.00 16514.76 3031.06 -6775.77 2.9157 6312096.44 -18276920.00 8470249.00 16514.70 3019.00 -6711.96 2.1113 627996.44 -18276920.00 8470249.00 16514.70 3019.00 -6724.40 2.00157 63009.14.00 -18276920.00 8470249.30 16426.23 3019.05 -6628.24 2.01713 62719960.41 182442317.25 | 8.4994 | 5905668.31 | -18328633.75 | 8610865.75 | 18358.82 | 3023-17 | -7517.00 |
| 30254 -1351.05 57321.31 17833.62 3022.46 -7352.05 5.7338 5035818.25 -18374562 6557321.31 176174.35 3032.94 -77280.38 8.7335 6095780.57 -18374562 6557321.31 17074.35 3032.94 -7780.38 8.7335 6102778.75 -18274562.55 6557321.31 17074.35 3032.94 -7780.38 8.7975 6100750 511137.94 17295.05 8557321.31 17074.35 3035.71 -7009.16 8.7955 61601.12 16514.76 3032.67 -18294.65 6711.96 -6795.79 8.005531 8470244.00 8470240.01 16514.76 3032.65 -61731.96 -6796.26 8.00763 6312795.29.00 8470244.00 16514.76 3032.67 -6794.47 -6171.96 8.01713 6278996.44 -18240130.75 8442313.20 15404.61 3031.66 -6794.47 -6424.47 8.025649 6312096.51 16246.60 154143.86 154425.23 2990.88 -6528.24 -64234.47 -6516.82 -6424.47 74625.23 2990.86 <td< td=""><td>1-5775</td><td>5961699.50</td><td>-18319321.50</td><td>8587875.37</td><td>18047.22</td><td>3027.47</td><td>-7420.92</td></td<> | 1-5775 | 5961699.50 | -18319321.50 | 8587875.37 | 18047.22 | 3027.47 | -7420.92 |
| 5.7738 60957818.75 -18306728.25 8553195.37 17617.91 3035.31 -7280.38 0.8744 61249705.65 -18297436.25 8553195.37 17074.36 3034.31 -7099.21 0.8744 61249705.67 -18297436.25 8553195.37 17074.36 3034.31 -7099.16 0.8744 612490.67 -18279529.50 848460.12 16514.76 3034.51 -7099.16 6.0150 6211327.94 -1820923.00 8456213.50 16514.76 3034.51 -7099.16 6.0150 6211327.94 -1820923.00 8445231.25 16514.76 3031.06 -67729.79 6.0150 6211327.94 -1820923.00 8445231.25 155809.57 3019.03 -6771.96 6.01713 622469 31 -1826923.00 8442211.25 15809.57 3019.03 -6578.26 6.01713 6312096.31 -1826973.00 84422132.00 15464.70 3009.73 -6574.40 7.4057 639208.94 -18224130.25 84422132.00 15464.70 3009.73 -6528.24 -6508.26 7.4057 639208.94 -182774.2 | 3.6557 | 2998981.87 | -18313027-75 | 8572525.37 | 17833.62 | 3029.66 | -7352.05 |
| 0.937 0.037 0.044 <td< td=""><td>5.1338</td><td>6035818.25</td><td>-18306728-25</td><td>8557321.37 8555132</td><td>17617.91</td><td>3032.94</td><td>-7280.38</td></td<> | 5.1338 | 6035818.25 | -18306728-25 | 8557321.37 8555132 | 17617.91 | 3032.94 | -7280.38 |
| 5.9556160239.37-18284822.008505729.5016514.763036.11-7009.165.01506211327.94-18275529.5084460.1216514.763032.57-6881.105.01506211327.94-18275529.508470249.0016514.763032.57-6881.105.01506211327.94-18275529.508470249.0016514.763032.57-6795.775.017136278996.44-18256653.008470249.0016046.003026.54-6711.962.24946312096.31-18256653.008442351.25156809.573019.03-6529.165.32756360714.00-18274774.258422132.0015454.773009.73-6629.165.32756360714.00-182441130.25840894.1215456.773009.73-6629.165.32756360714.00-182441130.25840894.1215456.232980.68-6629.755.49546497026.19-18224130.008376128.56144625.232980.68-66204.755.56196469026.19-1822132.008376128.56144625.232980.68-66204.755.56196469026.19-1822132.008376128.56144625.232980.68-6610.305.7025652886.94-18213422.258332544.0613779.032944.97-5966.405.70256528936.94-182213427.038332544.0613779.032944.97-5786.405.70256528936.94-181213422.2583308666.8113779.032944.97-5966.405.70256579136.10< | 0- 1 702 | 61 06 10 10 10 10 10 10 10 10 10 10 10 10 10 | -1820120 75 | 8520270 27 | 17076 36 | 10.000 | -1109-21 |
| 5.01506211377.94-18275529.508470249.0016514.763032.57-6891.108.09326245405.75-18269234.759470249.0016281.893031.06-6795.790.17136278996.44-1826523.008470249.0016046.003026.54-6711.962.24946312096.31-1825653.008442351.2515809.573019.03-6528.262.32756360714.00-18247174.258422132.0015454.703009.73-65508.267.40576392083.81-18254130.258422132.0015456.7703009.73-65508.267.40576392083.81-182241130.258423132.0015456.7703009.73-65508.267.40576392083.81-18221130.258408694.1215216.972999.75-6508.267.40576392083.81-18221130.258376128.6214625.232980.88-65288.847.40576528586.94-182294307.008376128.6514625.232989.64-6110.308.7025652886.94-18204337.008332544.0613779.032944.97-5868.849.78076571562.00-18198229.758320454.3713529.412932.68-6508.949.78086571562.00-18198229.758308666.8113279.262994.63-5766.409.78136627583.62-18198229.758308666.8113279.262994.63-5663.959.97156697831.92-18198229.758308666.8113279.262996.28-5663.959.9218669783.62< | 2-9525 | 6160239.37 | -18284822-00 | 8505729-50 | 16849.20 | 3036.11 | -7009-16 |
| B.09326245405.75-18269229.008470249.0016026.003026.54-6795.790.17136278996.44-18262934.758456213.5016046.003026.54-6711.962.24946312096.31-1825653.008442351.2515809.573019.03-6629.162.32756350714.00-18247374.258422132.0015454.703009.73-6629.167.40576392083.81-18247374.258422132.0015454.703009.73-65208.267.40576392083.81-18241130.2584228132.0015454.703009.73-65208.267.40576392083.81-1824907.008375433.0015216.972999.75-65338.247.40576392083.18-18221951.508376438.66144385.332969.66-6110.304.46376571562.00-18213422.258350831.4413779.032944.97-5368.849.78076571562.00-18198229.758320454.3713579.262944.97-5868.849.78076571582.62-18198229.758320454.3713579.262944.97-5868.849.78076571582.00-18198229.758320454.3713579.262944.97-5868.849.78076571582.00-18198229.758320454.3713579.262944.97-5868.849.78076571582.00-18198229.758320454.3713579.262944.97-5868.849.78076571583.62-18198229.758320454.3713579.262946.87-5766.409.78076571583.62 <t< td=""><td>6.0150</td><td>6211327.94</td><td>-18275529.50</td><td>8484460.12</td><td>16514.76</td><td>3032.57</td><td>-6881.10</td></t<> | 6.0150 | 6211327.94 | -18275529.50 | 8484460.12 | 16514.76 | 3032.57 | -6881.10 |
| 0.1713 6278996.44 -18262934.75 8456213.50 16046.00 3026.54 -6711.96 2.2494 6312096.31 -18256653.00 8442351.25 15809.57 3019.03 -6629.16 5.3275 6360714.00 -182547374.25 8442351.25 15454.70 3009.73 -6508.26 5.3275 6360714.00 -18241130.25 8442351.25 15216.97 3009.73 -6508.26 7.4057 6392083.81 -18241130.25 8408694.12 15216.97 2999.75 -6508.26 9.4838 6423460.94 -1822132.00 8395433.00 14980.61 2999.75 -6504.75 2.5619 6469026.19 -1822195.00 8376128.56 14625.23 2980.88 -6504.75 2.5518.00 8376128.56 14625.23 2980.68 -66013.31 -6504.75 2.5528586.94 -18213422.25 8356831.44 14143.86 2969.64 -6110.30 6.7025 6528586.94 -181213422.25 8350831.44 13779.03 2944.97 -5863.95 6.7025 6528586.94 -18197239.75 8320456.81 2936.26 -6603.81 | 8-0932 | 6245405.75 | -18269229.03 | 8470249.00 | 16281.89 | 3031.06 | -6795.79 |
| 2.2494 6312096.31 -18256653.00 8442351.25 15809.57 3019.03 -6629.16 5.3275 6360714.00 -18247374.25 8422132.00 15454.70 3009.73 -6508.26 7.4057 6392083.81 -18241130.25 8422132.00 15454.70 3009.73 -6508.26 7.4057 6392083.81 -18241130.25 8408694.12 15216.97 2999.75 -6538.24 9.4838 6423460.94 -18235718.00 8376128.56 14980.61 2999.75 -6504.75 2.5619 6469026.19 -18219581.50 8376128.56 144385.33 2969.64 -6110.30 6.7025 652866.94 -18219581.50 8350831.44 14143.86 2958.16 -6013.31 9.7807 6571562.00 -18204337.00 8332544.06 13779.03 2944.97 -5863.96 9.7807 6571562.00 -18204337.00 8332544.06 13779.03 2944.97 -5863.95 9.7807 6571562.00 -18192195.25 83308666.81 13779.03 2944.97 -5663.95 9.627583.62 -18192195.25 8308666.81 13279.26 | 0.1713 | 6278996.44 | -18262934.75 | 8456213.50 | 16046.00 | 3026.54 | -6711.96 |
| 5.32756360714.00-18247374.258422132.0015454.703009.73-6508.267.40576392083.81-18241130.258408694.1215216.972999.75-6424.409.48386423460.94-1823130.258408694.1215216.972999.75-6424.402.56196469026.19-182234907.008376128.5614980.612999.64-6338.242.56196469026.19-18223718.008376128.5614625.232960.88-64013.312.56196469026.19-182219581.508356331.4414143.862958.16-6013.319.78076571562.00-18213422.25835685.440613779.032944.97-5868.849.78076571562.00-18213422.258308666.8113779.032944.97-5863.959.78076571562.00-18198229.758308666.8113279.262932.68-5766.409.78076577583.62-18192195.258308666.8113279.262946.97-5863.959.78076577583.62-18192295.258308666.8113279.262918.79-5663.959.97756694435.12-18177239.758291466.2512603.94-5512.039.07756694435.12-18177239.758280122.1212691.692918.75-5512.039.07756694435.12-18177239.758280122.1212691.692918.75-5512.03 | 2-2494 | 6312096.31 | -18256653-00 | 8442351.25 | 15809.57 | 3019.03 | -6629.16 |
| 7.4057 6392083.81 -18241130.25 9408694.12 15216.97 2999.75 -6424.40 9.4838 6423460.94 -18234907.00 8395433.00 14980.61 2989.54 -6338.24 2.55619 6469026.19 -18225718.00 8376128.56 14625.23 2980.88 -6204.75 4.6244 6499026.19 -18219581.50 8376128.56 14143.86 2969.64 -6110.30 6.7025 6528586.94 -18213422.25 8350831.44 14143.86 2958.16 -6013.31 9.7807 6571562.00 -18213422.25 8350831.44 13779.03 2944.97 -5868.84 9.7807 6571562.00 -18204337.00 8332544.06 13779.03 2944.97 -5863.96 9.7807 6571562.00 -18198229.75 8320454.37 13579.26 2932.68 -5663.95 9.7807 657583.62 -18192195.25 8320456.41 131279.26 2918.79 -5663.95 9.627583.62 -18192295.75 83308666.81 13279.26 2918.79 -5663.95 9.9775 6694435.12 -18197239.75 82914666.25 29146.67 <td>5.3275</td> <td>6360714.00</td> <td>-18247374.25</td> <td>8422132.00</td> <td>15454.70</td> <td>3009.73</td> <td>-6508.26</td> | 5.3275 | 6360714.00 | -18247374.25 | 8422132.00 | 15454.70 | 3009.73 | -6508.26 |
| 9.4838 6423460.94 -19234907.00 8395433.00 14980.61 2989.54 -6338.24 2.5619 6469026.19 -18225718.00 8376128.56 14625.23 2980.88 -6204.75 4.6244 6499026.19 -18219581.50 8376128.56 14143.86 2969.64 -6110.30 6.7025 6528586.94 -18213422.25 8350831.44 14143.86 2958.16 -6013.31 9.7807 6571562.00 -18213422.25 8350831.44 13779.03 2944.97 -5868.84 9.7807 6571562.00 -18204337.00 8332544.06 13779.03 2944.97 -5868.84 9.7807 6571562.00 -18198229.75 8320454.37 13579.26 2918.79 79 -5663.95 3.9213 6627583.62 -18192195.25 8308666.81 13279.26 2918.79 -5663.95 5.99944 56677883.62 -18192195.25 8308666.81 13279.26 2918.79 -5663.95 5.99944 5607583.62 -181922195.25 8308666.81 13279.26 2918.79 -5663.95 5.99944 5607583.62 12903.94 | 7-4057 | 6392083.81 | -18241130.25 | 8408694.12 | 15216.97 | 2999.75 | -6424-40 |
| 2.5619 6469026.19 -18225718.00 8376128.56 14625.23 2980.88 -6204.75 4.6244 649943.31 -18219581.50 8363428.62 14143.85 2969.64 -6110.30 6.7025 6528586.94 -18213422.25 8350831.44 14143.86 2958.16 -6013.31 9.7807 6571562.00 -18204337.00 8332544.06 13779.03 2944.97 -5868.84 9.7807 6571562.00 -18198229.75 8320454.37 13579.03 2944.97 -5868.84 9.7807 6571562.00 -18198229.75 8320454.37 13579.03 2944.97 -5863.95 9.7807 6577583.62 -18192195.25 8308666.81 13279.26 2918.79 -5663.95 9.9775 6694435.12 -18192195.25 8308666.81 12903.94 2896.28 -5512.03 9.0775 6694435.12 -18177239.75 8280122.12 12651.69 2663.75 -5512.03 | 9.4838 | 6423460.94 | -19234907.00 | 8395433.00 | 14980.61 | 2989.54 | -6338.24 |
| 4.6244 6498943.31 -18219581.50 8363428.62 14385.33 2969.64 -6110.30 6.7025 6528586.94 -18213422.25 8350831.44 14143.86 2958.16 -6013.31 9.7807 6571562.00 -18204337.00 8332544.06 13779.03 2944.97 -5868.84 1.8588 6599937.19 -18198229.75 8320454.37 13579.03 2944.67 -5766.40 3.9213 6627583.62 -18192195.25 8320454.37 13579.26 2918.79 -5663.95 3.9213 6627583.62 -18192195.25 8308666.81 13279.26 2918.79 -5663.95 5.9994 6667881.19 -18192195.25 8308666.81 12703.94 2896.28 -5512.03 5.9974 5657583.62 -18192195.25 8308666.81 12703.94 2896.28 -5512.03 5.9974 5657583.62 -18197239.75 8291466.25 12903.94 2896.28 -5512.03 | 2.5619 | 6469026.19 | -18225718.00 | 8376128.56 | 14625.23 | 2980.88 | -6204.75 |
| b.7025 652856.94 -18213422.25 8350831.44 14143.86 2958.16 -6013.31 9.7807 6571562.00 -18204337.00 8332544.06 13779.03 2944.97 -5868.84 1.8588 6599937.19 -18198229.75 8320454.37 13529.41 2932.68 -5766.40 3.9213 6627583.62 -18192195.25 8308666.81 13279.26 2918.79 -5663.95 6.9994 6667881.19 -18192195.25 8308666.81 13279.26 2918.79 -5663.95 6.9994 6667881.19 -18192195.25 8308666.81 13279.26 2996.28 -5512.03 6.9994 6667881.19 -18192295.25 8291466.25 12903.94 2896.28 -5512.03 9.0775 6694435.12 -18177239.75 8280122.12 12651.69 2663.75 -5405.64 | 4-6244 | 6498943.31 | -18219581.50 | 8363428•62 | 14385.33 | 2969.64 | -6110.30 |
| 9.7807 6571562.00 -18204337.00 8332544.06 13779.03 2944.97 -5868.84 1.8588 6599937.19 -18198229.75 8320454.37 13529.41 2932.68 -5766.40 3.9213 6627583.62 -18192195.25 8308666.81 13279.26 2918.79 -5663.95 6.9994 6667881.19 -18183245.50 8291466.25 12903.94 2896.28 -5512.03 9.0775 6694435.12 -18177239.75 8280122.12 12651.69 2883.75 -5405.64 | 6.7025 | 6528586.94 | -18213422.25 | 8350831.44 | 14143.86 | 2958.16 | -6013.31 |
| 1.8588 6599937.19 -18198229.75 8320454.37 13529.41 2932.68 -5766.40 3.9213 6627583.62 -18192195.25 8308666.81 13279.26 2918.79 -5663.95 6.9994 6667881.19 -18183245.50 8291466.25 12903.94 2896.28 -5512.03 9.0775 6694435.12 -18177239.75 8280122.12 12651.69 2883.75 -5405.64 | 9.7807 | 6571562.00 | -18204337.00 | 8332544.06 | 13779.03 | 2944.97 | -5868.84 |
| 3.9213 6627583.62 -18192195.25 8308666.81 13279.26 2918.79 -5663.95 6.9994 6667881.19 -18183245.50 8291466.25 12903.94 2896.28 -5512.03 9.0775 6694435.12 -18177239.75 8280122.12 12651.69 2883.75 -5405.64 | 1.8588 | 6599937.19 | -18198229.75 | 8320454.37 | 13529.41 | 2932.68 | -5766.40 |
| 6,9994 6667881.19 -18183245.50 8291466.25 12903.94 2896.28 -5512.03 9.0775 6694435.12 -18177239.75 8280122.12 12651.69 2883.75 -5405.64 | 3.9213 | 6627583.62 | -18192195.25 | 8308666.81 | 13279.26 | 2918.79 | -5663.95 |
| 9.0775 6694435.12 -18177239.75 8280122.12 12651.69 2883.75 -5405.64 | 6.9994 | 6667881.19 | -15183245+50 | 8291466•25 | 12903.94 | 2896.28 | -5512.03 |
| | 9-0775 | 6694435.12 | -18177239.75 | 5280122.12 | 12651.69 | 2683.75 | -5405.64 |

| | | EART | H CENTERED INERTIA | AL GREENVICH STEM | | |
|----------|---------------|----------------|--------------------|----------------------|----------|-----------|
| TIME | × | * | 7 | XDOT | YDOT | ZDOT |
| (SEC) | (FT) | (FT) | (FT) | (FT/SEC) | (FT/SEC) | (FT/SEC) |
| 674.2182 | 6757861.56 | -18162510.00 | 8253009.31 | 12024-01 | 2843.70 | -5145.41 |
| 676.2963 | 6782581.44 | -18156620.25 | 8242420.94 | 11766.53 | 2824.64 | -5044.92 |
| 678.3744 | 6806764.75 | -18150770.00 | 8232040-81 | 11507-62 | 2805.75 | -4944-95 |
| 681.4369 | 6841422.62 | -18142224-00 | 8217126.06 | 11126-11 | 2775.24 | -4795.33 |
| 683.5150 | 6864278.69 | -18136477.25 | 6207271.87 | 10870.72 | 2755.50 | -4688.40 |
| 685.5932 | 6886605.06 | -19130771.25 | 8197642.56 | 10616.29 | 2736.01 | -4578.90 |
| 688.6557 | 6918540.62 | -18122440.50 | 9183865.19 | 10239.60 | 2704.42 | -4418.58 |
| 690.7494 | 6939710.75 | -18116802.75 | 8174727.50 | 9982.60 | 2681.00 | -4309.92 |
| 692.8119 | 6960035.19 | -18111299.25 | 8165952.75 | 9725.95 | 2655.71 | -4198.93 |
| 695.8900 | 6989379.44 | -18103189-00 | 8153271.81 | 9340.34 | 2613.94 | -4040.46 |
| 697.9682 | 7008513.06 | -18097790.25 | 8144986.12 | 9073-96 | 2581.86 | -3933.77 |
| 700.0463 | 702 7094 . 69 | - 18092459. 75 | 8136919.25 | 8809.11 | 2549.21 | -3829.87 |
| 703.1244 | 7053612.81 | - 18084684.75 | 9125379.12 | 8420-93 | 2501.81 | -3668.28 |
| 105.2025 | 7070839.37 | -18079518.50 | 8117873.06 | A158.02 | 2470.19 | -3555.57 |
| 707-2807 | 7087520.62 | -18074417.75 | 8110605.75 | 7896.17 | 2439-04 | -3438.50 |
| 710.3432 | 7111116.69 | - 18067015.25 | 8100342.12 | 7513.49 | 2393.15 | - 3264.28 |
| 712.4213 | 7126462.62 | -18062077.75 | 8093681.62 | 7255.53 | 2361.81 | -3145.88 |
| 714.4838 | 7141162.00 | -18057240.50 | 8087318.50 | 6995.44 | 2328.65 | -3024.38 |
| 717.5619 | 7162130.81 | -18050145.25 | 8078277.75 | 6625.99 | 2281.61 | -2849.84 |
| 719.6400 | 7175643.00 | -18045436.25 | 8072481.00 | 6378-20 | 2250.20 | -2728.96 |
| 721.7182 | 7188645.94 | -18040790.00 | 8066933.44 | 6135.89 | 2221.48 | -2610.05 |
| 724.7963 | 7206989.50 | -18034014.75 | 8059163.94 | 5782-79 | 2180-65 | -2438.15 |
| 726-8744 | 7218762.81 | -18029508.50 | 805421A.00 | 5547.89 | 2156.24 | -2321.87 |
| 728.9525 | 7230048.06 | -15025051-75 | 8049511.00 | 5313.11 | 2133.04 | -2208.16 |
| 732-0307 | 7245879.06 | -18018536.75 | 8042954.50 | 4973.01 | 2099.95 | -2050.58 |
| 734.1088 | 7255982.00 | -16014193.75 | 8038796.06 | 4750.12 | 2079.77 | -1953.48 |
| 736.1869 | 7265628.37 | -18009891.50 | 8034832.50 | 4533.63 | 2060.96 | -1961-09 |
| 738.2650 | 7274835.44 | -18005633.25 | 8031063.75 | 4327.30 | 2037-14 | -1765.96 |
| 141.3432 | 7287708.37 | -17999455.25 | R025832.06 | 4036-84 | 1976.89 | -1633.33 |

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| | | EART | H CENTERED INERTIA Coordinate SYS | NL GREENNICH | | |
|---------------|------------|------------------------------|--------------------------------------|------------------|------------------|------------------|
| TIME (SEC) | X (FT) | Y (FT) | 2 (FT) | XDOT (FT/SEC) | YDOT (FT/SEC) | 200T (FT/SEC) |
| 143.4057 | 7295839.37 | -17995427.00 | 8022549.12 | 3847.77 | 1929-40 | -1550-11 |
| 745.4994 | 7303701.81 | -17991438.75 | 8019380.62 | 3662.63 | 1880.37 | -1476.48 |
| 760.5175 | 7314570.25 | -17985754-75 | 8015006.00 | 3399.06 | 1812.70 | -1365.94 |
| 100-001 | 1321402.44 | -17982035.00 -17978403 50 | 8012242.62 8088232 62 | 3234.03 | 1767.36 | -1293.53 |
| 755, 8110 | 7337185 60 | -17073173 25 | 00407064 | 3080.92 | 1727.42 | -1224.7 |
| 757.8900 | 7343014.75 | -17969735.25 | 8008019.54 8002760-66 | 2728 AG | 19.17.01 | -1118.4 |
| 759-9682 | 7348577.44 | -17966370.75 | 8001627-62 | 2615.44 | 1601-72 | - 000 - |
| 763.0463 | 7356362.44 | -17961507.00 | 1998699.81 | 2442.85 | 1558.36 | -905- |
| 765-1244 | 7361326.06 | -17958299.00 | 7996874.25 | 2334.15 | 1529-07 | -851-16 |
| 767-1713 | 7366001-06 | -17955198.00 | 7995184.00 | 2233.80 | 1500.90 | -800-4 |
| 770.2182 | 7372597.44 | -17950679.25 | 7992857.19 | 2096.12 | 1465-30 | -726-8 |
| 772.2807 | 7376833.62 | -17947679.25 | 7991403.06 | 2011.75 | 1443.82 | -686.15 |
| 774.3432 | 7380907.00 | -17944724.25 | 7990025.81 | 1938.17 | 1421.69 | -646.4 |
| 777.3744 | 7386615.31 | -17940458.00 | 7988150.06 | 1828-12 | 1393.19 | -591.10 |
| 179.4369 | 7390321.81 | -17937608.50 | 7986960.50 | 1766.06 | 1369.89 | -562.45 |
| 181.4994 | 7393893.87 | -17934809-00 | 7985819.06 | 1697.78 | 1344.85 | -544.41 |
| 184-5307 | 1398902.44 | -17930769.50 | 7984224.62 | 1606.83 | 1320.89 | -507.58 |
| 100.5432 | 29-961204/ | -1/928074.00 | 7983193.81 | 1550.68 | 1292.02 | -491.94 |
| 788.6557 | 7405305.37 | -17925428.75 | 7982194.75 | 1500.76 | 1273.16 | -476.87 |
| 791.7025 | 7409777.69 | -17921584.75 | 7980772.44 | 1434.91 | 1249.98 | -456.71 |
| 793.7650 | 7412698.75 | -17919026.00 | 7979541.69 | 1397.58 | 1231.45 | -445.8(|
| 796-7963 | 7416869.62 | -17915339.25 | 7978518.56 | 1354.35 | 1201.06 | -427.2(|
| 198-8588 | 7419638•06 | -17912880.50 | 7977651.19 | 1330.20 | 1192.95 | -413.8(|
| | | | | | | |
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4160-6047-TC000 -52-

