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CONTRACTOR REPORT

GEMINI EXPERIMENT S026

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INTRODUCTION

This document is the final report on reduction and analysis of data obtained from the S026 experiment from the Gemini X and XI conducted during the Gemini X and XI missions. The S026 electron and ion sensors were continuously operative throughout both missions from shroud removal (about 6 minutes after Agena liftoff to power-down conditions one week later. Data on ion and electron currents (I_+ and I_e), electron temperature (T_e), and vehicle potential (ϕ_s) were obtained at a sample rate of 32 times per second on I_+ for each of two ion sensors and once every 1.067 seconds for the electron sensor. Assuming only real time data acquisition, this means that the S026 Experiment System made available more than 10^7 samples of such quantities as I_+, I_e, and T_e over a wide range of ambient conditions and during various maneuvers of Gemini spacecraft (S/C) and Agena target vehicle (ATV) (yaws, dockings, tethered flight). This report deals only with the data reduction of the Gemini plasma wake measurements comprising roughly twenty minutes of data for six maneuvers programmed for wake measurements on Gemini X and XI; that is, less than 1/100 of the available data has been analyzed and included in this final report. Considerable ambient data are included where needed.

According to theory the depletion zone formed by the spacecraft as it moves through the ionosphere can be divided into three regions. These are (1) the near field, (2) the intermediate zone, and (3) the far field.

The following definitions and boundary conditions for the demarkation of these zones were arbitrarily assigned according to the procedure outlined in figure 1. The characteristic radius (R_o) used in analyzing the wake structure of the Gemini spacecraft is not unique and its definition depends on the spacecraft orientation with respect to the orbital velocity vector and portion of the depletion zone being considered. The near field of the wake region is defined as that part of the depletion zone usually found within one vehicle dimension of the object ($z_o < R_o$). In this region electric field effects and deviations from space charge neutrality will predominate. Material composition and structure of the surface may be more important than the actual geometrical configuration in determining the structure of the wake. The intermediate zone is considered to be between 1 and 10 vehicle radii downstream from the object ($R_o < z < 10R_o$). This is the region that has been emphasized in this study. Although the near field is a region of considerable interest, it could not be probed in an experiment employing two vehicles, one of which is manned. In addition to considerations of crew safety, there are fundamental limitations in any experiment employing two vehicles. The closer together the two objects happen to be, the more extreme are the effects produced by thruster firings. Also, the presence of the second vehicle probing the wake structure will produce significant distortion in an unpredictable way.

The far field, which is a region where magnetic effects on the wake structure may become significant and where some oscillatory behavior may

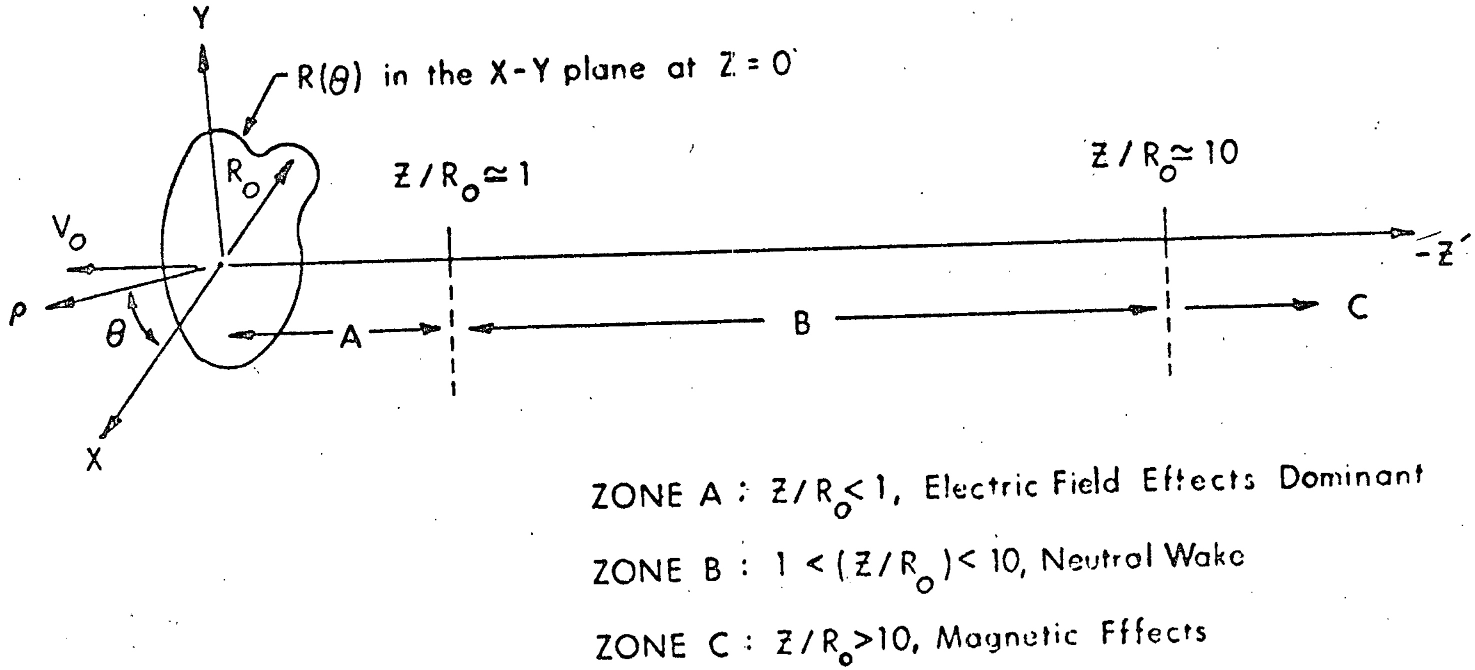


Figure 1.- Definition of coordinate system and regions of the wake.

exist (varying several percent below the ambient condition) has not been considered in this study. Two factors contributed to the relative de-emphasis of this region in the present program. If incremental departures between two vehicles in the same orbit exceeds 150-200 feet, it becomes increasingly difficult for the second vehicle to make a simple return to the referenced target vehicle. As aptly said by the astronaut crews, "one is faced with a complete re-rendezvous problem all over again". That is, the two vehicles are no longer in the same orbit. Also, the deviations of the wake structure from ambient in the far field region require instrument sensity resolutions much higher than those used.

In summary then, the intermediate zone has been emphasized in the design and execution of this experiment. For the Gemini vehicle, the smallest characteristic radius of interest is 1.34 feet and the largest is 5 feet. This implies a separation span extending from approximately 1.5 feet at the closest approach to at least 50 feet into the far field. The crew flight plans actually called for a separation at least twice this distance with the objective of determining ambient conditions over as large a region as possible.

The contamination problem associated with the use of manned vehicles and their life support systems is a serious one in the design of scientific experiments with manned spacecraft. It is likely that the spacecraft/space plasma interaction and the details of the wake structure would be quite different without the presence of a contamination atmosphere. The ion wake experiment provided an opportunity to utilize sensor responses on the ATV to monitor the possible influences of the contamination atmosphere surrounding the Gemini spacecraft.

The Gemini ion wake experiment represented the first attempt to measure wake structure with two distinct orbiting bodies. All previous in situ observations of the ionospheric perturbations produced by an orbiting satellite have been made from single-bodied systems. Such measurements were confined to the determination of the wake structure in the immediate vicinity of the spacecraft because the measuring probes were mounted close to the surface or on relatively short booms. Under such conditions the amount of information that can be generated is greatly limited and is restrictued to an angular measure of the wake structure at a fixed distance. The Gemini/Agena two-body system provided the first opportunity to make wake observations at arbitrarily large distances from the body producing the wake and gave a 3-dimensional flexibility to the experiment. Conversly, the use of a single body with a fixed probe requires a design of an instrument that can measure charged particle densities only. With a two-body system as employed in this experiment, the determination of the relative position coordinates between the object producing the wake effects and the sensors that are measuring it becomes critically important and makes any subsequent data reduction considerably more difficult.

The S026 experiment was approved for the flight of Gemini X and Gemini XI in October 1965. Flight instruments were scheduled for delivery to Cape Kennedy in April 1966 for the flight of Gemini X (which took place in July 1966). The original proposal was generated with the understanding that systems already existing in the Gemini/Agena rendezvous and docking program which would allow the determination of the relative position coordinates of the two vehicles. Earlier informal proposals from Goddard Space Fligth Center (GSFC) for measuring wake effects during docking and undocking manuevers apparently had ignored this requirement.

In a two-body system that measures the space plasma effects of one body with sensors mounted on a second body, the basic problem is a need to correlate the telemetry from the charged particle sensors on the same time base with the relative position coordinates. There are nine coordinates to be considered.

There were two basic systems suggested by NASA as satisfying the principle investigator's (PI) data requirement. These were:

a. A Mauer 16mm boresighted movie camera with interchangeable lenses

b. An L-band radar which was operated from the Gemini with an associated transponder on the Agena

Preflight planning and investigation of these systems, including some dry runs in the docking simulator, indicated that serious problems might be encountered in postflight data reduction. Attempts to provide improved techniques in the short time available were not successful. A significant portion of the data generated by the ion wake sensors was not used as a result of malfunctions and limitations in the other equipment employed for a determination of the relation position coordinates.

EXPERIMENT DESCRIPTION

EXPERIMENT PHILOSOPHY

The S026 Gemini Plasma Wake Experiment represented the first attempt to measure spacecraft/space plasma interactions utilizing two vehicles. The rendezvous and docking objectives of the manned Gemini Spacecraft with an Agena, which were programmed for the last five flights of the Gemini mission, constituted a unique opportunity for realizing such a measurement. Figure 2 illustrates some of the basic assumptions used in the design of the experiment. It is assumed that the wake or depletion zone structure (as indicated by the density contours in part (a) of the figure) is frozen on the spacecraft as it carries out incremental maneuvers relative to the Agena target vehicle while both are flying in a common orbit. The relative values of incremental velocity (ΔV) and the orbital velocity (V_o) are as follows.

$$V_o = 8 \times 10^5 \text{ cm/sec.}$$

$$\Delta V \simeq 10 \text{ cm/sec.}$$

The motion of the spacecraft relative to the target vehicle is produced by firing thrusters on the spacecraft. The firings produce complicating factors in the experiment since they disturb the local atmosphere by introducing a variety of foreign chemical species as well as additional ions and electrons. The effects of thruster firings on sensor behavior are discussed briefly in the section entitled "General Properties of the S026 PL Data". Sensor recovery time to ambient conditions prior to the thruster firing proved to be approximately one second.

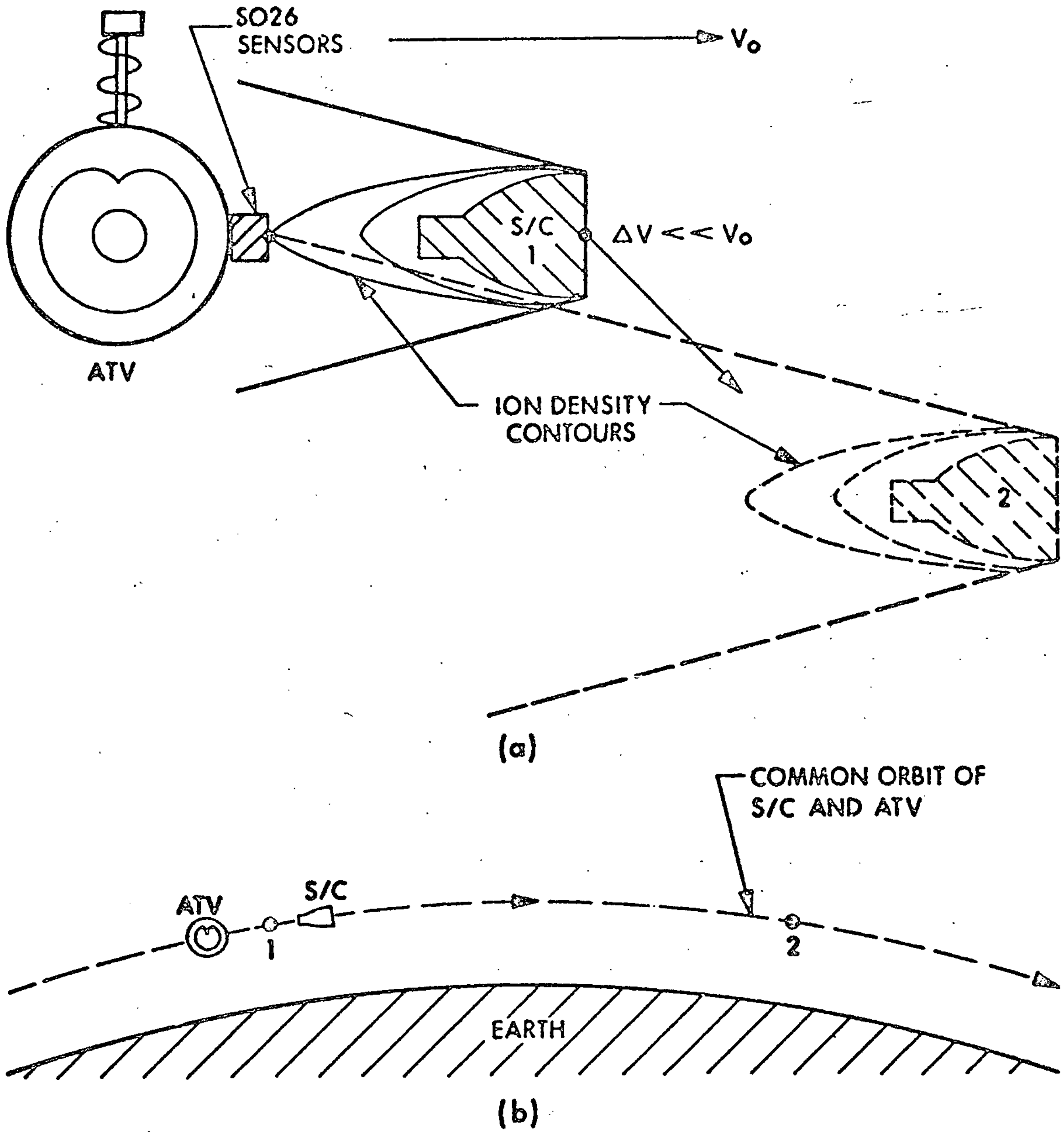


Figure 2.- Philosophy and assumptions of the S026 experiment (TDA south).

The Agena target vehicle is roughly cylindrical (5 feet in diameter by 25 feet in length). It is generally operated in an horizon-stabilized condition. (See Flight Control System.) The ion wake sensors were mounted near the edge of the docking cone. During the time that the spacecraft undergoes an incremental change in its relative change from position 1 to position 2 (fig. 2a) the two vehicles together move in their common orbit a considerable distance (fig. 2b). Yet the ion wake contours in figure 2a corresponding to points (1) and (2) are shown with the same structures. In position 1, a specific ion wake contour corresponding to local density of either electrons or ions intersects the appropriate S026 sensor assumed to be facing in the same direction as the orbital velocity, V_o. A crude approximation of probe theory shows that the sensor samples the local concentration at the point in question by a conversion from local density N_+ or N_e to current measured I_+ or I_e via the following expressions:

$$I_+ = q\, N_+\, V_o\, A\,(j) \tag{1a}$$

$$I_i = \frac{q}{4}\, N_e\, \overline{v}_e\, A\,(j) \tag{1b}$$

where: q = electron charge

$\overline{v}_e$ = mean thermal electron velocity

$A(j)$ = effective area for particle collection of j^{th} sensor

The expression of equation (1a) is used for the ion sensor current when the sensor faces directly into the ion wind; that is, the sensor normal is parallel to the orbital velocity vector. The situation is described by specifying that the sensor angle of attack is 0 degrees, or that the probe is operating in the "ram ion" mode. Equation (1b) on the other hand, holds for any arbitrary orientation of the electron sensor.

The exact relationships between sensor currents and the particle densities are complex functions. In presenting ion wake density contours as a function of the relative separation of the two vehicles, it was assumed that the linear relationships shown as equations (1a) and (1b) are valid. Consequently, most of the wake structure data and contour mapping will be presented as the variation of electron and ion sensor currents as a function of spatial separation between the Gemini and the Agena. When the spacecraft is at position 2 shown in figure 2a, a different wake contour corresponding to a new local density of particles intersects the S026 sensor on the Agena target vehicle and the output current changes accordingly.

The problem of relating local ionized particle densities to measured sensor currents is particularly complex when making wake measurements employing two vehicles. In such a situation, the system potentials and various other conditions unique to the depletion zone (such as the possible presence of nonmaxwellian distribution functions in the electrons) may impose serious limitations on the general applicability of the linear relationships.

In addition to such difficulties, there is a serious time problem in carrying out a wake measurement. Most of the S026 modes required from one to five minutes to complete. In such a time period the vehicles have moved 2400 km in orbit. Alternatively, it can be said that one minute of flight is equivalent to a change of 16 minutes in local time. Also, other conditions in the ambient may have changed with locale. Because of these factors, the problem of making meaningful wake measurements employing two vehicles in orbit presents unique problems.

The design of the experiment was, consequently, a compromise between several conflicting requirements. The assumption that the wake character is frozen on the spacecraft during its motion is probably invalidated during flight. The ambient conditions may change quite drastically. From this viewpoint a wake mapping should occur in an extremely short time (preferably less than one-half minute). However, this would require large incremental velocities (on the order of 3 to 5 feet per minute) with consequent heavy thruster firing activity. Such high velocities would also make it even more difficult to meet a requirement for adequate spatial resolution. Since local electron densities and temperatures are sampled only once every second, a considerable loss of information for large incremental velocities would occur, that is, data points would only be available every 5 feet. The flight plans and crew instructions were drawn up, therefore, as a compromise between relative motions which would minimize the effect of thruster firings on the sensor responses, provide a reasonable degree of position resolution in the determination of wake properties, and maintain some degree of constant ambient. Typical incremental velocities employed by the crew of Gemini XI were 0.1- to 0.5 foot per second. As a result, these wake maneuvers extended over time periods of 1 to 5 minutes.