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RE-ENTRY TRAJECTORY RECONSTRUCTION SPECIAL PARAMETERS





GEMINI GT-3 FREE-FLIGHT AND RE-ENTRY RECONSTRUCTION

| (15EC) (FT/SEC) (DEGREES) (FEFT) (DEGREES) (DEGREES) 462.4338 25427.9 -1.4772 27358.5 271.724 -94.4651 470.0292 25417.3 -1.4772 271.824 271.724 -94.4651 470.0292 25405.7 -1.4772 271.915.7 27.6657 -94.4651 470.0292 25405.7 -1.4728 270616.5 27.7246 -94.4651 475.7051 25405.7 -1.4728 270616.5 27.6251 -94.4051 475.7051 25932.4 -1.4444 25931.5 21.441 24.6619 475.7051 25932.4 -1.4444 25931.5 21.441 24.7621 494.4517 25331.6 -1.4444 25933.5 27.5212 -93.4739 494.1713 25331.6 -1.4444 25933.5 27.5212 -93.4739 494.1713 25331.6 -1.4444 25933.5 27.5212 -93.4739 494.1713 25331.6 -1.4454 25933.5 27.6213 -94.690 | ISEC (FT/SEC) (DEGREES) (FET) (DEGREES) (DEGREES) (DEGREES) 462.4438 25427.9 -1.4348 27450.5 27.667 -44.61 470.329 25411.2 -1.4378 27.667 -44.61 470.329 25410.2 -1.4378 27.660.5 77.673 -44.61 470.329 25410.7 -1.4328 27.661.6 77.673 -44.61 470.329 25410.7 -1.4328 270610.5 77.673 -44.100 472.010 25400.7 -1.4328 270610.5 77.672 -44.70 470.4707 25392.4 -1.4328 26930.5 77.5720 -93.400 491.171 25395.0 -1.4474 256951.0 77.5720 -93.400 491.471 25395.1 -1.4474 259940.7 77.670 -93.400 491.471 25395.2 77.670 27.670 -93.400 -94.400 491.471 25395.2 77.670 27.670 27.470 27.670 -91.470 | (15E) (FT/SEC) (DEGREES) (FEFT) (DEGREES) (DEGREES) 462.4433 254.77 -1-519 27.605.5 27.675 -64.4631 470.329 254.17.3 -1-529 27.605.5 27.675 -64.431 470.329 254.17.3 -1-4222 27.755 -64.431 470.329 254.07.7 -1-4222 27.655 -64.431 470.329 254.07.7 -1-4222 27.755 -64.431 470.329 254.07.7 -1-4222 27.556 -64.431 470.493 2594.07 -1-422 27.657 -64.431 470.493 25931.0 -1.4434 26931.5 27.475 -93.491 490.1713 25931.0 -1.4473 256657.5 27.7329 -93.417 490.1713 25931.0 -1.4473 256657.5 27.7329 -93.417 490.1713 25931.1 -1.4461 256657.5 27.247 -92.496 491.713 25941.1 -1.4461 256657.5 27.2472 | | VELUCITY MAGNITUDE | FLIGHT PATH ANGLE | ALTITUDE | GEDDETIC LAT. | GEODETIC LONG. |
|---|--|--|------------------|--------------------|-------------------|----------|---------------|----------------|
| 462.4639 25427.9 -1.519 756.65 27.828 -84.650 467.2441 2411.2 -1.4202 2735.86 27.7245 -84.630 472.01032 25401.7 -1.4202 2735.86 27.7265 -84.630 472.01032 25901.0 -1.4402 2735.86 27.7264 -84.133 472.01032 25901.0 -1.4402 2735.86 27.6621 -84.103 47.0032 25932.0 -1.4444 26655.2 27.4521 -84.033 47.004 25932.0 -1.4444 26381.0 27.4521 -84.033 470.4057 25931.0 -1.4444 26381.0 27.4581 -83.4690 491.113 25311.0 -1.4414 26395.0 27.2622 -82.4182 491.113 25311.0 -1.4414 26395.0 27.262 -82.4690 491.113 25311.0 -1.4414 25993.0 27.2622 -82.4182 491.113 25311.1 2531.0 -1.4414 259657.5 27.2072 -82.461 | 462.4839 25427.9 -1.5190 276.05.5 27.7261 -84.6630 472.01932 25401.7 -1.4202 2715655 277.7645 -84.4631 472.01932 25401.7 -1.4402 273581.5 277.6652 -84.1035 472.01932 25947.9 -1.4402 270616.5 277.6652 -84.1035 472.01932 25947.9 -1.4403 26613.2 271.6622 -84.1035 477.01932 25947.9 -1.4403 26613.2 271.6521 -93.4739 477.0193 25347.9 -1.4403 26161.2 27.4739 -84.173 491.713 25341.4 -1.4404 251951.0 -1.4404 25196.1 -8.1473 491.4113 25341.4 -1.4401 25196.1 27.459 -8.1693 491.4113 25341.4 -1.4401 25990.2 27.473 -8.1693 491.4113 25341.4 -1.4401 25990.2 27.4693 -8.1693 491.4113 25341.4 -1.4401 2596255.2 27.2472< | 482.4839 23427.9 -1.5199 776.05.5 27.828 -94.6630 472.0932 25410.7 -1.4226 27.788.5 27.7655 -94.6630 472.01932 254410.7 -1.4226 27586.5 27.7655 -94.6630 472.01932 254410.7 -1.4226 27586.5 27.7657 -94.0037 472.01932 254410.7 -1.4228 270646.5 27.6521 -94.003 47.7.0193 25392.4 -1.4343 20641.5 27.6521 -93.4739 47.7.7017 25931.4 -1.4461 25931.0 21.4451 26.651.5 27.2620 -93.4739 491.1713 25331.4 -1.4461 25943.5 27.2620 -93.4739 491.1713 25331.6 -1.4461 25943.5 27.2226 -93.4739 491.2713 25331.6 -1.4461 25943.5 27.2226 -93.4739 491.171 25943.6 -1.4461 25943.6 27.2266 -94.490 491.171 25343.6 -1.4461 25943.6 </td <td>(SEC)</td> <td>(FT/SEC)</td> <td>(DEGREES)</td> <td>(FEET)</td> <td>(DEGREES)</td> <td>(DEGREES)</td> | (SEC) | (FT/SEC) | (DEGREES) | (FEET) | (DEGREES) | (DEGREES) |
| 465.2715 25412.2 -1.4246 27584.5 27.7364.5 -94.1339 470.0932 25410.7 -1.4302 271584.5 77.665 -94.1339 470.0932 25410.7 -1.4302 271815.7 77.665 -94.1339 470.0932 25410.7 -1.4302 25655.2 77.6523 -94.1339 470.0932 25392.6 -1.4402 25655.2 27.5621 -93.6105 47.0113 25392.6 -1.4414 26695.2 27.5752 -93.6105 491.713 25391.0 -1.4454 256657.4 27.27522 -93.6105 491.713 25391.0 -1.4454 256657.4 27.27522 -92.4904 491.713 25391.0 -1.4454 256657.4 27.137226 -92.4944 491.713 25391.0 -1.4464 256657.4 27.13726 -92.4944 491.713 25391.0 -1.4464 256657.4 27.2475 -92.4944 491.713 25391.0 -1.4464 256657.4 27.1371 -92.4944 491.713 2591.1 25919.6 27.4460 -92.494 <td>462715 25412.2 -1.4246 27151.5 2751.65 -64.1339 4700932 25410.7 -1.402 27151.5 275.61 -64.1339 4700932 25410.7 -1.402 275.61 -64.1339 -64.1339 4700932 25410.7 -1.402 275.65 -64.1339 -64.1339 470017 25382.4 -1.4424 265851.0 77.6522 -93.6105 470017 25382.4 -1.4414 265851.0 77.502 -93.6105 470017 25382.4 -1.4414 265851.0 77.6522 -93.4139 491713 25341.4 265851.0 27.6582 -81.027 -81.027 491713 25341.4 261061.7 27.2672 -91.417 491713 25341.4 261061.7 27.2672 -91.401 491713 25341.4 261061.7 27.1376 -92.4019 491713 25341.4 261061.7 27.0367 -92.4010 491713 25341.7 261061.7 27.1377 -91.4011 492591.7 250625.2 27.1272<!--</td--><td>467.2475 27556.2776415 -1.4226 277.655 -94.4031 470.2922 25410.7 -1.4202 27556.277665 -94.1331 470.2922 25410.7 -1.4302 271815.7 27.5621 -94.1331 470.2032 25410.7 -1.4312 25016.2 71.6521 -94.1331 471.4961 25397.0 -1.4413 256351.0 27.5621 -93.1073 479.4713 25394.0 -1.4414 255951.0 77.6793 -93.1473 491.113 25311.6 -1.4414 255951.2 27.472 -92.6162 491.113 25311.6 -1.4414 25596.7 77.9793 -92.4690 491.113 25311.6 -1.4414 25591.2 27.472 -92.6172 491.113 25311.6 -1.4614 259391.2 27.472 -92.6192 491.113 25311.1 -1.4614 25931.2 27.472 -92.6192 491.127 25311.1 -1.4614 25931.2 27.472 -92.6192 501.113 25311.1 -1.4614 25931.2 27.472 -92.6192</td><td>462.4838</td><td>25427.9</td><td>-1.5198</td><td>276605.5</td><td>27.8281</td><td>-84.6630</td></td> | 462715 25412.2 -1.4246 27151.5 2751.65 -64.1339 4700932 25410.7 -1.402 27151.5 275.61 -64.1339 4700932 25410.7 -1.402 275.61 -64.1339 -64.1339 4700932 25410.7 -1.402 275.65 -64.1339 -64.1339 470017 25382.4 -1.4424 265851.0 77.6522 -93.6105 470017 25382.4 -1.4414 265851.0 77.502 -93.6105 470017 25382.4 -1.4414 265851.0 77.6522 -93.4139 491713 25341.4 265851.0 27.6582 -81.027 -81.027 491713 25341.4 261061.7 27.2672 -91.417 491713 25341.4 261061.7 27.2672 -91.401 491713 25341.4 261061.7 27.1376 -92.4019 491713 25341.4 261061.7 27.0367 -92.4010 491713 25341.7 261061.7 27.1377 -91.4011 492591.7 250625.2 27.1272 </td <td>467.2475 27556.2776415 -1.4226 277.655 -94.4031 470.2922 25410.7 -1.4202 27556.277665 -94.1331 470.2922 25410.7 -1.4302 271815.7 27.5621 -94.1331 470.2032 25410.7 -1.4312 25016.2 71.6521 -94.1331 471.4961 25397.0 -1.4413 256351.0 27.5621 -93.1073 479.4713 25394.0 -1.4414 255951.0 77.6793 -93.1473 491.113 25311.6 -1.4414 255951.2 27.472 -92.6162 491.113 25311.6 -1.4414 25596.7 77.9793 -92.4690 491.113 25311.6 -1.4414 25591.2 27.472 -92.6172 491.113 25311.6 -1.4614 259391.2 27.472 -92.6192 491.113 25311.1 -1.4614 25931.2 27.472 -92.6192 491.127 25311.1 -1.4614 25931.2 27.472 -92.6192 501.113 25311.1 -1.4614 25931.2 27.472 -92.6192</td> <td>462.4838</td> <td>25427.9</td> <td>-1.5198</td> <td>276605.5</td> <td>27.8281</td> <td>-84.6630</td> | 467.2475 27556.2776415 -1.4226 277.655 -94.4031 470.2922 25410.7 -1.4202 27556.277665 -94.1331 470.2922 25410.7 -1.4302 271815.7 27.5621 -94.1331 470.2032 25410.7 -1.4312 25016.2 71.6521 -94.1331 471.4961 25397.0 -1.4413 256351.0 27.5621 -93.1073 479.4713 25394.0 -1.4414 255951.0 77.6793 -93.1473 491.113 25311.6 -1.4414 255951.2 27.472 -92.6162 491.113 25311.6 -1.4414 25596.7 77.9793 -92.4690 491.113 25311.6 -1.4414 25591.2 27.472 -92.6172 491.113 25311.6 -1.4614 259391.2 27.472 -92.6192 491.113 25311.1 -1.4614 25931.2 27.472 -92.6192 491.127 25311.1 -1.4614 25931.2 27.472 -92.6192 501.113 25311.1 -1.4614 25931.2 27.472 -92.6192 | 462.4838 | 25427.9 | -1.5198 | 276605.5 | 27.8281 | -84.6630 |
| 470094 25410.7 -1.4272 271386.5 27.7564 -04.314 470092 25400.7 -1.4303 270616.5 27.6652 -94.003 470092 25405.7 -1.4303 26551.0 27.6521 -94.003 470092 25992.0 -1.4404 26551.0 27.6521 -93.603 470093 25932.0 -1.4404 26551.0 27.5621 -93.6105 470057 2531.0 -1.4414 26551.0 27.472 -92.9494 490239 25311.0 -1.4474 26551.5 27.2027 -92.4192 490213 25311.0 -1.4474 26591.6 -94.9127 -92.409 490213 25311.0 -1.4474 26591.6 27.2027 -92.409 490213 25311.0 -1.4464 255027.5 27.12137 -92.409 496.213 25311.0 -1.4464 259910.7 27.2037 -92.409 490.201 25501.1 -1.4464 259275.5 27.2037 -92.409 <td>47.2.594 254.11.3 -1.4772 27358.5 21.3156 -64.3134 47.0.050 254.05.7 -1.428 270616.5 21.6572 -68.1139 47.0.050 254.05.7 -1.428 270616.5 27.662 -68.1139 47.0.050 254.05.7 -1.428 270616.5 27.662 -68.1139 47.6.707 2393.6 -1.4424 26851.0 27.5202 -93.403 47.6.707 2393.6 -1.4424 263961.0 27.572 -93.403 48233 25351.0 -1.4424 263961.2 27.572 -93.403 48233 25331.0 -1.4424 25895.5 27.2723 -93.404 481.2 25331.0 -1.4457 25908.2 27.2026 -93.403 492444 25808.2 27.12302 28.9494 -93.433 492444 25808.2 27.2027 28.2469 -93.431 492571 25908.2 27.2027 28.9494 -93.431 492573 25508.2 27.0069 -93.4600 -93.4600 492603131 25308.2 2</td> <td>467.2494 25417.3 -1.4272 27186.5 27.264 -64.139 710.092 2540.7 -1.422 2700.15 27.652 -94.139 77.095 2540.7 -1.428 26051.0 27.622 -94.003 77.095 25931.0 -1.438 26051.0 27.622 -94.003 77.053 25332.4 -1.4434 265551.0 27.622 -93.079 47.501 2500.10 26106.1.2 27.6202 -94.493 49.407 25331.0 -1.4434 265651.0 27.2902 -92.6496 49.4171 25331.0 -1.4451 25594.0 -1.4451 25594.2 -92.6492 49.4171 25331.0 -1.4451 25594.2 27.2022 27.2022 -92.6492 49.4171 25331.0 -1.4451 25504.7 27.2026 -92.492 49.4171 25504.7 26106.12 27.2026 -92.492 49.4171 25504.7 26106.12 27.2026 -92.492 51.6012</td> <td>465.3275</td> <td>25421.2</td> <td>-1.4246</td> <td>274781.5</td> <td>27.7675</td> <td>-84.4651</td> | 47.2.594 254.11.3 -1.4772 27358.5 21.3156 -64.3134 47.0.050 254.05.7 -1.428 270616.5 21.6572 -68.1139 47.0.050 254.05.7 -1.428 270616.5 27.662 -68.1139 47.0.050 254.05.7 -1.428 270616.5 27.662 -68.1139 47.6.707 2393.6 -1.4424 26851.0 27.5202 -93.403 47.6.707 2393.6 -1.4424 263961.0 27.572 -93.403 48233 25351.0 -1.4424 263961.2 27.572 -93.403 48233 25331.0 -1.4424 25895.5 27.2723 -93.404 481.2 25331.0 -1.4457 25908.2 27.2026 -93.403 492444 25808.2 27.12302 28.9494 -93.433 492444 25808.2 27.2027 28.2469 -93.431 492571 25908.2 27.2027 28.9494 -93.431 492573 25508.2 27.0069 -93.4600 -93.4600 492603131 25308.2 2 | 467.2494 25417.3 -1.4272 27186.5 27.264 -64.139 710.092 2540.7 -1.422 2700.15 27.652 -94.139 77.095 2540.7 -1.428 26051.0 27.622 -94.003 77.095 25931.0 -1.438 26051.0 27.622 -94.003 77.053 25332.4 -1.4434 265551.0 27.622 -93.079 47.501 2500.10 26106.1.2 27.6202 -94.493 49.407 25331.0 -1.4434 265651.0 27.2902 -92.6496 49.4171 25331.0 -1.4451 25594.0 -1.4451 25594.2 -92.6492 49.4171 25331.0 -1.4451 25594.2 27.2022 27.2022 -92.6492 49.4171 25331.0 -1.4451 25504.7 27.2026 -92.492 49.4171 25504.7 26106.12 27.2026 -92.492 49.4171 25504.7 26106.12 27.2026 -92.492 51.6012 | 465.3275 | 25421.2 | -1.4246 | 274781.5 | 27.7675 | -84.4651 |
| 470.0922 25410.7 -1.4402 271.015.7 21.6652 -64.139 470.0922 2597.9 -1.4428 26765.7 21.6237 -93.005 470.6207 2597.9 -1.4428 26765.2 27.5227 -93.075 470.6207 25932.0 -1.4434 26765.2 27.5227 -93.075 470.6207 25932.0 -1.4444 26765.2 27.5222 -93.4739 470.6207 25931.0 -1.4454 26765.2 27.4522 -93.4739 490.1713 25311.0 -1.4554 25936.7 27.4522 -92.4079 490.273 25313.0 -1.4554 25936.7 27.2025 -92.4079 490.2735 25313.0 -1.4554 25936.7 27.2122 -92.4079 490.2575 25313.0 -1.4554 25936.7 27.2132 -92.4099 491.2757 25314.4 -1.4554 25936.7 27.451 -92.4099 491.2575 27.14003 25936.7 27.4937 27.902 -92.4097 <td>470.0932 25410.7 -1.4302 271.015.7 21.6652 -94.035 470.6930 25397.9 -1.4434 267635.2 27.5202 -93.6035 470.670 25397.9 -1.4434 26651.0 27.5202 -93.6035 470.671 25393.9 -1.4434 26551.0 27.5202 -93.6105 470.671 25551.0 -1.4444 26551.0 27.4502 -93.6105 490.1713 25331.0 -1.4451 26043.5 27.4502 -93.6105 490.1713 25331.0 -1.4450 256254.5 27.2022 -92.4690 490.1713 25331.0 -1.4554 25938.2 27.2022 -92.4690 490.4713 25313.0 -1.4554 25938.2 27.2022 -92.4912 490.4213 25314.4 261444 26147.2 27.2472 -92.4910 490.4213 25314.4 261444 261444 26149 27.472 -92.4910 491.421 2517.5 27.10067 27.472 264.910 <td< td=""><td>470.0922 25406.7 -1.4302 270616.2 21.6652 -64.139 470.0922 25407.9 -1.4328 270616.2 21.5621 -84.003 470.0923 25407.9 -1.4338 266951.0 21.5621 -84.003 470.057 25932.4 -1.4438 265651.0 21.5621 -84.003 470.4057 255951.0 -1.4474 265651.0 21.5202 -83.1473 490.4077 25391.0 -1.4474 265934.5 21.2472 -82.6162 491.1713 2331.0 -1.4474 26506.2 279308.2 21.2472 -82.6163 491.1713 2331.0 -1.4564 25.027.5 21.2472 -82.6183 491.1713 2331.0 -1.4567 25.027.5 21.2472 -82.6183 491.1713 2331.0 -1.4567 25.027.5 21.2472 -82.1827 501.6775 2331.1 23366.7 -1.4564 25.2027.5 21.27123 -82.1827 501.6775 252.6107.7 25.61077.5 21.246</td><td>467.2494</td><td>25417.3</td><td>-1.4272</td><td>273586.5</td><td>21.7264</td><td>-84.3314</td></td<></td> | 470.0932 25410.7 -1.4302 271.015.7 21.6652 -94.035 470.6930 25397.9 -1.4434 267635.2 27.5202 -93.6035 470.670 25397.9 -1.4434 26651.0 27.5202 -93.6035 470.671 25393.9 -1.4434 26551.0 27.5202 -93.6105 470.671 25551.0 -1.4444 26551.0 27.4502 -93.6105 490.1713 25331.0 -1.4451 26043.5 27.4502 -93.6105 490.1713 25331.0 -1.4450 256254.5 27.2022 -92.4690 490.1713 25331.0 -1.4554 25938.2 27.2022 -92.4690 490.4713 25313.0 -1.4554 25938.2 27.2022 -92.4912 490.4213 25314.4 261444 26147.2 27.2472 -92.4910 490.4213 25314.4 261444 261444 26149 27.472 -92.4910 491.421 2517.5 27.10067 27.472 264.910 <td< td=""><td>470.0922 25406.7 -1.4302 270616.2 21.6652 -64.139 470.0922 25407.9 -1.4328 270616.2 21.5621 -84.003 470.0923 25407.9 -1.4338 266951.0 21.5621 -84.003 470.057 25932.4 -1.4438 265651.0 21.5621 -84.003 470.4057 255951.0 -1.4474 265651.0 21.5202 -83.1473 490.4077 25391.0 -1.4474 265934.5 21.2472 -82.6162 491.1713 2331.0 -1.4474 26506.2 279308.2 21.2472 -82.6163 491.1713 2331.0 -1.4564 25.027.5 21.2472 -82.6183 491.1713 2331.0 -1.4567 25.027.5 21.2472 -82.6183 491.1713 2331.0 -1.4567 25.027.5 21.2472 -82.1827 501.6775 2331.1 23366.7 -1.4564 25.2027.5 21.27123 -82.1827 501.6775 252.6107.7 25.61077.5 21.246</td><td>467.2494</td><td>25417.3</td><td>-1.4272</td><td>273586.5</td><td>21.7264</td><td>-84.3314</td></td<> | 470.0922 25406.7 -1.4302 270616.2 21.6652 -64.139 470.0922 25407.9 -1.4328 270616.2 21.5621 -84.003 470.0923 25407.9 -1.4338 266951.0 21.5621 -84.003 470.057 25932.4 -1.4438 265651.0 21.5621 -84.003 470.4057 255951.0 -1.4474 265651.0 21.5202 -83.1473 490.4077 25391.0 -1.4474 265934.5 21.2472 -82.6162 491.1713 2331.0 -1.4474 26506.2 279308.2 21.2472 -82.6163 491.1713 2331.0 -1.4564 25.027.5 21.2472 -82.6183 491.1713 2331.0 -1.4567 25.027.5 21.2472 -82.6183 491.1713 2331.0 -1.4567 25.027.5 21.2472 -82.1827 501.6775 2331.1 23366.7 -1.4564 25.2027.5 21.27123 -82.1827 501.6775 252.6107.7 25.61077.5 21.246 | 467.249 4 | 25417.3 | -1.4272 | 273586.5 | 21.7264 | -84.3314 |
| 47.0150 25405.7 -1.4126 276616.2 27.6527 -64.005 47.0580 25397.9 -1.4363 261635.5 27.5621 -63.405 47.0581 25392.4 -1.4424 26583.5 27.5202 -63.473 48.457 25361.0 27.551 -63.473 -64.005 48.457 25351.0 -1.4451 261061.2 27.202 -82.444 48.457 25311.4 -1.4451 261061.2 27.202 -82.467 49.1713 25311.6 -1.4517 261061.2 27.202 -82.469 49.1713 25311.6 -1.4517 251037 25266.7 -82.4187 49.172 25311.6 -1.4613 255057.5 27.10697 -82.4187 50.577 25266.7 -1.4613 255077.5 26.9709 -81.4212 50.577 25266.7 -1.4613 255077.5 26.9278 -81.4127 50.577 25261.7 -1.4615 27.0397 26.1087 -81.4218 50.5555 27.11203 252027.5 26.770 -81.4218 50.5517 | 47.6150 25495.7 -1.4163 269396.5 27.6231 -94.0005 47.6168 25937.9 -1.4163 269395.5 27.5621 -93.679 47.6168 25932.9 -1.4463 26135.5 27.5521 -93.479 49.4274 255951.0 -1.44724 2561651.5 27.5759 -93.479 49.4274 255931.0 -1.44524 259398.2 27.12902 -92.9162 49.4274 255913.0 -1.44524 259596.7 27.1237 -92.6169 49.4274 255913.0 -1.4457 259596.7 27.1337 -92.4169 49.4274 255913.0 -1.4457 259340.7 27.1337 -92.4169 49.4274 255913.0 -1.4457 25906.7 -1.4457 25906.7 -91.4917 501.677 25506.7 -1.4457 259080.7 27.10869 -91.4919 501.677 25508.7 -1.4417 255085.7 27.10869 -91.4919 501.677 25508.7 257086.7 -1.4417 25.0305.5 27.10869 -91.4919 501.6877 25508.7 27. | 47.4648 25997.9 -1.4383 268938.5 27.5621 -89.4005 47.4648 25397.9 -1.4433 268931.0 27.5621 -89.4005 47.4648 25395.4 -1.4433 268951.0 27.5621 -89.405 47.4058 25395.4 -1.4461 261061.2 27.5621 -89.407 49.4074 25991.0 -1.4461 261061.2 27.5202 -82.4469 49.4213 23351.0 -1.4501 251061.2 27.202 -82.469 49.4213 23331.6 -1.4517 259362.5 27.2012 -82.469 49.4213 23331.6 -1.4614 259306.7 29391.7 -82.469 49.4213 23334.1 -1.4614 259306.7 21.401 21.413 49.4213 23334.1 -1.4614 259306.7 21.413 92.469 49.4213 23266.7 -1.4613 259306.7 21.4101 92.489 49.4213 23266.7 -1.4614 259306.7 24.7307 92.4919 501.575 232.617.2 21.4617 24.7307 24.7307 92.47 | 470.0932 | 25410.7 | -1.4302 | 271815.7 | 27.6652 | -84.1339 |
| 47858 25392.0 -1.4163 26883.5 27.5202 -83.075 479.6244 25382.4 -1.4426 25585.0 -83.4739 -83.6105 479.6244 25382.4 -1.4426 25585.5 27.3202 -83.4141 489.1713 25331.0 -1.4426 259830.2 27.2472 -82.6490 489.1713 25331.0 -1.4554 256855.5 27.2026 -82.4490 489.1713 25331.0 -1.4526 259830.2 27.2472 -82.6490 499.1713 25331.0 -1.4524 256855.5 27.2026 -82.4490 494.2491 2531.1 -1.4526 25980.7 27.2026 -82.4690 494.2501 25281.2 -1.44613 255308.7 27.10309 -82.456 501.4971 255281.7 -1.44613 255308.7 27.10309 -81.4811 510.4057 255281.7 -1.44613 255308.7 27.10809 -81.4811 501.4075 255308.7 27.4410.7 26.9700 -81.4811 | 47858 25397.9 -1.436 26895.0 27.552 93.070 47607 25382.4 -1.4474 26585.0 77.572 93.0141 49238 25395.0 -1.4474 26585.0 77.572 93.0162 49171 25395.0 -1.4474 26585.0 77.272 93.0162 49171 25391.0 -1.4454 25695.1 77.272 92.0163 49247 25391.0 -1.4526 25930.7 77.2025 92.0163 492713 25331.0 -1.4554 25930.7 77.026 92.0163 492575 2530.1 -1.4574 255930.7 77.026 92.0163 492575 2530.1 -1.4574 253930.7 77.026 92.0193 492575 2530.7 2530.7 2530.7 26.0507 77.1213 92.0197 501.4942 2550.7 2590.7 26.0701 91.0197 92.0197 501.647 2520.7 26.0707 26.0701 91.0191 501.64 | 47.4 858 25397.9 -1.4343 26893.6 27.5202 -93.6705 47.4 8581 25392.0 -1.4434 265851.0 27.5702 -93.4739 47.4 100 25392.0 -1.4434 265851.0 27.5702 -93.4739 480.1713 25391.0 -1.4454 256104.2 27.4712 -82.6104 490.1713 25391.0 -1.4564 255930.2 77.2702 -93.409 491.2713 25391.0 -1.4564 256955.2 27.1202 -92.6102 491.2713 25391.0 -1.4564 256955.5 27.13026 -92.409 491.2713 25391.0 -1.4603 255027.5 27.0957 -92.407 501.6904 25208.0 -1.4603 252901.2 21.4017 26.9050 -92.407 501.6904 25208.1 -1.4603 252077.5 27.0957 -92.4017 501.6914 252017.5 27.0917.5 26.9050 -91.4012 -91.4013 501.6917 2518.077 2.1464 252977.5 26.3070 -91.403 501.80077 2510.0175 26.0950 | 472-0150 | 25405.7 | -1.4328 | 270616.2 | 27.6237 | -84.0005 |
| 476.7607 25392.0 -1.4384 26153.2 27.5202 -83.6705 479.4754 25381.4 25141.6 -1.4474 25581.6 -83.479 487.4057 25391.0 -1.4474 25581.6 27.5529 -83.479 487.238 25591.6 -1.4474 25814.2 27.5529 -82.4694 487.1713 25331.0 -1.4461 25814.2 27.2772 -82.4690 494.2494 25501.1 -1.4461 258574.2 27.2137 -82.4690 494.213 25501.1 -1.4461 258674.2 27.12026 -81.4912 494.213 25504.1 -1.4461 258674.2 27.12026 -82.4690 494.213 25504.1 -1.4461 258674.2 27.12026 -82.4690 494.213 25504.1 -1.4413 256025.5 27.1337 -82.4690 494.257 25504.1 -1.4415 256025.5 26.9707 -81.4811 505.657 25917.1 25004.2 250177.5 26.2728 -81.4811 505.657 25188.0 -1.44137 24.4772 26.2709 | 476.7807 25392.0 -1.4384 26765.2 27.592 -83.6705 491.2339 25391.4 -1.4424 265845.5 27.2902 -83.479 491.2339 25351.0 -1.4474 265845.5 27.2490 -82.469 491.1713 25391.0 -1.4576 25961.2 27.202 -82.469 491.1713 25311.0 -1.4572 256655.5 27.2026 -82.469 494.2494 25313.6 -1.4572 256655.5 27.2026 -82.469 494.2494 25313.6 -1.4572 256655.5 27.2026 -82.469 494.217 25516.7 -1.4517 256655.5 27.1237 -82.469 494.217 25526.7 -1.4614 257075 26.9707 -82.4187 50.5575 25256.7 -1.4617 25906.7 26.3259 -81.9112 50.5575 25266.7 -1.4617 259075 26.9709 -81.9112 50.5575 25266.7 -1.4617 259075 26.9709 -81.9112 50.5575 25526.7 -1.4616 2577075 26.9770 -81 | 476.7807 25932.0 -1.4434 26155.2 27.5202 -83.4739 481.2338 25331.0 25331.0 27.5202 -83.4739 481.2338 25331.0 25351.0 27.5202 -83.4945 481.2338 25331.0 25331.0 27.5202 -82.4945 481.2338 25331.0 -1.4456 25854.2 27.2022 -82.4786 491.1713 25331.0 -1.4567 258674.2 27.12302 -82.4786 491.2739 25911.1 -1.4567 258974.2 27.10397 -82.4786 491.273 25911.2 -1.4467 255905.5 27.0057 -82.4786 491.275 25211.2 -1.4605 24.7430.7 26.9709 -81.4811 501.457 25211.2 -1.4605 24.7430.7 26.9709 -81.4811 501.457 25211.2 -1.4605 24.7430.7 26.9709 -81.4811 501.457 25211.2 -1.4605 24.7430.7 26.9109 -81.481 501.457 2510.471 26.4907 26.9192 -81.481 21.481 50 | 474.8588 | 25397.9 | -1.4363 | 268838.5 | 27.5621 | -83.8035 |
| 479.6244 25381.4 -1.4424 265851.0 27.4581 -83.4414 489.4057 25381.9 -1.4461 261061.2 27.2902 -82.8494 489.1713 25331.0 -1.4501 261061.2 27.2902 -82.8494 497.1713 25331.0 -1.4512 25938.2 27.2026 -82.8490 491.1713 25331.0 -1.4567 256571.2 27.2026 -82.8490 494.1713 25331.0 -1.4567 256571.2 27.10307 -82.4680 496.3275 25331.0 -1.4567 255308.2 27.10307 -82.4680 496.3577 25536.0 -1.4662 25007.5 27.0037 -82.480 503.577 25536.1 -1.4662 25077.5 26.9700 -81.4912 503.577 25536.1 -1.4662 25077.5 26.9700 -81.4912 503.577 25536.1 -1.4662 25077.5 26.9700 -81.4912 503.677 25308.0 -1.4662 25077.5 26.9700 -81.491 503.677 25108.4 -1.4665 24.6090 21.913 | 474.6244 25382.4 -1.4424 265851.0 27.4581 -83.4441 489.1713 25391.0 -1.4474 262813.5 27.2302 -82.8162 499.1713 25391.0 -1.4576 25991.2 27.2472 -82.8162 494.2336 25311.0 -1.4576 25991.2 27.2472 -82.8167 494.273 255301.1 -1.4574 256.55.5 27.1337 -82.4187 494.273 255301.1 -1.4617 255308.2 27.0397 -82.4187 501.4994 255301.1 -1.4617 255308.7 27.0397 -82.4187 501.4994 25551.2 -1.4614 25390.7 27.0397 -82.4187 501.4994 25531.2 -1.4614 253071.5 26.9170 -81.911 503.775 25531.2 -1.4615 24917.7 26.9150 -81.912 503.775 25531.2 -1.4615 24917.2 26.9150 -81.912 503.775 25531.2 -1.4615 24917.2 26.9150 -81.912 515.905 251.012 26.913 26.913 26.9190 | 479.6244 25981.6 -1.4474 266851.0 27.4581 -93.4739 494.4057 25341.4 -1.4574 268934.5 27.2922 -93.4744 491.423 25351.0 -1.4554 258574.2 27.2027 -82.6196 491.1713 25331.0 -1.4554 25990.7 27.2027 -82.4039 491.1713 25331.0 -1.4554 25930.2 27.1337 -82.4039 491.1713 25331.0 -1.4554 25990.7 27.2027 -82.4039 491.273 25331.1 -1.4564 25990.7 27.1337 -82.4039 491.4713 259390.7 27.10367 28.1877 -81.4811 501.4994 25234.7 -1.4662 25990.7 28.1977 501.4994 25234.7 -1.4614 252027.5 21.1337 -81.4911 501.4994 25234.7 -1.4662 25990.7 28.1971 -81.4911 501.4994 25234.7 -1.4614 252027.5 26.4919 -81.4911 501.617 252.8 21.4171.2 26.4777.2 26.9700 -81.4911 | 476.7807 | 25392.0 | -1.4384 | 267635.2 | 27.5202 | -83.6705 |
| 484.4057 25381.9 -1.4474 262843.5 27.3529 -83.1441 487.2338 25391.0 -1.4526 261061.2 27.2902 -82.6163 491.1713 25331.0 -1.4526 25938.2 27.2902 -82.6163 491.1713 25331.0 -1.4526 259574.2 27.2026 -82.6163 494.213 25331.0 -1.4517 255625.5 27.1337 -82.6169 494.213 25584.0 -1.4517 255625.5 27.1337 -82.6169 498.4213 25586.7 -1.4614 255625.5 27.0397 82.3258 498.4213 25586.7 -1.4614 25590.7 77.0397 82.3258 503.4794 25586.7 -1.4617 25590.7 27.0397 82.3258 503.755 25531.7 -1.4617 25590.7 27.0397 82.3697 503.759 25536.7 -1.4617 25590.7 26.9700 81.8312 503.755 25536.7 -1.4617 256027.5 26.9700 81.6191 513.657 25182.7 25027.5 26.9700 81.6191 | 664.4057 25361.9 -1.4474 26.863.5 27.3229 -83.144 487.233 25351.0 -1.4574 261061.2 77.2902 -82.9694 491.113 25311.0 -1.4574 256574.2 77.2902 -82.669 494.217 25311.0 -1.4554 25657.5 77.1337 -82.469 494.217 25311.0 -1.4564 255308.7 77.2026 -82.669 494.217 255308.0 -1.4603 255308.7 77.10377 -82.469 494.213 255308.1 -1.4603 255308.7 77.037 -82.481 494.213 255308.1 -1.4605 24914.7 257.037 -82.481 503.5775 255308.1 -1.4605 24934.7 26.970 -81.481 503.5775 255308.1 -1.4605 24914.7 27.0397 -82.4827 503.5775 255308.1 -1.4605 24914.7 27.0397 -82.4827 503.5775 255308.7 251.490.7 26.970 -81.481 503.5775 255308.7 26.9717.7 26.9726 -81.681 | 484.4057 25363.9 -1.4474 263843.5 27.202 -82.4441 489.1713 25331.0 -1.4561 256055.5 27.202 -82.6460 499.1713 25331.0 -1.4564 256055.5 27.1205 -82.6460 499.2713 25331.0 -1.4564 256055.5 27.1205 -82.6460 494.274 25301.1 -1.4564 25500.7 27.2027 -82.6460 494.3275 25301.1 -1.4603 255308.2 27.2037 -82.4807 501.4994 25508.0 -1.4614 255308.7 27.086 -82.4827 51.4994 25501.1 -1.4614 255027.5 26.9790 -82.4801 501.4994 25501.2 -1.4615 25901.7 26.9790 -82.4812 51.4994 255027.5 249310.7 26.9790 -81.4811 510.4994 251027.5 24.7310.7 26.9390 -81.4811 510.4994 251037.5 24.931.0 26.0791 -81.4813 510.4994 251037.5 24.931.0 26.0791 -81.4813 510.4994 25106. | 479.6244 | 25382.4 | -1.4424 | 265851.0 | 27-4581 | -83.4739 |
| 687.2338 25351.0 -1.4501 261061.2 27.2902 -82.9494 490.1713 2531.0 -1.4554 259380.2 27.2125 -82.6162 494.1713 25311.0 -1.4554 259380.2 27.1337 -82.460 944.2494 25313.6 -1.4514 256455.5 27.1337 -82.460 944.2494 25301.1 -1.4614 259300.7 27.0397 -82.460 501.4994 25301.1 -1.4614 259300.7 27.0397 -82.482 501.4994 25301.1 -1.4614 253007.5 26.9700 -81.4812 501.4994 255301.2 -1.4614 253007.5 26.9700 -81.4812 501.4994 25531.2 -1.4615 250707.5 26.9050 -81.4812 503.775 25531.2 -1.4615 257077.5 26.9050 -81.4812 515.993 255167 -1.4615 240397.0 26.0910 -81.4812 515.993 25167 25.167 26.9050 91.3123 25.44312 515.902 25167 25.47430.7 26.9191 91.3132 | 467.2338 25351.0 -1.4501 261061.2 277.2902 -82.9494 499.1113 25331.0 -1.4554 259036.2 277.2472 -82.6169 494.2494 2531.0 -1.4554 259036.2 277.2472 -82.4600 494.213 2531.0 -1.4567 25655.5 277.1337 -82.4600 494.213 2531.0 -1.4617 259030.7 77.0397 -82.4827 501.4994 25266.7 -1.4615 259030.7 77.0397 -82.4827 501.4994 25266.7 -1.4615 259030.7 77.0397 -82.4827 501.4994 25266.7 -1.4615 259030.7 77.0397 -82.4827 501.4994 25266.7 -1.4615 259030.7 77.0397 -82.4817 501.4994 252031.2 -1.4615 259030.7 26.9307 -81.4811 501.4994 252031.2 -1.4615 25007.5 26.9307 -81.4812 501.4997 251612.2 -1.4615 25007.5 26.9307 -81.4812 512.9037 251612.2 -1.4615 24.1430.7 | 481.2338 25551.0 -1.4501 261061.2 27.2902 -82.9494 489.1713 25311.4 -1.4524 259634.2 27.2026 -82.6400 494.2794 25311.6 -1.4567 256625.5 27.2126 -82.4600 494.2794 25311.6 -1.4567 256625.5 27.1337 -82.4600 494.279 25311.6 -1.4603 255027.5 27.10367 -82.4800 501.4994 25266.7 -1.4612 252027.5 26.9700 -82.1827 501.4994 25208.7 -1.4612 252027.5 26.9709 -82.1827 501.4994 25208.7 -1.4612 252027.5 26.9700 -82.1827 501.4994 25208.7 -1.4612 25027.5 26.9710 -81.4811 503.755 25208.7 -1.4612 25027.5 26.7700 -81.4812 510.775 25107.5 26.9700 26.9198.4 -1.4712 26.9199.7 27.091 -81.4893 511.792 25108.4 -1.4717 24.777.2 26.9700 29.196912 26.190912 26.199912 5 | 484-4057 | 25363.9 | -1.4474 | 262843.5 | 27.3529 | -83.1441 |
| 499.1713 25341.4 -1.4526 259839.2 27.2472 -82.680 491.1713 25331.0 -1.4554 258574.2 27.2026 -82.4680 494.3275 25331.0 -1.4564 255308.2 27.1337 -82.4680 494.3275 25331.0 -1.4563 255308.2 27.1337 -82.4680 494.3275 25281.0 -1.4603 255308.2 27.0367 -82.480 503.5775 25231.2 -1.4603 255027.5 27.0367 -81.4811 503.5775 25231.2 -1.4605 26.9707.5 26.9770 -81.4811 503.5775 25234.7 -1.4615 24731.2 26.9770 -81.4811 503.5775 25234.7 -1.4615 24731.2 26.9770 -81.4811 510.877 25181.7 25281.7 26.8707 26.9770 -81.4811 512.9057 25182.6 -1.4417 26.9707 26.9770 -81.4811 512.9057 25182.6 -1.4417 26.9807 26.7701 -81.4811 512.9056 25182.6 26.42818.6 -1.41765 26.46 | 499.1713 25341.4 -1.4526 259396.2 27.2472 -82.6109 494.2494 25313.0 -1.4587 25655.5 27.1337 -82.4680 494.2494 25313.0 -1.4587 25655.5 27.1337 -82.4680 494.2494 25313.0 -1.4587 25555.5 27.1337 -82.480 494.2494 25500.7 25655.5 27.0397 -82.480 503.577 25566.7 -1.4644 25207.5 26.9709 -81.4912 503.577 25531.2 -1.4644 25207.5 26.9709 -81.4811 503.577 25531.2 -1.4645 25007.5 26.9709 -81.4811 503.577 25531.2 -1.4645 25007.5 26.9709 -81.4811 513.607 25531.2 -1.4645 247430.7 26.0709 -81.4811 510.877 251.816.4 -1.4645 244777.2 26.7700 -81.4811 512.9057 251.912.5 -1.4712 24.6499.7 26.5099 -80.41017 512.9057 251.916.7 21.4750 24.74172 26.7700 -81.4814< | 499.1713 25391.4 -1.4526 25938.2 27.2472 -82.4605 491.1713 25331.0 -1.4587 2566.57.5 27.12026 -92.6609 494.274 25313.6 -1.4587 2566.57.5 27.1337 -82.460 494.274 25313.6 -1.4587 2566.57 27.0969 -82.3258 494.274 2531.1 -1.4603 255308.2 27.0969 -82.3258 494.275 25266.7 -1.4664 253308.7 26.9707 -8.9710 503.5775 25251.2 -1.4665 24930.7 26.9709 -81.4811 503.5775 25234.7 -1.4665 24930.7 26.9709 -81.4811 503.5775 25266.7 -1.4665 24930.7 26.9970 -81.4811 503.5775 25284 -1.4737 24430.7 26.9809 -81.4811 512.9057 251.677 26.9818.2 26.791 -81.4811 512.4057 251.67 21.4496.2 26.791 -81.4811 512.405 251.67 25.9818.4 -1.4750 24.4772 26.5719 -81.9393 | 487.2338 | 25351.0 | -1.4501 | 261061.2 | 27.2902 | -82.9494 |
| 491.113 25331.0 -1.4554 258574.2 27.2026 -82.6790 494.219 25513.6 -1.4587 255625.5 27.1337 -02.4690 494.213 255908.7 -1.4587 255625.5 27.0397 -82.3558 498.4213 255908.7 -1.4614 255908.7 27.0397 -82.1827 501.4994 25551.2 -1.4614 255007.5 26.9700 -81.8127 503.577 252551.2 -1.4662 25707.5 26.9700 -81.6899 503.577 25551.2 -1.4662 259077.5 26.9700 -81.6899 503.577 25531.2 -1.4662 25707.5 26.9050 -81.6999 512.0967 25132.6 -1.4662 24936.7 26.7570 -91.4918 512.0967 25146.7 -1.4712 24.430.7 26.5995 -91.198 512.0967 2518.077 25.4938.0 26.5999 -90.7999 512.0967 2518.477.2 26.4999.2 26.5995 -91.498 518.0775 2518.67 25.5918.7 26.5999 -90.709 518.07 | 491.113 258514.2 277.026 -82.689 494.2494 25911.6 -1.4587 256625.5 277.0397 -82.4690 494.213 25501.1 -1.4517 256625.5 277.0397 -82.480 496.277 25501.1 -1.4614 25930.7 25900.7 27.0397 -82.1827 591.575 25266.7 -1.4614 25930.7 25.027.5 26.9700 -81.4972 501.4994 25204.7 252027.5 26.9700 26.875 -81.6893 503.5775 252031.2 -1.4615 24931.0 26.875 -81.4893 510.755 252031.2 -1.4712 25702.7 26.8050 -81.391 510.75 25104.7 -1.4712 24.7430.7 26.8050 -81.391 510.875 25104.7 -1.4712 24.7430.7 26.8050 -81.391 510.875 25104.7 -1.4712 24.7430.7 26.8050 -81.391 510.875 25104.7 26.8095 26.1398 -81.398 -91.698 510.75 25104.7 26.6099 26.1398 26.60.809 | 491.1713 2531.0 -1.4564 25657.5 27.1237 -82.4680 494.2794 25310.1 -1.4567 256655.5 27.1337 -82.4680 494.2791 25301.1 -1.4567 255665.7 27.1337 -82.4680 494.2791 2556.6 -1.4644 25396.7 27.0397 -82.4680 494.2791 2556.6 -1.4644 25396.7 27.0397 -82.4590 503.5775 25231.7 -1.4645 24938.0 25.0975 26.9390 503.5775 2534.7 -1.4645 24938.0 26.9390 -81.4811 503.5775 2531.67 -1.4645 24938.0 26.9390 -81.4811 503.5775 2531.67 2530.27 210.097 26.0397 -81.4811 512.9057 2518.4 -1.4750 24.477.2 26.6399 -81.4811 512.9057 2510.218 25106.7 -1.4750 24.1466.7 26.4399 -81.4811 512.9057 25106.7 -1.4750 24.1466.7 26.6397 -80.4909 -81.486.10 512.9057 25106.7 -1.4770 </td <td>489.1713</td> <td>25341.4</td> <td>-1.4526</td> <td>259838.2</td> <td>27.2472</td> <td>-82.8162</td> | 489.1713 | 25341.4 | -1.4526 | 259838.2 | 27.2472 | -82.8162 |
| 494.2494 25313.6 -1.4587 256.55.5 27.1337 -82.4690 496.3275 25390.1 -1.4661 255308.2 27.09649 -82.3258 496.3275 25286.7 -1.4661 255308.2 27.09649 -82.3258 501.4994 25266.7 -1.4661 255308.2 27.09649 -82.4258 503.5775 25251.2 -1.4661 255308.7 26.9700 -81.4811 503.5775 25251.2 -1.4662 250707.5 26.9700 -81.4811 503.5775 25208.7 -1.4662 2509817.0 26.8959 -81.4811 510.8277 25208.2 -1.4675 24.730.7 26.8950 -81.4811 510.8277 2518.4 -1.4712 24.730.7 26.8950 -81.4811 510.8277 25106.7 -1.4712 24.730.7 26.8950 -81.4811 512.9905 2510.257 26.0994.2 26.7570 -81.4811 -80.7107 512.9102.757 2510.67.7 -1.4771.2 24.730.7 26.8950 -80.4909 512.9102.757 2510.757 24.74777.2 26. | 494.264 25313.6 -1.4587 256.25.5 27.1337 -82.4690 496.3275 25301.1 -1.4603 255308.2 27.0669 -82.3258 496.3275 25301.1 -1.4603 255398.7 27.0669 -81.9727 501.4994 25266.7 -1.4644 252027.5 26.9700 -81.827 503.5775 25265.12 -1.4645 252027.5 26.9707 -81.6812 503.5775 252534.7 -1.4645 25077.5 26.9770 -81.6812 503.5775 25534.7 -1.4647 252027.5 26.9770 -81.6813 503.5577 255034.7 -1.4647 252027.5 26.9770 -81.6811 513.672 25166.7 -1.4647 25007.5 26.9770 -81.6811 512.9057 25166.7 -1.4712 24.430.7 26.6791 -81.6813 512.9057 25166.7 -1.4712 24.4777.2 26.5639 -81.6803 512.9182 25166.7 -1.4712 24.4777.2 26.5639 -80.1909 512.9182 25166.7 21.486.2 26.5713 2 | 494.2694 25313.6 -1.4507 256.25.5 27.1337 -82.4680 496.273 253308.1 -1.4603 253308.7 27.0397 -82.4580 496.3215 25266.7 -1.4603 255308.7 27.0397 -82.4580 501.4994 25266.7 -1.4603 255308.7 27.0397 -82.4580 501.4994 25265.7 -1.4605 24916.7 26.9700 -81.612 503.577 252037.5 25.027.5 26.9700 -81.612 508.733 25204.7 -1.4605 247430.7 26.8050 -81.6193 510.8275 25167.2 -1.4712 24437.2 26.7570 -81.6393 510.8275 25167.2 -1.4712 24.437.2 26.5095 -81.6393 512.0936 2516.7 -1.4712 24.437.2 26.5095 -81.6393 512.0936 2516.7 -1.4712 24.437.2 26.5097 -81.393 512.0936 2516.7 -1.4712 24.437.2 26.5097 -81.393 512.01057 25094.3 -1.4712 24.437.7 26.5097 -81.393 <td>491.1713</td> <td>25331.0</td> <td>-1.4554</td> <td>258574.2</td> <td>27.2026</td> <td>-82.6789</td> | 491.1713 | 25331.0 | -1.4554 | 258574.2 | 27.2026 | -82.6789 |
| 496.3275 25301.1 -1.4603 255308.2 27.0867 -82.3258 498.3275 2566.7 -1.4614 253980.7 26.9700 -81.9727 503.5775 25551.2 -1.4614 253980.7 26.9700 -81.9312 503.5775 25551.2 -1.4615 25930.7 26.9700 -81.9312 503.5775 25534.7 -1.4615 25930.7 26.9700 -81.9312 503.735 255057 21.4712 26.9700 26.9701 -81.48312 503.7338 25208.2 -1.4675 24937.0 26.9701 -81.48312 510.757 25167.2 -1.4675 24730.7 26.9260 -81.48312 510.877 25167.2 -1.4772 26.6300 -81.48312 510.877 25167.2 -1.4772 26.6380 -80.4903 512.9057 2518.2 2518.2 26.5380 -80.4093 -80.40563 518.077 2504.388.0 26.5413 26.5413 -80.40563 -80.40563 523.2187 2504.388.0 26.5413 26.5413 -80.5656 -80.5656 | 496.3275 25308.1 -1.4603 255308.2 27.0869 -82.1827 501.475 252081.0 -1.4614 2533980.7 26.9707 -81.4811 501.475 25256.7 -1.4614 2533980.7 26.9707 -81.4811 501.5775 25251.2 -1.4614 2533980.7 26.9707 -81.4811 503.5775 25251.2 -1.4662 250707.5 26.9707 -81.4811 503.5775 25251.2 -1.4615 24.430.7 26.8959 -81.6811 508.7338 25508.2 -1.4750 24.477.2 26.8050 -81.4811 512.9057 251167.2 -1.4750 24.477.2 26.5091 -81.3893 512.9057 25118.4 -1.4750 24.148.2 26.5433 -80.99912 512.9057 251.12 -1.4750 24.148.2 26.5493 -80.99912 512.90563 255.3119 256.4699 0 -80.99912 -80.7107 523.2182 25016.7 21.4776 24.177.2 26.5493 -80.7107 -80.99912 523.3119 25016.3 25016.7 <t< td=""><td>+96.3275 25306.2 25306.2 27.0869 -82.3258 +98.3275 25286.7 -1.4614 253980.7 25.0707 -81.4717 501.4994 25286.7 -1.4614 253980.7 25.0707 -81.4912 501.4994 25281.2 -1.4615 259707.5 26.9709 -81.4912 503.5775 25234.7 -1.4615 259707.5 26.9709 -81.4911 503.5775 25234.7 -1.4615 247430.7 26.8700 -81.4811 503.577 25180.2 -1.4655 247430.7 26.8709 -81.4811 510.8775 25181.2 -1.4717 24.4777.2 26.9809 -81.4811 512.9057 25182.5 -1.4750 24.4177.2 26.7091 -81.4319 512.9057 25182.5 -1.4770 24.4777.2 26.5899 -80.2503 512.9057 25182.5 -1.4770 24.4176.2 26.5899 -80.2503 512.9057 25182.5 25.918.2 25.709 26.1398.0 -80.2503 513.0175 25074.3 24.4776 26.4999 90.9505 <td< td=""><td>494.2494</td><td>25313.6</td><td>-1.4587</td><td>256625.5</td><td>27.1337</td><td>-82.4680</td></td<></td></t<> | +96.3275 25306.2 25306.2 27.0869 -82.3258 +98.3275 25286.7 -1.4614 253980.7 25.0707 -81.4717 501.4994 25286.7 -1.4614 253980.7 25.0707 -81.4912 501.4994 25281.2 -1.4615 259707.5 26.9709 -81.4912 503.5775 25234.7 -1.4615 259707.5 26.9709 -81.4911 503.5775 25234.7 -1.4615 247430.7 26.8700 -81.4811 503.577 25180.2 -1.4655 247430.7 26.8709 -81.4811 510.8775 25181.2 -1.4717 24.4777.2 26.9809 -81.4811 512.9057 25182.5 -1.4750 24.4177.2 26.7091 -81.4319 512.9057 25182.5 -1.4770 24.4777.2 26.5899 -80.2503 512.9057 25182.5 -1.4770 24.4176.2 26.5899 -80.2503 512.9057 25182.5 25.918.2 25.709 26.1398.0 -80.2503 513.0175 25074.3 24.4776 26.4999 90.9505 <td< td=""><td>494.2494</td><td>25313.6</td><td>-1.4587</td><td>256625.5</td><td>27.1337</td><td>-82.4680</td></td<> | 494.2494 | 25313.6 | -1.4587 | 256625.5 | 27.1337 | -82.4680 |
| 498.4213 25288.0 -1.4614 253980.7 27.0397 -82.1827 501.4994 25266.7 -1.4614 252027.5 26.9700 -81.6993 503.577 25234.7 -1.4615 2493870.7 26.9700 -81.6899 503.577 25234.7 -1.4615 2493870.7 26.8754 -81.6899 503.577 25234.7 -1.4615 247430.7 26.8050 -81.6899 503.779 25208.2 -1.4712 24.7430.7 26.8050 -81.6899 512.9057 25167.2 -1.4712 24.7430.7 26.8050 -81.393 512.9057 25167.2 -1.4770 24.4777.2 26.5930 -80.9912 512.9057 25108.7 -1.4770 24.4777.2 26.5439 -80.9912 512.9057 25108.2 -1.4770 24.4777.2 26.5439 -80.9912 512.9057 25108.2 26.0701 26.6590 -80.1091 -80.2505 518.0775 25079.17 26.6499 26.6590 -80.4609 -80.3557 523.2182 25004.3 -1.4790 24.488.2 <t< td=""><td>498.4213 25288.0 -1.4614 253980.7 27.0397 -82.1827 501.4994 25265.7 -1.4614 252027.5 26.9700 -81.9727 503.4577 25251.2 -1.4612 257017.5 26.9700 -81.6899 503.4577 25234.7 -1.4652 257017.5 26.9750 -81.6899 503.4577 25234.7 -1.4652 254930.7 26.8754 -81.6899 503.757 25234.7 -1.4675 249340.7 26.8050 -81.6899 5108.7338 25208.2 -1.4712 26.4999.7 261.6893 -81.3889 510.8277 25187.2 -1.4712 26.4999.2 26.7570 -81.3880 510.8775 25105.7 -1.4778 24.1486.2 26.5413 -80.9912 518.0775 25105.7 -1.4778 26.46997 280.78050 -80.78050 518.0775 25105.7 -1.4778 26.46802 260.7413 -80.80503 518.0775 25106.7 -1.4778 26.46807 260.7605 -80.78050 520.1557 250.106.7 -1.4778 24.2886.0</td></t<> <td>508.4213 25288.0 -1.4614 253980.7 27.0397 -82.1827 503.575 25526.7 -1.4644 2507755 26.9700 -81.4727 503.575 25526.7 -1.4615 2507755 26.9706 -81.4912 503.575 25526.7 -1.4615 2507755 26.9707 -81.4912 503.575 25534.7 -1.4615 250775 26.9050 -81.4912 503.739 25534.7 -1.4615 254099.2 26.1591 -81.393 510.877 25105.7 -1.4712 24.099.2 26.5091 -81.4992 512.9938 25132.5 -1.4712 24.1496.2 26.5091 -81.393 518.077 25105.7 -1.4712 24.1496.2 26.5501 -81.393 518.077 25132.5 25.418.2 26.5509 -81.393 -80.503 518.077 2519.5 25.418.2 26.5699 -80.107 56.5693 518.077 25.918.2 25.511.7 26.5699 -80.503 56.5633 525.3119 2509.317.7 26.5699 26.5699 -80.5056</td> <td>496.3275</td> <td>25301.1</td> <td>-1.4603</td> <td>255308.2</td> <td>27.0869</td> <td>-82.3258</td> | 498.4213 25288.0 -1.4614 253980.7 27.0397 -82.1827 501.4994 25265.7 -1.4614 252027.5 26.9700 -81.9727 503.4577 25251.2 -1.4612 257017.5 26.9700 -81.6899 503.4577 25234.7 -1.4652 257017.5 26.9750 -81.6899 503.4577 25234.7 -1.4652 254930.7 26.8754 -81.6899 503.757 25234.7 -1.4675 249340.7 26.8050 -81.6899 5108.7338 25208.2 -1.4712 26.4999.7 261.6893 -81.3889 510.8277 25187.2 -1.4712 26.4999.2 26.7570 -81.3880 510.8775 25105.7 -1.4778 24.1486.2 26.5413 -80.9912 518.0775 25105.7 -1.4778 26.46997 280.78050 -80.78050 518.0775 25105.7 -1.4778 26.46802 260.7413 -80.80503 518.0775 25106.7 -1.4778 26.46807 260.7605 -80.78050 520.1557 250.106.7 -1.4778 24.2886.0 | 508.4213 25288.0 -1.4614 253980.7 27.0397 -82.1827 503.575 25526.7 -1.4644 2507755 26.9700 -81.4727 503.575 25526.7 -1.4615 2507755 26.9706 -81.4912 503.575 25526.7 -1.4615 2507755 26.9707 -81.4912 503.575 25534.7 -1.4615 250775 26.9050 -81.4912 503.739 25534.7 -1.4615 254099.2 26.1591 -81.393 510.877 25105.7 -1.4712 24.099.2 26.5091 -81.4992 512.9938 25132.5 -1.4712 24.1496.2 26.5091 -81.393 518.077 25105.7 -1.4712 24.1496.2 26.5501 -81.393 518.077 25132.5 25.418.2 26.5509 -81.393 -80.503 518.077 2519.5 25.418.2 26.5699 -80.107 56.5693 518.077 25.918.2 25.511.7 26.5699 -80.503 56.5633 525.3119 2509.317.7 26.5699 26.5699 -80.5056 | 496.3275 | 25301.1 | -1.4603 | 255308.2 | 27.0869 | -82.3258 |
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| 503.5775 25251.2 -1.4662 25077.5 26.9228 -81.48312 505.6557 25534.7 -1.4675 24.9387.0 26.8055 -81.4831 508.733 25208.2 -1.4675 24.6099.2 26.8055 -81.4831 5108.733 25188.4 -1.4737 24.6099.2 26.7570 -81.4831 510.8077 25167.2 -1.4737 24.4777.2 26.6380 -80.9912 512.9057 25132.5 -1.4737 24.4777.2 26.6380 -80.9912 515.9087 25106.7 -1.4778 24.4777.2 26.6380 -80.9912 518.0775 25106.7 -1.4778 24.186.2 26.5393 -90.5056 518.0775 25106.7 -1.4778 24.186.2 26.5597 -90.5056 52.9182 25079.3 -1.4778 24.186.2 26.5597 -90.5056 52.3119 25079.3 24.7177 26.4599 -90.5056 -90.5056 52.3139 25036.3 -1.4778 24.0164.7 26.6599 -90.5056 527.3900 25094.3 -1.4779 25.54253.2 | 503.5775 25251.2 -1.4662 250707.5 26.9228 -81.6831 505.657 25734.7 -1.4695 249387.0 26.8056 -81.689 508.657 25186.4 -1.4695 244730.7 26.8056 -81.689 508.657 25186.4 -1.4712 246099.2 26.7570 -81.393 510.8275 25182.5 -1.4712 24477.2 26.750 -81.393 512.9057 25132.5 -1.4750 24.777.2 26.7091 -81.198 512.9057 25132.5 -1.4761 2.44777.2 26.5395 -80.6901 518.075 25132.5 -1.4770 24.177.2 26.5493 -80.6901 518.0757 25132.5 -1.4770 24.166.7 26.5433 -80.6056 518.0757 25074.3 -1.4770 24.6466.2 26.5413 -80.2056 525.3119 25074.3 -1.4779 234253.2 26.5423 -80.2056 529.4682 24976.1 26.4599 280.556 -80.2572 529.4682 24976.0 24.210 -80.2572 529.4482 | 503.5775 25251.2 -1.4662 250707.5 26.9228 -81.4811 505.6557 25286.2 -1.4675 249387.0 26.8050 -81.4811 510.8278 25186.4 -1.4715 246099.2 26.8750 -81.4811 510.8278 25186.4 -1.4712 246070.7 26.8050 -81.4811 510.8775 25186.4 -1.4737 244777.2 26.7570 -81.393 512.9057 25132.5 -1.4730 244777.2 26.7500 -81.4988 512.9057 25132.5 -1.4750 24.4816.2 26.7500 -81.393 512.9057 25132.5 25106.7 -1.4750 24.486.2 26.5895 -80.803 528.0157 25016.7 -1.4776 24.1486.2 26.5695 -80.805 -80.805 528.3119 25036.3 236217.7 26.5413 -80.6556 -80.2555 529.3119 2504.682 24.0164.2 26.5413 -80.6556 -80.5556 528.3119 2504.682 24016.47 26.5413 -80.5552 -80.46860 -80.35572 529.3199 | 501.4994 | 25266.7 | -1.4644 | 252027.5 | 26.9700 | -81.9727 |
| 505.657 25234.7 -1.4675 249387.0 26.8754 -81.6899 508.733 25208.2 -1.4712 26.8050 -81.4811 510.827 25182.4 -1.4712 26.8050 -81.4811 512.9057 25182.4 -1.4712 26.8059 24.7310 -81.4811 512.9057 25182.4 -1.4712 26.6380 26.5380 -80.9912 512.9057 25132.5 -1.4750 24.1486.2 26.6380 -80.9912 518.0775 25132.5 -1.4760 241486.2 26.63895 -80.9912 518.0775 25106.7 -1.4778 241486.2 26.5895 -80.7107 523.2119 25004.3 -1.4799 238217.7 26.4543 -80.7107 523.2119 25004.3 -1.4799 238217.7 26.4543 -80.2056 523.3119 2504.43 -1.4795 238217.7 26.4543 -80.2056 523.3119 2504.43 -1.4795 238217.7 26.4513 -80.2026 527.3900 24916.4 -1.4795 234253.2 26.3236 -80.20272 | 505.657 25234.7 -1.4675 249387.0 26.8754 -81.6899 508.733 25208.2 -1.4712 26.8050 -81.4811 510.627 25188.4 -1.4712 26.8050 -81.4811 512.9057 25167.2 -1.4737 26.7091 -81.4811 512.9057 25167.2 -1.4772 26.5992 -80.7910 -81.481 512.9057 25132.5 -1.4770 24.6094.2 26.5393 -90.9912 518.0775 25106.7 -1.4760 241486.2 26.5413 -90.5056 518.0775 25004.3 -1.4778 24.1486.2 26.5413 -90.5056 523.2182 25004.3 -1.4778 24.1486.2 26.5413 -90.5056 523.2182 25004.3 -1.4789 238217.7 26.5413 -90.5056 523.2182 25004.3 -1.4789 238217.7 26.4510 -80.5056 523.2182 25004.3 -1.4789 236217.7 26.4510 -80.5056 523.3109 25004.3 -1.4789 235570.0 26.4210 -80.20556 523.310 | 505.657 25.34.7 -1.4675 249387.0 26.8050 -81.6899 508.733 2508.2 -1.4675 24730.7 26.8050 -81.6891 518.737 24777.2 26.7710 26.1730 -81.988 512.9057 25167.2 -1.477 24.730.7 26.7091 -81.1988 512.9057 25167.2 -1.477 24.717.2 26.7091 -81.1988 512.9057 25132.5 -1.477 24.177.2 26.7091 -81.1988 512.9057 25132.5 -1.477 24.1766 24.2818.2 26.5995 -80.9912 518.0775 25106.7 -1.4778 241166.2 26.5895 -80.9107 -80.9912 518.0775 25106.7 -1.4778 241166.2 26.413 -80.9035 520.187 25004.3 -1.4778 240164.7 26.4699 -80.7017 523.187 24918.2 25.4403 -80.7077 26.4213 -80.5056 527.3900 25916.7 -1.4795 235688.0 26.4210 -80.5056 527.3900 24938.17 26.4210 -80.2326 | 503.5775 | 25251.2 | -1.4662 | 250707.5 | 26.9228 | -81.8312 |
| 508.733 25208.2 -1.4695 247430.7 26.8050 -81.4811 510.8275 25186.4 -1.4712 24.47712 26.7570 -81.3393 512.9057 25167.2 -1.4712 24.4777.2 26.7570 -81.3393 512.9057 25167.2 -1.4750 24.4777.2 26.5895 -80.9912 512.90838 25106.7 -1.4750 24.1476.2 26.5895 -80.9912 518.0775 25106.7 -1.4779 24.1464.7 26.5895 -80.7107 520.157 25079.7 -1.4778 240164.7 26.5413 -80.7107 520.157 25074.3 -1.4778 240164.7 26.5413 -80.7107 525.3119 25074.3 -1.4790 23688.0 26.4510 -80.2056 527.3900 249164.7 26.4593 -80.2056 26.4513 -80.2056 527.3900 25936.88.0 236888.0 26.4699 -80.2572 527.3900 24936.2 24.553.2 26.3236 -80.20890 529.4682 24936.2 24.253.2 26.3236 -80.0890 <t< td=""><td>508.733 25208.2 -1.4695 247430.7 26.8050 -81.4811 510.8275 25188.4 -1.4712 26.7570 -81.3393 512.8057 2516.72 -1.4712 26.7570 -81.3393 512.9838 2516.72 -1.4712 26.7991 -81.3393 512.9838 25106.7 -1.4737 24.4771.2 26.5895 -80.9912 518.0775 25106.7 -1.4761 24.1486.2 26.5895 -80.9912 518.0775 25106.7 -1.4761 24.1486.2 26.5895 -80.7107 520.1557 25079.7 -1.4778 24.1486.2 26.5413 -80.7107 523.2182 25079.3 -1.4789 236884.0 26.556 -80.5056 527.3900 25004.3 -1.4789 236888.0 26.556 -80.5056 529.4682 24936.2 -1.4795 235688.0 26.3226 -80.0990 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0990 529.4682 24936.2 234253.2 26.3236 -80.0890</td><td>508.733 25208.2 -1.4695 247430.7 26.8050 -81.4811 510.8275 25188.4 -1.4712 24.477.2 26.5091 -81.393 512.9057 25167.2 -1.4750 24.817.2 26.5380 -81.398 512.9057 25132.2 -1.4750 24.817.2 26.5380 -80.9912 512.9057 25132.5 -1.4750 24.817.2 26.5380 -80.9912 518.0775 25132.7 25136.7 -1.4751 24.1486.2 26.5380 -80.8503 518.0775 25079.7 -1.4778 241486.2 26.5413 -80.7107 523.2182 25079.7 -1.4778 240164.7 26.5413 -80.7107 523.2182 25036.3 -1.4778 240164.7 26.5413 -80.7107 523.2182 25036.3 -1.4779 235270 28.3272 -80.2556 523.2190 25004.3 -1.4799 235570.0 26.3236 -80.20272 529.4682 24936.2 -1.4795 235570.0 26.3724 -80.20360 529.4682 24936.2 -1.4795 2342</td><td>505.6557</td><td>25234.7</td><td>-1.4675</td><td>249387.0</td><td>26.8754</td><td>-81.6899</td></t<> | 508.733 25208.2 -1.4695 247430.7 26.8050 -81.4811 510.8275 25188.4 -1.4712 26.7570 -81.3393 512.8057 2516.72 -1.4712 26.7570 -81.3393 512.9838 2516.72 -1.4712 26.7991 -81.3393 512.9838 25106.7 -1.4737 24.4771.2 26.5895 -80.9912 518.0775 25106.7 -1.4761 24.1486.2 26.5895 -80.9912 518.0775 25106.7 -1.4761 24.1486.2 26.5895 -80.7107 520.1557 25079.7 -1.4778 24.1486.2 26.5413 -80.7107 523.2182 25079.3 -1.4789 236884.0 26.556 -80.5056 527.3900 25004.3 -1.4789 236888.0 26.556 -80.5056 529.4682 24936.2 -1.4795 235688.0 26.3226 -80.0990 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0990 529.4682 24936.2 234253.2 26.3236 -80.0890 | 508.733 25208.2 -1.4695 247430.7 26.8050 -81.4811 510.8275 25188.4 -1.4712 24.477.2 26.5091 -81.393 512.9057 25167.2 -1.4750 24.817.2 26.5380 -81.398 512.9057 25132.2 -1.4750 24.817.2 26.5380 -80.9912 512.9057 25132.5 -1.4750 24.817.2 26.5380 -80.9912 518.0775 25132.7 25136.7 -1.4751 24.1486.2 26.5380 -80.8503 518.0775 25079.7 -1.4778 241486.2 26.5413 -80.7107 523.2182 25079.7 -1.4778 240164.7 26.5413 -80.7107 523.2182 25036.3 -1.4778 240164.7 26.5413 -80.7107 523.2182 25036.3 -1.4779 235270 28.3272 -80.2556 523.2190 25004.3 -1.4799 235570.0 26.3236 -80.20272 529.4682 24936.2 -1.4795 235570.0 26.3724 -80.20360 529.4682 24936.2 -1.4795 2342 | 505.6557 | 25234.7 | -1.4675 | 249387.0 | 26.8754 | -81.6899 |
| 510.8275 25188.4 -1.4712 24.6770 -81.393 512.9057 25167.2 -1.4737 24.777.2 26.7991 -81.1988 512.9057 25167.2 -1.4750 24.577.2 26.7091 -81.1988 515.9036 25132.5 -1.4750 24.518.2 26.6380 -80.9912 518.0775 25106.7 -1.4778 2.41686.2 26.55895 -80.8503 528.0157 25036.3 -1.4778 240164.7 26.55413 -80.5056 523.2182 25004.3 -1.4789 236888.0 26.5413 -80.5056 523.2182 25004.3 -1.4789 236888.0 26.4210 -80.3057 529.4682 24971.1 -1.4799 236888.0 26.3324 -80.30557 529.4682 24936.2 -1.4795 234253.2 26.3326 -80.30590 529.4682 24936.2 -1.4795 234253.2 26.3323 -80.305957 529.4682 24936.2 24.730 26.3236 -80.30590 -80.305957 529.4682 24936.2 24.7495 2342533.2 26.3323 | 510.8275 25188.4 -1.4712 246099.2 26.7570 -81.3393 512.9057 25167.2 -1.4737 244777.2 26.5380 -90.9912 515.9838 25167.2 -1.4750 242818.2 26.6380 -90.9912 515.9838 25132.5 -1.4750 241686.2 26.5895 -80.8503 518.0775 25016.7 -1.4798 241686.2 26.5413 -80.8503 523.2157 25036.3 -1.4790 238217.7 26.5413 -80.8505 525.3119 25004.3 -1.4795 238217.7 26.4210 -80.3656 527.3900 24936.2 -1.4795 235570.0 26.3236 -80.0890 527.3900 24936.2 -1.4795 234253.2 26.3236 -80.0890 527.3900 24936.2 -1.4795 234253.2 26.3236 -80.0890 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 510.8275 25188.4 -1.4712 246099.2 26.7570 -81.3393 512.9057 25167.2 -1.4737 24.4777.2 26.7091 -81.1988 515.9672 25167.2 -1.4750 24.2818.2 26.0380 -80.9912 515.9683 25132.5 -1.4750 24146.2 26.5895 -80.803 518.0775 25106.7 -1.4761 241464.2 26.5413 -80.803 52016.7 -1.4778 240164.7 26.5413 -80.803 5201.557 25004.3 -1.4779 23688.0 26.4699 -80.5056 525.3119 25004.3 -1.4779 23688.0 26.4210 -80.5056 527.3900 24936.2 -1.4795 235570.0 26.3236 -80.00890 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.20890 | 508.7338 | 25208.2 | -1.4695 | 247430.7 | 26.8050 | -81.4811 |
| 512.9057 25132.5 -1.4737 24,737 24,77.2 26.5380 -80.9912 515.9838 25132.5 -1.4750 24,2818.2 26.6380 -80.9912 518.0775 25106.7 -1.4750 24,186.2 26.6380 -80.9503 518.0775 25106.7 -1.4761 241486.2 26.5895 -80.7107 520.1557 25079.7 -1.4778 240164.7 26.5499 -80.7107 523.2182 25036.3 -1.4778 240164.7 26.5413 -80.7056 523.2182 25036.3 -1.4789 238217.7 26.4599 -80.3657 523.2182 25004.3 -1.4789 236217.77 26.4210 -80.3657 527.3900 24936.2 -1.4795 235570.0 26.3224 -80.2272 529.46682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 512.9057 25167.2 -1.4737 24477.2 26.7091 -81.1988 515.9838 25132.5 -1.4750 242818.2 26.6380 -80.9912 518.0775 25106.7 -1.4750 241486.2 26.63895 -80.9912 518.0775 25106.7 -1.4778 241486.2 26.54895 -80.8503 528.1557 25036.3 -1.4778 240164.7 26.5413 -80.7107 523.2182 25004.3 -1.4778 238217.7 26.5413 -80.5056 527.33019 25004.3 -1.4799 238217.7 26.4210 -80.3657 527.3300 259688.0 256.5435 26.3324 -80.3657 529.4682 24936.2 -1.4795 235570.0 26.3326 -80.08990 529.4682 24936.2 -1.4795 234253.2 26.3326 -80.08990 | 512,9057 25167.2 -1.4737 244777.2 26.7091 -81.1988 515,9838 25132.5 -11.4750 242818.2 26.6380 -90.9912 518.0775 25106.7 -11.4750 24186.2 26.6380 -90.8503 5218.0775 25079.7 -11.4761 24186.2 26.5895 -80.7107 520.1557 25079.7 -11.4778 240164.7 26.5413 -90.8503 520.1557 25079.3 -11.4778 240164.7 26.5413 -90.5056 525.3119 25004.3 -11.4789 236516.0 26.4210 -80.3657 527.3900 24971.1 -11.4795 235570.0 26.3724 -80.2072 529.4682 24936.2 -1.4795 234570.0 26.3236 -80.0890 529.4682 24936.2 24936.2 26.3236 -80.0890 | 510.8275 | 25188.4 | -1.4712 | 246099.2 | 26.7570 | -81.3393 |
| 515.9838 25132.5 -1.4750 242818.2 26.6380 -80.9912 518.0775 25106.7 -1.4761 241486.2 26.5895 -80.8503 520.1557 25079.7 -1.4778 241486.2 26.5895 -80.8503 520.1557 25079.7 -1.4778 241486.2 26.5413 -80.7107 523.2182 25036.3 -1.4778 240164.7 26.5413 -80.7107 523.2182 25036.3 -1.4778 240164.7 26.5413 -80.7107 523.2182 25036.3 -1.4778 240164.7 26.5413 -80.7107 523.2182 25036.3 -1.4779 238217.7 26.4210 -80.5056 525.3119 25904.3 -1.4789 236588.0 26.3236 -80.0890 527.3900 24936.2 234253.2 26.3236 -80.0890 529.4682 24936.2 234253.2 26.3236 -80.0890 | 515.9838 25132.5 -1.4750 242818.2 26.6380 -80.9912 518.0775 25106.7 -1.4761 241486.2 26.5895 -80.8503 520.1557 25079.7 -1.4778 240164.7 26.5413 -80.7107 520.1557 25036.3 -1.4790 238217.7 26.5413 -80.7107 523.2182 25036.3 -1.4790 238217.7 26.4699 -80.5056 523.2182 25004.3 -1.4799 238517.0 26.4210 -80.30572 525.3119 2590.4682 234283.0 26.3236 -80.0890 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 515.9838 25132.5 -1.4750 242818.2 26.6380 -80.9912 518.0775 25106.7 -1.4761 241486.2 26.5895 -80.8503 520.1557 25079.7 -1.4778 240164.7 26.5493 -80.7107 520.1557 25036.3 -1.4778 240164.7 26.5413 -80.5056 523.2182 25036.3 -1.4778 238217.7 26.4210 -80.5056 523.2182 25036.3 -1.4790 238217.7 26.4210 -80.5056 525.3119 25004.3 -1.4779 236888.0 26.4210 -80.5056 527.3300 24936.2 -1.4799 235570.0 26.3236 -80.0890 529.4682 24936.2 21.4795 235570.0 26.3236 -80.0890 | 512.9057 | 25167.2 | -1.4737 | 244777.2 | 26.7091 | -81.1988 |
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| 523.2182 25036.3 -1.4790 238217.7 26.4699 -80.5056 525.3119 25604.3 -1.4789 236888.0 26.4210 -80.3657 527.3900 24971.1 -1.4795 235570.0 26.4210 -80.2272 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 523.2182 25036.3 -1.4790 238217.7 26.4699 -60.5056 525.3119 25004.3 -1.4789 23688.0 26.4210 -60.3657 527.3900 24971.1 -1.4795 235570.0 26.3724 -80.2272 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 523.2182 25036.3 -1.4790 238217.7 26.4699 -80.5056 525.3119 25004.3 -1.4789 23688.0 26.4210 -80.2272 525.3119 25904.3 -1.4795 235570.0 26.3124 -80.2272 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 520.1557 | 25079.7 | -1.4778 | 240164.7 | 26-5413 | -80.7107 |
| 525.3119 2504.3 -1.4789 236888.0 26.4210 -80.3657 527.3900 24971.1 -1.4795 235570.0 26.3724 -80.2272 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 525.3119 2504.3 -1.4789 23688.0 26.4210 -80.3657 527.3900 24971.1 -1.4795 235570.0 26.3724 -80.2272 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 525.3119 25004.3 -1.4789 23688.0 26.4210 -80.3657 527.3900 24971.1 -1.4795 235570.0 26.3724 -80.2272 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 523.2182 | 25036.3 | -1.4790 | 238217.7 | 26.4699 | -80.5056 |
| 527.3900 24971.1 -1.4795 235570.0 26.3724 -80.2272 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 529.4682 24936.2 -1.4795 235570.0 26.3724 -80.2272 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.2272 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 525.3119 | 25004.3 | -1.4789 | 236888.0 | 26.4210 | -80.3657 |
| 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 529.4682 24936.2 -1.4795 234253.2 26.3236 -80.0890 | 527.3900 | 24971.1 | -1.4795 | 235570.0 | 26.3724 | -80.2272 |
| | | | 529.4682 | 24936.2 | -1.4795 | 234253.2 | 26.3236 | -80.0890 |
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COMPLEX EX HELA - Andrews

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| TIME (SEC) 532.5463 | さんやくそうな 書名 かんかん たんだい むたち 副事件 そうそう しょうしょう しょうしょう しょうしょう たいしょう しょうしょう 大量 い | | | | |
|----------------------------|--|-------------------|----------|---------------|----------------|
| (SEC) 532 . 5463 | VELOCITY MAGNITUDE | FLIGHT PATH ANGLE | ALTITUDE | GEODETIC LAT. | CENNETTC I NUC |
| 532.5463 | (FT/SEC) | (DEGREES) | (FEET) | (DEGREES) | (DEGREES) |
| | 24880.7 | -1-4786 | 0 202020 | 36 3613 | |
| 34-6244 | 24840-8 | -1-4705 | 220005 7 | 2162.02 | 1148844 |
| i 36.70 25 | 24799.0 | -1 4746 | 1.02020 | 2012-02 | -19.1419 |
| 39.7963 | | | C+000477 | 20.1531 | -79.6105 |
| 41 8744 | 20121 | -1-4/78 | 221142.7 | 26.0799 | -79.4073 |
| 1100111 43 0535 | 4-0047 | -1.4.774 | 226440.2 | 26.0307 | -79.2712 |
| +3.43C3 | 24635.3 | -1.4790 | 225140.5 | 25.9813 | -79-1356 |
| 41.0463 | 24552.4 | -1.4799 | 223209.0 | 25-9077 | -78.9344 |
| 49-1244 | 24493.0 | -1.4801 | 221914.5 | 25_8582 | -78 7000 |
| 51.2025 | 24430.2 | -1.4788 | 220624_2 | | |
| 54.2963 | 24330-5 | | 210700 1 | | |
| 56.3900 | 24259.8 | -1 4003 | 1.01012 | 27 . 1349 | -18.4612 |
| 58.4687 | 24104 0 | | 0-214177 | 22-0849 | -78.3334 |
| 2007002 61 5663 | 4°+01+7 | -1-4830 | 216138.5 | 25.6353 | -78.2011 |
| | 2400301 | -1.4929 | 214250.0 | 25.5617 | -78.0063 |
| 03-0400 | 23984.9 | -1.4830 | 212970.5 | 25.5117 | -77-8745 |
| 65.7182 | 23895.4 | -1.4883 | 211703.5 | 25.4620 | -77-7443 |
| 68.1963 | 23754.6 | -1.4942 | 209829.2 | 25.3885 | -77.5527 |
| 70-8900 | 23655.1 | -1.4951 | 208557.7 | 75-3385 | -77. 4733 |
| 72.9838 | 23550.7 | -1.5001 | 207289.7 | 25.2885 | -77 2046 |
| 75.0619 | 23443.3 | -1-4950 | 206037.2 | 25 2300 | |
| 78-1400 | 23276.2 | -1 5012 | 201000 | £2.623U | |
| 80.2182 | 22157 1 | | 2020102 | 801-07 | -16.9807 |
| 87 JOK2 | 1.14142 | 010C •T- | 1.444502 | 25.1165 | -76.8555 |
| C017070 | 2.46062 | 1904-1- | 201711.2 | 25+0672 | -76.7312 |
| 07.5 f44 | 22844.8 | -1.5180 | 199883.7 | 24.9944 | -76.5486 |
| 81.4682 | 22710.3 | -1.5352 | 198639.0 | 24.9450 | -76.4255 |
| 89.5463 | 22573.2 | -1.5443 | 197401.0 | 24-8962 | -76-3042 |
| 92-6244 | 22357.6 | -1.5750 | 195560-2 | 24-8240 | -76.1262 |
| 94.7025 | 22203.9 | -1-5932 | 194309.2 | 24.7754 | |
| 96.7807 | 22045.1 | -1-6161 | 193052.0 | 24.7371 | |
| | | | | 0 | |
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| RECONSTRUCTION |
|----------------|
| RE-ENTRY |
| AND |
| FREE-FLIGHT |
| GT-3 |
| GEMINI |

| (SEC) | (F1/SEC) | (UEGREES) | (FEE !) | [UEGKEES] | (DEGREES) |
|------------------|----------|-----------|-----------|-----------|-------------|
| 599.8 588 | 21798.6 | -1-6403 | 191181.5 | 24.6557 | -75.7167 |
| 601.9525 | 21624.5 | -1.6483 | 189909.7 | 24.6075 | -75.6006 |
| 604-0150 | 21446.1 | -1.6520 | 188663.7 | 24.5602 | -75.4873 |
| 607.1 088 | 21171.9 | -1.6593 | 186809.5 | 24.4897 | -75.3195 |
| 509.1 869 | 20979.4 | -1.6635 | 185573.7 | 24-4427 | -75.2083 |
| 511.2650 | 20783.7 | -1.6689 | 184346.7 | 24.3961 | -75.0982 |
| 614.3432 | 20486.4 | -1.6803 | 182543.7 | 24.3275 | -74.9374 |
| 516.4213 | 20279.5 | -1.6853 | 181336.0 | 24.2817 | -74.8304 |
| 518.4994 | 20067.2 | -1.6942 | 180137.0 | 24.2362 | -74.7247 |
| 621.5775 | 19746.8 | -1.7063 | 178376.0 | 24.1696 | -74.5704 |
| 623.6557 | 19526.1 | -1.7159 | 177196.7 | 24.1251 | -74.4679 |
| 625.7338 | 19302.7 | -1.7314 | 176023.2 | 24.0811 | -74.3667 |
| 528.7963 | 18966.5 | -1.7536 | 174303.2 | 24.0171 | -74.2200 |
| 530.8744 | 18735.2 | -1.7636 | 173144.2 | 23.9742 | -74.1221 |
| 532- 9525 | 18499.8 | -1.7892 | 171989.0 | 23.9319 | -74.0256 |
| 636.0150 | 18146.2 | -1-8088 | 170296.0 | 23.8704 | -73.8859 |
| 538.0932 | 17901.7 | -1-8395 | 169151.7 | 23.8293 | -73.7928 |
| 540.1713 | 17654.6 | -1.8721 | 168005.0 | 23.7388 | -73.7012 |
| 542.2494 | 17407.0 | -1-9032 | 166856.7 | 23.7489 | -73.6109 |
| 645.3275 | 17037.1 | -1-9732 | 165145.7 | 23.6906 | -73.4800 |
| 647.4057 | 16787.7 | -2.0110 | 163982.5 | 23.6519 | -73.3934 |
| 649.483R | 16538.7 | -2.0488 | 162816.0 | 23.6139 | -73.3082 |
| 652.5619 | 16164.2 | -2.1354 | 161073.7 | 23 5583 | -73.1847 |
| 654-6244 | 15908.9 | -2.1783 | 159896.0 | 23.5219 | -73.1037 |
| 656.7025 | 15651.2 | -2.2243 | 158707.0 | 23.4858 | -73.0236 |
| 659.7807 | 15263.6 | -2.3268 | 156928.5 | 23.4334 | -72.9076 |
| 661.8588 | 14996.6 | -2.3905 | 155713.7 | 23.3989 | -72.8311 |
| 663.9213 | 14728•8 | -2.4574 | 154499.2 | 23.3652 | -72.7568 |

4160-6047-TC000

CONFIDENCE

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GEODETIC LONG. (DEGREES) -72.6486 -72.5774 -72.5082 -72.4078 -72.3420 -72.2776 -72.1857 -72.1252 -71.7966 -71.7469 -72.0662 -71.9821 -71.9265 -71.8732 -71.6997 -71.6303 GEODETIC LAT. (DEGREES) 23.2839 23.2525 23.2069 23.1770 23-0510 23-0125 23.3162 23.1477 23.1056 23.0780 22.9870 22.9626 22.9275 22.9046 22.8824 22.8508 ALTITUDE 45625.0 35846.0 152668.7 50159.2 37299.0 51416.7 46951.2 42250.2 40851.7 33646.5 130610.7 43629.7 38755.7 32138.2 28313.7 48255. (FEET) FLIGHT PATH ANGLE -2.5698 (DEGREES) -2.6580 -3.0050 -2.7516 -2.8909 -3.3295 -3.4640 -3-6049 -3.8284 -4.1530 -3.9904 -4.4253 -3.1341 -4.6257 -4-8441 -5.1811 VELDCITY MAGNITUDE 14327.7 3787.5 3384.3 3110.3 2835.5 2155.1 1881.0 1475.5 1198.9 9519.8 4057.1 2429.3 0921.4 0221.4 0507.1 (FT/SEC) 9938.1 **666° 8**094 671-1400 678.3744 690.7494 692.8119 669.0775 674-2182 676.2963 681-4369 683.5150 685.5932 695.8900 697.9682 700-0463 688.6557 703-1244 705-2025 (SEC TIME

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4160-6047-TC000 -57 -71.2165 -71.1893 -71.1517 22.6611 22.6492 22.6327 09443.2 107686.7 05029.0 -9.4159 -10.0759 -11-2054 6389-0 6136.4 5774.6 726.8744 728.9525 732.0307