AGENA SYSTEM

Agena Geometry

Much of the material in this chapter is given in greater detail in reference 1. Section 2 of reference 1 describes the target vehicle airframe including the Agena structure, the aerodynamic shroud and the target docking adapter (TDA). The Gemini/Agena vehicle configuration is shown in detail in figure 3. Figure 4 illustrates a typical view of the Agena seen from the Gemini spacecraft when carrying out some of the maneuvers in the wake experiment during the Gemini XI mission when the Agena was in a TDA-south orientation. The running lights, which were required for data reduction of the relative position coordinates during night operations, are shown in this figure. The shroud and booster adapter are not part of the orbital vehicle; the shroud is ejected during the early stages of orbital insertion (approximately 6 minutes after Agena liftoff). An externally mounted retaining strap held together by explosive bolts holds the shroud until the time of separation. Separation also deploys the S026 sensors in the fully erect conditions (see Agena Integration).

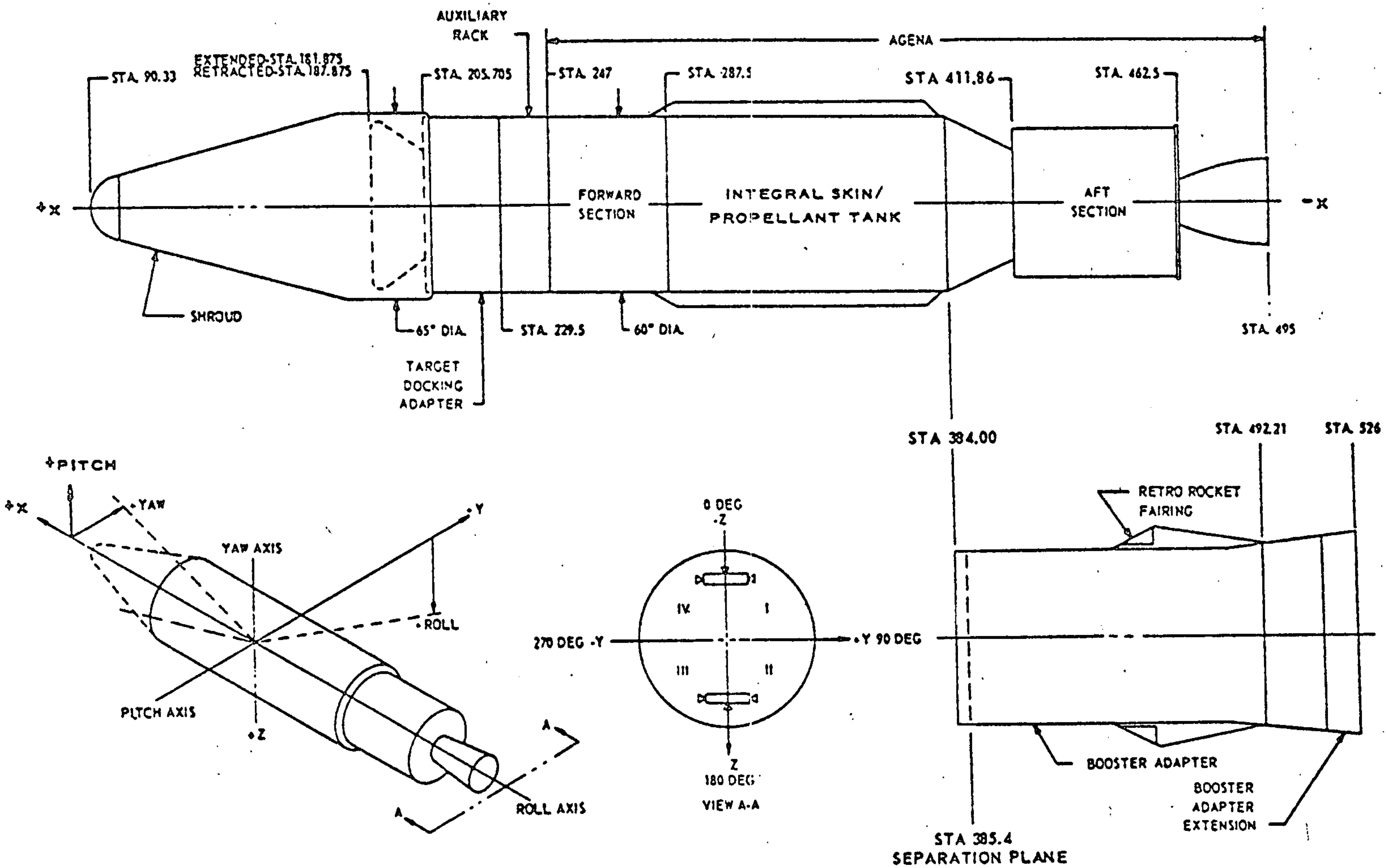


Figure 3.- Gemini/Agena vehicle configuration.

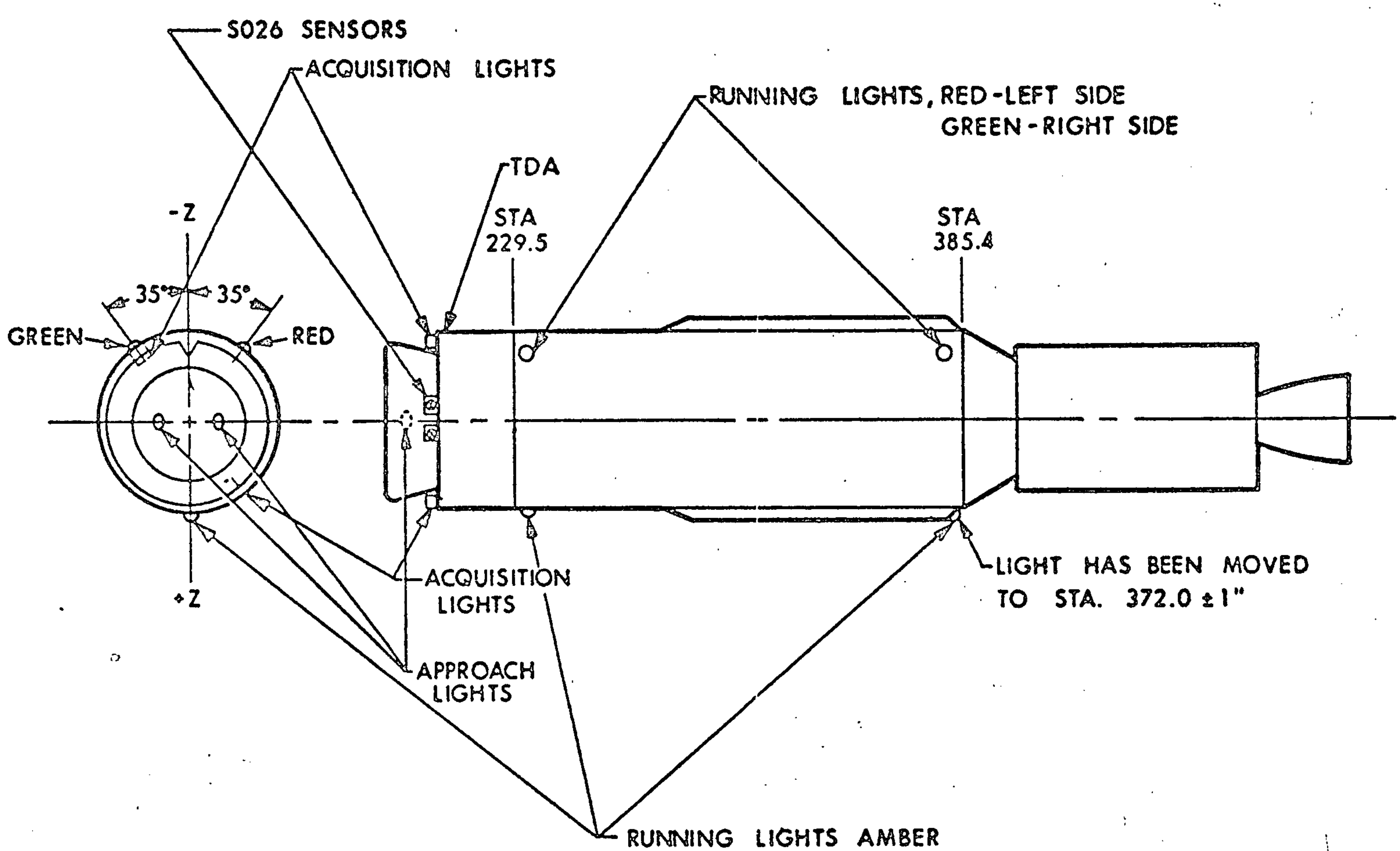


Figure 4.- Acquistion, approach, and running lights on the ATV.

The Target Docking Adapter

The TDA is attached to the forward end of the Agena as shown in figure 3. It is essentially the female part of the mating mechanism used for docking of the Gemini spacecraft with the Agena target vehicle. It consists of two structural parts, the docking adapter and the docking cone. The docking cone, which is supported by the docking adapter, can be operated either in an extended (unrigidized) or retracted (rigidized) condition.

Details of the TDA docking cone are shown in figure 5. The docking adapter is a right-circular cylinder containing complex apparatus. Appreciation of the complexity of this apparatus can be had from studying figure 6. The reader is referred to figures 2 and 3 for relative orientation of the cone and cylindrical parts of TDA unit (ref. 2).

Flight Control System

The Agena target vehicle is an horizon-stabilized quasi-cylindrical vehicle. The longitudinal axis of symmetry is maintained parallel to the earth's surface by means of an horizon sensing, guidance and control system. The Agena rotational axes are illustrated in figure 7 which shows that motion is restricted under usual operating conditions to a plane parallel to the earth's surface. A typical yaw maneuver is also illustrated in the figure.

The Agena flight mode usually corresponds to one of four cardinal headings under stable operating conditions. The Agena orientation is consequently identified as TDA-forward (instead of TDA-east) TDA-south

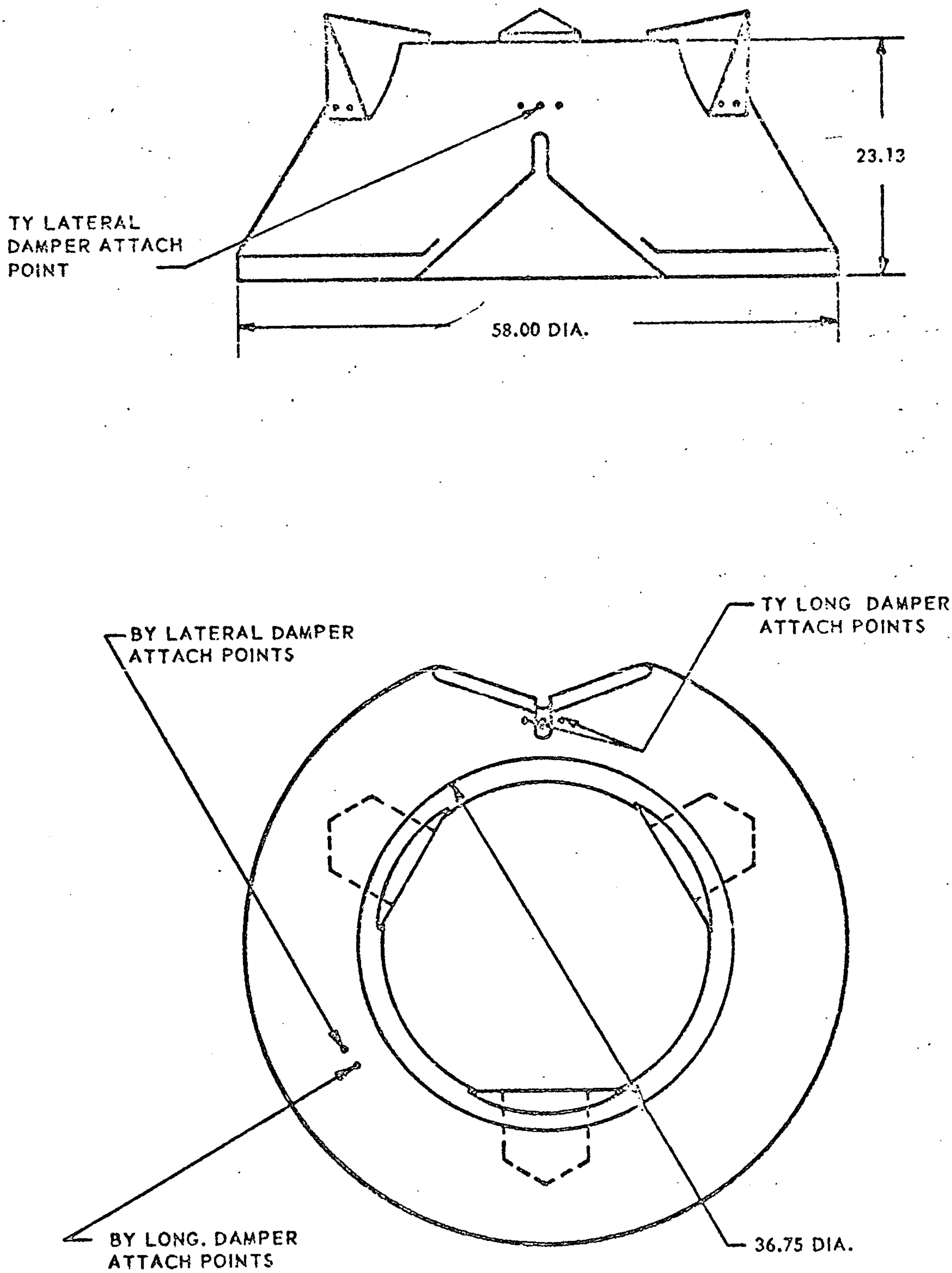


Figure 5.- The TDA docking cone.

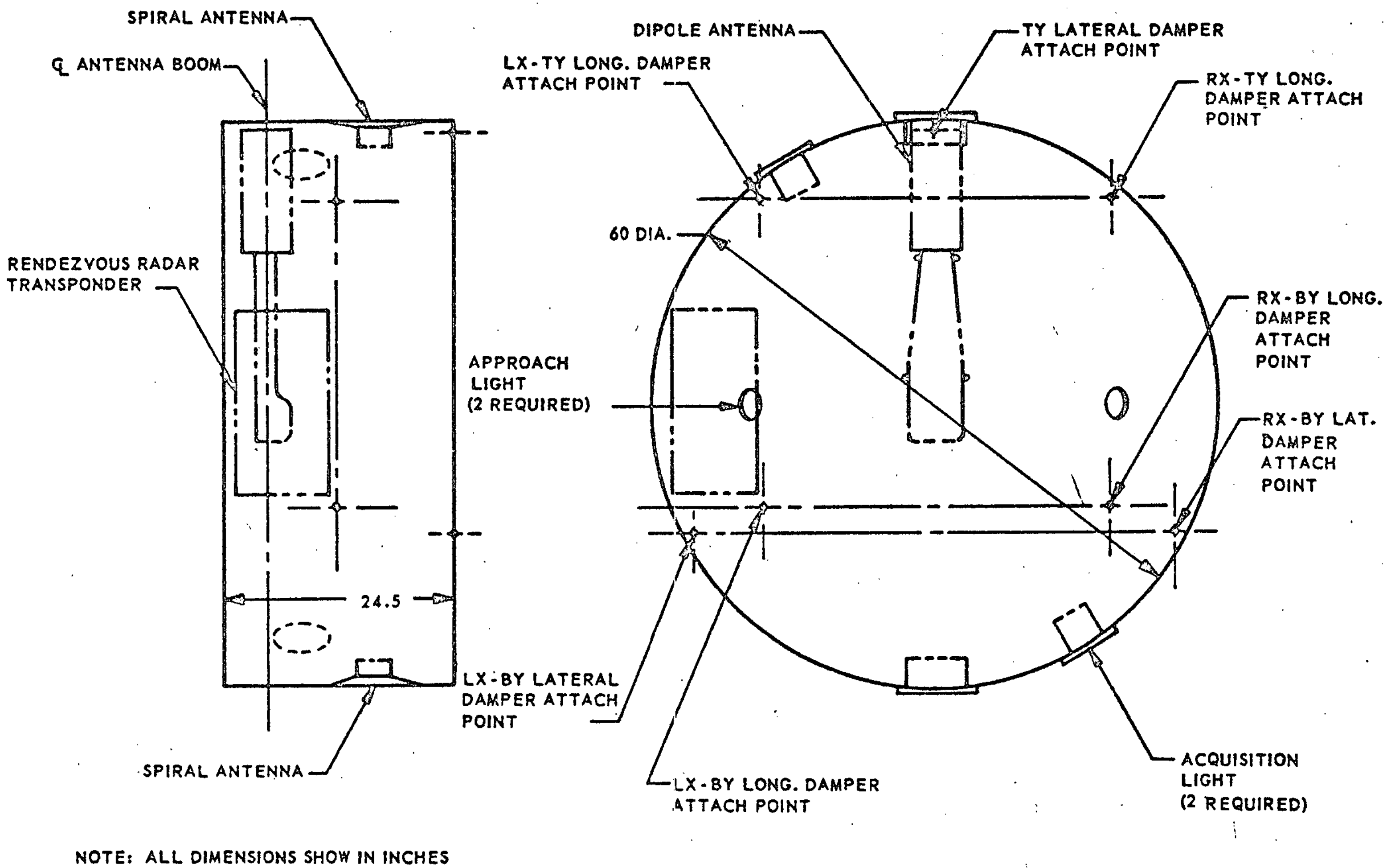


Figure 6.- Target docking adapter assembly.

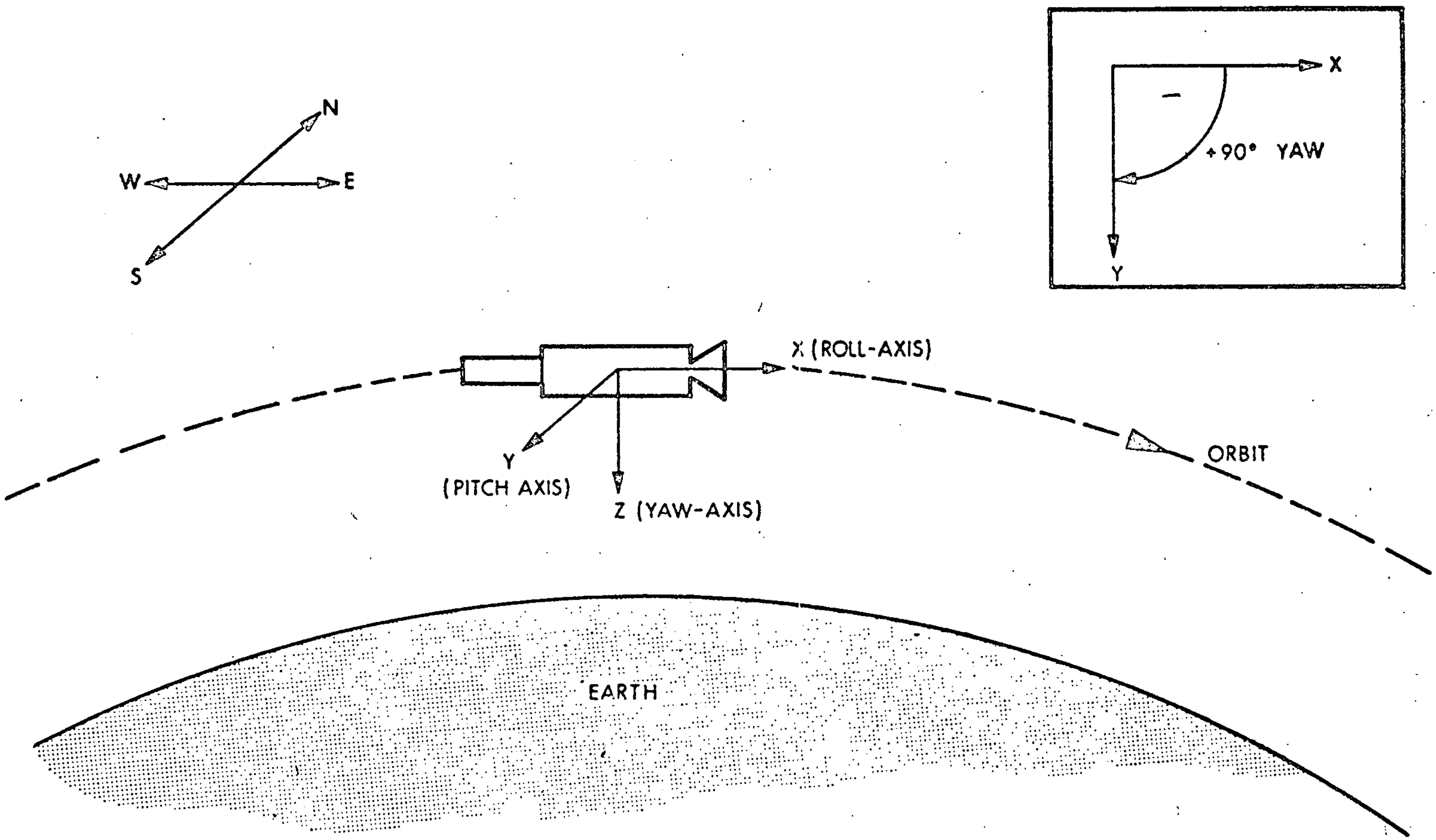


Figure 7.- Agena rotational axes.

(Agena orientated plus y direction), TDA-aft (instead of TDA-west) and TDA-north (-90° orientation).

The principal function of the flight control system is to provide control of the vehicle attitude in response to signals from the guidance system.

The vehicle pitch, roll, and yaw are provided by a pneumatic control system, as illustrated in figure 8. The pneumatic system employs cold gas to apply appropriate corrective force in the three axes. The gas is set to thrust values by means of a pneumatic pressure regulator from gas supply spheres maintained at a pressure of 100 psia (high mode) or a nominal 5 psia (low mode). This cold gas system is in turn controlled by an inertial reference package (IRP) through the flight control electronic unit. (See section 7 of reference 1.) Table I summarizes the Agena flight control modes for docked and undocked operations. Of particular interest to the S026 experiment is the angular dead band in roll, pitch, and yaw. These provide the nominal limits for angular excursions during the data modes of the experiment. Table II shows the connection between the cardinal headings and the flight control commands.

The various positions of the Agena vehicle during a typical 180° yaw maneuver about its yaw axis are illustrated in figure 9. The case shown is for a 180° yaw from a TDA-South orientation to a TDA-North condition. This figure will be referenced in later discussion of the sensor behavior observed during such maneuvers.

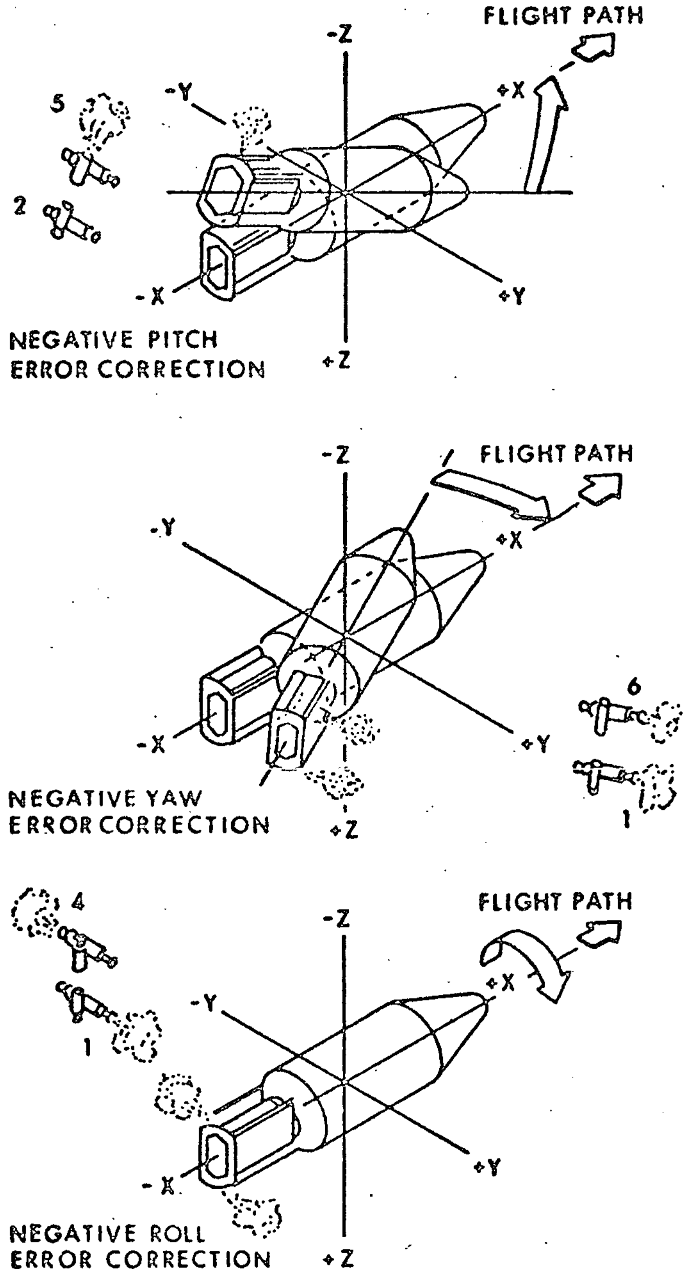


Figure 8.- Pneumatic flight control operation.

TABLE I.- FLIGHT CONTROL MODES FOR AGENA

AGENA FLIGHT CONTROL MODES	UNDOCKED ON-ORBIT COAST DOCKED ON ORBIT COAST (TENTATIVE PENDING FLT CREW APPROVAL)	TRANSITION FC-1 TO FC-3 GAS SAVING MODE FOR GYROCOMPASSING	UNDOCKED ATTITUDE CHANGES PPS AND SPS OPERATIONS. GYROCOMPASSING	AUTOMATICALLY OBTAINED FROM FC-3 DURING SPS OPERATIONS.	AUTOMATICALLY OBTAINED FROM FC-3 DURING PPS OPERATIONS.	DOCKED ON ORBIT COAST. ATTITUDE CHANGES	INITIATE 60 SEC PRIOR TO SPS INITIATE	OBTAINED AUTOMATICALLY FROM FC-7 DURING SPS OPERATION	OBTAINED AUTOMATICALLY FROM FC-7 DURING PPS OPERATION
FLIGHT CONTROL	UNDOCKED					DOCKED			
FUNCTION	FC-1	FC-2	FC-3	FC-4	FC-5	FC-6	FC-7	FC-8	FC-9
ACS PRESSURE	LOW 62/370	LOW 62/370	HIGH 63/371	HIGH 63/371	HIGH 63/371	HIGH 63/371	HIGH 63/371	HIGH 63/371	HIGH 63/371
ACS DEADBAND	WIDE 75/451	NARROW 74/450	NARROW 74/450	NARROW 74/450	NARROW 74/450	WIDE 75/451	NARROW 74/450	NARROW 74/450	NARROW 74/450
ACS GAIN	LOW 76/460	LOW 76/450	HIGH UNDOCKED 78/470	HIGH UNDOCKED 78/470	HIGH UNDOCKED 78/470	HIGH DOCKED 79/471	HIGH DOCKED 79/471	HIGH DOCKED 79/471	HIGH DOCKED 79/471
H/S GAINS	LOW 76/460	HIGH 50/310 51/311	HIGH 50/310 51/311	VERY HIGH ALL ENG BURNS	VERY HIGH ALL ENG BURNS	HIGH	HIGH	VERY HIGH ALL ENG BURNS	VERY HIGH ALL ENG BURNS
PWR RELAY RESET	47/271	47/271	47/271	47/271	47/271	47/271	47/271	47/271	47/271
HYDRAULIC GAIN	NA	NA	NA	NA	UNDOCKED 94/570	NA	NA	NA	DOCKED 95/571
DEADBANDS ROLL -	5.0 ± 1.0°	0.25 ± 0.1°	0.80 ± 0.3°	0.80 ± 0.3°	0.80 ± 0.3°	5.4 ± 1.0°	0.25° 0.1°	0.25 ± 0.1°	0.25 ± 0.1°
DEADBANDS YAW -	5.0 ± 1.0°	0.25 ± 0.1°	0.25 ± 0.1°	0.25 ± 0.1°	-	1.80 ± 0.6°	0.10 ± 0.05°	0.10 ± 0.05°	-
DEADBANDS PITCH -	2.0 ± 0.5°	0.25 ± 0.1°	0.25 ± 0.1°	0.25 ± 0.1°	-	0.79 ± 0.3°	0.10 ± 0.05°	0.10 ± 0.05°	-
CAUTIONS	NO PPS, SPS OR MANEUVERS		NO ON ORBIT COAST	-	-	NO PPS OR SPS MANEUVERS	NO ON ORBIT COAST		

TABLE II.- UNDOCKED COMMAND CONFIGURATION FOR ORBIT COAST UNDOCKED

Cardinal heading				Command title	Cmd. no.
0°	180°	+90°	-90°		
Reset	Reset	Reset	Reset	Power Relay Reset	47
X	X	X	X	Horizon Sensor On	49
X	X			Roll HS to Yaw IRP On	50
		X	X	Pitch HS to Yaw IRP On	51
	X	X		HS to Yaw Out of Phase	52
X			X	HS to Yaw In Phase	53
X	X	X	X	Hyrocompassing On	57
X	X	X	X	Geocentric Rate On	59
	X		X	Geocentric Rate Reverse	60
X		X		Geocentric Rate Normal	61
X	X	X	X	ACS Pressure Low	[a]62
X	X	X	X	ACS On	65
X	X	X	X	ACS Deadband Wide	[a]75
X	X	X	X	ACS Gain Low	[a]76
X	X	X	X	VM Disable	84
X	X	X	X	VM to Mode IV Off	88
X	X	X	X	Hydraulic Gain Undocked	94

[a]Identifies FC-1 Flight Control Mode.

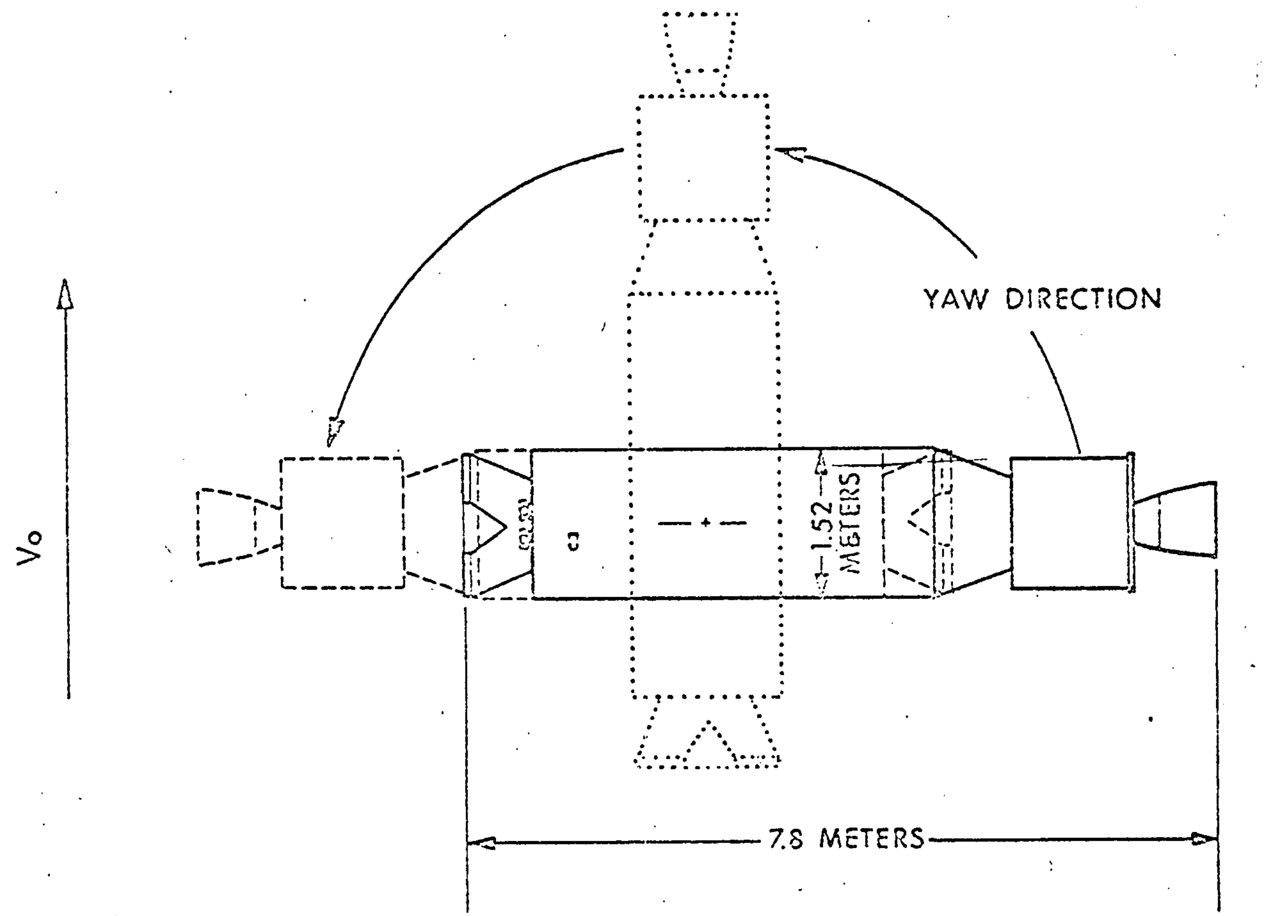


Figure 9.- Agena yaw maneuver of 180°.

Two classes of yaw maneuvers are carried out as follows.

(a) Yaw Command On.

This is a continuous gas jet high speed yaw with angular rates of 1.5°/sec or 3.0°/sec.

(b) Gyro Compass On (Gyro Yaw).

This is a yaw which occurs at a considerably slower rate than that listed in (a) above.

Agena Telemetry

The Agena telemetry system is a pulse code modulation-frequency modulation (PCM-FM) system which consists of a 128-channel pulse amplitude modulator (PAM) main multiplexer, 128-channel PAM sub-multiplexer, a PAM-PCM encoder, a telemeter control unit, a tape recorder, and radio frequency (RF) section. A simplified block diagram of the system is presented in figure 10. The tape recorder is a four track recorder/reproducer which has a maximum recording capacity of 20 minutes of data. This is obtained by recording in one direction for 10 minutes, reversing direction, switching tracks, and recording in the other direction for another 10 minutes. The 20 minutes of recorded data can be played back and transmitted at 4 times the recording speed, that is, in 5 minutes. Time sequencing is employed to distinguish one measurement from another with occasional markers in the form of frame synchronization words appearing at given times in the transmitted data bit stream. A mechanical analog of the system is employed in section 1, reference 1 to describe the time sequencing procedure. It is illustrated in figure 11.