-71.3218

22.7086 22-6940 22-6738

15391.5 .13704.5 111175.0

-7.6759

-7.2877

-8.1099 -8.8425

117065.7

-71.2898 -71.2450

-71.3553

+4077

12-

-

. 5434 -71-4834 -71.4446

-71

-71.5861

22.8303 22.8106 22.7828 22.7649 22.7479 22.7239

126741.0

-5.4315

9235.6

-5.6947

125151.2

7.9779.7

-6.1158

-6.4295 -6.7507

7.1797

7565.1

717.5619 719-6400

721.7182 724.7963

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7293.3 1028.3 6643.8

8253.3

8534.3

710.3432

712.4213

707.2807

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| (5 E C) (F T / SE C) (D E G R E (3 4 - 1088 55 41 - 2 -12 - 0 (3 6 - 1869 53 16 - 5 -13 - 0 (3 6 - 1869 53 16 - 5 -13 - 0 (3 8 - 2650 50 98 - 4 -13 - 0 (4 1 - 3 4 3 2 4 7 8 2 - 5 -14 - 0 (4 1 - 3 4 3 2 4 7 8 2 - 5 -14 - 0 (4 1 - 3 4 3 2 4 7 8 2 - 5 -14 - 0 (4 1 - 3 4 3 2 4 7 8 2 - 5 -16 - 0 (4 2 - 4 9 4 4 7 7 3 - 9 -16 - 0 (7 - 5 - 4 9 4 4 3 7 3 - 9 -16 - 0 (7 - 5 - 3 3 8 3 7 8 - 4 -22 - 19 - 22 - 19 - 22 - 18 - 18 - 22 - 18 - 18 - 22 - 18 - 18 | (EES) 0960 0802 0294 0294 0565 9691 9691 96918 4918 8659 6119 2454 6119 2454 1282 0617 | (FEET) 103191.5 101312.7 99400.7 94670.7 92770.2 92770.2 92770.2 92770.2 92770.2 94670.2 92770.2 88163.2 88163.2 88163.2 86340.0 81909.7 80160.2 75901.0 75901.0 | (DEGREES) 22.6225 22.6129 22.6129 22.6138 22.5839 22.5839 22.5560 22.55607 22.55607 22.55607 22.55607 22.55607 22.55608 22.55607 22.55608 22.55607 22.55608 22.55508 22.55508 22.55508 22.55508 22.55508 22.55508 22.5555508 22.555508 22.5555508 22.555508 22.555508 22.555508 22.5555508 22.5555508 22.555508 22.555508 22.555508 22.555508 22.555508 22.5555508 22.555508 22.555508 22.555508 22.555508 22.555508 22.555508 22.555508 22.5555508 22. | (DEGREES) -71.1280 -71.1055 -71.0843 -71.0843 -71.0370 -71.0370 -71.0370 -71.0370 -70.9671 -70.9511 -70.9511 -70.9159 -70.9159 |
|--|--|---|--|---|
| 34.1088 5541.2 -12.0 736.1869 5316.5 -13.0 738.2650 5096.4 -14.0 741.3432 4782.5 -15.2 741.3432 4782.5 -16.0 743.4057 4575.0 -16.0 745.4994 4575.0 -16.0 745.4994 4373.9 -16.0 745.4994 4373.9 -16.0 745.4994 4373.9 -16.0 752.4994 4373.9 -16.0 752.4994 4373.9 -16.0 752.4338 3786.4 -22.1 752.8119 3786.4 -22.1 555.8119 3786.4 -22.1 555.8119 3786.4 -22.1 557.8900 3786.4 -22.1 557.8900 3786.4 -25.1 557.807 2917.3 -25.1 655.1244 2907.7 -31.1 70.2182 2658.8 -34.1 77.3243 274.8 -34.1 77.3243 256.95.5 -36.1 77.32436 233.3 | 02960 0294 0294 0294 0294 0291 9655 9611 1282 0617 0617 0617 | 103191.5 101312.7 99400.7 94670.2 94670.2 92770.2 92006.7 988363.2 881909.7 81909.7 81909.7 81909.7 81909.7 75901.0 75901.0 | 22.6225 22.6129 22.6129 22.6129 22.5915 22.5915 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.556007 22.5556007 22.55550007 22.555500007 22.555500000000000000000000000000000000 | -71.1280 -71.055 -71.0955 -71.0943 -71.0370 -71.0370 -70.9967 -70.9691 -70.9511 -70.9511 -70.9159 -70.9159 |
| 36.1869 5316.5 -13.0 38.2650 5098.4 -15.0 41.3432 4782.5 -16.0 43.4057 4575.0 -16.0 45.4994 4575.0 -16.0 45.4994 4373.9 -16.0 45.4994 4373.9 -16.0 45.4994 4373.9 -16.0 45.4994 4373.9 -16.0 45.5775 4087.2 -198.2 45.5775 4087.2 -16.0 45.178 373.9 -12.0 55.21338 373.8,4 -22.4 55.2139 373.6,0 -22.4 55.2139 373.4 -22.4 55.2139 373.4 -22.4 55.2139 375.9 -23.1 55.2139 305.9 -23.1 56.1244 2917.3 -27.6 65.1244 2907.7 -34.1 65.1244 276.8 -27.5 70.2182 256.9 -34.1 71.332 256.9 -43.0 71.3333 27.4 27.4 | 0294 0294 0294 0565 9691 5675 5675 5675 5618 8659 8659 8659 1282 3385 0617 | 101312.7 99400.7 94670.2 94670.2 92770.2 92770.2 92770.2 92770.2 88163.2 88163.2 88163.2 88163.2 86340.0 81909.7 80160.2 75901.0 75901.0 | 22.6129 22.6038 22.5915 22.5915 22.5839 22.55807 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.5560 | -71.055 -71.0843 -71.0843 -71.0370 -71.0370 -71.0370 -70.9824 -70.9511 -70.9511 -70.9511 -70.9511 -70.9159 -70.8997 |
| 38.2650 5098.4 -14.0 41.3432 4782.5 -15.2 43.4057 4575.0 -16.6 45.4994 4373.9 -16.6 45.4994 4373.9 -16.6 45.4994 4373.9 -16.6 45.5175 4973.9 -16.6 45.4994 4087.2 -19.2 45.577 3905.9 -19.2 552.8119 3738.4 -22.4 552.8119 3738.4 -22.4 552.8119 3506.1 -22.4 552.8119 3506.1 -22.4 557.8900 3360.0 -22.4 559.9682 3035.9 -22.4 551.244 2917.3 -27.4 651.244 2907.7 -34.1 65.1244 2656.8 -27.4 65.1244 2907.7 -34.1 70.2182 2569.5 -34.1 71.33 2432 -43.1 74.34369 2373.3 -41.4 79.4369 2233.3 -43.1 79.446.1 273.3 -44.6 | 0294 2377 9691 5018 5675 5675 5675 6119 8659 6119 2454 6119 0617 0617 | 99400.7 94670.2 94670.2 92770.2 92770.2 90006.7 88163.2 88163.2 88163.2 88163.2 86340.0 81909.7 80160.2 75901.0 75901.0 | 22.6038 22.5915 22.5915 22.5819 22.55807 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.5560 22.55290 | -71.0843 -71.0551 -71.0370 -71.0370 -71.0198 -70.9824 -70.9691 -70.9511 -70.9511 -70.9511 -70.9159 -70.8997 |
| 41.3432 4782.5 -15.2 43.4057 4575.0 -16.6 45.4994 4575.0 -16.6 45.4994 4373.9 -16.6 45.4994 4373.9 -16.6 45.4994 4373.9 -16.6 45.4994 4373.9 -16.6 45.4994 4373.9 -16.6 55.8119 3738.4 -20.1 55.8119 3738.4 -22.4 55.8119 3506.1 -22.4 55.8119 3506.1 -22.4 55.1244 3035.9 -23.1 653.0463 3035.9 -23.1 653.1244 2917.3 -27.6 653.1244 2907.7 -34.1 67.1713 2656.8 -36.1 70.2182 2569.5 -34.1 71.32.2807 2373.3 -41.4 77.32.4994 233.3 -41.4 79.4369 2233.3 -41.4 79.4994 2233.3 -41.4 | 2377 0565 9691 5018 5675 5675 5675 6119 8659 6119 2454 1282 0617 | 96559.2 94670.2 92770.2 92770.2 90006.7 88163.2 88163.2 88163.2 88163.2 86340.0 81909.7 80160.2 75901.0 74241.7 | 22.5915 22.5819 22.55839 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.55607 22.5560 22.55290 | -71.0551 -71.0370 -71.0370 -71.0198 -70.9824 -70.9691 -70.9511 -70.9511 -70.9511 -70.9159 -70.9159 |
| 43.4057 4575.0 -16.0 45.4994 4373.9 -16.9 45.4994 4373.9 -16.9 46.5775 4087.2 -18.0 50.6557 3905.9 -19.0 55.8119 3738.4 -22.4 55.8119 3738.4 -22.4 57.8900 3360.0 -22.4 57.8910 3356.1 -22.4 55.1819 3738.4 -22.4 55.1819 3360.0 -22.4 55.1819 3035.9 -22.4 55.1244 2917.3 -27.5 65.1244 2917.3 -27.4 65.1244 2907.7 -34.1 65.1244 2569.5 -34.1 70.2182 2569.5 -34.1 71.32.2807 2373.3 -41.4 77.3749 2373.3 -41.4 77.3749 2233.3 -46.5 | .0565 9691 5018 5675 5675 5675 6119 8659 6119 1282 1282 0617 | 94670.2 92770.2 92770.2 90006.7 88163.2 86340.0 86340.0 81909.7 80160.2 77604.2 75901.0 75901.0 | 22.5839 22.5767 22.5568 22.55607 22.55560 22.55560 22.55560 22.55833 22.55383 22.55383 22.55300 22.55300 | -71.0370 -71.0198 -70.9967 -70.9824 -70.9691 -70.9511 -70.9511 -70.9571 -70.9159 -70.8997 |
| 45.4994 4373.9 -16.9 48.5775 4087.2 -19.6 50.6557 3905.9 -19.6 52.7338 3738.4 -20.1 55.8119 3738.4 -22.4 57.8900 3360.0 -22.4 57.8910 33506.1 -22.4 57.8900 3350.0 -22.4 59.9682 3224.8 -22.4 59.0463 335.9 -22.4 59.0463 335.9 -22.4 59.0463 3035.9 -23.4 65.1244 2917.3 -27.5 65.1244 2917.3 -34.1 70.2182 2569.5 -34.1 70.2182 2569.5 -38.1 74.3432 2373.3 -41.4 77.3744 2373.3 -41.4 79.4369 2233.3 -46.5 | 9691 5018 7238 4918 8659 6119 6119 1282 1282 | 92770.2 90006.7 88163.2 86340.0 85340.0 81909.7 81909.7 80160.2 75901.0 74241.7 | 22.5767 22.5568 22.55607 22.5550 22.5550 22.55473 22.53473 22.5325 22.5325 22.5325 | -71.0198 -70.9967 -70.9824 -70.9691 -70.9511 -70.9400 -70.9297 -70.9159 -70.8997 |
| 48.5775 4087.2 -18.5 50.6557 3905.9 -19.5 52.7338 3738.4 -20.1 52.8119 3506.1 -22.4 57.8900 3360.0 -22.4 57.8910 33506.1 -22.4 57.8900 3350.0 -22.4 59.9682 3224.8 -22.4 59.1244 2917.3 -27.5 65.1244 2917.3 -27.4 65.1244 2917.3 -27.4 65.1244 2917.3 -34.1 70.2182 2658.8 -34.4 70.2182 2658.8 -34.4 70.2182 2658.8 -34.4 70.2182 2658.8 -34.4 71.3344 2569.5 -38.1 71.3744 2373.3 -41.4 79.4369 2233.3 -46.4 | 5018 5675 4918 4918 8659 6119 3385 1282 0617 | 90006.7 88163.2 86340.0 86340.0 81909.7 81909.7 80160.2 77604.2 75901.0 74241.7 | 22.5668 22.55607 22.5550 22.55473 22.55473 22.55473 22.55473 22.55473 22.55473 22.55473 22.55473 22.55473 22.55473 22.5540 | -70.9967 -70.9824 -70.9691 -70.9511 -70.9400 -70.9297 -70.9159 -70.8997 |
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| 57.8900 3360.0 -23.8 59.9682 3224.8 -25.3 63.0463 325.9 -27.6 63.0463 3035.9 -27.6 65.1244 2917.3 -27.6 65.1245 2917.3 -29.1 65.1244 2917.3 -29.3 76.2182 269.6 -34.6 70.2182 2569.5 -34.6 71.3343 2649.1 -38.1 71.3744 2373.3 -41.6 79.4369 2233.3 -46.6 | .8659 .2454 .6119 .3385 .1282 .0617 | 81909.7 80160.2 77604.2 75901.0 74241.7 | 22.5426 22.5383 22.5325 22.5290 | -70.9400 -70.9297 -70.9159 -70.9074 -70.8997 |
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| 74.3432 2489.1 -38.1 77.3744 2373.3 -41.6 79.4369 2304.8 -43. 81.4994 2233.3 -46.5 | 1849 | 70168.5 | 22.5192 | -70.8831 |
| 77.3744 2373.3 -41.0 79.4369 2304.8 -43. 81.4994 2233.3 -46. | .1551 | 68548 . 7 | 22.5170 | -70-8772 |
| 79.4369 2304.8 -43.7 81.4994 2233.3 -46. | . 6865 | 66192.5 | 22.5140 | -70.8695 |
| 81.4994 2233.3 -464. | . 7853 | 64607-2 | 22.5123 | -70.8648 |
| | .3926 | 63036.5 | 22.5107 | -70-8605 |
| 84.5307 2141.1 -50.5 | .5371 | 60739.5 | 22.5086 | -70.8550 |
| 86.5932 2077.5 -53.1 | .0684 | 59191.5 | 22.5072 | -70.8517 |
| 38.6557 2025.0 -55.(| .6715 | 57660.2 | 22.5060 | -70-8487 |
| 91.7025 1957.0 -59.4 | .4415 | 55411.7 | 22.5043 | -70-8449 |
| 93.7650 1915.3 -61.0 | .6316 | 53902.2 | 22.5033 | -70-8426 |
| 96.7963 1859.9 -64. | .2692 | 51722.2 | 22.5018 | -70.8397 |
| 1827.6 -65.i | .8823 | 50270.2 | 22.5009 | -70.8380 |
| | | | | |
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GEMINI GT-3 FREE-FLIGHT AND RE-ENTRY RECONSTRUCTION

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6.0 TRACKING SYSTEM PERFORMANCE

6.1 Introduction

Many sets of tracking data were used in the Velocity Comparison Program during the course of the GT-3 analysis. These sets of data are obtained from essentially two different tracking systems for the ascent phase the GE Mod III system which is used as the primary ascent guidance system and the MISTRAM (Valkyria and Eleuthera) tracking system. During the re-entry phase, tracking data was received from four radar tracking stations.

The purpose of this section is to discuss the relative merits of the different sets of data and to present velocity comparison plots using this data which have not been included in previous sections of this report.

The tracking data received on this flight included:

For Ascent

GE Burroughs GE Final MISTRAM I Quick Look 10K and 100K MISTRAM II Passive MISTRAM Final BET



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For Re-Entry

Patrick AFB TPQ-18 Radar (0:18) Merritt Island TPQ-18 Radar (19:18) Grand Turk TPQ-18 Radar (7:18) Grand Bahama Island TPQ-18 Radar (3:18)

Delivery dates on most of the data were timely and considerably better than GT-2. For the ascent phase the GE Burroughs data was available on time to complete the quick look analysis. Quick Look MISTRAM data and GE Final data were received about 4 calendar days after the flight and were used to perform the final ascent guidance analysis.

For convenience all of the velocity comparisons using the different sets of data are displayed with those using quick look lOOK MISTRAM data as a reference. It is felt that the lOOK Quick Look MISTRAM data represented the best tracking data received on GT-3 based principally on its low noise content.

6.2 GE Mod III

The GE Mod III radio guidance system is used as primary guidance on GEMINI. The tracking portion of this system consists of a monopulse radar tracker which measures position and an interferometer rate system which measures range rate and two lateral rates. The data from this system is available from two data extraction systems - the Burroughs, where the data is sampled at a 2 per second rate, and the GE FDR (Flight Data Recording) unit, where the data is sampled at a 10 per second rate.

GE Mod III/Burroughs

The Burroughs data at a 2 per second rate is recorded on the intermediate punched paper tape. This data which consists of raw counts is available

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within a few hours after the flight and is processed in the STL data reduction programs and used for the quick look analysis. Figure 14 shows the velocity comparisons using Burroughs (and 100K MISTRAM) data. There is generally good agreement between the two sets of tracking data except toward the end of flight where the Burroughs data is noisy. This is expected since the elevation angle during the noisy region from 320 seconds to end of powered flight ranges from 10 degrees to less than 4 degrees and the range varies from 2.5 million feet at 320 seconds to over 3.5 million feet at 370 seconds. The timing error noted on this flight was 5 milliseconds compared to a value of 25 milliseconds noted on GT-2; an accuracy of 1 millisecond is expected.

GE Mod III/Final

GE/Final data is processed by GE/Syracuse from the 10 per second FDR output. The velocity comparisons using this data are shown in Figure 1 of Section 3.0 of this report. The principal difference between this data and the STL processed Burroughs data in addition to the sampling rate is the smoothing and refraction corrections applied. The GE/Final Syracuse processed data has significantly more smoothing applied as can be observed by comparing it with the Burroughs data of Figure 14 late in flight. The differences in refraction correction methods did not appear to have any significant effect on this flight as there are no significant systematic differences between the Burroughs and the GE Final data.

However, there are some significant systematic differences noted between the GE final data and the 100K MISTRAM. These differences have propagated to the following values toward the end of flight; 2-3 feet per second in \dot{X} , 10-20 feet per second in \dot{Y} , and 1 foot per second in \dot{Z} . These differences also seem to exist between the Burroughs and 100K MISTRAM data although it is less obvious due to the higher Burroughs noise content.

Figure 14



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These errors are quite large especially in the Y (vertical) direction. The ratio and sense of the X to Y velocity error suggests an error in the measurement of elevation rate (\dot{E}) by one or both systems as opposed to an elevation type error. This suggests an error in the GE P measurement and/or the MISTRAM P measurement. The error in either case is very much larger than expected even for the low elevation angles encountered.

6.3 MISTRAM Data

MISTRAM Quick Look Data

The quick look MISTRAM I data received is fully scaled and corrected but unsmoothed and in the system's measurement coordinates. This consists of R. P_{10K} , Q_{10K} , P_{100K} , Q_{100K} position data where R is a range sum measurement, P_{10K} , and Q_{10K} are range difference measurements from the 10,000 foot baselines and P_{100K} and Q_{100K} are range difference measurements from the 100,000 foot baselines. The two sets of range difference measurements along with the range sum measurement were processed to give essentially two redundant sets of tracking data. This data is differentiated and rotated into the proper coordinate system by the STL programs. Figure 15 shows the multiple plot of 10K MISTRAM and 100K MISTRAM used in velocity comparisons. There is good agreement between these two sets of data except for noise content. The MISTRAM 100K data is far superior to the 10K data as far as noise content is concerned as expected. Most of the noise indicated by the velocity comparisons until late in flight is caused by the large PCM timing quantizing error.

There does not appear to be any significant ambiguities in the quick look data as were observed on GT-2. The general quality of this data is excellent.



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Final MISTRAM And Passive MISTRAM

The Range (ETR) generates final MISTRAM data which consists of a merge of MISTRAM 10K, 100K and passive MISTRAM II. Comparisons using final MISTRAM data are shown plotted along with 100K MISTRAM I in Figure 16.

Comparisons using MISTRAM II passive data are shown in Figure 17. There appears to be a bias in this data of about 10 feet per second toward the end of flight in Y. This difference is also seen in the final MISTRAM comparisons and is presumably caused by the use of the passive MISTRAM II data in the final solution. An example of the passive MISTRAM influence on the final MISTRAM solution can be seen just before 300 seconds in Figures 16 and 17 where a systematic perturbation of like magnitude and duration is noted in both sets of data.

On this flight MISTRAM I actively tracked throughout the entire powered portion of flight. MISTRAM II passively tracked from about 190 seconds until the end of powered flight. The range sum measurements from this passive mode of tracking is ambiguous and must be zero set by the ETR in the data processing.

In summary the final MISTRAM data was disappointing and in fact degraded in comparison with the quick look data. The differences between the final and quick look MISTRAM data are extremely large from the standpoints of MISTRAM specifications although they appear small with relation to the guidance error.

BET

The BET (Best Estimate Trajectory) data is a merge of range tracking systems to produce the ETR best estimate tracking data for the flight. Comparisons using this data are shown in Figure 18. Since only the accurate ETR systems used on GEMINI are the MISTRAM systems the BET data should and does



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Figure 16

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Figure 17







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agree with the final MISTRAM solution. GE Mod III is not operated by the ETR and is generally not available for this purpose.

The BET like the final MISTRAM was of limited use on this flight because of the weight placed on the passive MISTRAM data.

6.4 Radar Data

Radar data from four stations were used for the re-entry analysis. MISTRAM and GE tracking are not available during this period because the beacon transponders for these systems are located in the Titan GLV. The GEMINI spacecraft does carry a radar beacon and track was accomplished with the following radars for the following time spans. Times are referenced to retro fire which occurred 16403 seconds after liftoff.

| Radar | <u>Time Span</u> | Track Mode |
|----------------------------|------------------------|----------------|
| Patrick (0:18) | 450 - 609 | Beacon |
| Merritt Island (19:18) | 469 - 513 513 - 617 | Beacon Skin |
| Grand Turk (7:18) | 614 - 674 675 - 899 | Skin Beacon |
| Grand Bahama Island (3:18) | 595 - 686 | Beacon |

Position and velocity comparisons using this data are shown in Section 4.0.

The data from the GBI (3:18) radar is poor as can be espcially noted from the position comparison plots. The ETR had no explanation for this performance except that the tracking geometry from that station was very

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poor. Elevation angles ranged from about 8 degrees at 595 seconds to less than 2 degrees at 686 seconds.

There is a marked discontinuity in the position comparisons around 675 seconds. At this time the velocity residuals settle down and the noise level is relatively low until end of tracking. The time of this discontinuity corresponds with the time that the Grand Turk station switched from skin to beacon mode track. The data is expected to be better in the beacon track mode. Therefore, the data from about 600 seconds to 675 seconds has to be discounted because of the combination of poor quality GBI tracking and Grand Turk skin tracking during that region.

In the Z (crossrange) direction there is about a 1,000 foot bias between the beacon track 7.18 data (after 675 seconds) and the earlier data described by the 0.18 and 19.18 radars. This error is quite large and is suspected to be in the 7.18 radar data.

6.5 Summary

In general the quality of the tracking data was excellent. It was especially gratifying to note the improved quality of MISTRAM quick look data compared to GT-2.

The principal discrepancy in the data received on this flight is the large systematic error noted between MISTRAM and GE data late in flight.

Radar data received was, in general, adequate with the exception of 3.18 data which exhibited very large systematic errors.



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7.0 REFERENCES

- 4160-6009-TU000, "Preliminary GEMINI G And C Data Reduction And Analysis Plan," by F. B. Lavenhar, dated 30 October 1964. (U)
- 4160-6016-TU000, "GEMINI Inertial Measuring Unit Accuracy Prediction Study," by R. E. Sanson, dated 8 February 1965. (U)
- 4160-6029-TCOOO, "GEMINI GT-2 Inertial Guidance System Evaluation Trajectory Reconstruction (U)," by R. J. Boyles, dated 10 March 1965. (C)



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Appendix I

ASCENT THRUST PROFILE

Guidance thrust, position, velocity, and acceleration quantities during ascent are listed along with plots of the thrust accelerations and the inertial flight path angle.

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| TICS SPACE TECHNOLOGY LABORATORIES INULT RAAPESENDIO WODINIOSE INC. |
|---|
| ACCELEROMETER BLASES (PULSES/SEC) |
| |
| FISALIGARENT AND SCALE FACTOR MATRIX .10009750 .00015980 .00005860 .00005920 .00003415 .09749790 .0000442009029480 .00013660 |
| Stading Times |
| LIFTCFF= .000 BUDSTER ENGINE CUTOFF= 156.250 SUSTAINER ENGINE CUTOFF= 337.450 |
| SUM CF ACCUMULATOR COUNT DATA AT TIME ZERO |
| SFX0= 119.000 SFY0= -449.000 SF2-548604.000 |
| TIPE BLAS 3.452 THE 999999.000 THE 999999.000 |
| |
| |
| |
| |

| TIME (SECS) | | | TIME | IN SECONDS | FROM LIFTON | | | | | |
|----------------|-------|---------------|------------|-------------|-------------|-------------|----------------|------------|---------------------------------|--|
| TIME (SECS) | | 11209 031U940 | TON VELOCT | TY AND ACCE | LERATION IN | CUIDANCE TI | HRUST COORDIN | ATES | | |
| (SEC S) | × | ≻- | 7 | TDOX | YDOT | 2001 | TUDOX | YDOOT | ZODOT | |
| | (11) | (13) | (FT) | (FT/SEC) | (FT/SEC) | (FT/SEC) | (FT/SEC+2) | (FT/SEC+2) | (F1/Sc.•2) | |
| 707 C | I | -596 | | .03 | -214.92 | .18 | 11 | -42.11 | 60. | |
| 184.7 | | - 1021- | | 14* N.S. | -312.17 | 15. | 21 12 | -42.62 | •16 | |
| 7.515 | | -2214 | m | 87 | -429.43 | - 98 | 15 | -43.22 | 57. 92 | |
| 5.812 | ĥ | -3315 | ¢ | 95 | -529.41 | 1.61 | +1 | -43.12 | 07. | |
| 12.124 | 8- | -4657 | 10 | -1.58 | -631.05 | 2.24 | | 144.10 | | |
| 14.437 | -11 | -6235 | 16 | -1.78 | -733.87 | 3.04 | | | 57. | |
| 16.765 | -16 | -8064 | 24 | -2.19 | -837.85 | 4°03 | | -45 95 | | |
| 19-515 | -23 | -10540 | 37 | -2.69 | -363.39 | 0.1 | 10° | | | |
| 21-828 | -30 | -12891 | 51 | -2.80 | -10201- | 0.00 | * * * | | 1.7 | |
| 24.093 | -38 | -15435 | 68 | -2.71 | -1175-84 | 8.04 | 5.° | -17 -17 | 10 | |
| 26.499 | -42 | -18401 | 38 | .29 | -1289.58 | 8,93 | 2.1.2 | | | |
| 28.906 | -33 | -21643 | 111 | 7.19 | -1404.97 | 9.72 | 3.82 | | 77 . | |
| 31.296 | ĥ | -25141 | 136 | 18.39 | -1521-62 | 10.52 | 2.49 | -+0.40 | | |
| 11.703 | 65 | -28944 | 160 | 94.00 | -1639.83 | 6 | 11-1 | | | |
| 36.109 | 162 | -33033 | 183 | 52.91 | -1759.31 | 61°6 | 6.40 | +0.+0.+ | | |
| 38-484 | 314 | -37354 | 204 | 75.82 | -1879.17 | 8.11 | 10.01 | | 1.4 - | |
| 46-874 | 528 | -41991 | 222 | 103.34 | -2000.78 | 6.92 | 14.21 | | 10 | |
| 43.265 | 812 | -46920 | 236 | 135.47 | -2122.79 | 5.31 | 12-41 | | | |
| 45.624 | 1174 | -52372 | 246 | 171.49 | -2245.08 | 3.19 | 10.01 | 23.76- | 76 - | |
| 210-27 | 1631 | -57589 | 252 | 211.52 | -2369.90 | | | 06.90 | | |
| 100-05 | 21.84 | -63367 | 254 | 255.65 | -2495-80 | | 19.22 | | -1.76 | |
| 52.749 | 2843 | -69403 | 247 | 303.89 | -2621.40 | -3.91 | 51-12 | NC . CC- | -1.25 | |
| 55.176 | 3627 | -75780 | 233 | 356.84 | -2747.67 | -8-01 | 60.62 25 25 | | - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 | |
| 57.499 | 4543 | -82457 | 212 | 415.68 | -2875.61 | -9-80 | 20°22 | | | |
| 50.905 | 5621 | -89530 | 186 | 480.94 | -3003.15 | -12.52 | 67.82 | 27.66- | | |
| 196.63 | A846 | -96812 | 153 | 221.20 | -3129-52 | | 87.05 | | | |
| 44.487 | 8262 | -104496 | 112 | 626.66 | -3256.85 | -18.6/ | 17.26 | 77•6C- | | |
| | 14050 | -130996 | -100 | 895.31 | -3666.15 | -36.31 | 38.98 | 90.50- | 71.7- | |
| 814 74 | 16240 | -139853 | -193 | 02.166 | -3793.09 | -41.00 | 41.22 | 16.56- | 97 - | - T - L |
| 200-26 | 18763 | -149014 | -297 | 1092.29 | -3920.39 | -45.60 | 43.38 | | 00*1 | |
| 70 4 94 | 21500 | -158543 | -408 | 1199.18 | -4051.63 | -46.22 | 94.04 | 89 • • C - | | |
| | 74515 | -168452 | -513 | 34°60EL | -4184.22 | | 21-14 | | 17=7 | -7 |
| 04000 | 27785 | -178615 | -601 | 1426.54 | -4317.97 | 67"EE- | 20*15 | 21-66- | | 6 |
| | | | | | | | 4 | | • | an a |

| THE X Descrited matching Model Hauss Composition Model Model <thmodel< th=""> <thmodel< th=""> <thmodel< th=""></thmodel<></thmodel<></thmodel<> | | | | 111 | HE IN SECOND: | S FROM LIFTC | JFF | | | | |
|--|-----------------|--------|---------------|-------------|------------------|-------------------|----------------|--------------------|------------|----------------|----|
| THE X X001 Y001 X001 Y001 Z001 Y001 Z001 Z011 Z01 | | | COMPUTED POST | TON VELO | CITY AND ACC | ELERATION IN | V GUIDANCE TI | HRUST COORDIN | ATES | | |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$ | UWI1 | × | | 7 | XDOT | YDOT | 2001 | XDDOT | YDDOT | 20001 | |
| 06.687 31365 -199166 -673 1550.33 -4452.40 -7.44 52.76 -56.06 3.27 91.0915 39465 -21313 -757 1900.03 -4652.40 -1.449 00.39 -77.42 3.34 91.017 57946 -21313 -757 1900.05 -4652.40 -1.449 00.39 -77.42 3.34 91.017 57946 -2101.37 -5108.15 -5108.15 -5108.15 -5108 3.27 91.017 55946 -711 2284.37 19.2.28 45.33 15.2.28 3.34 91.017 55949 2701.47 570.45 3.105 <td< td=""><td>(SECS)</td><td>(FT)</td><td>(FT)</td><td>(1-1)</td><td>(FT/SEC)</td><td>(FT/SEC)</td><td>(FT/SEC)</td><td>(FT/SEC+2)</td><td>(FT/SEC+2)</td><td>(FT/SEC+2)</td><td></td></td<> | (SECS) | (FT) | (FT) | (1-1) | (FT/SEC) | (FT/SEC) | (FT/SEC) | (FT/SEC+2) | (FT/SEC+2) | (FT/SEC+2) | |
| Will's 3946 -210013 -758.70 -108.10 -758.70 -108.30 -55.71 -55.38 5.20 91.917 5405 -21191 -778 1960.03 -4662.40 -14.9 60.39 -57.42 3.33 91.917 5405 -21191 7702 210.013 16.27 -56.10 3.13 91.917 58745 -21101 2206.15 -701.13 10.14.9 66.12 -56.10 3.13 91.917 58745 -20031 38745 -701.13 210.44 64.12 -56.10 3.13 91.0519 58755 -20031 91.051 10.14.10 469.25 3.13 11.12 50.16 3.13 11.12 50.16 3.13 11.12 50.16 10.12 51.12 3.13 11.12 50.16 10.12 51.12 3.13 11.12 50.16 50.16 50.16 51.12 51.12 51.12 51.12 51.12 51.12 51.12 51.12 51.12 51.12 <td>86.687</td> <td>31365</td> <td>-189166</td> <td>-673</td> <td>1550.33</td> <td>-4452.21</td> <td>-25.44</td> <td>52.76</td> <td>-56.06</td> <td>3.27</td> <td></td> | 86.687 | 31365 | -189166 | -673 | 1550.33 | -4452.21 | -25.44 | 52.76 | -56.06 | 3.27 | |
| 91-517 3405 -21103 -772 1961.62 -4724.27 -9.1 51.05 -55.02 3.12 91-917 5993 -226953 -772 1961.65 -51.05 55.10 -55.02 3.12 91.917 5993 -226953 -773 -1001.89 55.10 -55.02 3.12 90.617 5993 -226953 -7101 2366.15 -5101.89 55.10 -56.12 3.13 90.617 5993 -226953 -711 2366.15 -5733.26 5731.2 59.30 56.12 5.13 90.617 5975.4 -710 5733.31 -5730.51 19.43 71.06 5.13 59.10 2.11 90.617 -776.4 -775.4 310.47 -996.12 47.12 50.12 5.14 11.778 -777.2 2100.4 -774 310.24 -774.2 3.13 11.778 -777.2 310.47 -996.12 47.12 57.13 57.12 11.778 -777.2 310.47 -77.12 47.12 57.13 57.13 11.778 -777.2 310.47 -77.26 310.47 57.13 57.13 11.778 -2807 1965.17 -5865 | 601-68 | 11266 | -200113 | - 126 | E0*1891 | -4587+61 | -18.21 | 55.27 | -56.38 | 3.30 | |
| 93-31 4402-40 -110 2100-03 -517.42 3.24 95-31 59-30 -517.42 3.13 3.25 96-31 59-37 -77.42 3.25 97.41 770 -5106.33 -5108.33 12.28 55.27 -56.06 3.13 97.41 7712 -595.34 -591.01 2366.17 27.03 11.29 55.27 -55.06 3.13 97.41 7018 -256.66 -711 2368.15 -573.35 33.04 2.68 97.41 7018 -276.57 -3105.31 -573.35 33.04 2.68 2.28 112.709 677.72 -576.56 30.37 37.03 86.37 -59.01 2.28 112.709 677.72 -324.47 -95.65 77.03 86.37 -59.27 2.23 112.7124 1097.4 -56.75 61.711 59.36 47.33 86.3 2.249 112.721 1197.4 -56.75 61.711 59.46 57.47 95.45 2.249 112.721 1197.4 -57.711 1197.47 59.45 69.45 2.49 112.721 1197.4 -57.714 110.72 -59.45 2.49 | 91.515 | 39485 | -211316 | -759 | 1817.62 | -4724.27 | -9.71 | 57.81 | -55.92 | 3.32 | |
| 0.0.017 5999 -244113 -750 2200.17 590.37 -56.10 | 93.937 | 44058 | -222925 | -112 | 1960.03 | -4862.40 | -1-49 | 60.39 | -57.42 | 3.34 | |
| 1000001 55516 256666 711 25611 579910 10.40 68.30 56.30 < | 98.197 | 57949 | -244113 | - 750 | 2226.73 | -5108.33 | 12.28 | 50°53 | | 0.7.0 6.1.4 | |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | CO-603 | 58536 | -256656 | -711 | 2368.15 | -5249.37 | 19.43 | 68°30 | -58.12 | 3.04 | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 160.60 | 64523 | -269538 | -655 | 2556+78 | 10-0665- | 27.03 | 62.17 | -58.48 | 2.88 | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 05.437 | 70838 | -282677 | -581 | 2733.32 | -5530.56 | 33.91 | 74.08 | -59.01 | 2.67 | |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | 07.874 | 11772 | -296334 | 167- | 2916.86 | -5675+38 | 39.89 | 77.08 | -59.55 | 2.34 | |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | 10.296 | 85053 | -310257 | -338 | 3105.31 | -5821.28 | 45.33 | 80.35 | -59-62 | 2.32 | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | 15.126 | 77726 | -324431 | - / / 4 | 3303.47 | -5965-32 | 49.69 53.52 | 84 • 21 88 · 42 | -59.22 | 1.85 | |
| 15.953 119047 -369218 132 3958.92 -5386.97 63.44 96.42 -58.05 2.49 22.374 128921 -344855 234 4196.72 -6658.50 77.54 100.27 -56.44 2.40 27.203 150335 -417055 667 -66912.76 812.76 814.9 100.27 -59.17 3.00 27.203 150335 -417055 651 -6959.26 -6959.26 -6959.27 -55.45 77.05 3.01 3.01 27.624 162791 -41705 566 77.54 100.27 12.53 -61.29 3.17 37.624 162791 -41705 124.55 117.12 -55.133 3.24 3.26 36.647 201180 5243.19 -7715.12 124.55 3.17 3.23 35.281 215538 -5733183 -7715.27 124.55 117.12 -65.13 3.24 41.12 201180 -5753183 -7715.27 124.55 133.15 -65.77 3.42 55.281 215534 -7713.135 127.45 <td>17-531</td> <td>107737</td> <td>-353920</td> <td>-16</td> <td>3730-63</td> <td>-6247.34</td> <td>58.16</td> <td>92.38</td> <td>-58.01</td> <td>2.13</td> <td></td> | 17-531 | 107737 | -353920 | -16 | 3730-63 | -6247.34 | 58.16 | 92.38 | -58.01 | 2.13 | |
| 22.374128921-3644552344196.72-6526.5070.54 100.27 -58.44 2.80 27.731139315-4170556604093.94-6812.76 814.99 100.27 -59.17 3.08 27.651150345-4170556604965.26-6612.76 82.49 117.12 -551.17 3.08 27.651150345-417055660 4965.26 -6612.76 32.45 117.12 -551.17 3.08 27.6511116 5243.19 -7107.97 100.27 117.12 -651.13 3.24 35.817201180 -953849 1263 122.15 -651.23 3.43 35.817 201180 -533849 1926 717.32 124.55 127.47 -651.46 3.43 35.817 201180 -533849 1926 174.356 133.46 33.72 3.43 3.32 35.817 2001180 -533849 1926 116.74 -7751.25 122.15 -651.26 3.94 41.702 230971 -52379 2145.91 142.55 132.46 3.94 3.95 41.724 246966 -541301 2575 6819.69 779.26 142.55 145.91 -654.46 3.34 41.724 246966 -541301 2575 6819.69 172.55 142.91 -654.46 3.34 41.724 246966 -541301 2575 6819.69 142.75 152.66 40.41 -16.77 < | 19.953 | 119047 | -369218 | 132 | 3958.92 | -6386.97 | 63.44 | 96.42 | -58.05 | 2.49 | |
| 24.163 139315 -4:0031 472 4443.63 -6663.66 17.45 104.15 -59.19 3.00 25.12031 160335 -4:17055 667 4699.94 -6812.76 84.99 106.23 -650.17 3.08 25.121 17.451 -4:17055 667 4699.94 -6812.76 84.99 106.23 -6.0.17 3.08 25.121 17.451 -45057 1116 5243.19 -7107.97 100.27 117.12 -65.13 3.12 35.201 174314 -45057 116.39 55331.83 -7259.37 100.27 117.12 -65.13 3.24 35.201 175738 -731.35 116.25 133.46 133.46 3.36 3.4 35.20397 -524319 2576.05 142.55 133.46 133.46 3.36 41.10 230971 -52231 2576.05 189.49 142.55 145.91 -65.73 3.43 41.2 24.566 172.15 142.55 133.46 142.55 157.64 3.43 41.2 24.569 167.0 | 22.374 | 128921 | -384855 | 294 | 4196.72 | -6526.50 | 70-54 | 100.27 | -58.44 | 2.80 | |
| Z7.203 150335 -417055 667 4699.94 -6812.76 84.99 108.25 -650.17 3.08 Z5.624 162731 -431733 884 4966.25 -5959.27 92.45 112.53 -610.29 3.17 Z5.621 1874 -55657 116 27259.27 108.09 127.47 -610.29 3.17 34.74 1874.11 -566.77 116.28 127.47 -610.29 3.13 35.281 215538 -593849 1929 6146.74 -7570.72 124.55 133.15 -65.73 3.43 35.281 215538 -573849 1929 6146.74 -7570.72 124.55 133.15 -65.73 3.43 35.281 215638 -53349 1929 6146.74 -7570.72 124.55 137.45 -61.05 3.43 44.124 264934 -522379 2241301 2541301 2541301 254435 -67.45 147.591 4.564 3.34 46.966 284770 -57.51 124.55 142.541 142.541 -16.45 4.54 <td>24.731</td> <td>139315</td> <td>-400731</td> <td>214</td> <td>£443.63</td> <td>-5663.56</td> <td>17.45</td> <td>104.15</td> <td>-59.19</td> <td>9°90</td> <td></td> | 24.731 | 139315 | -400731 | 214 | £4 4 3.63 | -5663.56 | 17.45 | 104.15 | -59.19 | 9°90 | |
| C-7.00.4 100.7 100.27 117.12 -01.07 | 27 . 203 | 150336 | -417056 | 66 7 | 4699.94 | -6812.76 | 84.99 | 108.28 | -63.17 | 3.38 | |
| 3.453 18741 -468054 1368 5531.83 -7259.37 108.09 127.47 -64.46 3.32 36.674 201180 -465822 1639 5531.83 -7259.37 108.09 127.47 -64.46 3.43 36.674 201180 -465822 1639 5531.83 -7413.56 116.20 127.47 -64.46 3.43 36.674 201180 -465822 1639 5731.83 -7711.35 124.55 133.15 -65.73 3.43 36.672 254034 1929 6146.11 -7731.35 133.46 139.27 -65.73 3.43 41.703 230971 -5575 5819.69 -7861.30 257.55 152.64 -59.93 4.14 46.968 281779 257.55 152.64 -59.93 4.14 -61.05 3.74 41.77 24.058 3314 1561.30 -7731.35 142.55 152.64 -59.93 4.14 52.768 2817.05 179.62 179.62 179.62 -711.39 4.16 4.14 52.758 339655< | 23.024 | 146201 | -433133 | 100 | 07°004+ | 72.84.80- | C+-24 | CC. 211 | 61 - To- | 11.0 | |
| 36.874 201180 -485822 1639 5832.78 -7413.58 116.28 127.47 -64.46 3.43 35.281 215538 -503849 1929 6146.74 -7570.72 124.55 133.15 -65.73 3.56 41.703 239871 -522379 2241 6476.11 -7731.35 133.46 139.27 -65.73 3.63 41.703 230871 -522379 2241 6476.11 -7731.35 133.46 139.27 -65.73 3.63 44.124 246968 -541301 2575 5819.69 -7804.91 142.55 145.91 -664.45 3.43 46.562 264074 7731.35 142.55 152.64 -57.93 4.14 46.562 264074 7731.35 142.55 152.64 -57.93 4.14 46.562 264074 718 142.55 152.64 -59.93 4.14 -59.93 4.14 52.758 31917 -612421 3196.02 359.46 40.94 -116.77 .03 52.758 3120167 -621242 4576 | 34.453 | 187421 | -468054 | 1368 | 5531.83 | -7259.37 | 108.09 | 122.15 | -53.28 | 3.32 | |
| 35.281 215538 -503849 1929 6146.74 -7570.72 124.55 133.15 -65.73 3.56 41.703 230871 -522379 2241 6476.11 -7731.35 133.46 139.27 -65.73 3.56 44.124 252379 2241 6476.11 -7731.35 133.46 139.27 -67.05 3.74 44.124 2541301 2575 5819.69 -7894.91 142.55 145.91 -68.45 3.94 46.968 -541301 2575 5819.69 -7894.91 142.55 145.91 -68.45 3.94 52.758 311917 -612421 3970 8190.12 -8511.69 179.88 -711.39 4.054 52.187 3190157 -612421 8159.33 -85494.24 178.62 40.91 -16.77 0.03 56.187 359635 -641242 4576 8253.26 -8569.60 178.70 41.47 -15.63 -01 56.593 359635 -641349 5606 8352.30 -8569.60 178.70 41.47 -15.63 -01 | 36.874 | 201180 | -485822 | 1639 | 5832.78 | -7413-58 | 116-28 | 127+47 | -64.46 | 3.43 | |
| 41.703 230371 -522379 2241 6476.11 -7731.35 133.46 139.27 -67.05 3.74 44.124 246968 -541301 2575 5819.69 -7894.91 142.55 145.91 -68.45 3.34 46.562 264034 -541301 2575 5819.69 -7894.91 142.55 145.91 -68.45 3.34 46.968 24170 2935 139.40 142.55 152.64 -69.93 4.14 52.758 311917 -612421 3970 8190.12 -8511.69 179.88 -711.39 4.54 52.3163 310517 -612421 3190.12 -8511.669 179.88 -16.77 0.03 56.187 350655 -641242 4576 8353.26 -8511.68 178.70 41.47 -16.20 .02 56.593 359635 -661319 5606 8352.30 -8569.60 178.70 41.47 -16.263 .01 56.593 359635 -661319 5436 8555.30 -8569.60 178.70 42.41 -15.58 -01 <t< td=""><td>35.281</td><td>215538</td><td>-503849</td><td>1929</td><td>6146.74</td><td>-7575-72</td><td>124.55</td><td>133.15</td><td>-65.73</td><td>3.56</td><td></td></t<> | 35.281 | 215538 | -503849 | 1929 | 6146.74 | -7575-72 | 124.55 | 133.15 | -65.73 | 3.56 | |
| 44.124 246968 -541301 2575 5819.69 -7894.91 142.55 145.91 -68.45 3.34 46.562 250334 -541301 2575 5815.00 2935 7105.00 -69.93 4.14 52.758 311917 -612421 3314 1551.30 -8234.07 162.73 159.28 -711.39 4.54 52.758 311917 -612421 3970 8190.12 -8511.69 179.88 -713.72 4.54 55.187 320167 -612422 4576 8153.35 -8494.24 178.62 40.41 -16.77 .03 56.187 320167 -611242 4576 8353.30 -8569.60 178.84 40.41 -16.77 .03 56.593 359635 -641319 5606 8352.30 -8569.60 178.70 41.47 -15.63 .01 56.593 359635 -641319 5606 8352.30 -8569.60 178.70 41.47 -15.63 .01 56.593 359635 -641348 178.74 418.47 -15.58 01 .02 | 41.703 | 230371 | -522379 | 2241 | 6475.11 | -7731.35 | 133.46 | 139.27 | -67.05 | 3.74 | |
| 46.562 264034 -560730 2935 7183.09 -6063.52 152.64 -69.93 4.14 48.966 24170 -560356 3314 1561.30 -8234.07 162.73 159.28 -71.39 4.33 52.758 311917 -612421 3970 6190.12 -6511.69 179.88 169.85 -71.39 4.33 52.758 311917 -612421 3970 6190.12 -6511.69 179.88 169.85 -73.72 4.64 53.812 320167 -621024 4151 8158.33 -8494.24 178.62 40.41 -16.77 .03 56.593 35655 -641242 4576 8253.26 -8551.68 178.70 41.47 -15.63 .01 56.593 359635 -661319 5006 8352.30 -8554.68 178.70 41.47 -15.63 .01 03 56.593 359635 -661319 5006 8352.30 -8569.60 178.70 41.47 -15.58 01 .01 56.593 56.56 8555.37 -8643.68 178.74< | 44-124 | 246968 | -541301 | 2575 | 5819.69 | - 7894.91 | 142.55 | 145.91 | -58.45 | 3.94 | |
| 48.968 24170 -580356 3314 1561.30 -8234.07 162.73 159.28 -71.39 4.33 52.758 311917 -612421 3970 6190.12 -6511.69 179.68 169.85 -73.72 4.64 53.812 320167 -612421 3970 6190.12 -8511.69 179.68 169.85 -73.72 4.64 53.812 320167 -621024 4151 8158.33 -8494.24 178.62 40.41 -16.77 .03 56.187 339655 -641242 4576 8253.26 -8531.68 178.62 40.493 -16.20 .02 56.593 359635 -661319 5006 8352.30 -8569.60 178.70 41.47 -15.63 .01 60.559 5006 8352.30 -8569.60 178.70 41.47 -15.63 .01 .02 60.559 5006 8355.30 -8643.68 178.70 42.41 -15.58 01 .02 60.557 5006 8555.37 -8643.68 178.79 42.41 -15.58 04 | 10292 | 160192 | | 5662 | 60.CHT | -6063.52 | 132+55 | 152-64 | -69.93 | 4.14 | |
| 52.758 311917 -612421 3970 6190.12 -6511.69 179.68 169.85 -73.72 4.64 53.812 320167 -612421 4151 8158.33 -6494.24 178.62 40.41 -16.77 .03 56.187 339655 -641242 4576 8253.26 -8531.68 178.62 40.41 -16.20 .02 56.593 359635 -661319 5006 8352.30 -8559.60 178.70 41.47 -15.63 .01 60.593 359635 -661319 5006 8352.30 -8569.60 178.70 41.47 -15.63 .01 60.593 359635 -661319 5006 8352.30 -8569.60 178.70 41.47 -15.63 .01 60.593 359635 -661319 5606 8355.30 -8663.60 178.70 42.41 -15.58 01 .02 60.593 359635 -6613105 5853 8555.37 -86643.68 178.70 41.47 -15.58 01 .02 60.593 370 47 -15.58 | 48-968 | 281770 | -280358 | 3314 | 1951 | -8234-07 | 162.73 | 159.28 | -71.39 | 6.33 | |
| 5.187 320167 -021024 4101 8128.53 -0494.424 178.62 40.41 -10.77 -03 56.187 339655 -641242 4576 8253.26 -8531.68 178.64 40.93 -16.20 .02 56.593 359635 -661819 5606 8352.30 -8569.60 178.70 41.47 -15.63 .01 60.579 359635 -661819 5606 8352.30 -8569.60 178.70 41.47 -15.63 .01 60.539 359635 -661319 5606 8352.30 -8563.60 178.70 41.47 -15.63 .01 60.539 359635 -661313 76.74 42.41 -15.58 01 .02 61.539 5355 -8643.685 178.79 43.23 -15.58 01 .02 | 851-25 | 116116 | -612421 | 9970 | 21-0619 | -8511.69 | 179.88 | 169.85 | -13.12 | 4.54 | |
| 50.187 334033 -041242 4371 -10 -12 50.593 359635 -661819 5606 8352.30 -8569.60 178.70 41.47 -15.63 .01 60.593 359635 -661819 5606 8352.30 -8569.60 178.70 41.47 -15.63 .01 60.593 359635 -8653.03 -8663.60 178.70 41.47 -15.53 .01 61.339 5436 8453.43 -8663.60 178.70 41.47 -15.58 .01 61.339 5555.37 -8663.68 178.70 42.41 -15.58 01 1 61.339 40.673 178.79 43.23 -15.59 01 1 1 | 518.C | 320165 | -021024- | 1014 | 8178.35 | 47*464 <u>8</u> - | 1/8-02 | 14.04 | -10.11 | | |
| 64.549 5794 57.54 64.540 176.74 42.41 15.56 -10 64.549 5853 6555.31 -8643.68 176.74 43.23 -15.59 04 | 50 503 | 250625 | 012140- | | 02.02558 | - 8560 60 | | 41.43 | -15,63 | 20. | |
| 63.390 400186 -703105 5853 8555.37 -8643.88 178.79 43.23 -15.5904 2.2 | | 379855 | -682484 | 5436 | ED-ES-03 | -8607.03 | 178.74 | 42.41 | -15-58 | 10 | |
| | 046-50 | •0100+ | S01601- | 5853 | 8555.37 | -8643-88 | 176-79 | 43-23 | -15.59 | 40 | 77 |