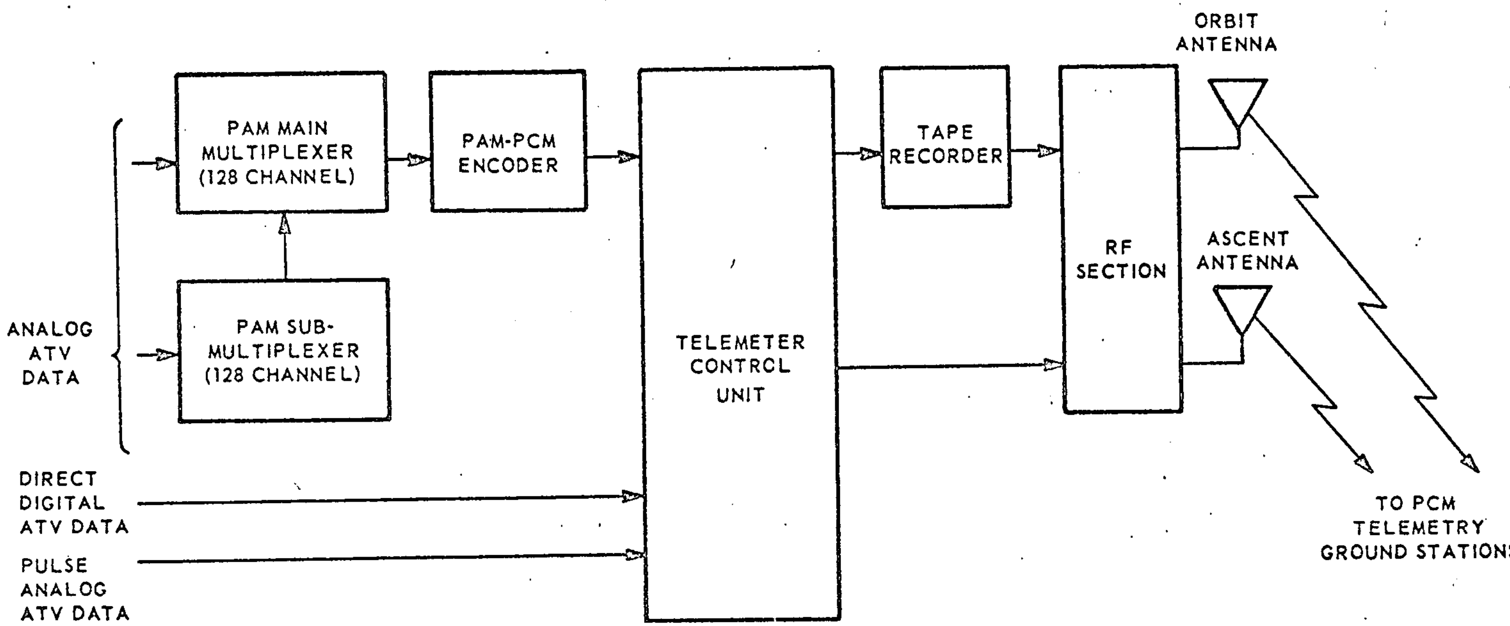


Figure 10.- Simplified block diagram of the ATV telemetry system.

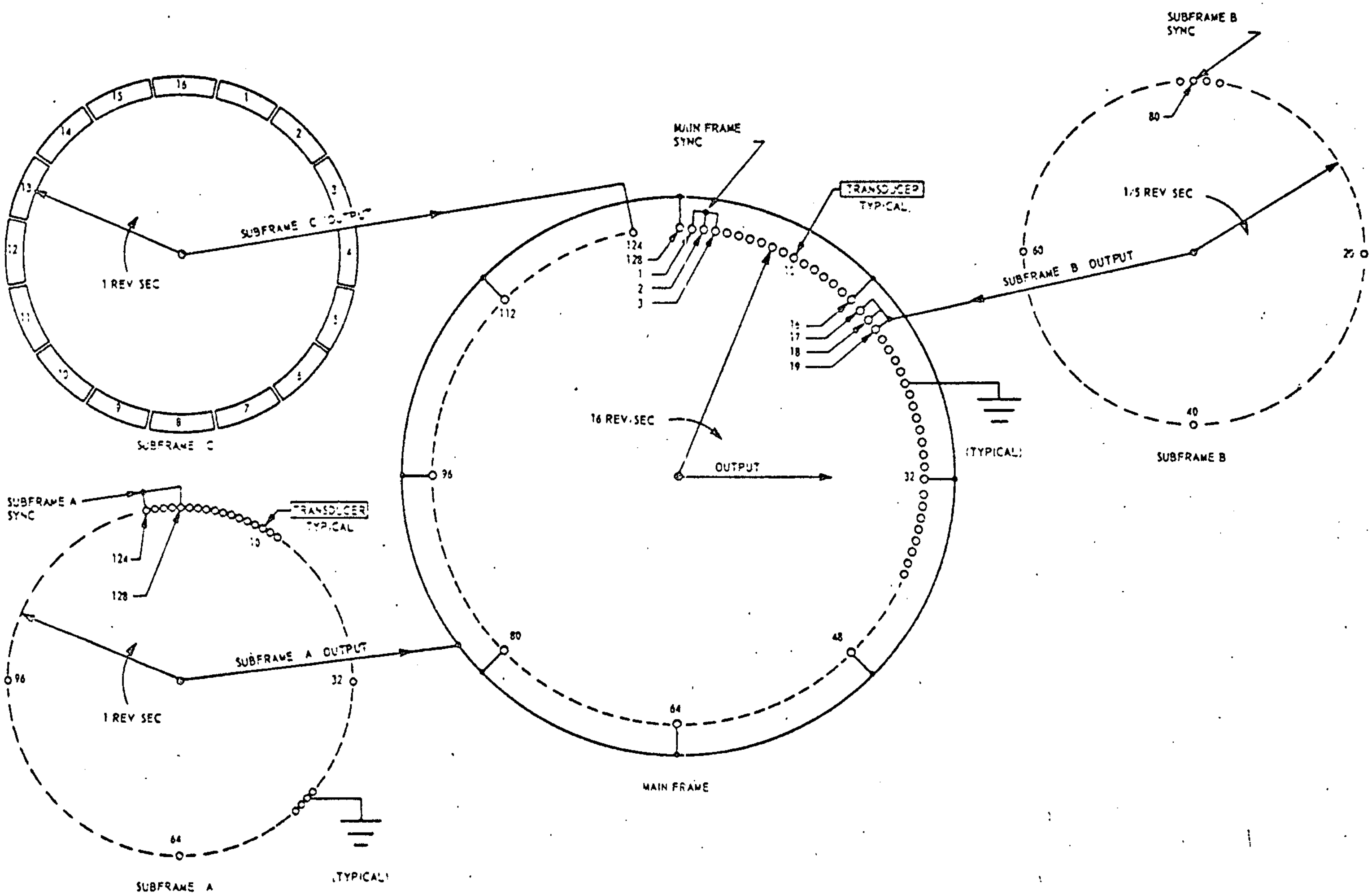


Figure 11.- Mechanical analogy of the vehicle telemeter.

In figure 11 each of the small circles around the periphery of the main frame represents a contact insulated from adjacent contacts. Each time the wiper arm completes a revolution, it will have made contact with all 28 of these contacts. The voltage level then appears as an output for the appropriate channel. The main time frame commutator is driven at a speed of 16 revolutions per second (rps).

Since there are 128 channels, the dwell time is 488 microseconds per channel. If the output of a given transducer is connected to two or more main channels, the output will be sampled at an appropriately higher rate. For example, the output of the electron sensor used in the S026 experiment was bussed to 4 distinct channels allowing 64 samples per second. (See Agena Integration.) This technique of increasing the sampling rate for a given transducer is called supercommutation.

Representative output of a main frame analog is illustrated in figure 12 as a PAM wave train. Since the ATV telemetry system is pulse code modulated, each of the data samples illustrated in figure 12 is encoded as an 8 bit binary word. Consequently, the system bit rate is 16,384 bits per second. Table III summarizes the quantities discussed

If a transducer input goes directly to the main frame, the slowest sampling rate possible is 16 samples per second. Some vehicle measurements (including some associated with the S026 experiment) require monitoring of quantities whose values may vary quite slowly over large time periods. For such measurements a rate of one sample per second is considered to be adequate. The reduced sampling is accomplished by use

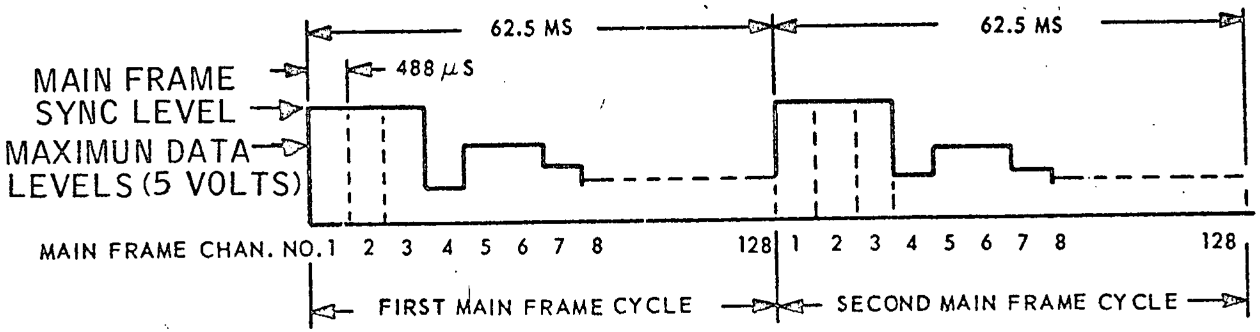


Figure 12.- Representive output of the main frame mechanical analog.

TABLE III.- AGENA TELEMETRY SUMMARY

	Time	Samples/sec
Main frame	1/16 sec	16
Main frame channels (128)	488 μ sec	2084 (system data sampling rate)
Data sample (8 bit binary word)	16 μ sec	16,384 (system data bit rate)

of sub-frame commutators identical to the main frame commutator and hooked into a particular position (fig. 11). The sensors that monitor the temperature of the electronic packages used in the S026 experiment are examples of this slower data rate requirement (PL4 and PL5).

The S026 sensor telemetry channels were identified as Group 31. In order to obtain time correlation of this data with the appropriate Agena cardinal headings and angle rates, a large number of flight control telemetry time history plots were employed and are summarized in table IV (group 8).

Agena Target Vehicle Guidance System

The guidance system provides the vehicle with an earth reference for stable flight and remote control maneuvers. Under normal flight conditions the nose of the vehicle is pointed in the direction of flight, TDA-forward with its vertical axis (the z axis in fig. 7) passing through the center of the earth. This function is accomplished by the inertial reference package (IRP) and a horizon-sensor system. The latter consists of two sensors and a signal mixer. Each sensor scans a spatial region below the vehicle and generates a corresponding output signal when the discontinuity in the infrared radiation between earth and space is detected. The horizon-sensor/signal-mixer system is limited to developing error signals for pitch or roll attitude corrections. Errors in yaw attitude are detected by gyro-compassing circuits.

TABLE IV.- AGENA TIME HISTORY TELEMETRY CHANNELS

Meas. no.	Measurement	Calibration range	Time history plot no.
D5	Hydraulic oil return line temperature	-10° to 255° F	8-10
D32	Hydraulic oil low pressure	0 to 100 psig	8-5
D41	Pitch horizon sensor	±5°	8-4
D42	Roll horizon sensor output	±4.5°	8-1
D46	No. 1 valve cluster temperature	-46° to 173° F	8-11
D47	No. 2 valve cluster temperature	-46° to 148° F	8-11
D54	Horizon sensor head temp (righthand)	-29° to 195° F	8-12
D55	Horizon sensor head temp (lefthand)	-28° to 194° F	8-12
D57	Control gas regulator pressure no. 2	0 to 20 psia	8-7
D58	Control gas regulator pressure no. 1	0 to 120 psia	8-7
D59	Control gas supply monitor pressure	17 to 4003 psia	8-9
D60	Hydraulic oil high pressure	7 to 3973 psig	8-3
D65	Yaw gyro torque rate	±10°/min	8-6
D66	Roll gyro torque rate	±10°/min	8-1
D68	Pitch hydraulic actuator position	±2.5°	8-5
D69	Yaw hydraulic actuator position	±2.5°	8-6
D70	Control gas supply temperature	-46° to 199°/F	8-10
D72	Pitch position gyro	±5°	8-4
D73	Pitch gyro torque rate	±10°/min	8-4
D74	Yaw position gyro	±5°	8-6
D75	Roll position gyro	±5°	8-1
D85	V/M electric oven temperature	1° to 197° F	8-13
D87	V/M accelerometer oven temperature	4° to 198° F	8-13

TABLE IV.- AGENA TIME HISTORY TELEMETRY CHANNELS - Concluded

Meas. no.	Measurement	Calibration range	Time history plot no.
D129	Inertial reference package internal case temperature	1° to 169° F	8-11
D150	Gas jet 2 and 5 monitor	0 to 5V	8-2
D151	Gas jet 1 and 3 monitor	0 to 5V	8-2
D152	Gas jet 4 and 6 monitor	0 to 5V	8-2

THE S026 INSTRUMENTS

Sensor Geometry and Potentials

The S026 sensors were five-element planar probes. (See figure 13 for construction illustration.) Space was allocated after experiment approval for three charged particle sensors to be mounted upon the Agena TDA (see Agena Integration). Originally all three were built to identical geometrical specifications. A change in the aperture size of the electron sensor was carried out in the interval between the flight of Gemini X and Gemini XI. The experiment plan called for the use of two ion sensors and one electron sensor. The ion sensors were operated with the external grid (G1 of figs. 13 and 14) at vehicle ground potential. The electron sensor was a retarding potential analyzer (see note 2 of fig. 15). A direct relationship was assumed to apply between the ion sensor outputs and local ion densities in the design of the experiments. Definition of electron density and other quantities such as electron temperature and vehicle potential relative to the surrounding space environment required application of the Langmuir probe theory to the retarding potential analyzer characteristic (The Inboard Ion (PL-3) and PROGRAM ELECTRON).

Each sensor unit consisted of four planar grids, a planar collector electrode with guard ring, and the appropriate structural and insulating members (fig. 13). Figure 16 gives the dimensions of the aperture plate which was utilized to reduce the electron collection efficiency of the electron sensor for the Gemini XI flight. This correction proved to be

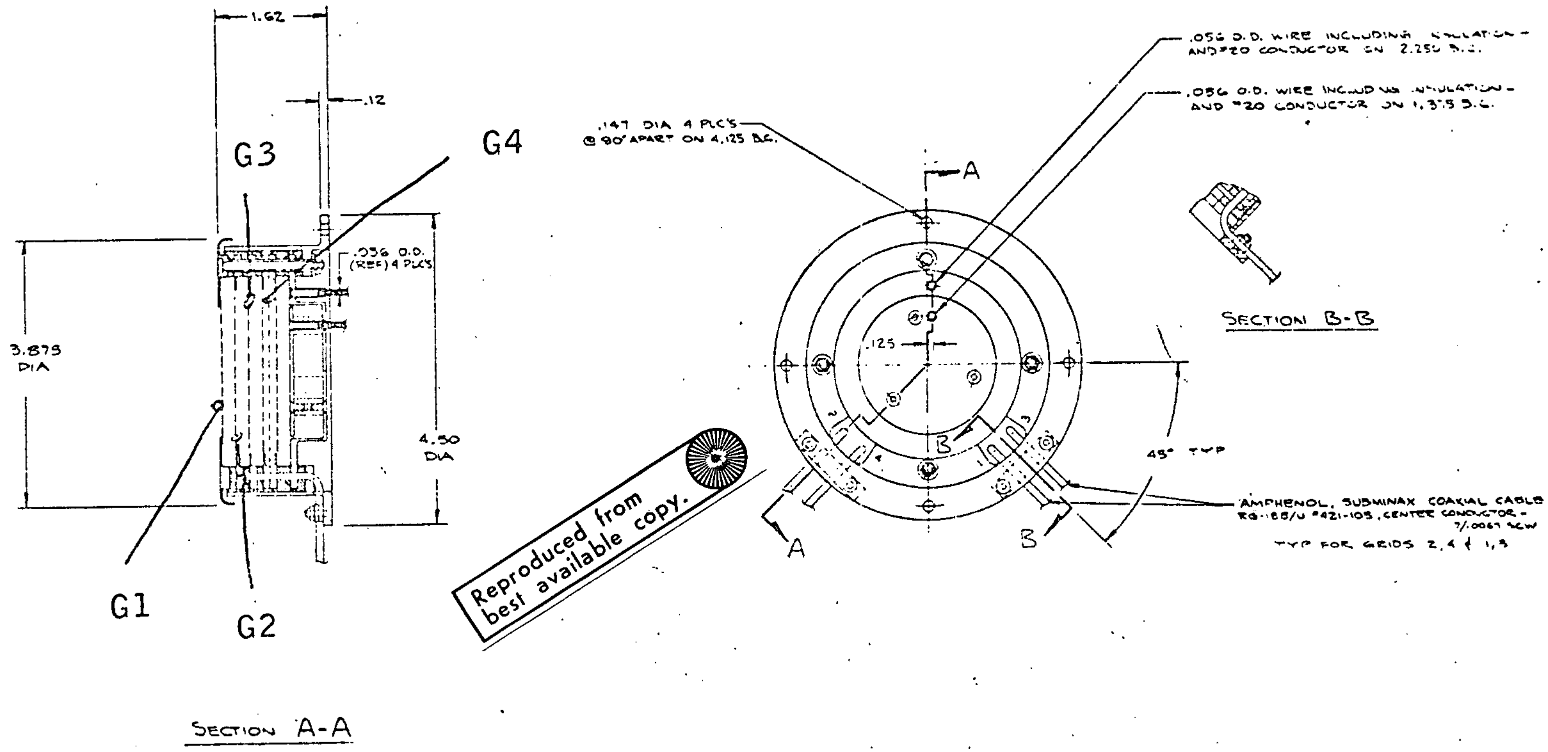


Figure 13.- Geometry of the S026 sensors.

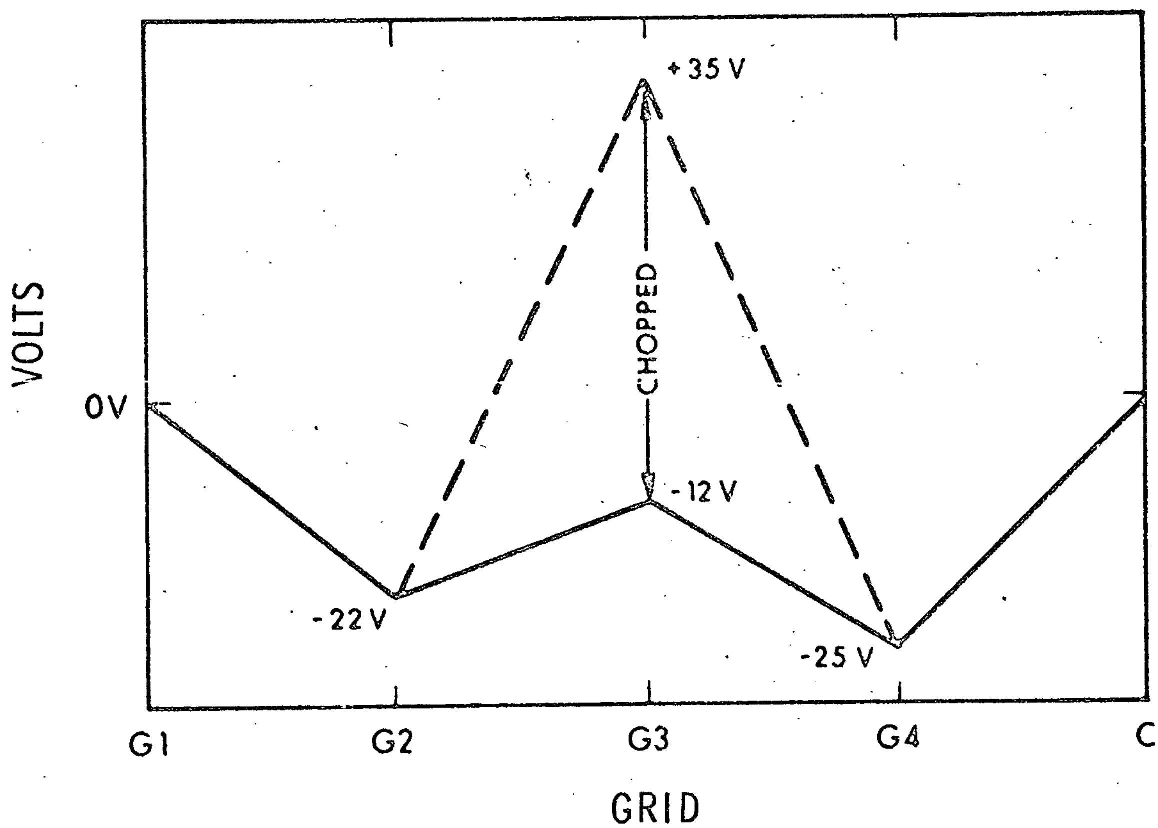
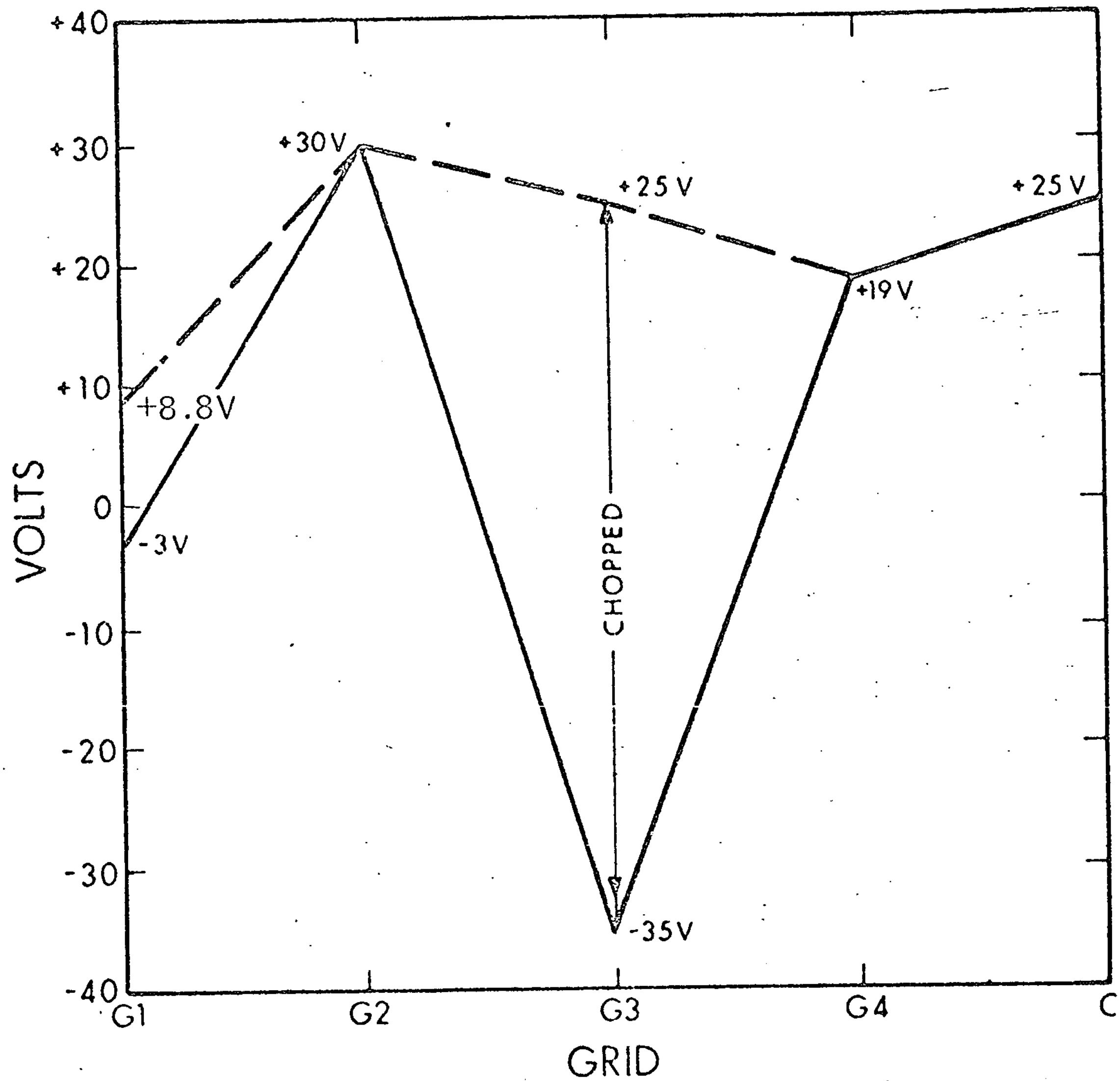


Figure 14.- Ion detector grid potentials.



NOTES:

1. Chopping frequency on G3 is 384 Hz square wave
2. G1 stepped from +8.8 to -3V in 60 equal steps and set at -12V during calibration and synchronization
3. G4 is a triple grid to completely isolate G3 from collector

Figure 15.- Electron detector grid potentials.

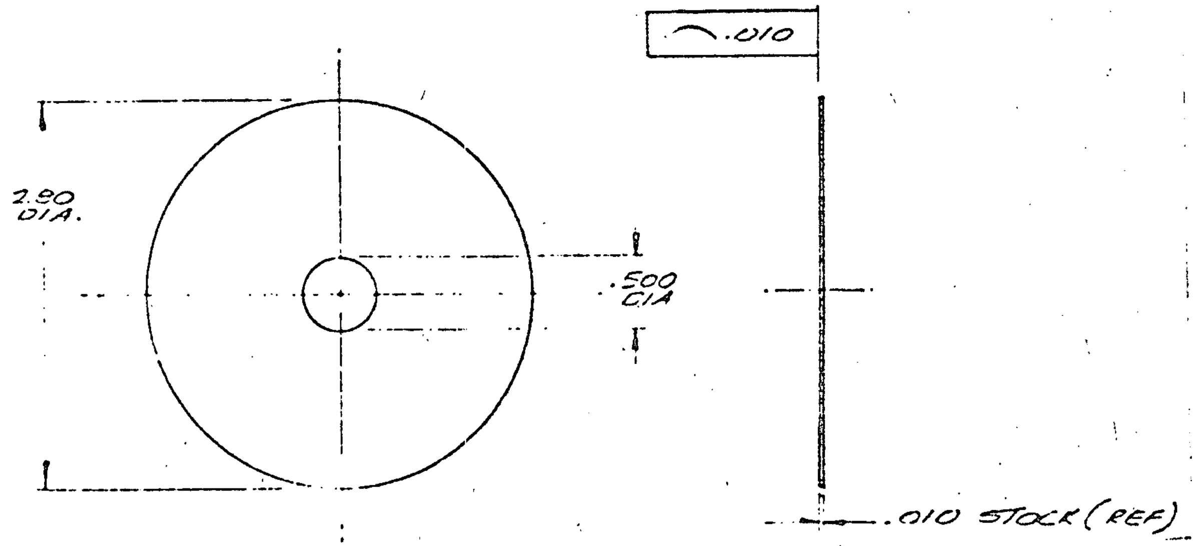


Figure 16.- Aperture plates for GT-XI electron sensor.

too severe, and although it did remove the saturation conditions observed in Gemini X, it led to serious problems in the data reduction.

The potential applied to various grids are illustrated in figures 14 and 15. Not shown is the potential of the guard electrode, which is identical to that of the collector, and which provides support for the collector and electrostatic insulator to minimize insulator leakage current. Grid no. 4 physically consists of three distinct sections of grid material employed to improve the electrostatic shielding between the modulation grid no. 3 and the collector. Particle transmission through all fixed grids is computed to be approximately 57 percent without employing any electrostatic analysis.

The detector grid potentials employed in the S026 experiment determined the energy range of the charged particles that could enter the sensor and be detected. Consider the grid potentials illustrated in figure 14 for the ion detector. The outermost grid, G1, is at vehicle ground potential. The second grid, G2, has a negative potential of 22 volts. This voltage has several functions. It serves to exclude ambient electrons from the measuring system, provides the sensor with the ion trapping function, and excludes secondary and photo-electrons emitted by the external grid, G1. The third grid, G3, is driven by a 3850 Hz square wave between -12 volts and +35 volts. Its function is to modulate the ion flux by switching from a blocking mode at the +35 volt level to one which accelerates the positive ions, transforming the current from dc to ac. Any positive particles with energy greater than 35 eV would, consequently, not be affected by the chopping voltage applied to G3. The combination of potentials between G1 and G3 means that the instrument is sensitive to ion energies between 0 and 35 electron volts since the ac electrometer unit is tuned to the 3840 Hz modulation. The screen grid, G4, has as its primary function the reduction of coupling capacitance between the collector plate and the modulation grid. It is also maintained at the most negative potential in the sequence. This means that secondary electrons produced by ions impinging on the collector will be turned around and returned to the collector. The photo-electrons emitted from the collector will be similarly suppressed. To a first approximation the grid system potentials are designed so that the only secondary particles that can lead to spurious currents are those emitted by incidence of positive ions or photons on the screen grid. Since secondary electron yeilds are, at most, on the order of 10 percent for the ion species and energies involved and, since grid transparency is 91 percent, the effect of secondaries generated in the sensor is calculated to be less than 1 percent of the total current measured.

The grid potentials for the electron sensor are shown in figure 15. The potential applied to the external grid, G1, varies from +8.8 to -3 volts relative to vehicle ground. The grid voltage, (V_{g1}) varies as a function of time. If Δt is the amount of time elapsed from the start of the stairstep cycle, which repeats once every 1.067 seconds, a linear approximation (the actual variation is illustrated in figure 17) can be written as

$$V_{g1} = +8.8 - 0.2\ (\Delta t/16.67) \tag{2}$$

where V_{g1} is in volts and Δt is in milliseconds. There are 60 equal steps of 0.2 volts, each step lasting for 1/60 second. The remainder of the cycle is occupied with calibration signals to be discussed later. The span of voltage coincides with the estimated range of Agena potential relative to its environment. (See Inboard Ion PL-3, for a more detailed discussion.) Again, there was a design choice between accommodating a wide range of variation in possible potentials, which might be measured, and the accuracy of a potential measurement. In addition to the maneuvers of the ion wake experiment, Agena maneuvers that would change the orientation relative to the orbital velocity vector. were to be carried out. The stairstep voltage increment could have been made considerably lower with a corresponding shrinkage in the span of potentials measured. The Agena telemetry sample rate of 64 times a second limited the steps to approximately 60 steps per cycle (S026 INSTRUMENTS). The second grid, G2, was maintained at a bias potential of +30 volts to repel positive ions with energy less than 30 eV. The modulating third grid voltage in this case changes from a blocking potential for electrons of -35 volts to an accelerating potential of +25 volts, thus serving to modulate all electrons with energies less than 35 eV. The screen grid combination is maintained at a potential slightly less

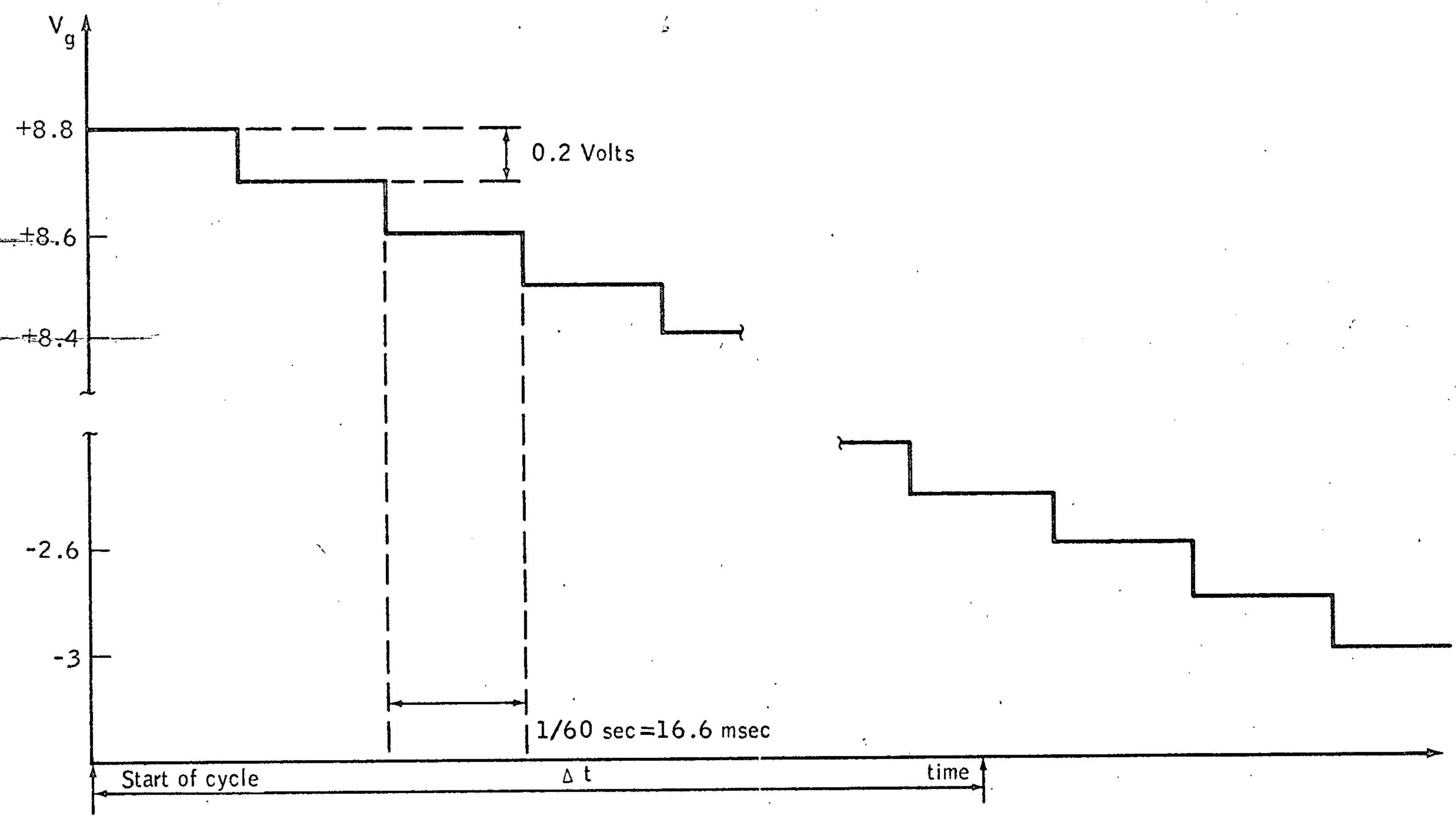


Figure 17.- Stairstep voltage applied to G-1 electron sensor.

positive than the accelerating potential on G3 in order to avoid collection of secondary electrons. The collector also is maintained at +25 volts to suppress emission of photo-electrons and secondary electrons, and to ensure that all the electrons modulated by the chopping grid are collected. The sensor design specifications are summarized in table V where the range of particle densities is computed assuming that equations (1a) and (1b) are relevant to the experimental conditions with the effective particle collection areas set equal to the geometrical aperture. There is a five decade span in sensor current ranging from 5×10^{-11} to 5×10^{-6} amperes. Accordingly, the following transformation equation can be written relating this current to the span of telemetry (0 to 5 volts range in V_t)

$$I(\text{amps}) = 5 \times 10^{-11 + V_t} \qquad (3)$$

A typical ion detector calibration plot obtained in preflight testing is shown in figure 18. By combining equations (1) and (3) the following relationships are developed between particle densities and telemetry output voltages.

$$N_+(\text{cm})^{-3} = 22 \times 10^{V_t}$$

$$N_e(X) = 0.44 \times 10^{V_t} \qquad (4)$$

$$N_e\ (XI) = 6.25 \times 10^{V_t} \qquad (5)$$

TABLE V.- S026 SENSOR DESIGN SPECIFICATIONS

Function	TM code	Area (cm^2)	Range of particle densities[a]
Outboard Ion Sensor	PL1	17.9	22 ions/cm^3 to 2.2×10^6 ions/cm^3
Inboard Ion Sensor	PL3	17.9	"
Outboard (G-10) Electron Sensor	PL2	17.9	0.44 electrons/cm^3 to 4.44×10^4/cm^3
Outboard (G-11) Electron Sensor	PL2	1.26	6.25 electrons/cm^3 to 6.25×10^5 electrons/cm^3
Temperature Monitor - Inboard	PL4		--------
Temperature Monitor - Outboard	PL5		--------

*For $V_0 = 8 \times 10^5$ cm/sec and $\bar{v}_e = 10^7$ cm/sec according to the equations (2-3) for a current range from 5×10^{-11} amps to 5×10^{-6} amps (0 - 5 volts telemetry).