| THR X Y Z X001 Y001 Z001 Y001 Y011 Y011 <thy011< th=""> <thy011< th=""> <thy011< th=""></thy011<></thy011<></thy011<> | | | | W11 | E IN SECONDS | FROM LIFTC | JFF | | | | |
|--|--------------------|---------|--------------|-------------|--------------|-------------|---------------|----------------|------------|------------|-----|
| THK X VDI ZDDI VDOI ZDDI VDOI ZDDI VDOI ZDDI VDOI ZDDI VDOI YDOI | | | COMPUTED POS | ITION VELOC | ITY AND ACCE | LERATION IN | I GUIDANCE TI | HAUST COORDIN | ATES | | |
| IEECS1 (FT) < | TIME | | * | 2 | XDOT | YDOT | 2001 | XDDOT | YDDOT | 20001 | |
| 165.765 4.2029 -723679 6.288 8659.57 -8681.11 178.45 -15.65 -15.65 175.210 46012 -46395 7132 8872.66 -7561 8993.66 -8717.76 178.33 44.03 -15.724 175.212 57914 -837236 7132 8973.65 -876.75 176.30 45.06 -10.94 177.312 57714 -837236 973.02 -8875.45 177.39 47.42 -10.94 177.312 57914 -837336 973.02 -8825.47 -8825.45 177.39 47.42 -10.94 186.124 54942 -81613 9625.47 -8825.45 175.70 49.45 -10.94 186.124 56071 10241 972.05 171.48 51.29 51.29 57.65 185.164 175.71 57.61 175.71 57.65 17.45 52.75 185.164 57.84 57.65 17.16 57.65 7.91 185.164 57.84 57. | (SEC S) | (FT) | (FT) | (FT) | (FT/SEC) | (FT/SEC) | (FT/SEC) | (FT/SEC+2) | (FT/SEC+2) | (FT/SEC+2) | |
| 117-112 575-56 118-33 64.09 -13.71 117-405 7132 8931.66 6755.56 117.42 44.08 -13.71 117-405 456.05 751 8931.66 6755.56 117.42 44.08 -10.04 117-112 527410 -825466 8415 9139.71 -8825.41 176.42 44.65 -10.04 117.115 527410 -825464 8415 9355.51 185.55 177.42 48.15 -10.04 186.112 549142 10.411 9255.51 1825.44 177.25 51.65 51.65 185.115 50.036 -973.55 177.25 51.65 7.76 5.93 191.640 6.0731 -95077 10.81.95 975.55 177.25 51.65 7.76 191.640 6.0731 -95077 10.81.25 10.75.5 51.65 7.76 7.76 191.640 6.1209 10.61.24 10.76.5 51.65 7.95 7.76 195.6015 <td>165.765</td> <td>420629</td> <td>-723679</td> <td>6288</td> <td>8659.52</td> <td>-8681.11</td> <td>178.65</td> <td>60.44</td> <td>-15.65</td> <td>90</td> <td></td> | 165.765 | 420629 | -723679 | 6288 | 8659.52 | -8681.11 | 178.65 | 60.44 | -15.65 | 90 | |
| 177.510 462127 -164956 7132 6871.64 177.42 46.08 133.71 175.312 56756 7561 973.35 -8877.64 177.42 48.76 -1.17 175.312 56756 -7561 973.35 -8877.64 177.51 57.57 -10.57 177.7115 577410 -879646 88415 971.75 -17.59 46.08 -1.17 187.115 577410 -879646 8841 971.75 -17.56 -1.57 187.118 577412 -879646 8915 972.77 -8875.64 177.49 51.69 6.29 187.116 577915 -975791 194.109 975.55 177.45 51.26 6.29 194.104 66771 -975797 1875.56 177.48 57.35 7.56 194.105 54541 -177.74 51.69 6.29 1.57 194.105 54562 110252 8775.55 177.48 51.26 194.104 667731 | 166.093 | 012044 | -743933 | 6703 | 87.62.66 | -8717.76 | 178.33 | 44.98 | -15-24 | 8C*- | |
| 172.906 493612 78610 983.66 -877.36 177.19 47.42 -10.94 177.712 577410 -25464 8417 953.77 -932.571 -932.571 -932.571 -952.44 175.71 50.57 -3.60 186.7124 577410 -25464 8419 972.9782 -817.56 17.42 -10.94 186.7124 577410 -25464 972.9781 982.577 -915.56 17.46 5.29 186.7124 577417 -993.545 17.56 17.45 51.29 7.56 186.7124 567.67 10.22.21 -973.55 17.56 97.56 17.46 51.29 7.56 191.647 664.01 -972575 10.32.24 975.35 167.67 7.56 7.56 194.405 615.40 -1056723 12.965.10 10.75.35 165.66 55.65 7.95 7.95 191.647 66.019 10.24.3 10.66.109 10.75.35 165.67 7.95 7.95 | 170.499 | 462127 | -764956 | 7132 | 8871.80 | -8755-58 | 178-29 | 46.08 | -13.71 | 12 | |
| 175.312 5057563 -915256 7959.50 -8805.45 177.42 48.15 912.07 187.17.18 571412 -8284.46 84.15 912.0.7 -8815.44 175.71 50.57 1.0.0 187.17.18 57142 -8790.68 952 912.0.7 -8815.44 175.71 50.57 1.0.0 187.515 59334 -8790.68 958 952.37 -8815.45 177.45 51.69 6.29 185.514 53575 -95077 1031 9753.65 171.48 50.57 51.69 6.29 194.107 54541 -97077 1030.61 9753.65 171.48 52.59 7.56 194.107 54541 -97077 1020.63 10072.22 -8713.100 109.57 54.23 7.91 194.107 54541 17709 12304 10072.22 -8713.103 10456 7.91 7.91 201.404 76120 10124 10072.22 -8773.23 168.04 55.65 7.91 7.91 201.404 76120 10206.05 10074.24 1057.25 <td>172-906</td> <td>483612</td> <td>-786056</td> <td>7561</td> <td>8983.86</td> <td>-8787.64</td> <td>177.98</td> <td>47.42</td> <td>-10.94</td> <td>18</td> <td></td> | 172-906 | 483612 | -786056 | 7561 | 8983.86 | -8787.64 | 177.98 | 47.42 | -10.94 | 18 | |
| 177.713 527410 -023664 8415 9219.00 9845.77 185.44 175.60 49.46 -1.00 185.046 593334 -693064 8415 9592.37 -8835.44 175.61 50.57 1.00 185.046 593334 -693064 9592.37 -88305.23 172.25 51.23 4.24 185.046 59334 -959355 1.0124 973.05 177.29 51.23 4.25 185.046 560737 -959375 1.0126 973.95.1 -959.75 53.33 7.56 194.1650 660737 73955 112560 10074.24 876.95 53.35 7.91 194.1650 650737 103315 10042.22 -8771.48 15.67 7.95 195.517 73952 112560 10072.5.21 -8637.25 16.66 53.69 7.95 205.406 81349 -1107605 13716 12974 1054.25 55.05 7.91 7.91 205.406 81349 -11076050 1294.25 10621.75 963.54 166.09 7.91 7.91 | 175.312 | 505368 | -807236 | 6861 | 9093.82 | -8809.85 | 177.42 | 48.76 | -7.17 | 27 | |
| 16C.124 549742 -849694 8639 934C.77 -5834.44 175.71 50.57 4.24 185.345 51286 -914613 10124 9720.97 -8805.25 117.45 51.63 4.24 187.515 650731 -957465 177.25 51.63 5.26 187.515 650731 -950975 10611 9839.61 9710.55 51.63 5.26 194.103 660731 -950975 11250 10072.22 -8731.60 55.13 7.91 194.103 660731 -973955 11250 10072.22 -8711.60 166.57 7.95 7.91 194.103 71209 10461.25 -8011.95 166.65 55.69 7.95 7.91 194.103 71209 10461.25 -8072.61 167.07 55.49 7.95 7.91 201.491 71209 10942.25 166.109 56.65 7.95 7.91 201.481 71256 10072.22 1661.77 66.55 56.6 | 177.718 | 527410 | -826464 | 8415 | 9219.09 | -8822.41 | 176.60 | 49.85 | -3.00 | 35 | |
| 187.513 512351 -811464 9271 9656.37 -8815.65 174.35 51.65 6.29 187.515 503436 -914613 10124 9592.97 -8815.65 174.35 51.65 6.29 6.29 187.515 503456 -914613 10124 9720.97 -8876.75 177.25 51.05 51.65 6.29 6.29 194.109 545441 -972595 11250 100212.51 9939.61 87491 7.76 7.91 194.109 545441 -972975 102505.63 -8771.48 166.09 54.32 7.91 194.562 71031 102505.63 10042.25 -8671.76 166.09 54.32 7.91 201.404 712050 10042.176 1667.07 74.75 7.92 7.91 201.404 712051 10764.25 -8677.47 1667.07 7.45 7.95 201.404 712050 10764.25 -8677.45 1167.07 7.45 7.83 201.404 | 18C.124 | 549742 | -849694 | 8839 | 9340.77 | - 9824.44 | 175.71 | 50.57 | 1• 60 | 14- | |
| 187.515 592335 99395.91 9805.51 9120.52 117.2.9 51.95 8.93 187.516 520186 -913016 1973.55 11755 1775 1755 1755 194.105 56737 -950977 10831 9939.61 -8713.00 177.53 17.15 194.105 56737 -950977 10831 9939.61 -8713.00 107.53 53.95 7.95 194.105 710316 -105303 12507 10072.22 -8713.00 106.53 54.65 7.95 7.95 201.401 73035 -105303 12079 10042.84 -8091.95 166.69 56.65 7.95 201.401 813493 -1079314 13315 10764.38 -8633.25 1656.69 56.65 7.95 201.405 81744 -1130605 14733 11055.54 -8633.26 166.49 56.65 7.95 201.405 94.77 11356.57 1656.59 56.16 7.96 7.95 <t< td=""><td>182-593</td><td>156215</td><td>+9+119-</td><td>14.26</td><td>9466.37</td><td>-8815.64</td><td>174-56</td><td>57•16 51 53</td><td>47°4</td><td></td><td></td></t<> | 182-593 | 156215 | +9+119- | 14.26 | 9466.37 | -8815.64 | 174-56 | 57•16 51 53 | 47°4 | | |
| 187.515 6.20186 -914813 10.124 987.8.81 -9169.55 11.4.67 72.87 7.56 191.66 56737 -95977 10831 9939.61 -8750.55 17.48 52.87 7.57 191.66 56737 -95977 10831 9939.61 -8750.55 17.48 52.87 7.57 194.10 566737 -959775 11250 10020.222 -8711.45 55.89 7.56 194.105 565441 -977375 10205.25 -8671.45 156.55 7.95 7.95 201.931 1373916 12394 10761.16 865.22 161.77 7.82 7.95 201.931 1379316 12394 1064.12 865.26 166.49 56.65 7.91 7.82 201.946 11423 11055.05 166.29 56.65 7.95 7.95 201.946 11423 11055.05 166.49 56.65 7.95 7.82 201.947 1112590 10764.39 865.35< | 185-046 | 595335 | -893068 | 9698 | 9592.97 | -8800-22 | 113.43 | 40°16 | 47°0 | | |
| 185.187 -950571 10411 9505.01 -9705.01 170.53 54.32 7.76 194.167 566737 -972557 11250 10072.22 -8750.20 17.91 7.91 194.167 566737 -972557 11250 1072.22 -8750.20 167.57 55.69 7.91 194.167 567737 12507 10541.25 -8751.26 167.57 55.69 7.91 201.481 761209 -1035730 12493 10621.76 -8691.95 167.67 57.45 7.95 201.481 9113493 -1037976 12904 10621.76 -8652.60 167.67 58.34 7.87 201.481 9113493 -103773 12493 10521.56 -8652.60 167.67 58.33 7.87 201.406 91346 1106005 13756 10525.04 -8652.60 167.67 58.33 7.83 215.249 972344 1155023 13756 13555.04 -8555.10 167.67 58.33 167.45 7.82 216.249 970687 1155023 11555.04 | 187-515 | 620186 | -914813 | 10124 | 9120-91 | | 116+67 | 51 63 52 83 | 1.56 | <u> </u> | |
| 194.109 564.31 -795971 11250 1072.22 -8711.48 166.62 54.32 7.91 194.109 565.41 -973955 11250 1072.22 -8711.48 166.62 54.32 7.91 195.517 710316 -973955 11250 1072.22 -8711.48 166.62 55.65 7.91 195.517 735520 -1015303 12707 10341.25 10764.39 56.56 55.65 7.95 201.617 71375 12764 10621.76 -8652.60 167.07 77.45 7.95 201.817 913493 -1120605 13726 10990.20 -8653.60 167.07 77.45 7.95 201.817 94.07 11350.87 10950.26 86.13 166.09 54.35 7.87 201.817 94.07 11350.87 86.13 166.09 54.36 166.09 54.36 7.81 201.817 94.07 11350.80 155.67 155.67 166.09 62.46 7.81 7.83 211.715 970.81 1151.62 1657.41 155.67 | 185.187 | 636514 | -929486 | 10411 | 78788°81 | - 3/07.00 | | 53 53 | 7.76 | 96. 1 | |
| 195.562 710316 11565 10206.53 -8711.48 168.02 55.05 7.97 201.931 73520 -1015303 12079 10342.84 -8691.95 168.06 55.69 7.97 201.931 737520 -1015303 12079 10341.75 -8672.23 167.07 57.45 7.97 201.931 73795 -107914 13315 10761.35 -8672.23 167.07 57.45 7.93 206.406 913493 -1107914 13315 10761.35 -8613.73 165.09 59.17 7.81 206.407 91447 11375.45 -8594.78 165.09 59.17 7.82 211.328 85572 -1185023 15353 11510.89 -6536.10 164.41 62.03 7.81 216.713 950572 -1189418 11510.89 -6536.45 164.41 62.93 7.81 216.713 950572 -1189418 11510.89 -6533.65 164.41 62.03 7.81 2216.40 | 191-640 | 161396 | | 10001 | 10072-22 | -8731.00 | 169-59 | 54.32 | 1.91 | 35 | |
| 195.015 735520 -1015903 12079 10541.25 -8641.25 1641.66 56.65 7.91 201.484 761209 -1035733 12493 10641.25 -86472.23 167.66 56.65 7.95 201.484 761209 -10379314 13315 10764.39 -86522.60 167.61 51.46 7.87 206.874 940349 -11070605 13715 10764.39 -8633.26 166.09 59.17 7.82 206.874 913469 -11070605 13726 10909.20 -8633.73 166.09 59.17 7.82 213.796 894670 -1142709 1433 11055.64 56.65 7.82 7.83 216.249 972344 -1151713 14133 113055.64 65.65 7.82 7.83 216.749 91644 -1163923 11510.89 -8555.67 164.49 62.00 7.83 7.83 216.749 105712 11575.88 -8555.46 1654.49 64.74 7.75 222.817 98961 -1220440 16036 1775.88 -8564.43 | 104.547 | 716176 | -993955 | 11665 | 10206-63 | -8711-48 | 168.82 | 55.05 | 26.7 | 30 | |
| Z01.464 761209 -1036723 12403 10481.25 -8672.23 167.07 59.46 7.46 7.95 Z03.931 737093 -1379316 12904 10521.76 -8655.60 167.07 57.45 7.93 Z03.931 737093 -1379314 13315 107621.76 -8653.75 166.09 59.17 7.87 Z08.406 813493 -113703 14133 11075.82 -8653.75 166.09 59.17 7.82 Z11.3276 894.670 -1142703 14542 11295.04 955.45 166.09 59.17 7.82 Z11.3276 894.670 -1142703 14542 11355.67 -8554.10 166.13 7.83 Z16.718 -55.65 11994.18 156.31 164.41 65.40 7.83 Z16.719 95057 -11994.18 15610.69 -8556.10 164.41 63.83 7.86 Z16.2187 1057718 -1263923 119175.88 -856433 1651.47 63.87 7.80 | 195-015 | 735520 | -1015303 | 12079 | 10342.84 | -8691.95 | 168.06 | 55.89 | 1.97 | 25 | |
| 203.937 737093 -1057976 12904 10621.76 -8652.60 167.57 57.45 7.93 206.406 813493 -1079314 13315 10764.39 -8613.73 166.09 59.17 7.87 206.406 813493 -11279314 13315 10764.39 -8613.73 166.09 59.17 7.87 211.328 34.713 -112173 14542 11255.02 -8613.73 165.09 59.17 7.82 211.328 39.65712 -1163923 14947 11356.09 60.15 7.83 216.249 950572 -1185023 15535 11510.89 -8573.67 165.44 60.15 7.83 216.713 950572 -1185023 15535 11510.89 -8553.67 165.44 62.00 7.86 222.874 998961 -1220440 1660.75 8553.67 164.41 62.03 7.86 222.874 998961 -1220440 160.75 856.47 8564.45 165.46 64.74 7.87 222.874 998961 -1220440 160.76 8465.4 | 201.484 | 761209 | -1036723 | 12493 | 10481-25 | -8672.23 | 167-66 | 56.65 | 7.96 | 23 | |
| 206.406 813493 -1079314 13315 10764.38 -8633.26 166.49 58.34 '.8' 208.874 940248 -11.00605 13726 10909.20 -8613.73 166.09 59.17 7.82 213.796 84.791 -11.21713 14.133 11.055.04 -8575.45 165.09 59.17 7.83 213.796 84.791 -11.63909 145.31 11.205.04 -8575.45 165.30 61.13 7.83 216.249 950572 -1185023 155031 11510.89 -8556.16 164.41 62.93 7.85 216.719 950572 -1185023 155031 11617.25 -8555.16 164.42 63.83 7.86 226.406 970687 -1120440 16036 11775.88 -8556.44 163.94 64.74 7.86 225.326 1087798 -1226440 16036 11775.88 -8655.45 165.29 63.20 7.86 226.405 1087798 1764.21 1256.44 165.79 64.22 7.86 7.76 7.75 222.874 108779 </td <td>759.502</td> <td>137093</td> <td>-1357976</td> <td>12964</td> <td>10621.75</td> <td>-8652.60</td> <td>167-07</td> <td>57.45</td> <td>1.93</td> <td>12</td> <td></td> | 759.502 | 137093 | -1357976 | 12964 | 10621.75 | -8652.60 | 167-07 | 57.45 | 1.93 | 12 | |
| 208.874 94.0248 -11.006.05 13726 10909.20 -8613.73 166.09 59.17 1.02 211.328 367191 -1121713 14133 11055.82 -8594.78 1655.69 50.15 7.83 213.796 894670 -11472009 14542 11356.64 8555.10 1655.30 60.15 7.83 216.249 922344 -1163723 1510.89 -8555.10 164.42 65.93 7.86 216.249 950572 -1185023 1550.89 -8555.10 164.42 63.83 7.86 216.249 970587 -1185023 1550.89 -8556.10 164.42 63.83 7.86 222.874 -11890418 -15636 1101775.88 -8556.46 165.49 64.74 7.75 222.871 998961 -1299418 1563.64 1653.65 64.74 162.93 7.91 222.877 998799 -12841280 160.75 1775.88 -865.44 162.77 64.74 7.75 222.287 081799 -1265206 1604.12 1257.25 6405.77 <td< td=""><td>206.406</td><td>813493</td><td>-1279314</td><td>13315</td><td>10764.39</td><td>-8633.26</td><td>166.49</td><td>58.34</td><td></td><td> 20</td><td></td></td<> | 206.406 | 813493 | -1279314 | 13315 | 10764.39 | -8633.26 | 166.49 | 58.34 | | 20 | |
| 211.328 367191 14133 11055.82 -8594.78 165.30 61.13 7.83 213.796 894670 -1147909 14542 11356.67 -8556.10 164.40 62.00 7.83 216.249 950572 -1185023 14947 11356.67 -8556.10 164.40 62.00 7.80 216.249 950572 -1185023 155031 11617.25 -8556.10 164.41 62.03 7.80 220.406 979061 -1199440 156361 11617.25 -8556.47 165.47 63.83 7.80 222.406 1260440 16636 11775.88 -8504.33 163.94 64.74 7.91 227.3567 1087799 1220440 160366 1756.89 -8504.33 165.47 7.91 227.3567 1087799 12267.09 -8465.44 162.77 63.83 7.91 227.356 1087799 -1220440 16036 175.68 -8465.44 162.77 64.74 7.16 227.356 1087799 126473 12267.09 -8465.44 162.77 64.24< | 208.874 | 940248 | -1100605 | 13726 | 10909.20 | -8613.73 | 166.09 | 59.17 | / 82 | 21 | |
| 213.796 994670 -1142909 14547 11354.67 -0556.10 164.490 62.00 7.86 216.249 950572 -1185023 155031 11510.89 -8556.10 164.41 62.93 7.87 216.249 976087 -1185023 155031 11617.25 -8556.10 164.41 652.93 7.87 220.406 979061 -1199418 156311 11617.25 -8556.43 165.47 64.74 7.86 222.874 97061 -1220440 16636 11775.88 -8504.33 163.94 64.74 7.86 222.874 81028045 -1220440 16636 116175.88 -8665.44 165.77 63.94 64.74 7.91 227.326 1057718 -122040 156392 1742 68.76 7.91 7.95 227.312 118103 -1220440 16036 1755.88 -8645.44 162.77 68.22 7.91 227.316 1118103 -1283082 1742 12267.09 -84456.44 161.47 68.22 7.94 235.187 1149021 | 826.115 | 161498 | -1121713 | 14133 | 11055.82 | 82-1658- | 115 30 | 61 19 | 50°7 | - 10 | |
| Z16.249 9223.44 -1103423 14371 1137.661 64.441 62.93 7.87 Z18.713 976672 -1185023 15531 11510.89 -8536.76 164.41 62.93 7.87 Z22.406 978061 -1199418 15531 11775.88 -8536.76 164.42 63.83 7.80 Z22.874 978061 -1220440 16036 11775.88 -8504.33 163.94 64.74 7.86 Z25.3718 -1220440 16036 11775.88 -8504.33 163.94 64.74 7.91 Z27.326 1057718 -1220440 16036 1775.88 -8665.44 165.77 63.94 64.74 7.91 Z27.326 1087799 -1262406 16.00.75 1267.39 165.77 68.22 7.94 Z27.719 1118103 -1283082 176539 12267.09 -84456.44 165.22 68.22 7.94 Z37.640 1180076 -1324558 1800.53 72436.74 161.47 69.49 8.14 Z35.718 1149021 -1324558 12667.03 842 | 213.796 | 894670 | 6062411- | 24241 | 11202-04 | C+-C1CD | 144.00 | 61-10 67-00 | 7.86 | 15 | |
| ZIC: (15) 700012 1199418 15631 11617.25 -8523.67 164.42 63.83 7.80 ZZC: 406 998961 -1290410 15631 11775.88 -8504.33 163.44 64.74 7.80 ZZC: 406 998961 -1290440 16036 11775.88 -8504.33 163.44 64.74 7.80 ZZC: 874 98961 -1270440 16036 11775.88 -8504.33 163.55 55.93 7.86 ZZC: 874 1057718 -126240 164.42 165.77 55.93 55.93 7.86 ZZC: 7796 1057718 -1262306 164.81 12100.75 -8465.44 165.47 162.72 7.91 ZZC: 719 1118103 -1283082 17742 12267.09 -84456.44 166.73 162.22 7.91 Z312.719 1118103 -1324558 12667.03 -8426.44 161.47 69.49 8.16 2.22 Z316.40 1180176 -1324558 12667.03 -8426.44 160.73 70.69 8.14 8.34 Z316.40 1180176 - | 216.249 | 922344 | -1105323 | 15253 | 11510-89 | -8536-76 | 164.41 | 62.93 | 7.87 | 14 | |
| 222.874 998961 -1226440 16036 11775.88 -8504.33 163.55 64.74 7.75 222.874 998961 -1241280 16436 183.55 65.63 7.88 227.796 1057718 -1241280 16441 12100.75 -8465.44 162.79 67.06 7.91 227.796 1057718 -1262206 16441 12100.75 -8465.44 162.79 67.06 7.91 227.719 1118103 -1283082 17742 12267.09 -8465.44 162.22 68.22 7.94 236.265 1087799 -1283082 17742 12267.09 -8465.44 161.47 69.49 8.02 235.187 1149021 -1324558 18036 12466.63 8386.37 1559.80 71.91 8.33 237.640 1180176 -1345151 18429 127846.63 -8386.37 1559.80 71.91 8.33 237.640 1180176 -1345151 18429 127846.63 -8386.37 1559.80 71.91 8.59 237.640 1180176 -1345151 18 | 511-517 235 404 | 01006 | -1199418 | 15631 | 11617.25 | -8523.67 | 164.42 | 63-83 | 7.80 | 14 | |
| ZZ5728 IO270045 -IZ4I280 16436.91 163.55 55.93 7.88 ZZ7.796 IO57718 -IZ62206 16841 12100.75 -8465.44 162.79 67.06 7.91 ZZ7.796 IO57718 -IZ62206 16841 12100.75 -8465.44 162.79 67.06 7.91 ZZ7.719 I1181C3 -1283082 17242 12267.09 -8445.99 162.22 68.22 7.94 Z35.719 I1181C3 -1303778 17639 12436.73 -8426.44 161.47 69.49 8.02 Z35.187 1149021 -1324558 18036 12609.38 -8406.70 160.73 70.69 8.14 Z37.640 1180176 -1345151 18429 12784.63 -8386.37 1599.80 71.91 8.33 Z4C.109 1180176 -1345151 18429 12784.63 -8386.37 1599.80 71.91 8.38 Z4C.109 1180176 -1345151 18429 12784.63 8386.37 1599.80 71.91 8.38 Z4C.109 1180176 -1345151 < | 222-876 | 998961 | -1220440 | 16036 | 11775.88 | -8504.33 | 163.94 | 64.74 | 7.75 | 17 | |
| Z27.796 1057718 -1262206 16841 12100.75 -8465.44 162.79 67.06 7.91 236.265 1087799 -1283082 17242 12267.09 -8445.99 162.22 68.22 7.94 236.265 1087799 -1283082 17242 12267.09 -8445.99 162.22 68.22 7.94 235.187 11181C3 -1303778 17639 12436.73 -8426.44 161.47 69.49 8.02 235.187 1149021 -1324558 18036 12609.38 -8406.70 160.73 70.69 8.14 237.640 1180176 -1345151 18429 12784.63 -8386.37 159.80 71.91 8.33 24C.109 1180176 -1345151 18429 12784.63 -8386.37 1599.80 71.91 8.33 24C.109 1180176 -1345151 18429 12784.63 -8386.37 1599.80 71.91 8.33 24C.109 1180176 -1345151 18429 12784.63 -8386.37 1599.80 71.91 8.33 24C.109 1180176 -1345151 18429 12784.63 -8386.37 1599.80 71.91 8.59 24C.109 166.12 | 775.178 | 1026045 | -1241280 | 16438 | 16.96911 | -8484-98 | 163.55 | 65-93 | 7.88 | 22 | |
| 236.265 1087799 -1283082 17242 12267.09 -8445.99 162.22 68.22 7.94 232.719 11181C3 -1303778 17639 12436.73 -8426.44 161.47 69.49 8.02 232.187 1149021 -1324558 18036 12609.38 -8426.44 161.47 69.49 8.02 235.187 1149021 -1324558 18036 12609.38 -8406.70 160.73 70.69 8.14 237.640 1180176 -1345151 18429 12784.63 -8386.37 159.80 71.91 8.33 24C.109 1219076 -1345151 18429 12784.63 -8386.37 159.80 71.91 8.33 24C.109 1211961 -1345151 18429 12784.63 -8386.37 159.80 71.91 8.33 24C.109 128021 1344.74 -8336.37 159.80 71.91 8.59 | 227.796 | 1057718 | -1262206 | 16841 | 12100.75 | -8465.44 | 162.79 | 67.08 | 16-1 | c7 • - | |
| 232.718 11181C3 -1303778 17639 12436.73 -8426.44 161.47 69.49 8.42 235.187 1149021 -1324558 18036 12609.38 -8406.70 160.73 70.69 8.14 235.187 1180176 -13245151 18036 12609.38 -8406.37 159.80 71.91 8.33 237.640 1180176 -1345151 18429 12784.63 -8386.37 159.80 71.91 8.33 240.100 1211961 -1365832 1596.56 -8346.34 158.87 73.18 8.38 240.100 1211961 -1365832 12962.68 -8346.34 158.87 73.18 8.98 240.100 1211961 -1365832 15962.68 -8346.34 158.04 74.57 8.98 | 236.265 | 1087799 | -1283082 | 17242 | 12267.09 | -8445.99 | 162-22 | 68.22 | 1.94 | 87 | • |
| 235.187 1149021 -1324558 18036 12609.38 -8406.70 160.73 70.69 8.14 237.640 1180176 -1345151 18429 12784.63 -8386.37 159.80 71.91 8.33 24C.1C9 1211961 -1365832 16823 12962.68 -8346.34 158.87 73.18 8.98 24C.1C9 1211961 -1365832 16823 12144.74 -8344.34 158.04 74.57 8.98 | 232.718 | 1118103 | -1303778 | 17639 | 12436.73 | -8426.44 | 161.47 | 64.49 | 8.02 | | |
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| | 246-109 | 1261121 | -1365832 | 18823 | 12962.68 | -8365.84 | 158-87 | 13.18 | 0 * 0 A | | •78 |
| | 242.562 | 1243989 | -1386331 | 19211 | 13144.74 | | 10.801 | | 00+0 | | 5- |

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| 76671 -1605904 19601 1322.05 157.12 75.46 9.20 656577 -1621792 17959 155.16 155.65 91.26 9.55 6565757 -1641704 20633 13641.04 8256271 155.05 9902 10.01 656971 -1641704 20633 13641.04 8256271 155.05 9902 10.01 75591 -15627244 21192 14757.17 8256715 910.72 9102 75951 -1522356 22144 14575.254 912.67 9102 7575112 -15225612 22390 1599.13 900.43 111.59 7174710 -15622662 233926 15793.254 912.67 122.69 5575119 -1562276 233926 15793.254 912.67 122.69 5575119 -1562276 233926 15793.254 912.67 122.69 5575119 -1562276 23996 15793.254 147.29 127.67 5575119 -16627615 -77384 127.29 97.05 122.69 5575119 -1642721 23996 15793.254 147.29 101.61 1369 5575119 -1642721 23996 15793.254 1706.254 127.29 127.29 5575119 -1642721 23996 15793.254 1706.254 127.29 127.29 5575119 -1642721 25791 1677.26 161.261 127.29 557676 $-$ | 7SECJ (FT/SEC) (FT/SEC) | () (FT/SEC+2) (FI | /SEC+2) (F1/SEC+2) |
| 15.51 15.53 15.53 16.48 15.51 15.53 15.54 15.54 15.54 15.54 15.54 15.54 15.54 15.54 15.54 15.54 15.54 15.55 15.54 15.55 15.55 15.56 15.55 <th< td=""><td>29.80 -8322.05 157.12</td><td>12 75.85</td><td>9.2033</td></th<> | 29.80 -8322.05 157.12 | 12 75.85 | 9.2033 |
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| Constrain Constrain Constrain Constraint | 49.04 -8282.95 155.87 | 78.48 | |
| 7.7575 -143191 21(12 14942.17 -8203.69 157.87 84.82 10.99 415555 21769 14245.46 -8201.69 157.87 84.82 10.99 543170 -1552545 21769 14245.46 -8105.46 157.87 84.82 10.99 543170 -1552542 22361 14245.46 810.96 90.43 11.91 574910 -1562612 23250 15979.13 -8005.63 149.50 90.43 11.91 574910 -1667266 23523 15979.13 -8005.63 149.50 91.47 12.25 574910 -1667266 23623 15979.25 -8005.63 149.50 91.56 12.25 574910 -1647211 23751 25554.34 -8003.61 149.50 91.76 12.25 574050 15792.55 -17917.04 149.50 91.46 91.66 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 14.65 <td>43.91 -8258.71 155.05</td> <td>5 60-00</td> <td></td> | 43.91 -8258.71 155.05 | 5 60-00 | |
| 43551 -153244 21392 14452.15 -8200.66 152.67 84.82 10.99 400755 -1522355 21748 14452.15 -8180.96 152.67 84.82 10.91 541170 -1562612 22519 14879.23 -8125.28 150.72 96.43 11.91 541170 -1562612 22390 15909.13 -8005.53 149.30 94.74 12.25 547143 -1662221 23906 15793.25 -8005.53 149.30 94.74 12.25 554015 -1662221 23996 15793.25 -8074.65 147.89 97.05 12.26 554015 -1662221 23996 15793.25 -8074.65 147.89 97.05 12.25 554015 -1662221 23996 15793.25 -8074.65 147.89 10.91 13.49 772936 -1667261 23849.20 -7939.78 147.29 13.49 13.68 550304 -1664261 -18827.64 -788.20 166.75 147.67 14.65 14.66 13.49 13.68 13.68 13.68 | 42.73 -8233.69 154.14 | | |
| 7(755 - 1522355 - 21763 - 14452.15 - 9180.97 - 152.94 - 151.91 - 155.25 - 155.25 - 155.25 - 156.2513 - 156.2513 - 156.2513 - 156.2513 - 156.2513 - 156.2513 - 156.2513 - 156.2513 - 150.25 - 115.91 - 150.25 - 150.25 - 106.25 | 45.46 -8207.69 123.29 | | 10.99 |
| 506696 -1542518 22144 14663.54 -8125.48 151.43 66.44 11.59 517980 -1562512 22519 149125 8125.28 90.43 11.91 5179170 -1562517 232890 1599123 8026.65 149.59 97.05 12.58 51743 -1602765 232810 1599123 8036.13 149.59 97.05 12.59 655119 -166221 23996 15793.25 8074.65 149.59 97.05 12.90 655319 -1661618 24359 16571.53 -7917.04 146.59 97.05 12.90 659304 -1664515 24970 16571.53 -7917.04 146.50 101.67 13.48 77304 -1664515 24970 16974.61 -7882.82 147.29 101.67 13.48 702034 -1694515 24970 16974.61 -7882.82 145.78 101.67 14.34 802565 -1732297 26409 172.66 145.78 100.21 14.34 902031 -117203 26404 172.66 145.71 145.71 14.34 9254619 -180400 27138.47 177.77 145.78 14.36 14.36 | 52.15 -8180.9C 152.8/ | 19 04•0C | 11-3029 |
| 543170 -1562612 22519 1489.923 8096.35 150.72 90.43 11.91 557490 -1562517 23269 15095.35 8096.35 149.59 92.54 12.25 557490 -1602465 23261 15579.35 8096.35 149.59 97.64 12.25 55749 -1662220 23623 15793.25 8076.55 148.59 97.65 12.25 733052 -166221 23996 15793.25 -8074.65 148.59 97.05 12.29 733052 -1663160 24724 16577.31 147.29 101.67 13.49 733054 -1664515 24970 16579.30 -7917.04 145.78 101.67 14.61 73024 -1664515 24970 16577.3 141.23 101.65.75 14.65 14.65 14.65 73124 -175203 25590 15610.65 -77384.47 145.78 10.65.75 14.69 732451 -175203 1574.61 1775.82 1775.82 116.65.75 14.69 732441 -1750.03 16412.72 | 63-54 | | |
| 579880 -1582517 22890 15095.13 -8096.50 149.30 97.05 12.58 5571430 -1642221 23996 15793.25 -8036.65 149.30 94.74 12.58 55715 -1642221 23996 15793.25 -8036.65 148.59 97.05 12.90 733052 -164221 23996 15793.25 -8036.65 148.59 97.05 12.90 733052 -164515 24970 16271.55 -7939.72 145.79 101.67 13.49 730304 -164515 24970 16771.65 -7882.82 146.27 103.94 13.68 360304 -164515 25490 16771.65 -7882.82 146.27 114.57 14.65 382565 -1732.847 1775.83 146.57 114.52 14.65 14.65 3847675 -1716702 25640 16774.65 146.57 146.57 14.65 146.57 3244817 -1715.84 1775.84 146.10 112.24 <td< td=""><td>179.23 -8125.28</td><td></td><td>11.91</td></td<> | 179.23 -8125.28 | | 11.91 |
| 571747 -1602465 23251 15323.83 -5665.63 149.30 97.05 12.90 655319 -162222 23952 1573.57 -99136.13 148.59 97.05 12.90 65319 -162222 23956 15793.57 -9912.56 148.59 97.05 12.90 772903 -1661618 24724 16571.53 -7912.56 147.29 101.61 13.49 772903 -1661618 24724 16571.53 -7917.04 146.57 14.67 800304 -1694515 24970 16651.53 -7917.04 145.10 112.29 14.67 800304 -1694515 254970 16671.53 -7812.41 145.10 112.29 14.67 802565 -177558 771758 146.51 145.10 112.22 14.67 982565 -177558 146.51 145.10 145.10 112.22 14.65 982565 -177558 147.57 147.57 145.10 112.22 14.65 982565 -177558 145.51 145.51 145.51 145.51 < | 199.13 -8096.35 LJU-12 | 20°-22 | 12.25 - 29 |
| 65519 -1622220 23623 15554.34 -8034.65 147.89 97.05 12.90 733052 -1642021 23996 15793.25 -8074.65 147.89 99.18 13.18 733052 -1642021 23996 15793.25 -8074.65 147.89 99.18 13.49 772938 -1661618 24379 165793 -7917.04 146.80 101.67 14.67 712938 -1694515 24970 16671.53 -7917.04 146.80 103.94 13.68 712938 -1694515 24970 16671.65 -7882.82 146.69 103.94 13.68 734747 -1714730 25690 16674.65 -7738.47 146.510 112.25 14.65 734815 -177159 26649 17264.76 -7738.47 144.67 15.10 734815 -177169 1670.05 -7738.47 144.67 125.65 16.66 734815 -177584 1758.47 -7738.47 144.67 125.44 15.66 7039132 -184824 27100.03 144.67 144.67< | 123.83 -8065.63 149.83 | 83 92.37 20 04 74 | 12.5828 |
| 694015 -1642C21 23996 15793.25 -8004.65 147.29 101.67 13.49 733052 -1661618 24379 16531.57 -7917.04 147.29 101.67 13.49 772938 -1681260 24774 16531.57 -7917.04 146.80 103.94 13.68 900304 -1694515 24970 16671.53 -7917.04 146.29 103.94 13.68 900304 -1694515 24970 16974.61 -7812.41 145.10 112.29 14.64 948.15 -1712533 26049 17246.76 -7812.41 145.10 112.29 14.69 948.15 -171253 26049 17246.76 -7733.47 145.10 112.29 14.69 948.16 -171253 26049 17246.76 -7733.44 125.44 125.65 164.65 948.17 -171630 1577.77 144.11 118.80 154.40 177.96 948.48 -175583 164.94 177.36 173.05 126.25 17.96 10444122 -1828321 27498 195.36< | 54.34 -8030.13 147.30 | | 12.9026 |
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| 712938 -1681260 24724 166153 -7917.04 146.80 103.94 13.68 800304 -1694515 24970 16451.53 -7917.04 146.29 176.55 14.67 841242 -1714202 255490 16974.61 -7882.82 145.10 112.29 14.69 324815 -1714202 255490 16974.61 -7812.41 145.10 112.29 14.69 324815 -177526 7738.47 144.61 145.10 112.29 14.69 324815 -177584 184.69 7738.47 144.11 118.80 155.53 344.61 17526.12 -7738.47 144.11 118.80 155.65 156.65 054619 184.09.04 17526.12 142.30 136.26 156.56 156.56 054619 1828321 27458 184.09.04 184.09.01 137.25 17.26 144.102 -1864753 28139 1932.13 -7577.77 141.73 134.40 17.36 144.102 -1864753 28139 1932.213 -7577.77 141.73 | | 20 101-67 | 13.4926 |
| 800304 -1694515 24970 1670766 7882.82 14.67 14.67 14.67 847542 -1714202 25331 1670766 -7848.20 145.29 109.21 14.34 882565 -173297 256490 15746.76 -7848.20 145.10 112.29 14.69 724815 -1752633 26649 17246.76 -7715.83 144.69 145.10 112.29 14.69 746747 -1775633 26649 17246.76 7718.47 145.10 112.29 14.69 746719 -1775633 26649 17815.49 17546 15.73 15.53 746719 -177578 26404 17526.26 14.67 15.73 746192 -1809601 27109 18166.96 -7700.03 44.69 1222.43 16.06 7946192 -1809601 27169 18720.84 -7660.42 141.73 1222.43 15.65 794644 -1864753 28139 19052.13 -7577.77 141.73 136.40 17.26 744102 -1864753 28139 19052.13 -7577.77 141.73 134.43 17.26 781566 -1864753 28139 1905724 79946 140.79 19.67 78156 -1864753 28139 1905724 79946 1940.46 20.36 7781575 -1934757 29102.24 7994560 154.96 20.36 7781575 -1934757 29544 20910.22 < | | 80 103-94 | 13.6823 |
| 347242 -1714302 25331 6974.61 -7848.20 145.10 112.29 14.69 324815 -173297 25690 16974.61 -7812.41 145.10 112.29 14.69 324815 -1752633 26649 17246.76 -77138.47 145.10 112.29 14.69 347473 -1775783 26409 17246.72 -77138.47 144.11 118.80 15.53 367475 -1795784 26748 17815.47 175.43 122.243 146.06 356479 27109 16106.96 -7700.03 143.05 122.43 15.53 1056479 27109 16106.96 -7700.03 143.05 122.243 15.65 1054619 -189644 -1864753 271458 18720.64 -7577.77 141.73 136.45 17.26 1144102 -1864753 28139 19932.13 -7577.77 141.73 134.40 17.26 1144102 -1864753 28139 19932.13 -7577.77 141.73 134.40 17.26 2194644 -1864753 28139 19922.13 -7577.77 141.73 134.40 17.26 21895600 28132 2932.13 -7595.81 140.79 146.08 19.67 278056 -18647227 28456 199772.77 141.73 144.08 20.36 278056 -18647227 28137272 28456 199.46 19.67 21.36 277057 -1991.79 | 12 KK -7KR7.R7 146.29 | 29 10.6.55 | 14.6724 |
| 882565 - 175265 - 17565 - 7812.41 145.10 112.29 14.69 $224815 - 1752633$ 26404 17246.76 7175.83 144.61 115.45 15.10 $34747 - 1775783$ 26404 17526.72 77738.47 144.61 115.45 15.10 $345419 - 1776784$ 26704 17526.72 -77738.47 144.11 118.60 15.53 $054619 - 180901$ 27109 $16106.96 - 7700.03$ 143.05 122.43 15.65 $054619 - 180944$ -1804753 27458 $184(5.04 - 7660.42)$ 143.03 134.43 17.26 $0199122 - 1828321$ 28456 19732.13 -7577.77 141.73 134.43 17.26 01806441864753 28139 199572.23 -7491.79 144.07 146.64 17.26 $233027 - 1848227$ 28792 19973.23 -7491.79 144.07 144.64 19.657 2186441864753 28195 199673.23 -7491.79 144.02 19.64 19.657 2780560 28795 19973.24 7495.81 | 174.61 -7848.20 145.78 | 78 109.21 | 14.3422 |
| 724815 -1/72030 26404 1526-12 -7/75-83 144.69 115.45 15.70 764619 -1/705784 26704 175.64 178.65 144.11 118.60 15.53 1054619 -1/705784 26758 178.54 -7700.03 143.05 125.55 15.53 1054619 -1795784 18106.96 -7700.03 143.05 125.55 15.65 1054619 -1809301 27109 18106.96 -7700.03 143.05 137.25 17.26 1054619 -1809321 27458 184.05.04 -7650.42 143.05 137.45 17.26 1041132 -18264824 28139 19732.13 -7577.77 141.73 134.45 17.94 1041132 -1864753 28139 19732.13 -7577.77 141.73 134.45 17.94 233027 -1846824 28192 199473.23 -7491.79 144.73 134.45 18.64 233027 -1864753 28139 19732.13 -7577.77 141.73 134.45 18.64 233027 -1864753 28139 19732.13 -7495.81 140.79 14.45 18.64 278156 -1914773 2910.22 -7495.81 | 44.76 -7812.41 145.10 | 10 112.29 | 14.6922 |
| 94.6.1 179.6.7 178.5.4 178.5.4 178.5.4 15.53 101.0619 -1796784 26758 178.5.4 178.5.4 15.53 105649 -1809601 27109 161.06.96 7700.03 143.44 122.43 16.06 1054102 -1809601 27109 161.06.96 -7700.03 143.05 1526.26 16.65 1094102 -1846824 27804 18720.84 -7619.14 142.30 137.25 17.26 104103 -1846824 28139 19932.13 -7577.77 141.73 134.40 17.26 10444 -1864753 28139 19932.13 -7577.77 141.73 134.40 17.26 233027 -1846824 28192 195424 2010.24 -7585.80 140.79 146.57 278156 -19677.27 191.79 140.77 141.73 134.40 17.26 278156 -196473.21 -7585.80 140.79 140.79 18.64 278156 -196473.31 -7495.81 140.79 149.40 20.36 278055 -1934757 2910.72 -7381.76 139.46 21.30 284056 -19610.24 2010.24 21.31.76 139.46 | 174.72 - 2775.83 144-69 | 115.44 | 15.1023 |
| CULURAI Linyun Linyun Linyun Linyun Linyun C094619 -1809601 27109 16106.96 -7700.03 143.05 125.25 16.06 C0940132 -1826824 27458 184(59.04 -7660.42 143.05 135.25 16.65 C0940132 -1826824 27804 18720.84 -7619.14 142.30 135.25 15.65 C0940132 -1846824 28139 19732.13 -7577.77 141.73 134.40 17.26 C144173 -184644 -1864753 28139 19732.13 -7577.77 141.73 134.40 17.94 C144164 -1864753 28139 19732.13 -7577.77 141.73 134.40 17.94 C144174 -1864753 28139 19732.13 -7581.04 140.79 140.64 20.56 C18664 -186471 28192 195478.23 140.79 140.79 140.64 21.56 C185755 -1933457 29568 20510.24 139.46 161.41 22.05 C185755 -1933457 29588 20388.26 -7331.77 139.44 167.95 22.67 | 114.49 -7738.47 144.11 | C2-811 11 | 15-5322 |
| 109917 1828321 27458 184(9.04 -7660.42 143.05 126.26 150.25 1094102 -1828321 27458 18720.84 -7619.14 142.30 137.25 17.26 1044102 -1846824 28139 19732.13 -7577.77 141.73 137.45 17.94 1144103 -184645 28139 19732.13 -7577.77 141.73 134.43 17.94 233027 -1846824 28192 19347.62 19347.61 18.64 19.65 2333027 -1849760 28792 19347.62 134.66 19.65 19.65 278156 -1916871 28792 19673.23 7491.79 140.79 140.79 18.64 278156 -1916871 2917 20010.24 7495.81 140.79 140.40 20.36 2185755 -1933457 29544 20473.31 -7381.94 139.46 161.41 22.05 2433531 -1955470 29688 21217.72 -7279.91 139.44 167.95 22.67 | 106.967700.03 143.44 | 44 122-43 | 16-05 |
| 1144102 -1846824 27804 18720.84 -7619.14 142.30 151.42 17.94 2188644 -1864753 28139 19032.13 -7577.77 141.73 134.43 17.94 2339027 *188644 -1864753 28139 19032.13 -7577.77 141.73 134.43 17.94 2339027 *188644 -1864753 28139 19032.13 -7577.77 141.73 134.43 17.94 2333027 *188644 -18647227 284565 1934742 2445.81 140.79 146.40 20.36 278156 -1916871 29177 20010.24 7445.81 140.79 140.40 20.36 2385755 -1933457 29544 20473.31 -7381.94 139.40 161.41 22.05 2433531 -1955470 29888 20388.26 -7331.75 -7279.91 139.44 167.95 22.67 | +C9.04 -7660.42 143.05 | | 10.07 |
| 2188644 -1864753 28139 19032.13 -7577.77 141.73 137.43 16.44 2233027 28456 19347.42 -7535.80 141.06 136.73 16.57 278156 -1899600 28792 19673.23 -7491.79 140.79 140.42 195.64 278156 -1899600 28792 19673.23 -7491.79 140.42 140.40 195.66 278156 -193457 29117 20010.24 -7445.81 140.42 149.46 20.36 2185755 -1933457 29544 20473.31 -7381.94 139.76 154.96 21.30 2135755 -1933457 29968 20838.26 -7331.76 139.76 161.41 22.05 2135531 -1955470 20988.26 -7331.76 139.44 167.95 22.67 | 720.84 -7619.14 142.30 | 30 150.42 | 11 - 20 |
| 233027 -1882277 28466 1947.42 -7535.80 140.42 140.43 19.57 278158 -1899600 28792 19673.23 -7491.79 140.42 149.96 20.36 278156 -1916671 29117 20010.24 -7445.81 140.42 149.96 20.36 28795 -1939600 28792 19673.31 -7381.94 139.96 154.96 21.30 287955 -1939457 29544 20473.31 -7381.94 139.96 161.41 22.05 283531 -1939457 29888 20838.26 -7219.91 139.44 167.95 22.67 | 332.13 -7577.77 141.73 | 73 134.4J | |
| 278158 -1899600 28792 19673.23 -7491.79 140.42 149.66 20.36 23278154 -191671 29117 20010.24 -7445.81 140.42 149.66 20.36 232755 -1939457 29544 20473.31 -7381.94 139.96 154.96 21.30 2433531 -1935457 29568 20838.26 -7331.76 139.70 161.41 22.67 2433531 -1955470 29868 20838.26 -7279.91 139.44 167.95 22.67 | 141 * 45 * + 1232* BD 141 * D4 | | 10.5717 |
| F1264056 -1916871 29117 20010-24 -7455-81 140-34 154-96 21-30 2385755 -1933457 29544 20473.31 -7381.94 139.70 161.41 22.05 2433531 -1955470 29868 20838.26 -7331.76 139.70 161.41 22.67 2433531 -1955470 29868 20838.26 -7331.76 139.44 167.95 22.67 | 23-23 -141-16 E2-E29 | | 20-36 - 14 |
| 2385755 -1933457 29544 20473.31 -7361.94 139.70 161.41 22.05 2433531 -1955470 29868 20838.26 -7331.76 139.70 161.41 22.05 2433531 -1955470 29868 20838.26 -7331.76 139.40 161.41 22.05 2433531 -1955470 29868 21217.72 -7279.91 139.44 167.95 22.67 | 2010-24 -7442-81 120-24 | 95 154.95 | 21.3013 |
| 2433531 -1956470 29868 20838.26 -1331.00 139.44 167.95 22.67 | | 70 161-41 | 22.0510 |
| | | 44 167.95 | 10 73.52 |
| | | L7 175.06 | 23.37 |
| ZANTEL | 013+20 1144+444 144 144 144 144 144 144 144 14 | 96 182.48 | 24.21 .17 |
| 2342216 -2006786 30831 24428-39 | | | |

| | | | | | | | E | e | | | | | | | | | | | 41 | .60- | 60 47 -80- | TCC |
|-----------------------|----------------|---------------------|----------|----------|----------|----------------------|----------|-------------|-------------|----------|----------|----------|----------|----------|----------------------|----------|-------|--|----|------|----------------------|-----|
| | | 20001 (FT/SEC+2 | .23 | 62* | .29 | 06. | . 32 | 2C . | • 12 • C | 00 | 10 | 10'- | .03 | | 9 C • | 1C. | | | | | | |
| | ITES | YDDOT (FT/SEC+2) | 25.34 | 26.66 | 27.18 | 26.42 | | .01 | 20° | .05 | .21 | .61 | .05 | •12 | | 01 | | | | | | |
| | IRUST COJRDINI | XDD0T (FT/SEC+2) | 196.62 | 199.59 | 201.49 | 206-29 | 2.83 | 2.21 | 1.64 | .17 | .75 | •:5 | .43 | | 46 | •54 | | | | | | |
| FF | GUIDANCE TH | 2001 (FT/SEC) | 140-27 | 14.0+1 | 141-67 | 142.55 | 145.13 | 145.00 | 145.14 | 145.20 | 145.25 | 145.13 | 145.08 | 145.22 | 145-56 | 146.02 | | | | | | |
| PROGRAM FROM LIFTO | LERATION IN | YDOT (FT/SEC) | -7115.53 | -7055.75 | -6992 54 | -6925.99 -6838.60 | -6627.69 | -6927.16 | -6826-62 | -0820.01 | -6826.44 | -6826.59 | -6826.35 | -6526-30 | -6825.43 | -6824.61 | • | | | | | |
| CEMENT EDIT | ITY AND ACCE | XDOT (FT/SEC) | 22456.ÅI | 22905.64 | 23376.00 | 23871.18 | 24600.59 | 24607.86 | 24-11942 | 24014-24 | 24616.98 | 24615.94 | 24617.30 | 24617.46 | 24622-00 | 24627.99 | | | | | | |
| INC. | ITION VELOC | 2 (FT) | 31150 | 31484 | 31811 | 32140 | 32913 | 33278 | 33586 | 33991 | 34990 | 35356 | 35680 | 36029 | 36734 | 37794 | | | | | | |
| NO WOCIEZION | COMPUTED POS | ۲ (۴۴) | C015666- | +156502- | -2055814 | -2071909 -7033820 | -2168784 | -2125959 | -2140467 | -2157641 | -7736498 | -2223670 | -2238923 | -2255350 | -2288414 -7364945 | -2338005 | | | | | | |
| AR NOSPACHT | | X (F1) | 6688876 | 1616892 | 2739340 | 2793961 | 2924841 | 2986736 | 1606606 | 3166949 | 1017775 | 3339031 | 3394037 | 34532.75 | 3572525 | 3751444 | · · · | | | | | |
| | | TIME (SECS) | | 181.926 | 328.499 | 336.812 | 336.147 | 338.703 | 340.828 | 343.343 | 345.449 | 353.015 | 355.249 | 357.656 | 362.499 | 365.755 | | | | | | |

4160-6047-тсооо -81-

Appendix II

RE-ENTRY THRUST PROFILE

Guidance thrust, position, velocity, and acceleration quantities during re-entry are listed along with a plot of the thrust accelerations.

•



| FR. J. SPACE TECHNOLOGY LANGRATORIES - INPLT PARMERERS & ACCTVEDED. |
|---|
| ACCELERCMETER BIASES (PULSES/SEC) |
| BU= .26165500 BV=23000200 Bu=22332800 |
| PISALISAMENT AND SCALE FACTOR MATRIX -10009150 -00015980 -0005350 -10003415 -09749790 -00034420 09629430 -00013660 |
| STAGING TIMES |
| LIFICEE . ODG BUDSTER ENGINE CUT ICOGCCO.COU SUSTAINER ENGINE CLIU IOODCOO.DOD |
| SLW CF ACCUMULATOR CCUNT DATA AT TIME ZERO |
| SFX0= -103.000 SFY0= 139.000 SF20= 167.000 |
| IMIENCED AZIMUTH IN CES.= 17.100 NUMBER OF TAPES INPUTE I |
| TIME BIAS= .000 TME 999979.660 TME 359539.660 |
| <pre>TIME ADJUSTEDPOSITICA ADJUSTEC</pre> |
| ••••FLS••VEL• ADJUSTEC |
| |
| |
| |
| -83- |
| |
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4160-6047-TC000

| | | | - | | | | | | |
|-----------|--|---------------|-------------|----------|----------------|----------|------------------------|--------------|-----------|
| | | | 2 2 | | VORT | ZDAT | THRUST COUNTY XDANT | | Z DDOT |
| tsecsi | | (LT) | (FT) | IFT/SECJ | (1+1/SEC) | IFT/SECT | IFT/SEC=21 | (FT/SEC+2) | IFT/SEC+2 |
| 1.890 | -27.5 | 18.8 | 4.6 | -25.88 | 18.17 | 4.02 | -14.62 | 9.24 | 1.99 |
| | | | 0.12 | | 24*04 | 54-9 | 81-51- | 5.76 | ÷. |
| 654"6 | | 321.9 | 99.2 | -146.67 | 50.40 50.40 | 11-11 | -15.68 | 3.89 | -1-24 |
| 12.031 | -1109.3 | 4.01.4 | 38.4 | -188.42 | 24.20 | 50-8- | -14.89 | 4.59 | -3.20 |
| 13.953 | -1456.3 | 601.1 | 10.9 | -218.67 | 75.33 | -16.41 | -14.39 | 4.98 | -2.12 |
| 16.484 | -2080.8 | 805.7 | -37.5 | -246.02 | 87,15 | -22.67 | -14.20 | 4.43 | •16 |
| CTACK 1 | | 1026.9 | A-91- | 00.002 | 20*C6 | 8.77 | 19.77- | 3• 11 °C | 26•1 |
| 23.484 | | 5691 | -108-2 | -331.24 | 105.37 | | 92.4 92.4 | 1.01 1.01 | 1-00 |
| 160.02 | 2.12UC- | 1763.5 | -116.8 | -331.37 | 105.32 | -3.34 | 31 | 10. | •0• |
| 28.562 | -5859.8 | 2030.1 | -125.4 | -331.21 | 105.36 | -3.29 | .02 | -01 | 00. |
| 31.109 | -6703-2 | 2298.4 | -134.0 | -331.14 | 105.30 | -3.51 | •02 | 00• | 0. |
| 02000 | Contraction of the | AC LOCK | C. The | 10-165 | TOS: TOS: TO | 12.5 | 00* | 20- | 10* |
| 35"265 | - FILLET | 2767.6 | 6-847- | -331.12 | 105.30 | -3.32 | 8 . | -02 | -01 |
| 36.109 | 0-1206- | 3036.2 | -157.3 | -331.16 | 105-54 | -3.27 | 00. | -01 | 02 |
| 40-929 | -9864.4 | 3304.8 | -165.8 | -331.69 | 105.49 | -3.40 | •03 | 10. | 10 |
| 43.167 | -10762.2 | 3571.8 | -174.4 | -331.02 | 105.43 | -3.44 | 00 - | 01 | 01 |
| 45.109 | -11328.4 | 3774.4 | -181.1 | -330.87 | 105.49 | -3.40 | 00 | 10. | •03 |
| Sold Inc. | No. of the other states | 1-5 404 | | 177166 | St-SOI | | 20 | 20* | 90 |
| | | THE | | | | | 20°- | 8 | ~ ~ ~ ~ |
| | | CALK - L | | | 102-201 | | 00 | | 20 |
| 51.203 | -15342.5 | 5050.5 | -218-0 | -330.96 | 105.42 | -3.05 | -01 | - 04 | - 05 |
| 59-968 | -16258.1 | 5341.6 | -226.5 | -331.18 | 105.06 | -3.09 | 00. | 10 | +0-1 |
| | | | 1-122- | 20-166- | 105.30 | -3.22 | 10- | 10*- | \$0*- |
| 24.512 | | 11585 | -243.0 | -331.06 | 105.35 | -3.26 | •03 | -03 | -03 |
| 61:236 | -18663.4 | 5106.3 | 1-042- | -330.89 | 105.20 | -3.48 | -01 | •03 | 02 |
| 69.656 | -19454.8 | 6361.6 | | -330.53 | 105.44 | -3.34 | 20. | •0• | 20 |
| 72.078 | -20266.3 | 6617.2 | -266.5 | -330.97 | 105.68 | -3.38 | -01 | .03 | 01 |
| 74.374 | -21026.3 | 6859.7 | -274.4 | -330.81 | 105.53 | -3.51 | .01 | 10. | 02 |
| | 1 5-77 A. B. | 1-FIL | 6-797- | 10"DE- | 85*50I | 94.6- | | 10. | 20- |
| | A DESCRIPTION OF A DESC | | | | | | | | |

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| 25 | LOE TECHNE | VIDEY LADO | RATORIES IRY | | | | April 3 19 | 65 | |
|------------|------------|--------------|-----------------|-------------|-------------|-------------|---------------|------------|-----------|
| | | | | GEMINI EDET | PROGRAM | | | | |
| | 63 | PPUTED PUSIT | TON VELOCI | IT AND ACCE | CERATICN IN | GUIDANCE IN | HRUST CODRDIN | ATES | |
| 11.005 | × | ٢ | 7 | XDGT | YDOT | ZDOT | XDDDT | YDDOT | 20001 |
| 1SECS1 | (14) | 111 | | (FT/SEC) | TFT/SEC) | (FT/SEC) | [F1/SEC+2] | [FT/SEC+2] | { F1/SEC+ |
| 81.524 | -23424°7 | | -299.2 | -330.62 | 105.76 | -3.18 | .02 | • 02 | E0. |
| E4.046 | -24225-5 | 7881.4 | -307.0 | -330.65 | 105.61 | -3.22 | 20. | • 02 | 10. |
| 86.462 | -25026.4 | 8137.5 | -314.8 | -333.69 | 105.85 | -3.26 | - 00 | •05 | 60°- |
| Ef.755 | -257±5.9 | 8380.6 | -322.5 | -330.63 | 105.80 | -3.30 | | • 02 | 10 |
| 810.12 | -26550.5 | 8625.3 | -330.I | -330.67 | 105.85 | -3.43 | 10. | | 70 |
| 93.578 | -27377.2 | 8889.9 | -338.5 | -330.60 | 105.80 | -3.29 | 10. | 10. | 10 |
| 55.399 | -29177.8 | 9146.2 | -346.9 | -330.64 | 105.84 | -3.51 | -02 | 10 | 8 |
| 55.421 | -23978.4 | 9402.5 | -355.2 | -330.4E | 105.89 | -3.37 | 20* | 00. | 10. |
| 10C.343 | -23778.9 | 9558.8 | -363.4 | -330.51 | 105.74 | -3.41 | .00 | -•02 | 20. |
| 103+265 | -33579.3 | 0-2166 | -371.5 | -330.45 | 105.88 | -3.27 | 01 | 10 | 10. |
| 105-562 | -31338.5 | 10151.9 | -379.0 | +330°59 | 105-63 | -3.31 | 10. | 00. | 00- |
| 107.171 | -31870.5 | 10328.2 | -384.3 | -330.55 | 105.79 | -3.28 | 00. | 01 | 20*- |
| 110.374 | -32929.0 | 10566.9 | -395.2 | -330.35 | 105.82 | 3.39 | •02 | • 02 | 02 |
| Se : 211 | -33729.2 | 1.52531 | -403-5 | -330.40 | 105.67 | -3.52 | 20. | 00. | 10 |
| 115.213 | -34529.4 | 11173.2 | -411.3 | -330.44 | . 105.9L | -3.38 | 01 | -02 | 10. |
| 117.540 | -35329.6 | 11435.5 | -420.1 | -330.27 | 105.76 | -3.42 | | • 03 | 20- |
| 120-052 | 8.95186- | 11692.1 | -428.2 | -330.51 | 106-00 | -3.28 | 10. | 20. | |
| 122-458 | -35924-8 | 11347.2 | -436.2 | -330.35 | 106.04 | -3.32 | 10. | .01 | 10*- |
| 124-874 | -31119.1 | 2-20221 | -444.3 | -330.28 | 105.39 | -3.45 | •03 | 00 | 20 |
| 127.171 | -38478.4 | 12445.6 | -452.2 | -330.32 | 105.84 | -3.41 | .02 | 01 | 00. |
| 125-593 | -39279.2 | 12702.2 | -460.5 | -330.16 | 106.08 | -3.45 | -01 | 10. | 10- |
| 1122-015 | -4107 | 12958.3 | -458.7 | -332.20 | 105.93 | -3.31 | 10. | 20. | 00 |
| 136.259 | -41677.6 | 13472.5 | -485.0 | -330.27 | 106.02 | -3.48 | •02 | 02 | 02 |
| 135.156 | -42436.0 | 13716.0 | -493.0 | -330.11 | 105.07 | -3.43 | .03 | 01 | 01 |
| 141-671 | -43266.3 | £.28261 | 8.106- | -330.04 | 28-501 | -3.55 | 20. | 00. | 00. |
| 142.768 | -44024-4 | 14225.9 | -509.7 | -325.98 | 105.97 | -3.42 | 10. | 00. | 00 |
| 146.390 | -44823-7 | 14482.5 | -518.2 | -330.12 | 106.11 | -3.46 | 10 | .03 | 10- |
| 145-212 | -43523.1 | 14739.4 | | -32.526- | 105.96 | -3.50 | 02 | 10. | 10. |
| 151-234 | -46422.5 | 14996.3 | -534.8 | -330.19 | 106.20 | -3.35 | 02 | -01 | 10. |
| 152-656 | -47222.2 | 15253.4 | -543.1 | -330.23 | 105.05 | -3.40 | 00 | -02 | 10. |
| 1174 - 864 | -4112-6 | 1:410.9 | -2+8-1 | P1-066- | 106.21 | -3.37 | 20. | 10. | 10 |
| 156.468 | -48811-0 | 15764.4 | -559.3 | -330.01 | 106.24 | -3.39 | .03 | •01 | 10 |
| 156-765 | -49568.9 | 16008.4 | -567.2 | -325.94 | 106.19 | -3.43 | 10. | 10 | 0°. |
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TALY SPACE TECHNOLOGY LAPORATORIES

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April 3 1965

GEMINI EDIT PROGRAM

CUPDHED FOSITION, VELUCITY AND ACCELERATION IN GUIDANCE THRUST COORDINATES

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| | | 01.03% 1.4.0% | ORATORIES NTRY | - | | | April 3 1 | 965 | | |
|-----------|-----------|---------------|-------------------|---------------------|----------|---------------|---------------|------------|-------------|----------|
| | | | | GEMINI EDIT | PROGRAM | | | | | |
| | CD | INPUTED FUST | TUN, VELUCT | TY AND ACCE | LEATION | V GUIDANCE TH | HRUST COURDIN | IATES | | |
| 3611 | × | * | 2 | TEOX | YDOT | 1002 | XDDDT | YD00T | 20001 | |
| (SEC 3) | (1-1) | (13) | (1-1) | (FT/SEC) | (FT/SEC) | [FT/5£C] | [FT/SEC•2] | (FT/SEC+2) | (FT/SEC•2) | |
| 746.745 | -17261.9 | 74945.8 | -856.2 | -325-2 ⁵ | 106.50 | -3.51 | 00. | 01 | 00. | |
| | | 75704-1 | | -325-48 | 106.64 | -3.53 | 10 | 00*- | 00 | |
| 245.663 | -73858-7 | 25462.9 | -872.8 | -325.32 | 106.69 | -3.39 | •05 | 02 | 01 | |
| 251.053 | 1.19347.7 | 25621-2 | -817.9 | -329.48 | 106.55 | -3,36 | •03 | 01 | 00 | |
| 254-345 | 2.05208- | 25935.0 | -998-0 | -325-10 | 106.501 | -3.48 | 10. | 00 - | EC | |
| 255.968 | -36353.0 | 26140.9 | -894.7 | -329.25 | 106.65 | -3.53 | 10. | 00-1 | 20 | |
| 25£.795 | -81335.3 | 26442.9 | -905.2 | -329.28 | 106.68 | -3.65 | 01 | -01 | 00 | |
| 261.624 | -97315-6- | | -915.31 | -329.30 | 106.52 | -3.50 | 00*- | • 00 | 10. | |
| 252.546 | -83449-5 | | -922.3 | -325.25 | 106.58 | -3.55 | C0"- | 00 | 10. | |
| 256.393 | -84386.0 | 27252.7 | -932.3 | -329.28 | 106.71 | -3.49 | 02 | •03 | 10 | - |
| 255-235 | -85013.3 | 21435.1 | 0.950- | -323.33 | 105.57 | -3-54 | 10*- | 20. | 00.1 | |
| 271-143 | -35953.3 | 27751.7 | - 343.5 | -325.46 | 106.90 | -3.57 | 10. | -•01 | 00 | |
| 273.052 | -36586.8 | 27967.3 | -956.4 | -329.31 | 106.76 | -3.53 | .02 | 01 | .01 | |
| 068-512 | - 015218- | 28271.5 | -457-5 | -323.33 | 106.50 | -3.57 | •03 | 04 | 10. | |
| 217.812 | -98153.4 | 28475.4 | -974.3 | -329.03 | 106.55 | -3.44 | 10 | 02 | 10. | |
| 230.640 | -39084.7 | 28777.9 | -984.2 | -329.31 | 105.60 | -3.56 | 03 | • 02 | 10. | - |
| 232.552 | -337:5 | 28382.6 | 5.166- | -325.45 | 105.55 | -3.43 | - 20*- | 20. | 10.4 | |
| 235.393 | -90647.1 | 29284.2 | -1001-4 | -329.48 | 105.79 | -3.45 | 10 | •02 | 00. | |
| 287.312 | -91250.2 | 29489.5 | -1008.3 | -325.33 | 106.65 | -3.60 | 02 | •01 | 10 | |
| 276.14.7 | 1.51526- | +-16162 | 1.8101- | -329.45 | 81.501 | -3.45 | +0 | 10 | 10. | |
| 232.062 | -92845.6 | 29996.5 | -1024.8 | -329.71 | 106-64 | -3.50 | 06 | 0 | 10. | |
| 254.905 | -93783.2 | 30299.8 | -1034.7 | -329.73 | 106.69 | -3.44 | 03 | 03 | 10 | |
| 276.8:22 | -34411.8 | 30503-1 | -1041.4 | -323.99 | 105.64 | -3.49 | 10. | 00°- | 00 • | |
| 255.655 | -95349.5 | 30806.4 | -1051.3 | -329.71 | 106.48 | -3.52 | • 02 | -•02 | 10 | |
| 301.562 | -35978.0 | 31007.5 | -1058.0 | -329.56 | 106.73 | -3.48 | co • | • 00 | 10"- | |
| 304.406 | -96915.6 | 31312.6 | -1068.0 | 69*676- | 100.47 | 26*6- | 20 | 10. | 10 | |
| 307.234 | -97845.2 | 31614.1 | -1078-9 | -329.91 | 106.70 | -3.64 | 03 | 10 | 00 | |
| 30 5.1 56 | -98482.I | 31819.0 | -1084.9 | -329.75 | 106.56 | -3.51 | - • 05 | -•00 | .00 | |
| 311.984 | - 19415.3 | 32120.4 | -1034.9 | -325-89 | 106.50 | -3.54 | +0 | 03 | 10. | |
| 313.906 | -100049.7 | 32325.1 | -1101.7 | -330.34 | 105.56 | -3.50 | 04 | 10 | 10 | -{ |
| 316.747 | -100188.5 | 32629.0 | -1111-7 | -330.15 | 106.40 | -3.53 | 03 | 10. | 10 | 37 |
| 315-671 | -101623.4 | 1.26326 | S-BIII- | -11-366- | 106-55 | -3.58 | 10*- | 00 | 10. | <u> </u> |
| 321.459 | -102556.8 | 33133.3 | -1128.6 | -330.34 | 106.59 | -3.61 | - 04 | 00. | 00. | |