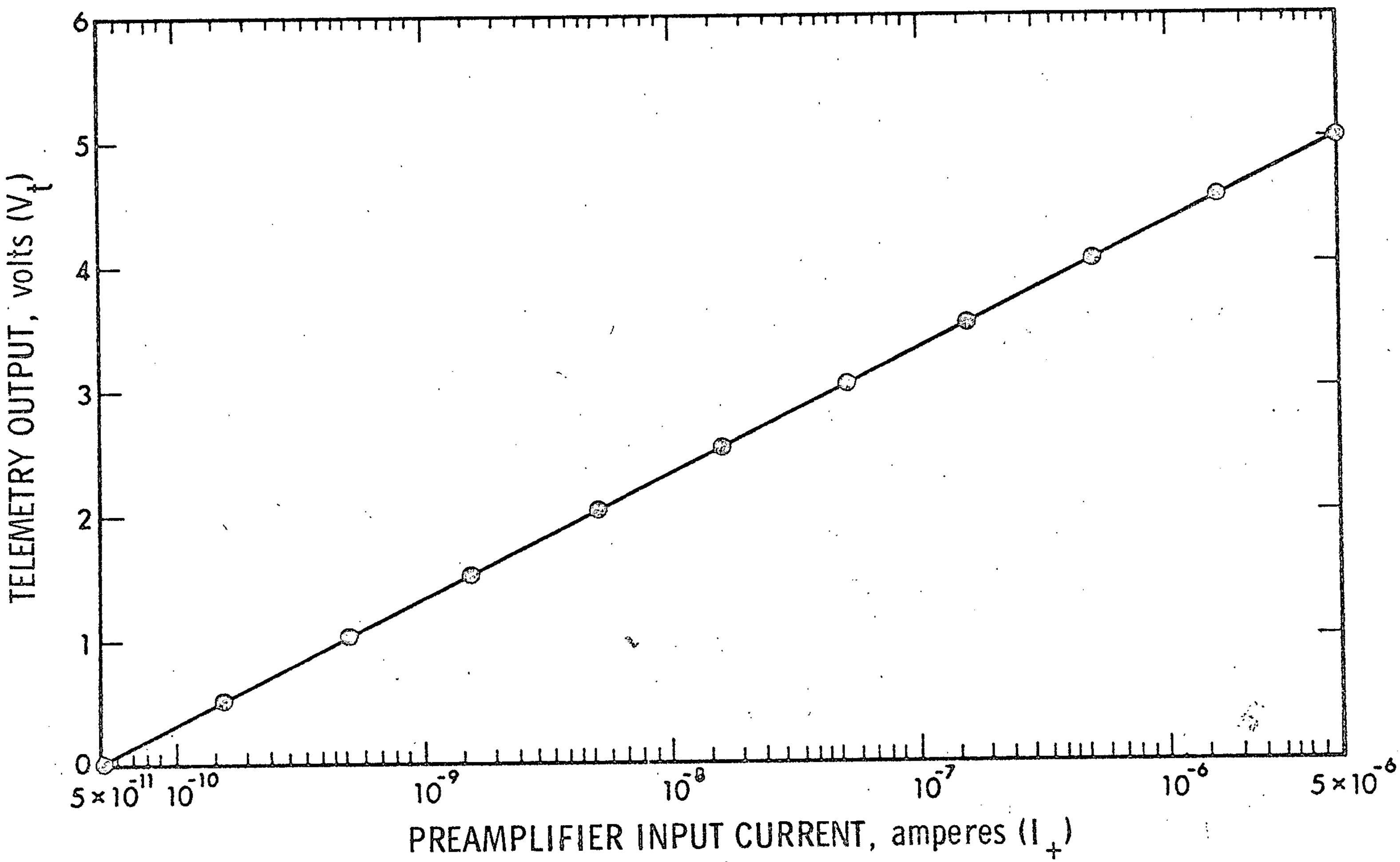


Figure 18.- Typical ion detector calibration plot.

These equations provided the experimenters with an approximate framework for estimating the span of densities that can be accommodated within the telemetry interval of 0 to 5 volts. More precise calculations on the relation between telemetry voltage and particle density are described later. It should be emphasized that the relationships of equation 4 refer to electron density only for a specific value of the telemetry voltage during a sweep cycle (See Inboard Ion (PL-3) and PROGRAM ELECTRON). The resolution of the S026 sensors is limited by the pulse code modulation characteristics of the Agena telemetry, where 125 counts are equivalent to 5 volts or one count equals 0.04 volt. This defines ultimate resolution of the S026 instruments. Changes in local concentrations, which are less than 9 percent ($10^{-0.04}$), are therefore not measureable. A range of five orders in magnitude is covered. As indicated in EXPERIMENT PHILOSOPHY, there was a choice between measuring an extreme range in variation and a fine resolution of such measurement. The S026 instrument was designed to emphasize the near wake variations rather than engage in any attempt to define the small fluctuations from ambient, which may exist more than 10 vehicle dimensions downstream.

Sensor Electronics

A simplified block diagram of the S026 Instrument is shown in figure 19. Separate electrometers are employed. They are coupled to each of the three charged particle sensors. The stairstep voltage and modulation signals are fed by a programmer sequencer to each of the appropriate grids in the three sensors. The sequencer cycles once

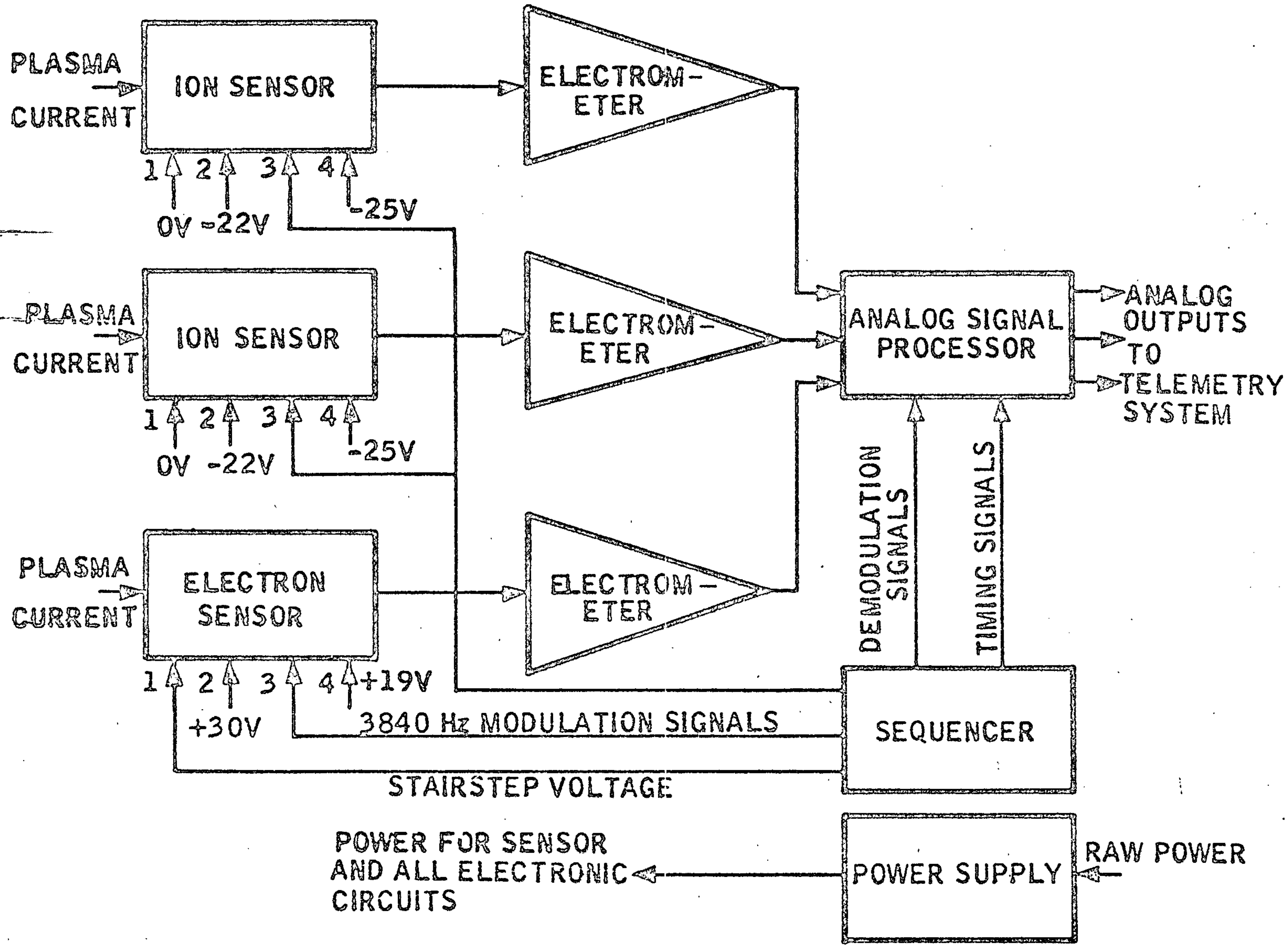


Figure 19.- Simplified instrument block diagram.

every 1.067 seconds through a calibration and synchronization mode for 67 milliseconds with the data acquisition mode lasting 1 second. The voltage on the front grid of the electron sensor is stairstepped during this data acquisition mode as previously described, whereas the front grid of the ion detector remains at ground potential during this mode. During the calibrate mode, internally generated square wave currents which are synchronized to the 3840 Hz modulation signal are fed to the inputs of the electrometers. Charged particles are excluded from the detectors by applying high bias potentials to the external grids. This internal calibration system employs a low calibrate and a high calibrate signal for each of the detectors illustrated in figures 20 and 21. As noted in figure 15, the front grid (G1) of the ion detector goes to +35 volts during the calibration cycle and the front grid of the electron detector is set at -12 volts during the calibration and synchronization modes. A complete cycle of the sequencer can be visualized by combining figures 21 and 17 for variation of the electron sensor external grid potential. The output ac current from a given sensor is amplified by an ac electrometer located immediately behind the detector. The signal from the electrometer is synchronously demodulated and averaged within the analog signal processor. A voltage proportional to the logarithm of this processor average is generated as an output for the analog-to-digital converter in the Agena telemetry system. It is this logarithmic response that compresses the five orders of magnitude dynamic range in current to the Agena telemetry span of 0 to 5 volts. A detailed description

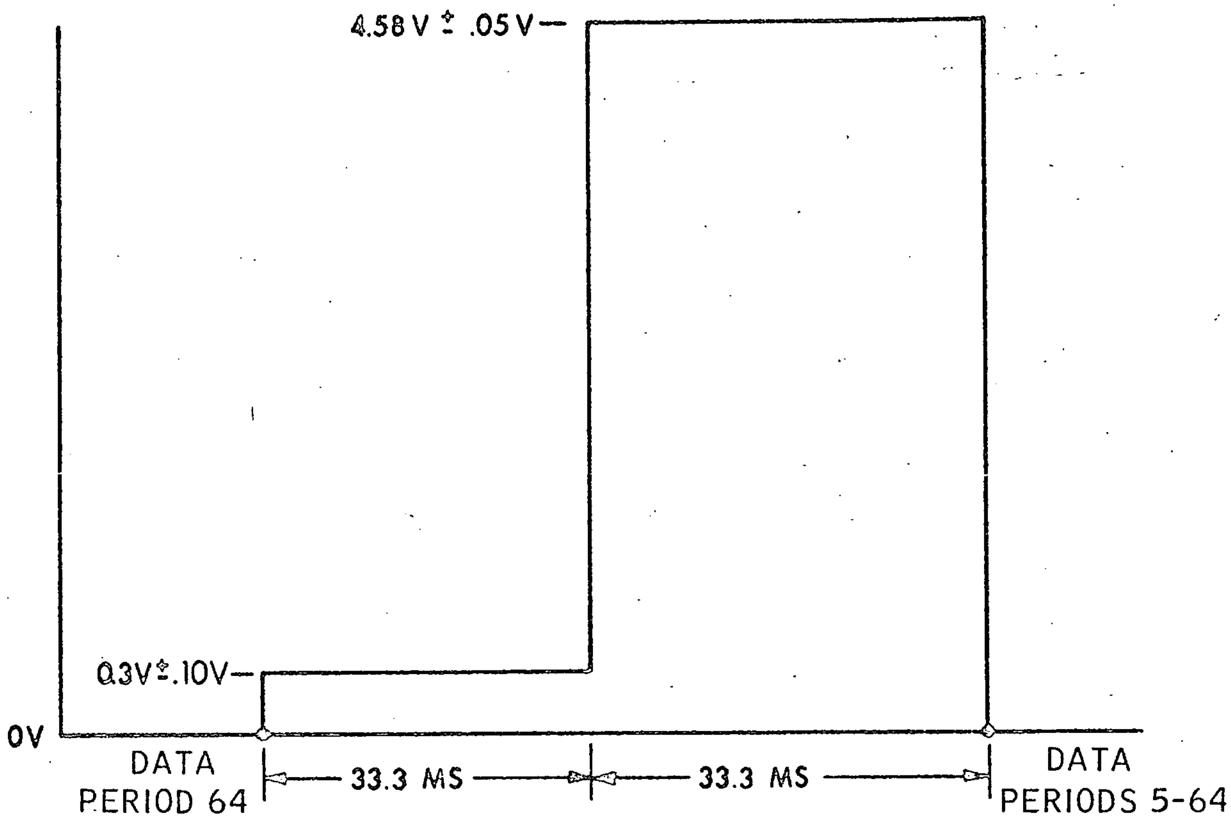


Figure 20.- Ion detector telemetry output during calibration.

2

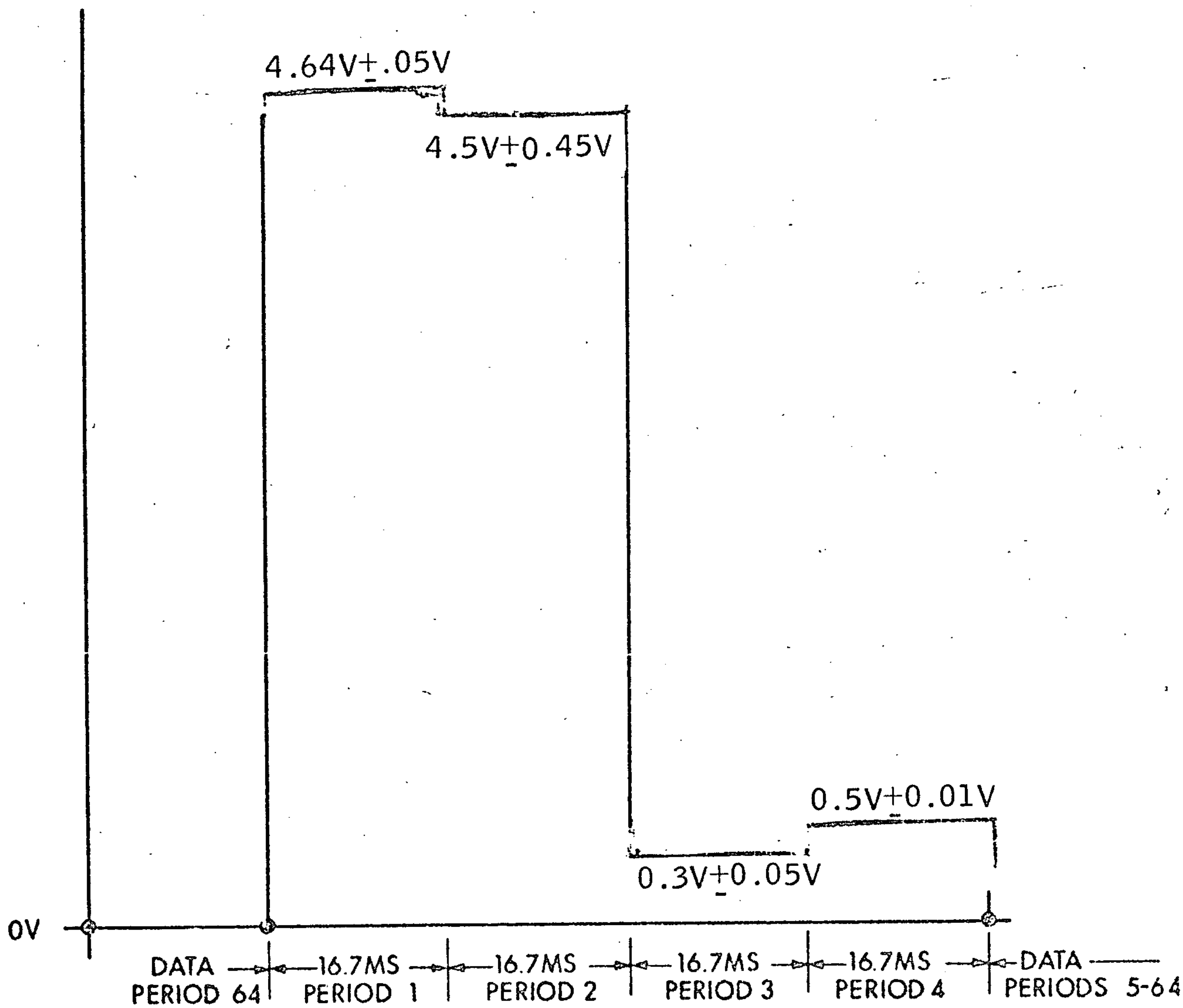


Figure 21.- Electron detector telemetry output during calibration.

of this sequence of operations and the electronics circuitry is given in pages 3-10 to 3-17 of reference 2.