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TELES SPACE TECHNOLOGY LAEORATORIES THOMPSON TAND WOM-SPEEDERY

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April 3, 1965

GEMINI EDIT PROGRAM

CUMPUTED PUSITIUM, VELUCTIY AND ACCELERATIUN IN GUIDANCE THRUST CODRDINATES

| | | | - - | | | | | | • | | | - | | Ĩ. | | | | , , | | .1 | | - | | | | _4 | -16 | 50. | -6 | 04 | 7- | ·T | CO | 00 |) | |
|-------------|--------------|-------------|------------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|--|
| 20007 | (FT/SEC+2) | 01 | 00. | • 00 | .02 | 00 | 01 | 10 | 00 | -02 | 00. | 10. | - 00 | 10 | 10. | 10. | 10. | 02 | 03 | | E0 | 02 | 10 | 02 | 01 | 02 | 03 | EC | · 50°- | 90 - - | - 00 | 01 | - 10 | 10 | 60 | |
| YDDGT | (FT/SEC+2) | 01 | 02 | 02 | 02 | 03 | 03 | 03 | E0 - | 01 | . 50 | 02 | 02 | 03 | £0°- | 06 | 08 | 38 | 05 | - 23 | 03 | -• 06 | 10 | 06 | 07 | 05 | 19 | 16 | | 18 | 17 | 61 | 20 | 23 | - 56 | |
| XDDOT | (FT/SEC+2) | 04 | +0 | 05 | 08 | 07 | 07 | 05 | 76 | 07 | 08 | £0°- | 07 | 60 | £0°- | 12 | 13 | 13 | 11 | c1:- | 12 | 12 | 11 | 13 | 15 | - 22 | 21 | 24 | - 25 | 25 | 24 | 12"- | 31 | 34 | 36 | |
| 2001 | TFT/SECT | -3.39 | -3.60 | -3.46 | -3.42 | -3.47 | -3.50 | -3.64 | -3.49 | -3.54 | -3.57 | -3.35 | -3.56 | -3.42 | -3.55 | -3.41 | -3.45 | -3.47 | -3.45 | -3.55 | -3.71 | -3.74 | -3.73 | -3.83 | -3.73 | -4.03 | -3.87 | -4-08 | -4.13 | -4.17 | -4 - 4 3 | -4.61 | -4.93 | -5.14 | -2.33 | |
| YDOT | TF1/SEC1 | 106.45 | 106.49 | 105.44 | 106.28 | 106.34 | 106.27 | 106.14 | 105.98 | 106.13 | 105.97 | 106.03 | 106.06 | 105.30 | 105.85 | 105.80 | 105.65 | 105.30 | 105.15 | 105.10 | 105.16 | 105.00 | 104.85 | 104.50 | 104.55 | 104.40 | 104.07 | 103.71 | 103.28 | 102.92 | 162.39 | 102.04 | 101.70 | 101.15 | 100.43 | |
| XDCT | TFT/SEC1 | -330.39 | -330.41 | -330.55 | -330.79 | -330.84 | -331.17 | -331.22 | -331.44 | -331.39 | -331.82 | -331.87 | -332.09 | -332.22 | -332.47 | -332.80 | -332.85 | -333.47 | -333.72 | -333.85 | -334.10 | -334.52 | -334.17 | -335.CO | -335.25 | -335.69 | -336.13 | -336.75 | -337.30 | -333.13 | -338.38 | -12.456- | -335.64 | -346.68 | -341.33 | |
| 2 | [14] | -1135.4 | -1145.3 | -1152.1 | -1162.1 | -1168.8 | -1178.3 | -1185.5 | -1194.5 | -1202.4 | -1212.3 | C*6121- | -1223.9 | -1238.6 | -1245.3 | -1255.2 | -1261.9 | -1271- | -1276.9 | -1288.9 | -1296.0 | -1305.6 | 513.8 | -1324.6 | -1332.0 | -1344.2 | -1352.0 | -1353.4 | -1371.2 | -1383.2 | -1391.5 | -1404-4 | -1413.6 | -1427.9 | -1433.0 | |
| 7 | (<u>1</u>) | 1.333338.1 | 33639.0 | 33843.6 | 34146.1 | 34348-8 | 34651.0 | 34855.1 | 35155-2 | 35359.1 | 35560.6 | 1.20862 | 36164.1 | 36463.8 | 30567.2 | 36967.7 | 37170.9 | 37470.9 | 27674.4 | 6-11-16 | 35175.6 | 36474.3 | 1.278.45 | 3073.6 | 39174.6 | 35454.2 | 39652.4 | 35947.8 | 46146.7 | 40433.3 | 40637.1 | 40.429.0 | 41125.2 | 41413.4 | 41507.1 | |
| × | (1-1) | ~ L-161EJL- | -104125.5 | -104761.8 | -105762.2 | -106332.B | -107274.1 | -107910.6 | -1.78947.1 | -105434.7 | -110427.8 | -111050.3 | -112004.5 | -112944.0 | -113552.9 | -114525.1 | -115164.8 | -116112.3 | -116751.6 | -117655.7 | -118342.9 | -113253.6 | 9.220611- | -120588.0 | -121532.3 | -1-2480-1 | -123125.8 | -124062.7 | -124730-5 | -12565C.7 | -124340.8 | -127304.5 | -127962.3 | -128929.8 | -125555.2 | |
| JIME | 15253 | 323.421 | 326-249 | J2E-171 | 331.015 | 126-222 | 335.765 | 331.667 | 345-515 | 342.437 | 345.281 | 341-181 | 350-031 | 352.353 | 181.22 | 357.600 | 355.531 | 752.374 | 364.256 | 361-124 | 365.062 | 371.905 | 372.326 | 376.671 | 376.593 | 162-186 | 322.359 | 386.203 | 366.1.24 | 356.363 | 392.892 | 355-734 | 397.671 | 400.515 | 452.437 | |
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Apr11 3, 1965

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GEMINI EDIT PROGRAM

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| (accs.28 (FF) | 100 | × | H | 2 | 1001 | TOOT | ZDOT | 5000 | TOOLX | ZDOULZ |
|--|----------|-------------|---------|-----------|-----------|----------|----------|------------|------------|-----------|
| 4(1):253 -13957.4 (1892.1 -163.5 -342.37 99.48 -5.49 -317 -35 4(1):253 -1331.0 47531.7 -1510.2 -344.75 99.45 -5.49 -317 -35 4(1):253.1 -1531.0 -1510.2 -344.75 95.17 -5.19 -31 -35 4(1):253.1 -1510.2 -1510.2 -1510.2 -544.75 95.17 -5.19 -31 -35 4(1):253.1 -1510.2 -1511.8 -95.77 -5.19 -5.9 -34 4(1):251 -1511.1 -1511.1 -1513.1 -357.75 91.37 -5.15 -5.19 - | (9228) | (II) | Ê | Ē | ()TT/SEC) | (FT/SEC) | (FT/SBC) | (FT/SEC#2) | (FT/SEC#2) | 2*3ES/IM) |
| (0,1,20) $-13,216,0$ $(2003,3)$ $-164,4$ $-94,11$ $99,45$ $-5,82$ -37 -25 $111,680$ $-13375,31$ $-1481,2$ $-34,17$ $98,11$ $-6,63$ $-5,17$ -35 $111,680$ $-13375,31$ $-1481,4$ $-1510,2$ $-34,17$ $96,11$ $-6,63$ $-5,17$ $-5,23$ $411,55,77$ $-13445,6,2$ $4323,9,0$ $-1510,2$ $-34,12$ $96,11$ $-6,63$ $-5,13$ $-34,77$ $411,55,7$ $-131465,4,2$ $4325,4,0$ $-1511,12$ $-34,77$ $96,217$ $-6,63$ $-6,64$ $-395,72$ $422,5421,11$ $-14002,2$ $-1597,17$ $90,177$ $-8,27$ -72 -29 $432,5175$ $-13936,51,4$ $-1697,22$ $-1697,12$ $-949,22$ $-1697,12$ $-949,22$ $-1097,12$ -129 $432,5175$ $-14956,11$ $-4949,22$ $-1697,12$ $-917,23$ $-1202,22$ $-1097,12$ $-1202,22$ $-1097,12$ $-1202,22$ $-1097,12$ | 405+281 | -133557.4 | 41892.1 | -1453.5 | -342.35 | 99.88 | -5.53 | 38 | 26 | 08 |
| 41.000 -132895.8 -1981.0 -544.75 98.11 -6.05 -6.1 -22 41.005 -132895.8 425531.0 -1510.2 -344.75 98.17 -6.03 -6.1 -23 -34 41.012 -132895.8 425531.0 -1510.2 -344.75 95.17 -5.17 -5.95 34 41.575 -13787.4 4127.71 -1511.8 -347.27 95.17 -5.16 35 34 425.112 -1345.12 -1551.12 -347.27 91.30 -17.23 66 344 36 421.717 -1395.11 -1551.12 -347.27 91.30 32 36 34 421.717 -1395.12 -1551.1 -377.29 91.37 32 36 36 421.717 -14186.1 -1551.2 -1551.7 -377.29 -17.23 32 36 37 431.275 -1395.12 -1395.12 -1395.12 -137.23 -130 -121 -121 -121 | 407-203 | -131216.0 | 42083.3 | - 1464 .4 | -343.11 | 99.45 | -5.82 | 37 | 25 | 07 |
| 411.055 -1320554 4555.1 -1407.6 -344.15 97.06 -6.03 35 32 415.757 -1370572 4519.2 -151.2 -345.75 -510.2 -345 -33 415.757 -1364.51 -547.7 -546.41 97.06 -5.05 34 415.757 -1361.12 -547.77 95.31 -5.05 34 425.1167 +1361.11 -1577.7 -151.2 -5.05 34 425.1167 -13817.11 4400.25 -1597.7 -357.75 90.77 -6.07 56 44 425.1167 -13817.11 4400.55 -1597.7 -357.75 90.77 -6.27 26 54 425.1173 -1387.70 -157.71 -1617.7 -1613.1 -355.75 90.77 -9.20 -1.07 -7.58 425.118 -14407.56 -175.6 -377.79 97.37 -9.20 -1.07 -7.65 -7.65 425.119 -14107.56 -175.6 -377.29 -10.20 -1.105 -7.76 441.464 -14327.76 -175. | 410-046 | -132153-3 | 42354.8 | -1481-0 | -344.34 | 98.51 | -5.85 | 14 | 29 | 07 |
| 414.812 133099.1 42331.0 -1510.2 -346.41 97.06 -6.30 -50 -34 417.57 -17464.2 42105.7 -1511.3 -347.12 -4.27 -377 -34 425.477 -191467.2 42105.7 -1511.3 -375.77 94.26 -39 -34 425.472 -19161.2 -1511.3 -355.77 94.26 -7.28 -342 425.4173 -1917.7 -1513.1 -355.77 90.77 -8.27 -7.44 425.4173 -1913.1 -355.77 90.77 -8.27 -7.66 -7.64 421.737 -11966.15 $44.077.7$ -1513.1 -1555.6 -17.25 -7.72 -544 431.26 $-144.77.7$ -1513.1 -357.47 -357.47 -12.25 -7.72 431.26 $-144.77.7$ -1513.1 -17.25 -7.72 -7.72 431.26 $-144.77.7$ -1513.7 -12.25 -12.25 | 411.969 | -132055;8 | 42553.7 | -1492.6 | -344.79 | 96.17 | -6.03 | 47 | 32 | 09 |
| 415.57 115.475 43105.7 -15.4.2 95.37 -5.5 -37 415.572 113.451.4 4359.0 -1561.8 -345.12 94.24 -7.25 -5.6 -44 427.151 113.451.4 43579.0 -1561.8 -357.17 94.24 -7.25 -5.6 -44 427.151 -19176.1 4612.1 -355.75 90.77 -8.27 -36 -44 427.151 -19056.1 4402.2 -1679.5 -355.75 90.77 -8.27 -38 -56 -44 427.151 -19056.6 -4402.2 -1679.5 -357.75 90.77 -8.27 -37 -56 -57 425.154 -19056.6 -4402.2 -1679.5 -357.55 95.63 -10.20 -11.16 -57 431.57 427.47 -175.6 95.63 -9.35 -10.20 -11.16 -9.76 444.181 -144.68 -175.9 -175.9 -107.20 -11.69 -10.5 444.181 -146.72.4 670.72 -1175.1 -1122.9 -10.20 -11.16 -10.5 <td>414.812</td> <td>-133839.1</td> <td>42431.0</td> <td>-1510.2</td> <td>-346.41</td> <td>97.04</td> <td>-6.30</td> <td>50</td> <td>34</td> <td>10</td> | 414.812 | -133839.1 | 42431.0 | -1510.2 | -346.41 | 97.04 | -6.30 | 50 | 34 | 10 |
| 425.473 115456.2 42399.6 -154.48 95.37 -6.64 39 425.471 115456.4 43559.5 -156.1.9 -355.77 94.24 -7.72 -6.64 44 425.471 113171.1 43057.2 -1597.17 91.897 56 44 425.1127 -113181.1. 44077.7 -1513.1 -355.26 91.89 77 89 55 425.1127 -119181.1. 44005.2 -1597.7 -955.26 97.77 87 93 55 435.7187 -114647.2 -11697.7 -355.26 87.74 87 93 55 435.7187 -114647.2 -11697.7 -355.26 97.75 -11.20 95 76 435.718 -145.67 -1755.6 -375.65 96.73 -175 97 97 446.181 -144.04.5 -175.64 -175.76 -107.77 -10.95 97 445.146 -144.04.5 -175.61 -373.87 77.23 -11.21 92 95 445.1181 -146.72.7 | 411-555 | -134925.4 | 43105-7 | -1528.8 | -342.04 | 96.10 | -5.75 | 55 | 37 | -11 |
| 425,421 $134651,4$ $43559,0$ $1561,0$ $-956,77$ $94,24$ $-7,23$ -644 -644 $275,1127$ $-138155,4$ $4717,7$ $-1591,1$ $-355,75$ $90,77$ $-88,27$ -323 -556 $425,1127$ $-138155,4$ $4717,7$ $-1556,75$ $90,77$ $-88,27$ -395 -567 $425,1127$ $-13885,44$ $44002,27$ $-1556,63$ $-1576,65$ $-1676,75$ $-90,77$ $-88,77$ -395 -576 $435,7148$ $-143576,54$ $-1679,75$ $-597,559$ $95,753$ $-90,77$ $-88,77$ -395 -576 $443,477$ $-1675,64$ $-1676,56$ $-1755,64$ $-375,297$ $-100,202$ -11056 -1765 $443,427$ $-1755,79$ $-1755,79$ $-1755,79$ $-1752,79$ $-102,202$ $-101,64$ $-1,212$ -902 $443,474,77$ $-1755,97$ $-1759,77$ $-112,212$ $-102,202$ $-101,202$ $-102,222$ $-102,224$ $-102,224$ $-102,224$ $-102,224$ $-102,224$ $-102,224$ $-102,224$ | 415.578 | -135456.2 | 43299.6 | -1541.8 | -343.89 | 95.37 | -5.84 | 58 | 39 | 12 |
| 25,1,187 $1,917,11$ $1,97,7$ $55,179$ $91,32$ $-1,68$ $-1,72$ $-5,48$ $25,1187$ $-1,985,153$ $-55,179$ $90,777$ $-8,27$ -58 -59 $25,1187$ $-1,985,153$ $-55,179$ $90,777$ $-8,27$ -56 -56 $425,118$ $-1,985,155$ $-1,55,77$ $90,777$ $-8,27$ -56 -76 $435,173$ $-1,985,15$ $-1,95,12$ $-1,55,77$ $90,77$ $-8,12$ $-1,09$ -76 $441,427,55$ $45,045,7$ $-1,75,16$ $-1,22$ $-1,075$ $-1,075$ -76 $441,427,55$ $45,045,7$ $-1,755,4$ $-357,37$ $81,12$ $-1,025$ $-1,095$ -776 $441,121$ $-14,175,75$ $-1755,9$ $-375,37$ $77,43$ $-11,16$ -120 $-10,122$ $-10,44$ $-10,21$ $-10,20$ $-11,16$ $-12,12$ -95 $441,127,12$ $-14,472,96$ $-1756,7$ $-1753,72$ $-11,22$ $-10,20$ $-11,16$ $-10,20$ $-11,16$ $-11,126$ $-11,126$ | 422.421 | -134451-4 | 43559.0 | -1561-9 | -355.72 | 94 . 24 | -7.23 | 64 | - • 44 | 11 |
| 427.1.187 -1391.11 44002.2 -1197.7 -554.12 90.77 -88.77 88 58 423.5.173 -13955.4 444177.7 -1513.1 -355.575 90.77 -88.77 88 58 433.5.174 -14056.6 44435.5 -357.593 90.77 -88.77 82 58 433.5.174 -14056.6 444.52.6 -16757.5 -1575.6 -357.693 87.63 -97.52 -17.05 70 441.484 -143127.5 45247.9 -1755.4 -367.643 81.82 -10.20 -11.15 817 817 441.484 -143127.5 4574.47 -1755.4 -375.12 80.12 -11.01 121 92 70 444.187 -14404.5 4574.7 -1175.4 -375.17 77.43 -11.61 -1.21 92 95 444.187 -14409.5 44930.4 -1985.4 452.47 -1176.7 -1128 -1.21 92 92 92 92 92 92 92 92 95 95 95 92< | 5+5+343 | -137166.9 | 6.95722 | -1575.9 | -351.97 | 25.59 | -7.45 | 72 | 48 | 14 |
| 425.159 -13985.4 44177.7 -1613.1 -355.75 90.77 -8.27 022 58 423.573 -140556.5 44002.7 -1679.5 -357.59 87.74 -8.72 037 70 433.564 -140556.5 44002.7 -1679.5 -357.59 87.63 -9.32 -70 87 70 433.564 -140556.5 44002.7 -1679.5 -357.59 87.63 -9.32 -10.05 70 441.606.1 4404.50 -175.4 -175.4 -10.20 -11.09 87 92 441.601 -144075.4 575.4 -175.4 11.20 -11.05 87 441.601 -144075.4 575.4 -375.27 77.23 -11.22 92 446.112 -144072.4 -1125.0 -396.56 77.23 -11.26 -12.37 446.112 -144072.4 -1123.7 75.44 -12.21 -12.22 -92 446.112 -146670.2 457.31 75.44 -12.37 -11.40 -11.05 455.791 -167653.5 451 | 427.157 | -138171.1 | 44002.2 | -1597.7 | -354.10 | 91.89 | -7.68 | 11 | 54 | 15 |
| 471.773 137369.5 44435.1 -1755.8 -37799 37.05 -86.7 -88.6 -95. -70 - 473.715 -140656.6 44402.7 -1673.6 -357.69 85.63 -9.30 -1.03 70 - 473.715 -140656.6 44042.7 -1755.6 -367.91 84.13 -9.62 -1.03 81 87 441.484 -141327.5 45247.9 -1755.4 -375.19 80.12 -10.20 -1.16 87 441.484 -144042.9 4574.7 -1755.4 -375.19 80.12 -11.21 -1.21 92 95 95 95 95 95 95 96 95 96 97 92 92 92 92 92 92 92 92 92 95 95 95 95 95 93 95 95 95 95 95 95 95 95 95 95 95 95 95 95 95 95 95 105 105< | 425.163 | -139853.4 | 44177.7 | -1613.1 | -355.75 | 90.17 | -8.27 | 82 | 58 | 15 |
| 433.674 -140558.6 44402.7 -16/73.6 -353.63 87.63 -9.32 -1.05 -76 -76 435.718 -141327.5 474275.4 -357.65 85.63 -9.32 -1.05 87 441.684 -14725.5 -357.65 85.63 -9.32 -1.05 87 441.684 -14327.5 4504.5 -175.4 -357.51 87.63 -10.20 -1.115 87 441.681 -147.57 -175.4 -371.62 90.12 -10.20 -1.116 92 441.67 451.01 -146.67 -175.7 -175.12 -11.21 -1.21 -92 441.67 451.01 -176.19 -373.82 77.23 -11.21 -1.21 -92 451.011 -146.57.4 457.71 -17761 -11.21 -11.21 -1.05 451.013 -146.59.2 457.71 -175.73 -11.21 -1.05 -1.05 451.013 -146.59.2 457.71 -11.21 -11.21 -1.05 -1.05 451.013 -146.59.2 457.11 59.45 | £21-353 | -135363.5 | 44433.1 | -1536.3 | -351.58- | 39.05 | -8.67 | 83 | 65 | 15 |
| 436.718 -145861 4.9492 -1679.5 -36591 8563 -9.32 -1.05 -1.05 -1.05 441487 -14327.5 $4.5047.2$ -1077.5 -36591 8413 -9.52 -1.03 -1.80 441487 $4.522.4$ $4.5774.7$ -1775.9 -37591 8012 -1062 -1.21 -92 442271 $-1447.57.7$ -775.9 -775.9 -776.2 -1021 -1.22 -92 442271 $-147.075.7$ $4.5774.7$ -1776.9 -772.34 -1121 -1.22 442273 -146731.0 45774.7 -1769.9 -772.34 -1121 -792 447727 -146732.4 45774.7 -1796.6 -12.21 -1257 -1.292 447727 -146731.01 46714.7 -11769.0 -12.21 -12.67 -1.257 452793 -1465731.01 46714.3 -19857.00 -3866639 -1221 -12.97 -1.259 4577119 -1465730.0 -19920.9 -3966639 -1273 -179 -179 4577119 -1465731.01 46730.9 -19570.0 -10.57 -179 -179 457743 -11580.7 -1990.9 -91076 -1069 -1079 -1079 457743 -15734.6 -1990.9 -201.715 -20.91 -10.79 -10.79 457743 -15734.7 -15734.7 -10.79 -10.79 -10.79 | 432.674 | -140558.6 | 44402.9 | -1653.6 | -353.83 | 87.74 | -8.72 | 35 | - 70 | 14 |
| 441.484 -1422E5.4 45012.2 -1697.1 -364.91 84.13 -9.52 -1.09 80 441.484 -143327.5 45247.9 -1755.8 -397.51 81.82 -10.20 -1.16 92 444.127 -14705.4 -1755.8 -375.31 87.32 77.43 -11.61 92 444.127 -14605.2 45774.7 -1756.9 -375.32 77.43 -11.61 92 444.121 -14659.2 45774.7 -1768.8 -375.37 75.43 -11.61 -1.05 444.121 -14659.2 45774.7 -1768.8 -375.37 75.44 -11.60 -1.05 451.718 -146731.1 45174.7 -1897.0 -386.46 50.39 -12.37 -1.69 -1.14 457.718 -146731.1 46120.7 -1897.0 -386.46 50.39 -12.69 -1.69 -1.65 457.718 -146731.1 46120.7 -1897.0 -386.46 50.39 -12.69 -1.69 -1.65 457.718 -19.46 -10.50 -12.61 -13.69 -1.69 | 436.718 | -141585.1 | 44349.2 | -1679.5 | -362.65 | 85.63 | -9.30 | -1.05 | 76 | 17 |
| 441.484 -143327.5 45247.9 -1725.8 -367.54 81.82 -10.20 -1.16 87 442.221 -144042.9 45774.7 -1775.7 -375.33 80.12 -10.44 -1.21 92 92 444.127 -144042.9 45774.7 -1775.7 -375.33 80.12 -10.46 -1.21 92 92 4451.031 -146592.4 45774.7 -1775.7 -317.337 75.43 -11.61 -1.165 -1.165 451.031 -146592.4 4513.7 -1857.0 -383.46 70.06 -12.37 -1.55 -1.23 455.705 -16753.6 4613.4 -1994.4 -383.65 65.39 -12.57 -1.59 -1.23 455.719 -16533.6 4613.4 -1994.4 -383.65 55.39 -12.57 -1.59 -1.69 | 1435-040 | -142265.4 | 2.21022 | -1697-1 | -364.91 | 84.13 | -9.62 | -1.09 | - 80 | 81 |
| 443.421 -144.042.9 454.04.5 -1745.9 -375.19 80.12 -10.44 -1.21 92 92 446.187 -144.055.4 45774.7 -1758.8 -375.87 77.43 -11.61 -1.32 99 99 451.031 -14659.2 45774.7 -1758.8 -375.37 71.23 -11.50 -11.64 -1.05 451.031 -146579.2 45734.7 -1152.7 -385.46 70.06 -12.77 -1.57 -1.23 451.031 -146579.2 45734.1 -1987.0 -383.45 60.39 -13.57 -1.57 -1.23 451.046 46314.3 -1987.0 -383.45 60.39 -13.57 -1.29 -1.23 451.718 -147681.0 4614.4 -383.47 56.39 -13.57 -1.79 -1.35 455.328 -154480.5 46174.6 -1990.9 -405.43 56.39 -15.76 -1.79 -1.79 455.328 -157480.9 46174.5 431.44 -1990.9 -406.45 56.39 -16.69 -1.69 -1.69 -1.69 -1.69 | 441.484 | -143327.5 | 45247.9 | -1725.8 | -367.54 | 81.82 | -10.20 | -1.16 | 87 | 19 |
| 446.187 -14.055.4 450.26.9 -1776.7 -373.82 77.23 -11.20 -1.32 99 446.187 -146559.2 45774.7 -1756.8 -375.37 75.43 -11.61 -1.40 -1.05 451.031 -146559.2 45734.2 -1857.0 -3856.65 70.05 -12.779 -1.57 -1.65 -1.65 451.031 -146559.2 45134.3 -1897.0 -383.65 70.05 -12.779 -1.57 -1.57 -1.55 -1.65 | 442.421 | -144042.9 | 45404.5 | -1745.9 | -375.19 | 80.12 | -10.44 | -1.21 | 92 | 21 |
| 444.187 -146422.4 45774.7 -1758.8 -375.37 75.43 -11.61 -1.40 -1.05 451.031 -146573.5 45774.7 -1857.0 -386.66 72.34 -12.37 -11.50 -11.14 455.705 -16733.5 45120.7 -1897.0 -383.46 70.06 -12.37 -11.50 -11.24 455.7176 -146731.1 46439.1 -1990.9 -391.34 63.71 -13.87 -11.79 -11.55 455.7718 -1574805 45439.1 -1990.9 -405.45 51.54 -15.41 -2.157 -11.63 455.729 -1534807 59.39 -15.41 -1.790 -1.46 -1.63 455.718 -1574809 46377.8 -19909 -405.45 51.54 -16.35 -1.63 -1.63 455.494 -1534807 4677.8 -16.35 -1.63 -1.63 -1.63 -1.63 -1.63 -1.63 -1.63 -1.63 -1.63 -1.63 -1.64 -1.63 -1.63 -1.63 -1.63 -1.63 -1.64 -1.63 -1.63 -1.63 | 446.243 | -14-045.4 | 45626.9 | -1115.7 | -373.82 | 77.23 | -11-23 | -1.32 | 99 | 23 |
| 451.031 -146559.2 45784.2 -1622.3 -386.6C 72.34 -12.37 -1.50 -1.14 455.795 -14653.6 46120.7 -1897.0 -383.46 70.06 -12.79 -1.57 -1.23 455.796 -146731.1 46139.1 -1994.4 -383.69 66.39 -13.55 -1.697 -1.23 455.719 -14940.5 46439.1 -1920.9 -391.34 63.71 -13.55 -1.79 -1.25 457.719 -14940.5 46439.1 -1920.9 -391.34 63.71 -13.67 -1.79 -1.25 451.719 -14940.5 46724.6 -1990.9 -391.34 63.71 -13.87 -11.79 -1.44 465.439 -1951.0 -1970.9 -391.34 63.71 13.87 -1.46 -1.55 451.244 -15.148 -2051.9 -1990.9 -405.45 51.54 -1.663 -1.663 -1.663 -1.663 -1.663 -1.65 -1.663 -1.65 -1.663 -1.65 -1.663 -1.65 -1.663 -1.663 -1.663 -1.663 -1.663 | 446.127 | -14582.4 | 45774.7 | -1758.8 | -375.37 | 75.43 | -11.61 | -1.40 | -1.05 | 25 |
| 452.953 -147623.6 46120.7 -1857.0 -383.46 70.06 -12.79 -1.57 -1.23 455.796 -146721.1 46314.3 -1994.4 -383.05 66.39 -13.55 -1.69 -1.35 457.719 -149480.5 45439.1 -1920.9 -391.34 63.71 -13.55 -1.79 -1.79 -1.44 457.719 -149480.5 45639.1 -1920.9 -391.34 63.71 -13.55 -1.79 -1.79 -1.44 451.719 -14348.2 -1970.9 -391.34 63.71 -13.67 -1.79 -1.63 462.494 -151348.2 46377.8 -2091.0 -405.65 51.54 -16.35 -1.79 -1.78 465.329 -15.41 -2.05 -1.78 -2.06 -1.78 -1.78 472.015 451.54 -16.35 -16.35 -16.35 -16.35 -2.66 -1.90 472.015 -155480.7 47100.9 -2137.1 -215.10 -2.65 -2.30 -1.90 472.015 -155480.7 47100.9 -2.055 472.37 | 451.031 | -146559.2 | 45784.2 | -1032.3 | -380.60 | 72.34 | -12.37 | -1.50 | -1.14 | 25 |
| 455.796 -146721.1 464394.1 -1894.4 -383.C3 66.39 -13.55 -1.69 -1.35 457.719 -149480.5 46439.1 -1920.9 -391.34 63.71 -13.87 -1.79 -1.44 457.719 -149480.5 46439.1 -1920.9 -391.34 63.71 -13.87 -1.79 -1.44 457.719 -143480.5 46439.1 -1920.9 -395.71 59.45 -14.82 -1.79 -1.44 465.494 -151369.2 4677.8 -1990.9 -405.65 51.54 -16.35 -2.05 -1.63 465.329 -152515.3 46377.8 -2053.0 -405.65 51.54 -16.35 -2.05 -1.79 475.093 -154460.9 47100.9 -2117.1 -417.45 42.37 -17.72 -2.05 -2.06 -2.06 472.015 -155288.7 47178.1 -2152.0 -425.61 38.33 -18.32 -2.62 -2.016 -2.05 474.359 -1565218.7 47178.1 -2152.0 -425.61 38.33 -18.35 -2.62 -2.05 | 452.953 | -147633.6 | 46120.7 | -1857.0 | -383.46 | 70.06 | -12.79 | -1.57 | -1.23 | 24 |
| 457.719 -14940.5 46439.1 -1920.9 -391.34 63.71 -13.87 -1.79 -1.44 450.552 -150501.7 45613.7 -1951.9 -345.77 59.45 -14.82 -1.79 -1.55 462.494 -151369.2 46177.6 -1990.9 -405.65 51.54 -16.35 -2.05 -1.63 465.494 -151369.2 46377.8 -2035.0 -405.65 51.54 -16.35 -2.18 -1.78 465.329 -152515.3 46377.8 -2051.0 -405.65 51.54 -16.35 -2.18 -1.78 470.093 -15440.9 47100.9 -2117.1 -417.45 42.37 -17.72 -2.46 -2.06 470.093 -15440.9 47178.1 -2152.0 -422.51 38.33 -18.32 -2.62 -2.190 472.015 -155288.7 47178.1 -2152.0 -422.51 38.33 -18.32 -2.62 -2.21 474.359 -156501.4 47333.7 -2244.3 -435.85 27.10 -20.50 -3.11 -2.05 475.624 -1573 | 455.796 | -148731.1 | 46314.3 | -1894.4 | -383.09 | 66.39 | -13.55 | -1.69 | -1.35 | 25 |
| 45C.552 -1505C.1.7 45613.7 -1951.9 -395.77 59.45 -14.82 -1.94 -1.55 462.434 -15.41 -2.05 -1.63 -1.63 -1.63 -1.63 465.434 -15.41 -2.05 -1.63 -1.78 -1.78 -1.78 465.434 -15.41 -2.05 -1990.9 -405.65 51.54 -16.35 -2.18 -1.78 465.329 -152515.3 46377.8 -2051.0 -405.65 51.54 -16.35 -2.18 -1.78 451.244 -153302.4 47100.9 -2117.1 -417.45 42.37 -17.72 -2.30 -1.90 470.093 -154400.9 47178.1 -2157.0 -422.51 38.33 -18.32 -2.62 -2.19 472.015 -156501.8 47271.2 -2205.2 -435.85 27.10 -20.50 -2.63 -2.63 474.359 -156501.8 47271.2 -2244.3 -445.03 19.72 -21.96 -2.35 474.35624 -156501.8 472.39.1 -20.50 -3.47 -2.62 -2.35 </td <td>457.718</td> <td>-143480.5</td> <td>45439.1</td> <td>-1920.9</td> <td>-391.34</td> <td>63.71</td> <td>-13.87</td> <td>-1.79</td> <td>-1.44</td> <td>27</td> | 457.718 | -143480.5 | 45439.1 | -1920.9 | -391.34 | 63.71 | -13.87 | -1.79 | -1.44 | 27 |
| 462.494 -151369.2 46724.6 -1990.9 -4CC.43 56.39 -15.41 -2.05 -1.63 - 465.329 -152515.3 46377.8 -2054.0 -405.65 51.54 -16.35 -2.18 -1.78 - 451.243 -152515.3 46377.8 -2053.0 -405.65 51.54 -16.35 -2.18 -1.78 - 451.243 -153302.4 45972.8 -2051.0 -405.65 51.54 -16.35 -2.18 -1.790 - 470.093 -154480.9 47100.9 -2117.1 -417.45 42.37 -17.72 -2.46 -2.06 - 472.015 -155208.7 47178.1 -2152.0 -422.51 38.33 -18.32 -2.62 -2.21 - 474.359 -156501.4 472.46 31.92 -19.65 -2.62 -2.33 - -2.62 -2.35 - -2.62 -2.35 - -2.65 -2.35 - -2.65 -2.35 - -2.66 -2.35 - -2.66 -2.35 -2.66 -2.66 -2.66 -2.66 | 451-562 | -1-25-25-1- | 45613.7 | -1961- | -395.77 | 59.45 | -14.82 | -1.94 | -1.55 | 30 |
| 4£5.329 -152515.3 46377.8 -2035.0 -405.65 51.54 -16.35 -2.18 -1.78 - 451.243 -153302.4 45972.8 -2067.8 -417.45 48.19 -16.78 -2.30 -1.90 - 470.093 -154400.9 47100.9 -2117.1 -417.45 42.37 -17.72 -2.46 -2.06 - 470.093 -15520.9 -7178.1 -2157.0 -422.51 38.33 -18.32 -2.62 -2.05 -2.06 - 470.015 -155201.8 472.17.2 -2205.2 -430.14 31.92 -19.63 -2.62 -2.33 - -2.62 -2.35 - -2.62 -2.52 -2.56 <td>462°434</td> <td>-151368.2</td> <td>46724.6</td> <td>-1990.9</td> <td>-400.43</td> <td>56.39</td> <td>-15.41</td> <td>-2.05</td> <td>-1.63</td> <td>31</td> | 462°434 | -151368.2 | 46724.6 | -1990.9 | -400.43 | 56.39 | -15.41 | -2.05 | -1.63 | 31 |
| 451_243 -1533C2.4 45972.8 -2067.8 -410.82 48.19 -16.78 -2.30 -1.90 470_093 -154460.9 47100.9 -2117.1 -417.45 42.37 -17.72 -2.46 -2.06 - 470_015 -155268.7 47100.9 -2117.1 -417.45 42.37 -17.72 -2.46 -2.06 - 472_015 -155268.7 47178.1 -2152.0 -422.51 38.33 -18.32 -2.62 -2.21 - 472_015 -155201.8 47217.2 -2205.2 -435.85 27.10 -20.50 -3.11 -2.33 - 474_859 -156501.8 47211.2 -2205.3 -435.85 27.10 -20.50 -3.11 -2.539 - 476_624 -158568.1 47333.7 -2246.3 19.72 -21.99 -3.47 -2.93 - -2.93 - -2.93 - -2.93 - -2.93 - -2.93 - -2.93 - -2.93 - -2.93 - -2.93 - -2.93 -2.93 - -2.93< | 465.328 | -152515.3 | 46377.8 | -2035.0 | -405.65 | 51.54 | -16.35 | -2.18 | -1.78 | 30 |
| 47C.093 -154460.9 47100.9 -2117.1 -417.45 42.37 -17.72 -2.46 -2.06 - 472.015 -155288.7 47178.1 -2152.0 -422.51 38.33 -18.32 -2.62 -2.21 - 472.015 -155288.7 47178.1 -2152.0 -422.51 38.33 -18.32 -2.62 -2.21 - 472.015 -155261.8 472.11.2 -2205.2 -435.14 31.92 -19.65 -2.68 -2.33 - 474.859 -157334.4 47333.7 -2205.3 -435.85 27.10 -20.50 -3.11 -2.59 - 475.624 -158568.1 47399.1 -2305.3 -445.03 19.72 -21.99 -3.47 -2.93 475.624 -158568.1 4795.5 -461.93 70.18 -21.49 -2.93 - -2.93 - -2.93 - -2.45.03 19.72 -21.99 -3.47 -2.93 - -2.93 - -2.93 - -2.93 - -2.93 - -2.93 - -2.93 -3.47 | 451-243 | -153362.4 | 45972.8 | -2061.8 | -410.82 | 48.19 | -16.78 | -2.30 | 06.1- | 30 |
| 472.015 -155268.7 47178.1 -2152.0 -422.51 38.33 -18.32 -2.62 -2.21 - 474.859 -156501.8 4727.2 -2205.2 -430.14 31.92 -19.63 -2.48 -2.35 - 474.791 -157334.4 47333.7 -2244.3 -435.85 27.10 -20.50 -3.11 -2.59 - 475.624 -158568.1 47399.1 -2305.3 -445.03 19.72 -21.99 -3.47 -2.93 - 484.405 -160759.6 4755.3 -2415.3 -461.93 5.18 -24.27 -3.73 -3.17 - | 470.093 | -154480.9 | 47100.9 | -2117.1 | -417.45 | 42.37 | -17.72 | -2.46 | -2.06 | |
| <14.859 | 472-015 | -155288.7 | 47178.1 | -2152.0 | -422.51 | 38.33 | -18.32 | -2.62 | -2.21 | 6E.1 |
| 416.781 -157334.4 47333.7 -2244.3 -435.85 27.10 -70.50 -3.11 -2.59 - 475.624 -1585268.1 47399.1 -2305.3 -445.03 19.72 -21.99 -3.47 -2.93 - 4845.65 -15615.3 -445.03 19.72 -21.99 -3.47 -2.93 - 4845.65 -160159.65 -2415.3 -4451.43 5.18 -24.52 -3.47 -2.93 - | 474.859 | -136551-8 | 2-17512 | | -430.14 | 26.15 | -19.63 | -2.38 | -2.33 | |
| 475.624 -158528.1 47399.1 -2305.3 -445.03 19.72 -21.99 -3.47 -2.93 - 484.406 -160129.6 41455.3 -2415.3 -461.43 2.18 -24.27 -3.13 - 3.17 - | 476.791 | -157334.4 | 47333.7 | -2244.3 | -435.85 | 27.10 | -20.50 | -3.11 | -2.59 | 48 |
| | 415-624 | -158528.1 | 47399.1 | -2305.3 | -445.03 | 19.72 | -21.99 | -3.47 | -2.93 | 51 |
| | 904-909 | -160159.6 | 41455.3 | -2416-3 | -461.93 | 81.2 | 12-42- | -3.13 | -3.17 | 55 |

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LOUIDE FECTION OF SURCESTED

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April 3, 1965

MARCHAE TITE TUTAL

COMPLIED FUSITION, VELUCITY AND ACCELERATION IN GUIDANCE THRUST CORDINATES

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| | I | T | 2 | TOUT | TOUL | ZIJOT | xDDOT | YDDOT | ZIDOT |
|----------|--------------|----------|---------|-------------|--|-------------|--------|--------|----------|
| (8228) | (1) | | | (11/20c) | ())) ()))) ()))))))))))))))))))))))))) | | | | |
| 467.234 | -12164-1 | 4745422 | 1-2463- | -473.37 | -4.74 | -24.12 | -4.02 | -3.4] | 59 |
| 11151 | -11001- | 1.1512 | C*C*C- | -431.93 | -11-30 | -27.27 | -4.52 | -3.30 | 89*- |
| 171.124 | -153385.5 | 47405.0 | -2594.1 | -491.19 | -19.35 | -28.75 | -4.13 | -4.07 | 70 |
| 642-454 | -165521-4 | 47324.3 | -2697.9 | -506.33 | -32,30 | -3.3.91 | -4.97 | -4.34 | 72 |
| 5.5.3.5 | | 472652 | 2.275- | -516.83 | -4:15 | 22.22. | -5.25 | -4.55 | 72 |
| 455.421 | -157/20.4 | 47:47.3 | -2821.3 | -527.74 | -51.91 | -33.33 | -5.53 | -5.00 | 74 |
| 501.433 | -163134.1 | 46.142.5 | -2931.2 | -545.63 | -67.49 | -35.24 | 76°3- | -5.31 | 73 |
| 815-205 | - 110+55 - 1 | 40,03.7 | -3003.0 | | -78.94- | -37.75 | -6.38 | -5.72 | 74 |
| 505-655 | -171655.9 | 46630.8 | -3034.1 | -572.01 | -91.18 | -39.18 | -6.93 | -5.17 | 80 |
| 506.734 | -173454.1 | 46319.1 | -3213.0 | -593.56 | -110.75 | -41.53 | -7.35 | -6.61 | 88 |
| ECE 315 | -174-15-3 | 1.07.34 | | -00:02- | -125.15 | -43.52 | -7.73 | 7.15 | 66 - |
| 512.905 | -175253.4 | 45791.9 | -3394.3 | -5.26 . b 3 | -140.12 | -45.63 | -8.72 | -1.65 | -1.08 |
| 215. Jot | -17/979.5 | 45313.5 | -3543.1 | 54 . 45 | -145.35 | C 7 ° 6 7 - | -9.23 | -8.40 | -1-10 |
| 515.073 | 5-71£611- | 44950.4 | -3543.8 | -574.92 | -143.94 | | -17.32 | -9.13 | -1.15 |
| 525-155 | -130759.6 | 44546.0 | -3758.9 | -635.35 | -203.20 | -54.54 | -13.75 | -9.03 | -1.20 |
| 523.213 | -182565.9 | 43972.1 | -3930.5 | -730.15 | -234.39 | -57.69 | -11.34 | -10.50 | -1.26 |
| 575-312 | -134:43.7 | 43354.5 | -4054-5 | -754.74 | | | -11.31 | -11.15 | -1.28 |
| 527.39 | -186140.6 | 42792.4 | -4193.1 | -762.42 | -291.50 | - 53.23 | -12.74 | -12.03 | -1.33 |
| 525.455 | -157753.3 | 42177.3 | -4317.5 | -4-1.10 | -306.91 | - 55 - 32 | -13.44 | -12.78 | -1.32 |
| 522.546 | -196345.0 | 41156.9 | -4527-0 | -345.0P | -347.37 | -70.25 | -14.02 | -13.42 | -1.36 |
| 534.624 | -192144.9 | 40412.3 | -4675.7 | -673.57 | -375.00 | -72.79 | -14.82 | -14.28 | -1.42 |
| 534.703 | -194007.4 | 39576.5 | -4830.6 | -910.95 | -404.58 | 16.21- | -15.63 | -15.19 | -1 - 4 4 |
| 241-242 | - 170 70- | 752-0-4 | -50.3.2 | - 75.54(- | 27.752= | 13.08- | -15.43 | -15.96 | -1.67 |
| 541-274 | -132343.5 | 37275.8 | -5245.3 | -735.14 | -489.12 | -43.51 | -17.33 | -17.15 | -1.87 |
| 545-243 | -2010-64 | 34216.0 | -5425.2 | -1033.53 | -524.57 | -39.04 | -19.27 | -19.49 | -2.12 |
| 541-125 | -204333- | 34517.0 | -5768-8 | -1095-54 | -534.25 | -95.04 | -21.07 | -20.53 | -2.29 |
| 545-124 | -206550.3 | 33253.1 | -5912.2 | -1135.64 | -626.33 | -100.05 | -21.83 | -21.18 | -2.26 |
| 551,203 | -2000 - 5 | 31899.1 | -5125.3 | -1185.75 | -572.53 | -104-95 | -23.12 | -22.54 | -2.49 |
| 106-235 | -212874-1 | 7:2:1-2 | -6452.2 | -12.6321- | 18-24-2 | -112.25 | -24.34 | -23.70 | -2.50 |
| 556-390 | -215510.5 | 280-37.8 | -5704.3 | -1311.39 | -734.97 | -118.72 | -25.64 | -25.06 | -2.19 |
| 555.463 | -213357.2 | 24375.0 | -6954.4 | -1366.91 | -848.19 | -123.02 | -27.03 | -26.65 | -2.97 |
| 501-545 | -222756.6 | 1.62562 | -1353.7 | -1450-75 | -931.76 | -134.12 | -28.50 | -28.02 | -3.18 |
| 567.640 | -225811.5 | 21605.6 | -7641.0 | -1512.28 | -993.16 | -139.75 | -30.48 | -29.87 | -3.51 |

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GEMINI EDIT PROGRAM

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|--|----------------|--|-------------|---------------|------------|----------------------|----------|------------|------------|-----------|-------------------------|
| 14.1 | | 8) (17) | (L | (F . | (111/12EC) | (11/5EC) | (FT/SEC) | (FT/SEC+2) | (FT/SEC#2) | FT/SEC#2) | |
| 511-5 511-5 <td< td=""><td>585.7</td><td>F. #CAPCC-: P1</td><td>1.27241</td><td>-7941.4</td><td>-1578.41</td><td>-1056.33</td><td>-148.03</td><td>-32.45</td><td>-31.77</td><td>-3.65</td><td></td></td<> | 585.7 | F. #CAPCC-: P1 | 1.27241 | -7941.4 | -1578.41 | -1056.33 | -148.03 | -32.45 | -31.77 | -3.65 | |
| 577.200 -2217.21 1195.12 - | | | 161-56-3 | - 3414.3 | -1681.47 | -1154.58 | -159.55 | -33.85 | -33.21 | -3.78 | . 1 |
| 511.201 -2115.0 -1115.0 | | | 13554.8 | -8756-6 | -1753-12 | -1228.91 | -167.71 | -34.99 | -35.12 | -3.72 | |
| \$15.75. -5915.42 -1975.45 -1995.45 -1975.45 | | 07 - 201556 0 | 10899.0 | -115-0 | -1623-07 | -1303.58 | -175.02 | -35.53 | -37.22 | -3.60 | |
| 513.140 -251.440 -202.451 -199.25 -99.25 -90.444 -9.95 513.140 -251.440 -251.440 -2195.11 -217.17 -1199.11 -212.41 -43.37 -40.44 -9.95 59.517 -2011.210 -2721.21 -1197.11 -1199.11 -213.21 -47.19 -45.18 -40.44 -9.95 59.517 -2171.10 -1295.13 -2191.210 -273.10 -47.19 -45.18 -40.44 -50.45 59.517 -1171.10 -1191.11 -2195.11 -273.10 -47.19 -45.18 -40.44 -50.45 59.517 -1191.11 -273.10 -277.14 -279.16 -51.47 -51.47 -51.47 59.517 -1107.02 -1191.11 -273.10 -270.41 -51.47 -51.47 59.518 -1107.02 -1191.11 -273.10 -270.41 -51.47 -51.47 59.519 -1107.02 -115.41.1 -270.41 -71.41 -51.45 -51.45 59.510 -1107.02 -1107.02 -2195.10 -270.41 -71.41 -51.45 | | | P-UCK | -9485-8 | -19:4.42 | -1393.72 | -182.80 | -38-22 | -38.75 | -3.69 | |
| \$10,21: -554,47.2 -717.4 -1195.15 -200.51 -41.50 -42.15 \$15,75 -50115.4 -1077.8 -1177.17 -118.51 -273.37 -45.21 \$15,74 -25715.4 -1075.8 -2732.45 -119.11 -273.37 -45.21 \$15,74 -12774.1 -12051.5 -2733.12 -214.21 -45.21 \$15,74 -12774.1 -12051.5 -2733.11 -2732.37 -41.40 \$15,74 -177.2 -273.21 -273.21 -45.21 -5.14 \$15,74 -171.11 -271.21 -273.21 -41.40 -41.25 \$15,74 -277.11 -273.21 -273.21 -41.25 -5.14 \$52.65 -10.61.2 -274.17 -266.1.07 -279.21 -5.14 -5.16 \$52.65 -10.61.2 -274.11 -159.17 -270.21 -270.21 -50.24 -5.16 -5.16 \$52.65 -10.61.2 -274.12 -271.22 -273.21 -271.20 -5.16 -5.16 -5.16 -5.16 -5.16 -5.16 -5.16 -5.16 | | 6 976136 - VV | 3650.4 | -10066-9 | -2024-71 | -1594.35 | -193.25 | -39.66 | -40 • 44 | -3.82 | • |
| \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ | | 00000000000000000000000000000000000000 | C-172 | -10479-1 | -2112-48 | -1590.15 | -202.67 | -41.50 | -42.15 | -3.99 | ~ |
| 99:51% -2517.0 -1519.5 -2332.5 -1818.0 -2537.4% -171.10 -44.20 -45.36 -45.36 99:51% -2577.10 -12795.1% -2775.1% -1795.1% -277.5% -47.79 -45.36 -5.33 99:51% -2577.11 -12795.1% -277.5% -277.5% -5.34 -5.34 99:56% -277.51% -277.5% -277.5% -277.5% -5.34 -5.34 99:56% -277.5% -179.5% -277.5% -277.5% -5.34 -5.34 99:56% -96.6% -96.6% -175.5% -277.5% -5.34 -5.34 95:569 -96.7% -277.5% -277.5% -277.5% -5.34 -5.34 95:569 -96.6% -169.7% -277.5% -170.3% -5.34 -5.34 95:510 -175.7% -170.4% -170.4% -164.7% -5.34 95:517 -170.4% -171.2% -377.5% -377.5% -164.7% -5.34 95:516 -170.4% -170.4% -170.4% -164.6% -164.6% -164.6% -1 | | | ->475.8 | -10963-1 | -1-16-12- | -1683.72 | -210.47 | -43.37 | -43.89 | -4.16 | |
| 985.245 -9771(5.0 -17275.1 -27757.5 -2775.6 -47.19 -46.46 -47.29 -47.49 -54.66 -51.65 -51. | | | | -11573.5 | -2332.36 | -1319.05 | -223.65 | -44.82 | -45.21 | -4.51 | ~ |
| 952.624 -21575.1 -7012.15 -255.60 -44.57 -51.25 -5.37 952.624 -21555.15 -2155.20 -259.614 -51.74 -51.25 -5.37 952.624 -21555.15 -21955.10 -239.01 -59.65 -51.74 -5.36 952.624 -21555.11 -15767.13 -1391.01 -2709.55 -51.74 -51.75 955.655 -1901.150.0 -9901.10 -1591.71 -2705.56 -52.75 -52.66 955.655 -11870.2 -2705.51 -2705.51 -700.52 -50.64 -51.74 -51.66 955.751 -112770.2 -1307.51 -3705.51 -3715.25 -50.44 -51.66 -51.76 955.752 -770.52 -770.52 -771.52 -771.56 -70.55 -51.66 -51.66 -51.76 955.752 -770.52 -770.52 -771.52 -771.56 -771.56 -771.66 -77.66 -276 -50.66 -21.66 -21.66 -21.66 -21.66 -21.66 -21.66 -21.66 -21.66 -21.66 -21.66 -21.66 -21.66 | | | -12274-1 | -12053.5 | -2432.44 | -113.11 | -232.37 | -47.19 | -45.85 | -4.82 | |
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| 547.03 -70.61 -510.61 -51.4 -5.18 575.66 -2765.15 -1395.19 -770.55 -5.34 -5.34 575.66 -306.11 -1506.11 -306.11 -1506.11 -5.04 -5.04 555.75 -457.12 -1506.12 -500.47 -306.11 -500.47 -50.56 -45.68 561.95 -457.10 -1501.1 -1501.1 -3257.17 -2593.17 -503.68 -50.46 55.6 -50.46 561.95 -5106.12 -652.483 -1591.13 -3357.17 -2593.01 -59.56 -72.66 -51.66 600.110 -3504.11 -1091.12 -3515.21 -3336.55 -3183.17 -70.52 -50.46 -5.96 600.1117 -3577.00 -3597.17 -3597.16 -3181.12 -710.32 -710.52 -11.95 611.265 -3677.16 -1705.12 -3776.25 -3776.32 -3776.32 -11.97 -710.32 -11.97 611.364 -9757.10 -170.255 -477.81 -63.07 -10.97 -11.95 611.364 -9757.10 | | 1063FC- 76 | F.70704 | 1.1441- | -2634-55 | -2165.20 | -259.54 | -51.d3 | -51.25 | -5.33 | |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | | 1 900 JUC - 601 | - 77621.5 | 0.69461- | -7705.56 | -2275.19 | -270.81 | -54.06 | -53.74 | -5.18 | - |
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| 50::07: -515:72 -537:77 -2535.37 -313.52 -62.83 -31.55 -62.83 -31.55 -51.55< | | | | -15247 7 | -30.35,13 | 10-1954- | -238.24 | -57.15 | -59.55 | -4.58 | |
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| 611.265 -345255.2 -73490.7 -17935.2 -37151.5 -37151.5 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.75 -3715.76 -56.77 -76.74 -25 611.451 -567171.8 -11186.4.3 -22595.0 -44.73.21 -4121.50 -323.95 -59.37 -980.39 10.95 611.4574 -387711.8 -11186.4.3 -22295.0 -44.73.21 -4121.50 -323.95 -59.33 -311.112 -710.92 -882.08 4.071 625.774 -38771.6 -123785.0 -4776.6.11 -44.73.21 -4121.20 -291.71 -72.93 -895.21 4.71 625.774 -406790.1 -129716.0 -27653.4 -996.17 -72.483 -895.21 4.71 625.774 -45563.4 -576.77 -576.78 -4701.21 -72.483 -85.21 4.71 625.733 -45563.4 -576.773 -5576.70 -274.87 -74.85 <td< td=""><td></td><td>2-15-125-13</td><td>2 -20/1C+3</td><td>-166231-</td><td></td><td>36.3016- 36.3016-</td><td>10 900-</td><td></td><td>-72.64</td><td>-1.09</td><td>C</td></td<> | | 2-15-125-13 | 2 -20/1C+3 | -166231- | | 36.3016- 36.3016- | 10 900- | | -72.64 | -1.09 | C |
| 614.345 -3572(0.1 -94099.0 -19933.2 -3979.15 -5774 -78.44 -76.74 -76.74 -27 616.457 -374326.8 -97551.1 -27611.5 -3774.12 -328.45 -60.741 -76.74 1.14 616.457 -374326.8 -97551.1 -21295.0 -4475.51 -4121.50 -328.45 -69.33 1.95 621.577 -387771.8 -11864.3 -22295.0 -4776.11 -4121.50 -323.45 -690.39 1.95 621.577 -387771.8 -11864.3 -22595.0 -4716.11 -4462.33 -311.112 -71.48 4.03 622.736 -97723.6 -5792.00 -4776.13 -4721.20 -297.70 -72.83 -83.21 4.71 622.796 -421923.9 -1476.11 -471.22 -72.46 -73.47 4.03 622.953 -4413.51 -4721.20 -2746.73 -5792.00 -73.47 -72.83 -95.21 4.71 622.953 -44370.1 -2573.46 -5921.00 -72.83 -95.21 4.71 622.953 -443361.8 -164 | 611- 2 | 165 -345255°3 | 2 -13490.7 | -1-921-3 | -37/8-32 | | 76 066 | - 45 35 | -74.48 | - 59 | |
| 611.4721 -5656,13.4.5 -216,14.5 -5114.12 -52.9,7 -58.77 -78.94 1.14 611.455 -374326.8 -9955.3.1 -21295.0 -42.5(5.02 -33975.90 -328.46 -68.77 -78.94 1.14 611.455 -374326.8 -9955.3.1 -21295.0 -42.5(5.02 -33975.90 -328.46 -69.33 1.94 4.03 621.572 -397723.4 -12015.0 -272978.3 -40121.50 -328.46 -49.32 -80.39 1.95 622.655 -374326.1 -21297.0 -44721.21 -4462.33 -311.12 -711.85 -83.24 4.03 622.657 -443301.8 -11186.4.3 -25538.4 -4996.13 -4721.20 -2977.00 -72.83 -85.21 4.03 622.055.73 -5295.05 -47721.20 -274.87 -74.83 -86.60 6.26 632.057.74 -52162.35 -5142.05 -5295.05 -774.87 -74.83 -86.60 6.26 632.051.5 -45575.73 -5382.07 -274.87 -74.83 -97.13 5.63 632.043 -455 | 7 614.3 | 143 -357200 | l -64099.0 | -19933.2 | -39/9-15 | - 57.55 | +2.72- | | | | L |
| 61:455 -374326.8 -99553.1 -21295.0 -42505.0 -4231.50 -328.45 -995.71 -905.31 -10.92 -905.33 -906.39 1.95 621.572 -387711.8 -111864.3 -22295.0 -4473.21 -4121.50 -323.95 -690.33 1.95 621.572 -387711.8 -111864.3 -22295.0 -4473.21 -4121.50 -323.95 -690.33 4.03 625.734 -4064760.1 -129716.0 -22995.0 -4776.11 -4462.33 -311.12 -71.48 -403.34 4.03 625.734 -4064760.1 -129716.0 -22958.4 -49995.11 -44721.20 -297.70 -72.83 -85.21 4.71 625.795 -443301.8 -1164156.4 -25723.4 -5982.02 -4721.20 -274.87 -74.85 -84.80 6.26 632.015 -443301.8 -164156.4 -25723.4 -5982.02 -576.13 -576.48 -74.83 -971.13 -74.85 -84.80 6.26 -74.83 -97.13 -97.13 5.39 -156.56 -636.71 -74.613 -97.13 -74.83 -9 | 614.4 | -12 12 eee : 18 - | | -20614.8 | -4117-64 | -3714.12 | -1-926- | 14.19- | | 120 | • |
| 621.57/c -387771.8 -11186.4.3 -22295.0 -4473.21 -4121.50 -323.95 -992.23 -90.95 -40.03 625.5656 -397223.4 -120615.6 -22958.3 -4015.01 -70.92 -82.08 4.03 625.734 -406790.1 -129716.0 -23607.6 -476.11 -462.33 -311.12 -71.85 -83.34 4.03 625.734 -406790.1 -129716.0 -23607.6 -476.11 -4662.33 -311.12 -71.85 -83.34 4.03 625.734 -406791.1 -24538.4 -4997.10 -271.85 -71.85 -85.21 4.71 625.735 -5142.55 -5142.55 -5745.73 -5785.07 -7246.87 -74.85 -85.21 635.055 -443301.8 -164156.4 -25723.6 -5296.77 -274.87 -74.85 -94.80 6.26 635.055 -443301.8 -164159.4 -25723.6 -5382.02 -274.87 -74.85 -94.80 6.26 -35.95 -74.87 -74.85 -94.80 6.26 -5382.07 -74.87 -972.01 3.79 -75.39 | 615.4 | 1-936425- 551 | 1-59553.1 | -21295.0 | -4250.02 | -3875.90 | -328.45 | | | | |
| 625.055 -397223.4 -120615.6 -22958.3 -4015.51 -7291.18 -318.71 -70.92 -92.06 -92.06 625.734 -406796.1 -129716.0 -23607.6 -476.11 -4762.33 -311.12 -71.85 -83.54 4.03 625.734 -406796.1 -129716.0 -23607.6 -476.11 -4662.33 -311.12 -71.85 -83.521 4.71 625.734 -406770.1 -129716.0 -23607.6 -4762.13 -4721.20 -297.70 -72.83 -85.21 4.71 625.673 -53673.6 -53745.75 -5145.05 -57723.6 -52723.6 -5796.77 -576.35 -74.87 -74.85 -86.80 6.26 632.053 -443301.8 -164156.4 -25723.6 -5376.73 -5376.07 -274.87 -74.85 -84.80 6.26 632.053 -443301.8 -190159.0 -25723.6 -5376.73 -5358.54 -256.73 -74.85 -74.85 -94.80 6.26 -74.85 -64.80 -76.13 -74.85 -76.13 -76.13 -76.13 -76.13 -76.13 -76.13 | 621.5 | 574 -387771.6 | 8 -111864.3 | -22295.0 | -4473.21 | -4121.50 | -323.95 | -59.53 | -80-54 | | |
| 625.734 -406760.1 -129715.0 -23607.6 -476.11 -4462.33 -311.12 -71.05 -0.25 621.796 -421923.9 -143785.1 -24538.4 -4990.13 -4721.20 -297.70 -72.83 -85.21 4.71 621.796 -421923.9 -143785.1 -24538.4 -4990.13 -4721.20 -297.70 -72.83 -85.21 4.71 621.796 -421923.9 -1437185.1 -24538.4 -4990.13 -4721.20 -297.70 -72.83 -85.21 4.71 652.053 -5140.55 -5142.55 -5192.02 -274.87 -74.85 -84.80 6.26 632.015 -190154.0 -25723.6 -5294.78 -5595.73 -5358.54 -252.79 -74.13 -900.16 5.39 -1 632.015 -190154.0 -26533.4 -5595.73 -5358.54 -2572.79 -76.13 -900.16 3.79 632.0193 -413512.0 -203219.5 -27052.0 -2744.55 -76.13 -900.16 3.79 640.171 -483512.0 -203219.5 -5391.56 -224.98 -78.05 </td <td>223.0</td> <td>-22166- 959</td> <td>4 -120615.6</td> <td>E-84622-</td> <td>16-519</td> <td>-4291.18</td> <td>-318.11</td> <td>26.07-</td> <td>DO-70-</td> <td></td> <td></td> | 223.0 | -22166- 959 | 4 -120615.6 | E-84622- | 16-519 | -4291.18 | -318.11 | 26.07- | DO-70- | | |
| 62E.796 -421923.9 -143785.1 -24538.4 -499C.13 -4721.20 -297.70 -72.83 -97.11 5.63 65C.674 -553785.4 -499C.13 -4721.20 -286.35 -73.70 -97.13 5.63 65C.674 -553785.4 -594C.15 -4721.20 -286.35 -73.70 -97.13 5.63 63C.675 -4433C1.8 -164156.4 -25723.6 -5296.78 -5982.02 -274.87 -74.13 -902.16 6.15 6.26 63C.075 -445361.6 -190159.0 -25723.6 -5394.78 -5585.73 -5388.54 -252.79 -76.13 -902.16 6.15 6.26 63E.075 -475132.2 -190159.0 -26533.4 -55354.54 -252.79 -76.13 -92.01 3.79 64C.171 -483518.0 -203219.5 -27052.0 -5848.86 -78.05 -78.05 -78.05 5.39 -1.53 64C.171 -483518.0 -203219.5 -27052.0 -5848.86 -524.98 -78.05 -78.05 3.07 64C.171 -48354.04 -215343.9 -56053.81 | 625-7 | 134 -4067F0. | 1 -129715.0 | -23609.6 | -4768.11 | -4462.33 | -311.12 | 69•1/- | | | 4. |
| 635.674 -53785.4 -25142.5 -5145.14 -286.35 -73.70 -37.13 5.03 635.674 -53785.4 -25723.6 -5296.78 -574.87 -74.85 -84.80 6.26 632.953 -443301.8 -164156.4 -25723.6 -5296.78 -5382.02 -274.87 -74.85 -84.80 6.26 632.953 -443301.8 -190159.0 -25733.4 -5398.54 -252.79 -76.13 -900.16 6.15 6.15 632.075 -455677.6 -190159.0 -26533.4 -55354.5 -252.79 -76.13 -900.16 6.15 6.15 632.079 -455677.6 -190159.0 -26533.4 -55354.5 -252.79 -76.13 -900.16 5.39 -14.25 632.079 -4783518.0 -203219.5 -277546.9 -5848.80 -231.55 -78.07 -92.61 3.07 640.171 -483518.0 -215343.9 -5930.61 -224.98 -78.08 -78.13 3.07 642.171 -495840.4 -215343.9 -5023.47 -5215.51 -217.03 -78.08 -78.35 | 5 3 5 Y | 196 -471973 | 9 -143785.1 | -24538.4 | -4990.13 | -4721.20 | -297.70 | -72.83 | 12.68- | | τo |
| 632.953 -443301.8 -164156.4 -25723.6 -5296.78 -5982.02 -274.87 -74.85 -84.60 6.26 6 632.953 -443301.6 -190159.0 -26533.4 -5525.73 -5358.54 -252.39 -76.13 -90.15 6.15 6.15 6 632.093 -471522.3 -191892.5 -27052.0 -5686.66 -5546.96 -240.55 -76.39 -91.31 5.39 - 640.171 -483518.0 -203219.5 -27546.9 -5848.80 -5737.90 -231.55 -78.04 -92.01 3.79 640.171 -483518.0 -203219.5 -28023.8 -60059.93 -5930.61 -224.98 -78.17 -92.67 3.07 642.245 -495840.4 -215343.9 -28023.8 -60057.93 -5930.61 -224.98 -78.08 -93.35 2.98 | | | | -7:147.5 | -5142.65 | -4901.41 | -286.35 | -73.70 | -97.13 | 69.6 | 0. |
| 636.015 -455677.6 -190159.0 -26533.4 -5575.73 -5358.54 -252.73 -76.13 -90.16 6.15 6 6.15 6 6.15 6 6.15 6 6.15 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | | | | -25723-6 | -5296-78 | -5082.02 | -274.87 | -74.85 | -84.63 | 6.26 | -0 - |
| 035:013 -75.39 -76.39 -91.31 5.39 - 635:093 -471522.3 -191492.5 -77052.0 -5666.66 -5737.90 -231.55 -78.34 -92.61 3.79 64C.171 -483518.0 -203219.5 -275546.9 -5848.8C -5737.90 -231.55 -78.34 -92.61 3.79 64C.171 -483518.0 -203219.5 -275546.9 -5848.8C -5737.90 -231.55 -78.34 -92.61 3.07 642.245 -495840.4 -215343.9 -60053.93 -5930.61 -224.98 -78.17 -92.67 3.07 642.245 -495840.4 -215343.9 -60053.93 -5035.47 -5215.51 -217.03 -78.08 -93.35 2.98 | | | | -76533-4 | -5525-73 | -5358.54 | -252.33 | -76.13 | -90.16 | e-15 / | 04 01 |
| 64C.171 -483518.0 -203219.5 -27546.9 -5848.8C -5737.90 -231.55 -78.04 -92.01 3.79 64C.171 -483518.0 -203219.5 -27546.9 -5848.8C -5737.90 -224.98 -78.17 -92.67 3.07 642.245 -495840.4 -215343.9 -28023.8 -6055.47 -5215.51 -217.03 -78.08 -93.35 2.98 | 0.00 | | | = 2 2052 - 01 | | -5546.96 | -240.55 | -76.39 | -91.31 | . 66*5 | + (• - |
| 642-245 -495840-4 -215343-9 -28023-8 -6065-93 -5930-61 -224-98 -78-17 -92.67 3.07 642-245 -495840-4 -215343-9 -28703-9 -6253-47 -6215-51 -217-03 -78-08 -93-35 2.98 | | | 0 -202219.5 | -77546.9 | -5848.60 | -5737.90 | -231.55 | -78.04 | -92.61 | 3.79 | - T. |
| | | -070207- 111 | 4 -715343.9 | -28023.8 | -6069.93 | -5930.61 | -224.98 | -78.17 | -92.67 | 3.07 | 100 |
| | | | | -2871.5 | - 6752.47 | -6215.51 | -217.03 | -78.08 | -93.35 | 86.2 | 0 |

THOMPSON AND WER-STREEDERY

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GEMINI EDIT PROGRAM

A statement of the statement

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Transmission

April 3, 1965

CONTROL PORTION, TELOCITY AND ACCELERATION IN GUIDANCE SHERE COORDIANS

| | 146 | X | T | Z | TOT | TOLY | TOLZ | TOTAL | TURIY | TTTTT |
|------------|-------------------|--------------|------------|--------------|------------|-----------|----------|------------|------------|--------------|
| | | E | (Ľ | (L) | (111/202C) | (JES/LL) | (11/212) | (FT/SEC#2) | (FT/SEC+2) | (1-1/2BC+2) |
| | 647.405 | -52787C.4 | -247159.9 | -29145.0 | -54]4.40 | -6410.94 | -211.10 | -78.16 | -93.88 | 3.87 |
| ł | 645 4 84 | | -260586.9 | -29570.2 | -4573.54 | -5607.16 | -203.60 | -78.12 | -64.94 | 5.06 |
| 4 | 652.562 | -1019192- | 6-11-182- | -30166.7 | -6817-80 | -6898.21 | -184-31 | -78.62 | +2*96- | 10.9 |
| | 654.624 | -576207.3 | -295916.7 | -30524.9 | -6950.05 | -7100.57 | -170.63 | -79.40 | -97.45 | 6.92 |
| | 656.703 | -590664.6 | -310565.3 | -30662.1 | -7143.21 | -7305.36 | -155.32 | -80.03 | -96.37 | 7.50 |
| | 131.378 | -6132+1.3 | -333645.7 | -31302.4 | -13-2-64 | -7609-10 | -131.96 | E0.1E- | -100.23 | 7.84 |
| | 561.853 | -6288C2.0 | -345883.8 | -31558.3 | -7552.65 | -7920.53 | -114.49 | -81.93 | -101.70 | 7.82 |
| | 662-921 | -644577.3 | -366237.0 | -31778.1 | -7732.43 | -8C32.93 | -91.94 | -92.41 | -103.16 | 8.09 |
| v i | 665.959 | -658768.7 | -391451.8 | -32040-8 | - 7985-63 | -8351.39 | -75.41 | -82.66 | -103.48 | 8,49 |
| N | 665.C78 | -665543.2 | -403030.0 | -32174.2 | -6158.41 | -9565.94 | -55.42 | -92.54 | -103.85 | 8.41 |
| , | 671-140 | -702544.3 | -426913.2 | -32272.5 | -6329.19 | -6780.11 | -34.72 | -62.54 | -104.27 | 7.80 |
| | 674.215 | -12851- | 6-12222- | -32357.6 | -62.22.63- | SE. 2016- | -13.73 | -82.95 | -104.83 | 6.59 |
| | 676.295 | -745587.4 | -473594.4 | -32378.3 | -9755.25 | -9321.01 | -3.14 | -83.22 | -105.20 | 5.42 |
| | 676.374 | - 764961.7 | -493181.8 | -32374.3 | -8925.71 | -9539.17 | 6.72 | -83.28 | -105.52 | 5.42 |
| J | 681.437 | -132654-5 | -2583ZS- | -32323.0 | 14.2810- | 11.5399- | 66.15 | -83.01 | -106.12 | 6.34 |
| ÷. | 622.515 | -611955.6 | -543520.4 | -32254.1 | -9355.18 | -10084.75 | 38.11 | -82.33 | -106.62 | 7.45 |
| | APE 531 | -211576-0 | -564813-6 | -32155.4 | -9525.15 | -10306.52 | 56.82 | -61.92 | -107.23 | 8.17 |
| - | 25-25 | 6-CF1146- | -536273-6 | -31346.4 | -97-2716- | -10435.51 | 31.69 | -91.76 | C6.701- | 8.08 |
| | 40, 740 | | -619387.5 | -31761.4 | -9346.74 | -10950.97 | 97.14 | -81.85 | -108.85 | 7.19 |
| đ | C . E . C . A . C | | -642024-3 | -31548.5 | -10116.12 | -11089-20 | 113.77 | -62.23 | -110.04 | 6.01 |
| L | | 0-0-0-1-0- | -676580-0 | -31183.5 | -10365.32 | -11427.32 | 123.95 | -82.87 | -111.15 | 4.82 |
| : | 500°C07 | -355729.2 | -700671-5 | -30909.4 | -10543.69 | -11561.37 | 137.26 | -82.82 | -111.72 | 4 .09 |
| | 70,046 | -917815-7 | -725145.3 | -30615.6 | -10715.45 | -11893.56 | 142.32 | -82.63 | -112.30 | 4.35 |
| 1 | 261-544 | -1011185.7 | -152263.6 | -33144.3 | -10755.05 | 22.45251- | 157.17 | -82.42 | -112.86 | 5.53 |
| | 756 272 | 4-6514661- | -747963-5 | -29795.5 | -11140.43 | -12474.83 | 171.23 | -81.93 | -113.33 | 7.29 |
| | 707-241 | -1057424-7-7 | -814141.8 | -29418.4 | -11311-01 | -12711.81 | 148.93 | -81.37 | -113.83 | 8.55 |
| I | | -11-3/6-11- | -853604-3 | -28194.5 | +5-2611- | -13060.59 | 10.112 | 10-18- | -114.23 | 6.9 |
| | | -1116654 | -840390.1 | -28321.5 | -11726.52 | -13295.73 | 236.50 | -79.79 | -113.87 | 9.74 |
| | 714-434 | -1141040.5 | -908655.1 | -27310.5 | -11892.11 | -13535.32 | 258.18 | -78.31 | -113.27 | 10.25 6 |
| 1 | | -11/801 | -350341.4 | -26365.8 | -12130-52 | -13381.26 | 238-53 | 50-11- | -112.57 | 1 68.01 |
| | 715-640 | -1203344.1 | -919323.3 | -26337.2 | -12288.31 | -14114.72 | 312.83 | -75.09 | -110.60 | 11.33 |
| | 721.718 | -1229075.1 | -1009480.3 | -25656.5 | -12442.43 | -14342.92 | 338.04 | -74.27 | -108.54 | 12.22 |
| | 724.196 | -1261113.1 | -1054130-0 | -245594-2- | -12665.49 | -14975-01 | 374.11 | si • 21- | -101-31 | 12.21 |

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| | | | | GEMINI ED! | IT PROGRAM | | | | |
|---------|------------|-------------|--------------|-------------|--------------|-------------|---------------|------------|------------|
| | | COMPLET FOS | LT DN TVELOC | TIT AND ACC | C. MOLINATOR | L CUDANCE T | HEUST COURDIN | ATES | |
| TIME | × | • | 2 | XDCT | VDOT | 2001 | XDDOT | VDCOT | ZDDOT |
| 12121 | (14) | | | (FT/SECT | IFT/SEC1 | IF1/SECI | (F1/SEC#2) | (FT/SEC+2) | (FT/SEC+2) |
| 726.874 | -1294125.4 | -1084847.1 | -23754.9 | -12816.06 | -14895.60 | 401.05 | -71.78 | -105.19 | 11.73 |
| 726-975 | -1320963-7 | -111e018-8 | 9-00622- | -12966-03 | -13113.89 | 64.024 | -10-51 | -102.45 | 10.68 |
| 732.031 | -1361251.1 | -1163002.8 | -21550.7 | -13182.CC | -15427.22 | 457.50 | -69.16 | +00-01- | 9.29 |
| 734.109 | -1358729.0 | -1195258.2 | -20548.9 | -13322.93 | -15629.46 | 473.36 | -66.53 | -97.53 | 8.20 |
| 136.167 | -1412246-3 | -1221/33-5 | -1 7592.4 | -13424.85 | -15825.66 | 487.51 | -60.33 | 16.26- | 6.17 |
| 736.265 | -1444615.6 | -1261036.1 | -16569.9 | -13583.37 | -16623.03 | 504.11 | -55.40 | -96.31 | 4.38 |
| 741.545 | -1486544.9 | -1310819.5 | -17023.2 | -13742.64 | -16323.29 | 513.53 | -50.97 | -96-54 | 1.89 |
| 145-405 | 1-SUDCICI- | -1344983•1 | -12976.1- | -13841-11 | -15524.53 | 513.05 | -46.77 | 12.20- | 15 |
| 145.45 | -1544144.7 | -1375477.8 | -14911-9 | -13934.75 | -16720.89 | 504.75 | -43.21 | -92.80 | -2.06 |
| 746-578 | -1587221.2 | -1431365.4 | -13361.0 | -14066.75 | -17004.17 | 498.75 | -40.28 | -90.21 | -1.78 |
| 150.056 | -1615514-0 | -1456376.9 | -12321-2 | -14144.58 | -17188-82 | 496.25 | -35-72 | -86.51 | .03 |
| 152.134 | -1645947.9 | -1502764.4 | -11294.0 | -14214.40 | -17362.95 | 496.30 | -31.17 | -92.35 | 1.21 |
| 755.912 | -1685841.2 | -1556576.3 | -9740.5 | -14303.58 | -17513.44 | 506.08 | -27.33 | -79.35 | 1.69 |
| 358-141 | -1/149CH-5 | 8-1255651- | -8688.9 | -14358.37 | -1117.93 | 507.11 | -24.37 | -15.70 | 62.2 |
| 755.958 | -1749484.3 | -1630410.8 | -7626.8 | -14403.66 | -17925.88 | 510.20 | -21.15 | -72.05 | 2.35 |
| 763-046 | -1793954.5 | -1665910.1 | -5037.4 | -14466.29 | -18144.48 | 522.C3 | -18.73 | -69.78 | 2.60 |
| 1654124 | 1.146.231- | -1123147.5 | 1-0-6 | -14-201-67 | -19285.43 | 525.47 | -15.38 | -66.61 | 2.78 |
| 161.171 | -1853656.1 | -1761303.3 | -3868.1 | -14533.83 | -13419.36 | 530.10 | -12.80 | -62.99 | 2.34 |
| 77C•21F | -1333009.5 | -1817592.9 | -2239.2 | -14566.82 | -18508.50 | 540.09 | -10.08 | -60.19 | 2.26 |
| 182.211 | 2*850261- | -18291/9-1 | -1125-3 | -14584.65 | -18726.14 | 85.245 | -1.35 | -56.96 | 2:03 |
| 114.343 | -1958140.4 | -1834912.2 | -2-7 | -14592.58 | -16839.38 | 546.61 | -4.20 | -53.92 | 1.12 |
| 111:374 | -2002389.4 | -1952257.3 | 1651.0 | -14607.73 | -19002.19 | 551.59 | -2.32 | -52.18 | - • 54 |
| | 9-1363636 | 1-0461661- | 2114.5 | -1400414 | -11-50161- | 548.68 | -1.23 | -20.00 | -1-92 |
| | 9-7567077- | | C•1495 | -14000-31 | 04-10261- | 534.50 | - 82 | -48.15 | -3.76 |
| 154-531 | -2106855.6 | -2085482.7 | 504°7 | -14607.21 | -13349.33 | 530.84 | 2.08 | -46.83 | -4.30 |
| 186.593 | -2101612-0 | -512948Z.4 | 6219-3 | -14246.48 | -19447.74 | 58.616 | 64.45 | -44.35 | 60.4- |
| TEE.656 | -2167051-1 | -2159673.0 | 7638.7 | -14584.95 | -19536.01 | 506.75 | 7.08 | -41.96 | -4.58 |
| 191.703 | -2211481-5 | -2229375.4 | 9166.4 | -14563.10 | -19658.71 | 495.72 | 9.70 | -40.07 | -3.88 |
| 152.165 | 2-6141427- | 0-10027- | 10130-8 | -14240-26 | -19133.55 | 486.45 | 12.21 | -39.04 | -3-62 42 |
| 796.795 | -2285474.9 | -2330009.9 | 11643.9 | -14495.59 | -19857.47 | 476.35 | 15.26 | -38.07 | -3.33 5 |
| 756.855 | -2315364.9 | -2370913.9 | 12627.4 | -14461.54 | -15934.13 | 472.59 | 17.49 | -37.41 | -2.57 |

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Appendix III

ASCENT GIMBAL ANGLES AND ATTITUDE ERRORS





Figure 22



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