Agena Integration

The integration of the instruments into the Agena system is described in two parts, electrical and geometrical. It was not possible to synchronize the sequencing system of the S026 instrument with the Agena clock. The instrument output was therefore sampled asynchronously. A separate crystal oscillator generates a clock signal at 30.720 kHz which is subdivided to approximately 60 Hz.

Since the basic timing clock signal in the instrument occurs at 60 Hz, a series of clock pulses is generated, each of which corresponds to a 16.67 millisecond time span. The Agena telemetry occurs at a sample rate of 64 samples per second so that there is a slight overlap. At least one sampling of the electron sensor by the telemetry occurs during each pulse of the instrument. For the ion system, the telemetry sample rate is 32 times a second, providing at least one sample for every two clock pulses of the instrument. Figure 22 illustrates a typical relationship between the telemetry sampling spikes and the stairstep voltage applied to the external grid of the electron sensor.

Figure 22 shows that the grid voltage was stepped down 0.2 volt every 1/60 second. The output telemetry of the Agena sampled the sensor every 1/64 second, corresponding to a period between sampling of 15.6 milliseconds compared to the 16.6 milliseconds for the instrument grid voltage change. The lower part of the figure is a plot of a typical

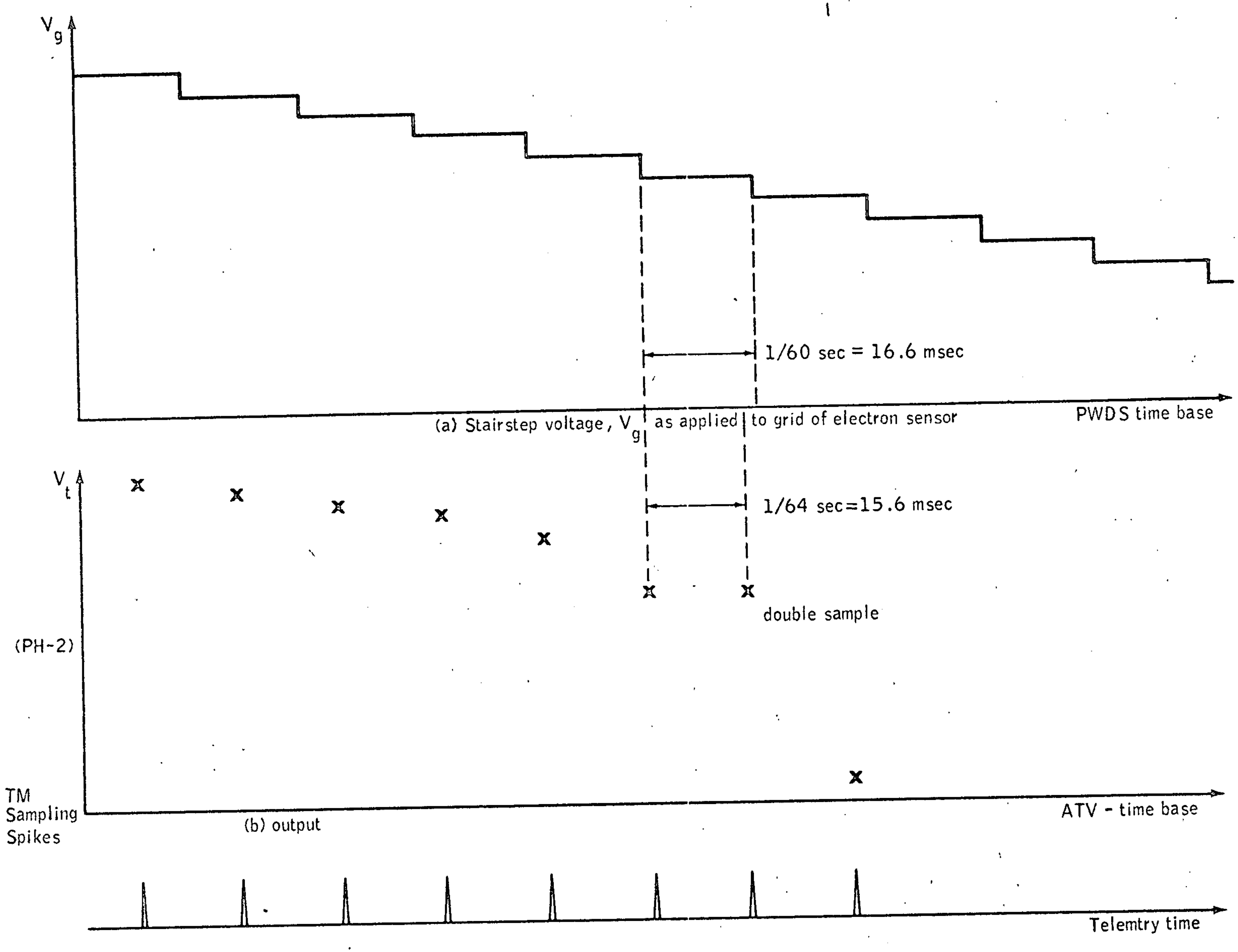


Figure 22.- Stairstep sweep and telemetry sampling schedule for electron sensor.

output of the telemetry voltage from the PL-2 channel as a function of the Agena time base. The occurrence of four double samples per frame was predicted. Both clocks were supposed to be accurate to 1 in 10^5 units. Very little drift was expected during flight, but the data analysis shows the contrary to be the case. Problems encountered as a result of this drift are discussed in the test results.

The telemetry interface with the main frame pin locations is summarized in table VI. The telemetry notations are those utilizing the Lockheed nomenclature, whereas the PL designators are characteristic of the Gemini program.

TABLE VI.- TELEMETRY INTERFACE

Function		Main Frame Location	TM Output
Outboard ion detector output	(VF01)	36,100	PL1
Electron detector output	(VF05)	13, 45, 77, 109	PL2
Inboard ion detector output	(VF03)	6, 70	PL3
Inboard detector temperature	(VF02)		PL4
Outboard detector temperature	(VF04)		PL5

The mounting of the charged particle sensors and their associated electronics within the TDA was designed to provide a maximum flexibility for the exigencies of a manned spaceflight experiments program. When the S026 experiment was originally approved no commitment was possible on specific maneuvers that could be carried out for the purposes of measuring the wake. At the very minimum it was hoped that such a measurement could be accomplished during some of the docking and undocking maneuvers scheduled for these missions. It was decided to place the electron sensor on the outer periphery of the docking cone with its normal perpendicular to the longitudinal axis of the Agena. That is, its field of view is to the side of the target vehicle. Since the electron sensor can measure local electron concentration relatively independent of its angle of attack with respect to the orbital velocity vector it was assumed that this location would provide an adequate measure of the wake effects expected. The inboard ion sensor has its field of view parallel to the axis of the Agena and measures ion concentrations produced by the ram ion effect under TDA-forward conditions; that is, its normal is parallel to the orbital velocity. The outboard ion sensor measures local ion densities directly only when the sensor aperture is pointing in the direction of the orbital velocity vector (which corresponds to the TDA-south orientation). Figures 23 and 24 schematically illustrate the final placement of the three detectors and the electronics package. Figure 25 is a photograph of the locations of the sensors and the programmer on the vehicle exterior. The attachments were made to the cylindrical section of the docking adapter because of a restriction against mounting anything on the docking cone. The sensor surfaces project somewhat beyond the outer rim of the docking cone. Shims were placed between the sensors and the mounting brackets to minimize the wake effects produced by the cone under TDA-forward conditions by bringing the surfaces further from the docking adapter. These shims are visible in the photograph of the

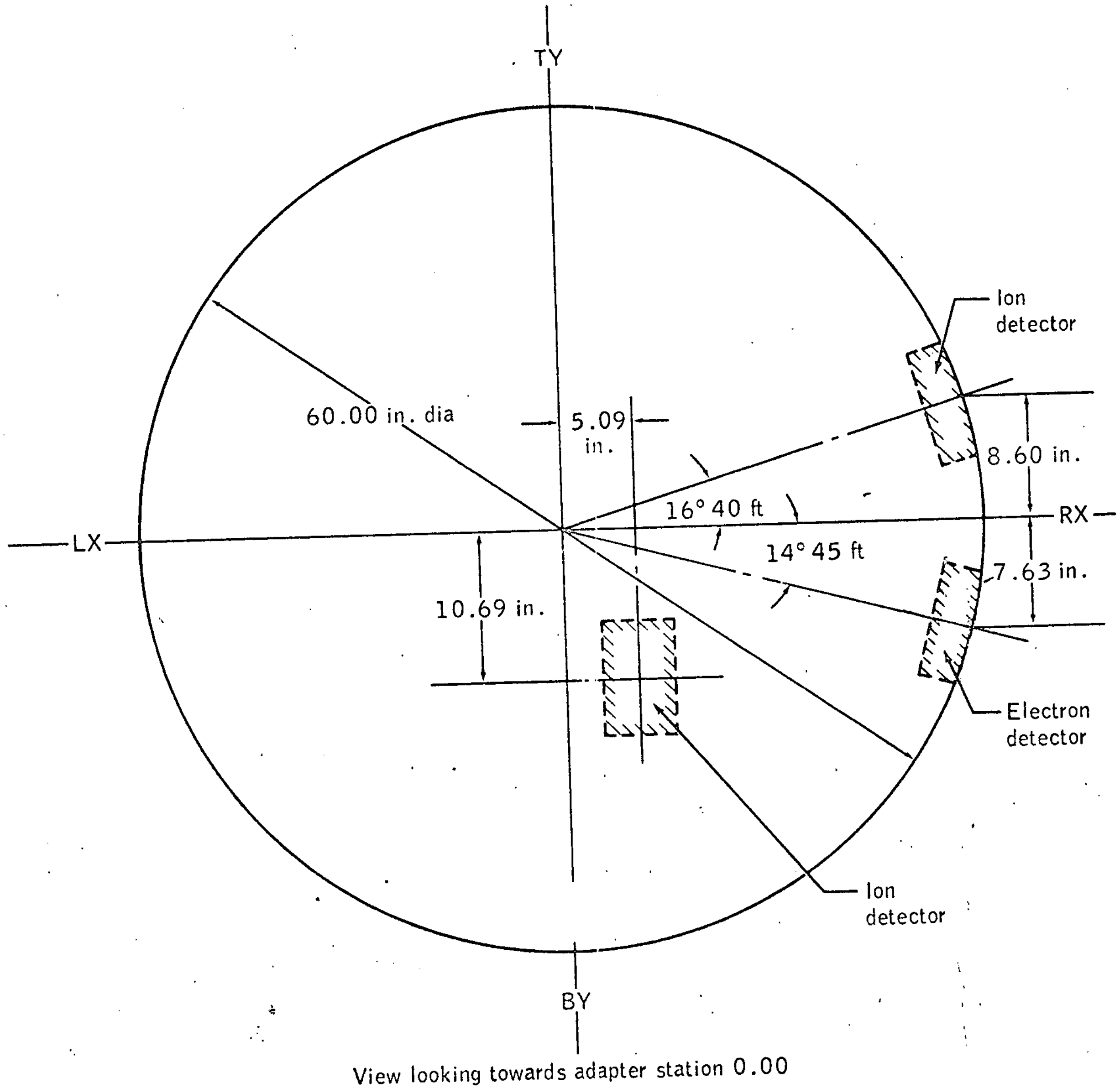


Figure 23.- Coordinates of TDA detectors.

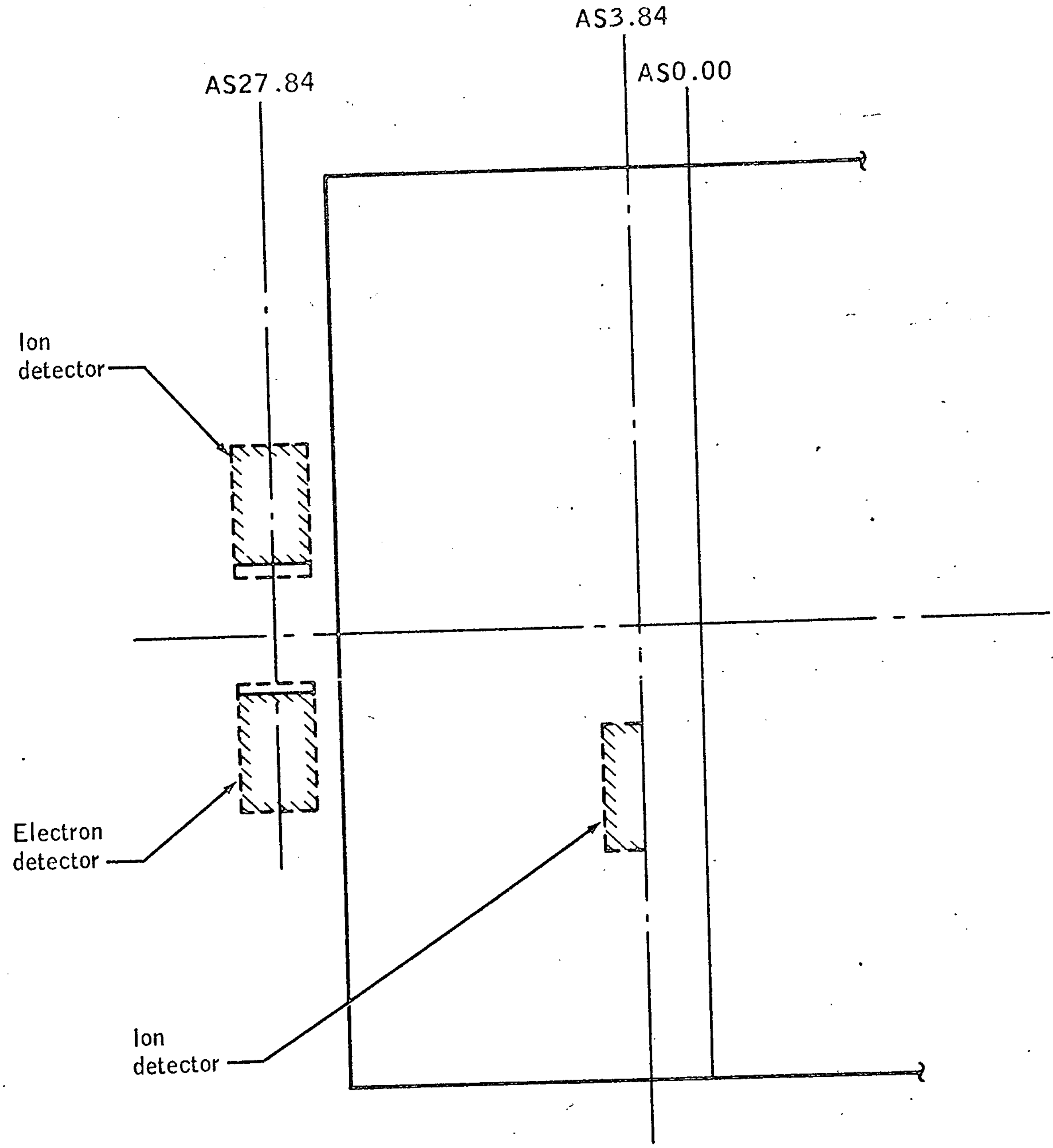


Figure 24.- Position of TDA sensors.

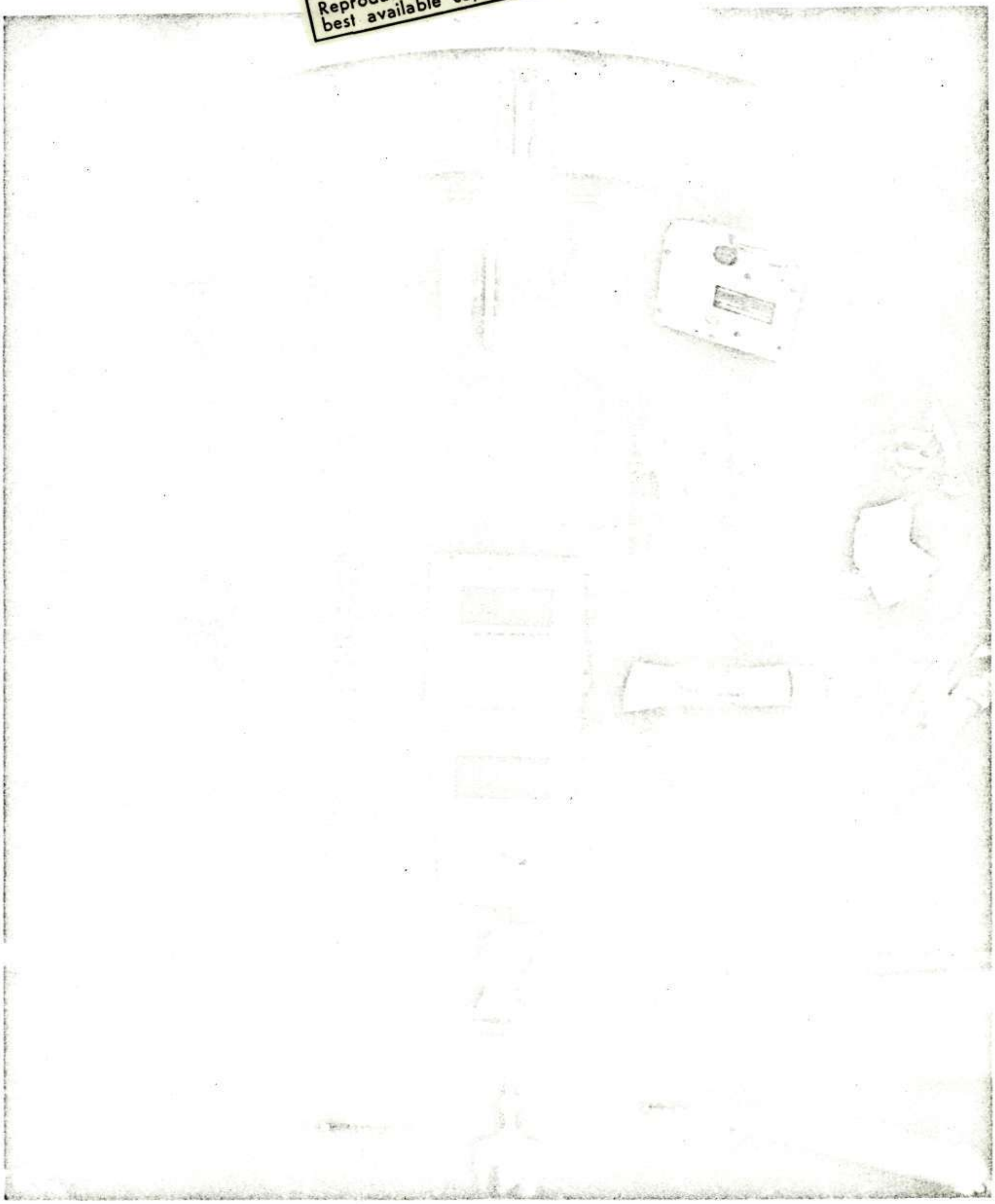


Figure 25.- Locations of sensors and programmer on vehicle exterior.

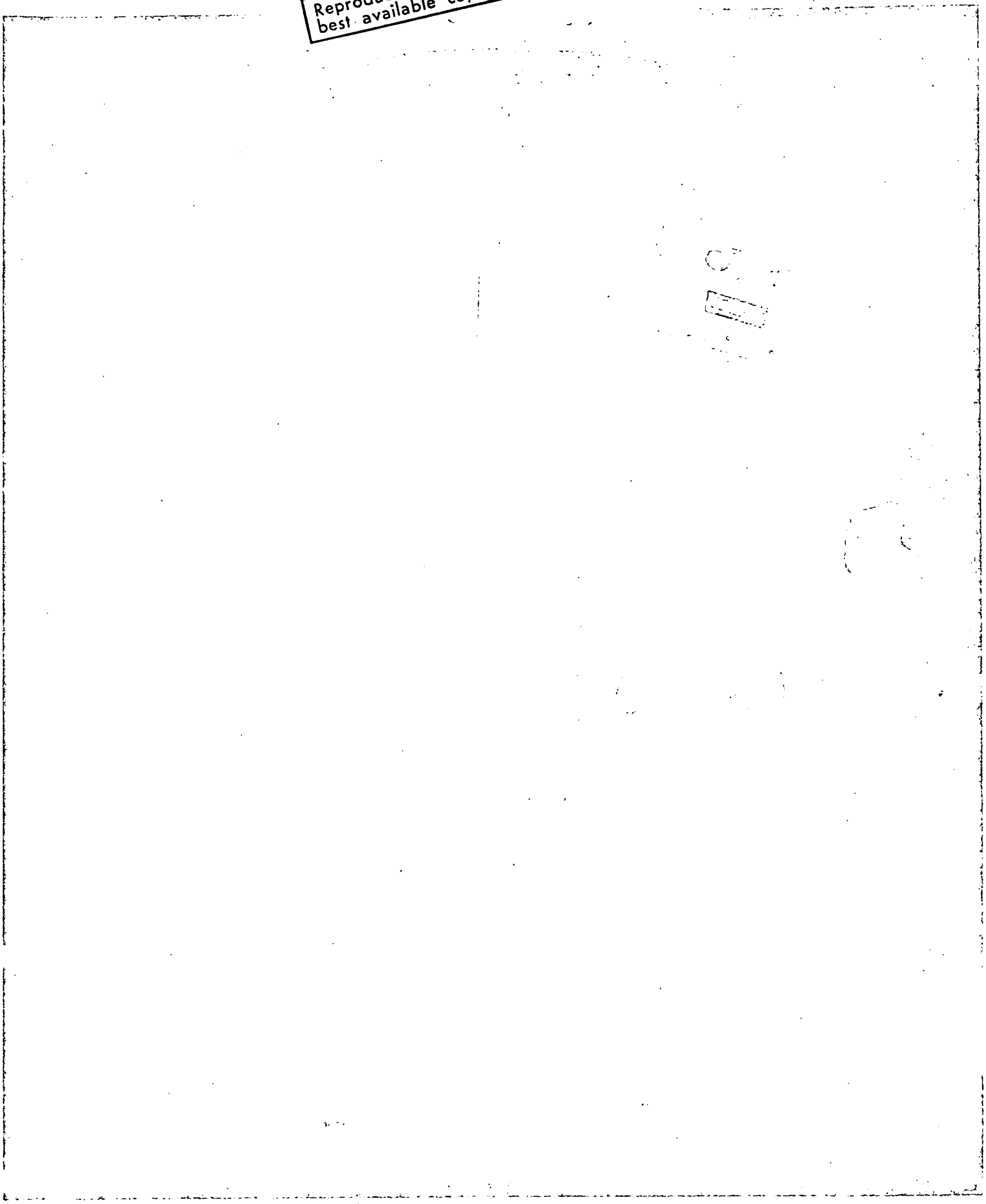


Figure 25.- Locations of sensors and programmer on vehicle exterior.

outboard detectors mounted on the TDA and shown in figure 26. This figure also shows the protective covers, the shielding on the wires, the cabling connections, and the sensors. They are shown in an undeployed position. Spring clamps which were released upon shroud removal provided the orientation of figure 24. Figure 26 is a photograph of the inboard detector, which shows that the sensor axis is off-set from the Agena longitudinal axis by an amount compatible with existing hardware such as the antenna boom and drive motor for the radar. Figure 27 is a sketch showing the coordinates of electron and ion detectors on the TDA as finally installed. The coordinates shown in the left side of the sketch correspond to those of the Gemini system, (view looking from the pilot toward the adapter station).

The Agena orbit is not exactly equatorial. Hence the TDA-north configuration signifies that the Agena is pointing with its longitudial axis perpendicular to the orbital velocity vector which is not necessarily due north, and similarly for TDA-south. The terms TDA-east and TDA-west are seldon, if ever, used. Instead the terminology TDA-forward and TDA-aft are employed respectively for these orientations. A yaw maneuver is generally carried out between any two of the four cardinal headings. Such maneuvers have provided additional information on wake effects produced by the Agena vehicle itself. For example, a yaw from the +90° (TDA-south) orientation to -90° (TDA-north) brings the outboard sensor from a condition where it is sampling ambient (in the ram ion mode) to one where it looks directly into the near wake of the Agena. Wake

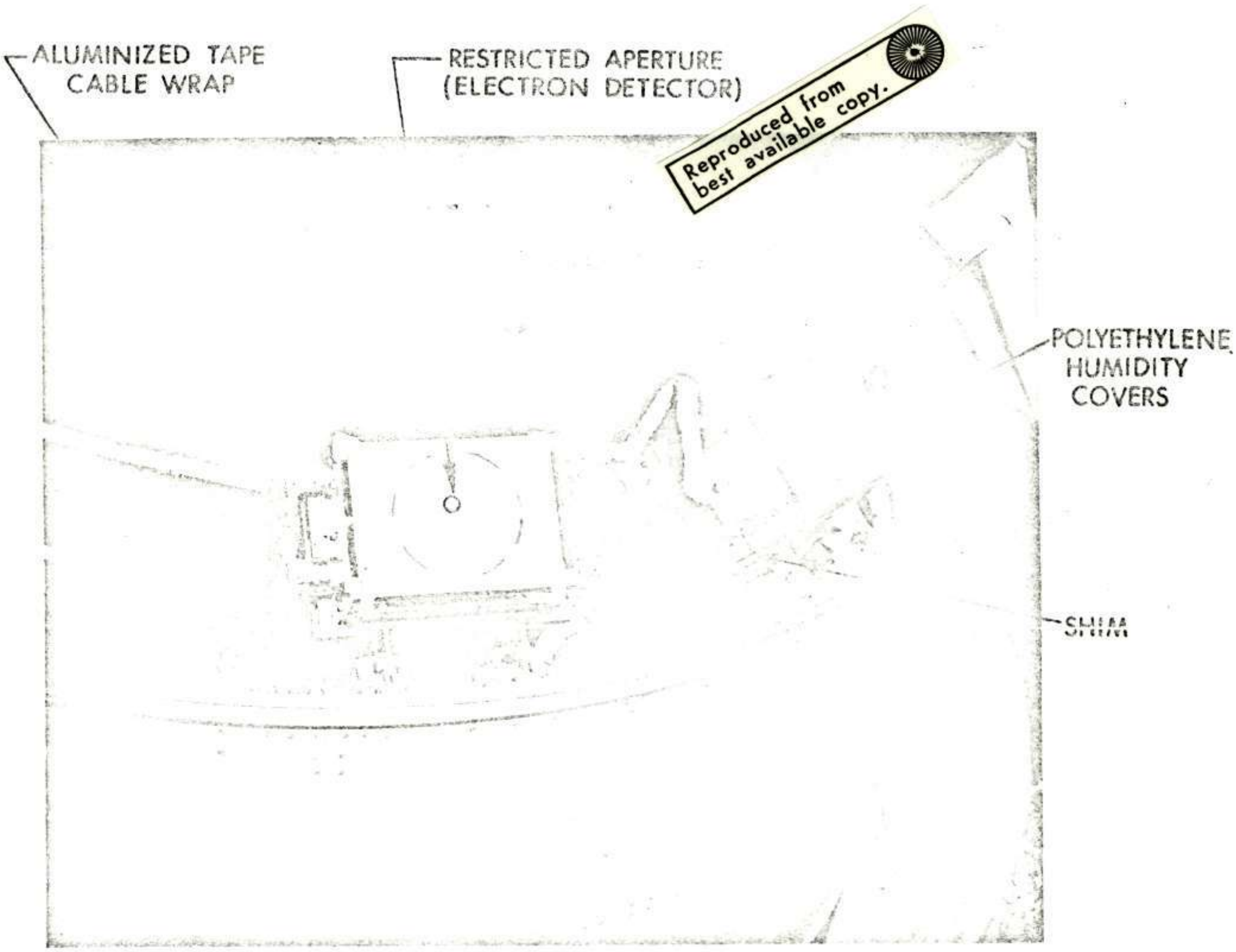


Figure 26.- Outboard detectors mounted on TDA showing position of shims.

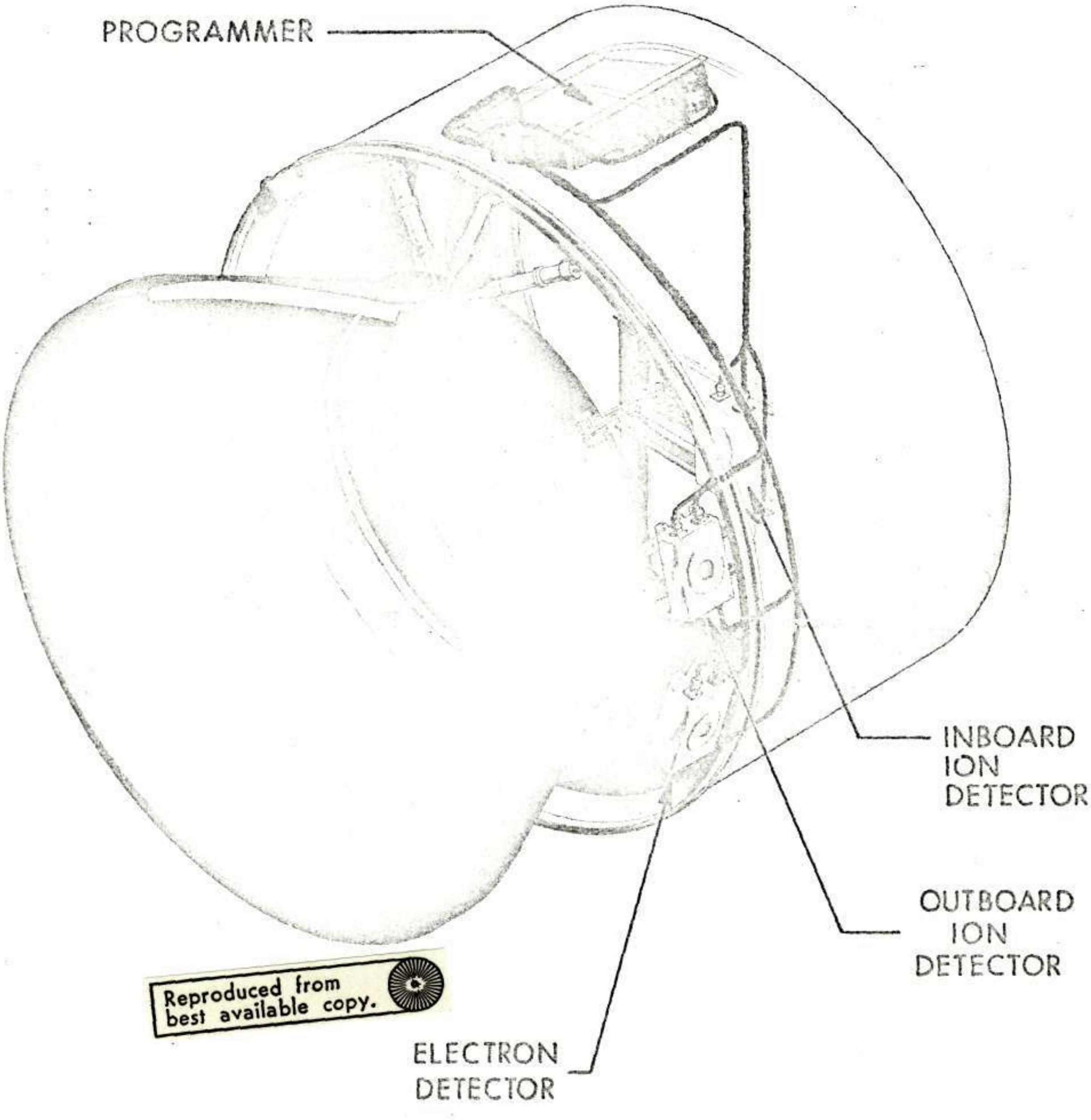


Figure 27.- Mounting of the S026 detectors on the Agena TDA.

measurements of the Gemini were obtained when the ATV was either in a TDA-forward condition or in a TDA-south condition. Wake effects on the Gemini are monitored by the inboard ion sensor in the TDA-forward condition. In the TDA-south orientation, the outboard ion sensor and electron sensor are employed for the wake measurements on the Gemini.

GEMINI SYSTEM

Gemini Geometry

The structure of the ion and electron wakes produced by an orbiting spacecraft was expected to depend on a large number of variables. In the analysis and interpretation of the data resulting from this experiment the variations with the geometry and orientation of the Gemini spacecraft (S/C) relative to the orbital velocity vector have been emphasized.

The dimensions of the Gemini spacecraft are shown in figure 28 (ref. 4). The spacecraft profile and dimensions are shown in a simplified version in figure 29. This configuration was employed in calculations of the structure using a computer bound subprogram (ref. 5). The Gemini spacecraft docked with the Agena target vehicle is illustrated in figure 30. This figure emphasizes equivalent disk dimensions for those circular cross sections normal to the orbital velocity vector. The Cartesian coordinates employed in figure 31 are those usually applied in theoretical plasma wake literature. The transformation relationships between the various coordinate systems, which have evolved, are discussed later (General Considerations and Coordinate Transformations). The dimensions called out in figure 30 are fundamental in the discussion and analysis section of this report.

The analysis of the experimental data in this program has been limited to a consideration of the geometrical effects only, although it is recognized that the details of the spacecraft/space plasma interaction

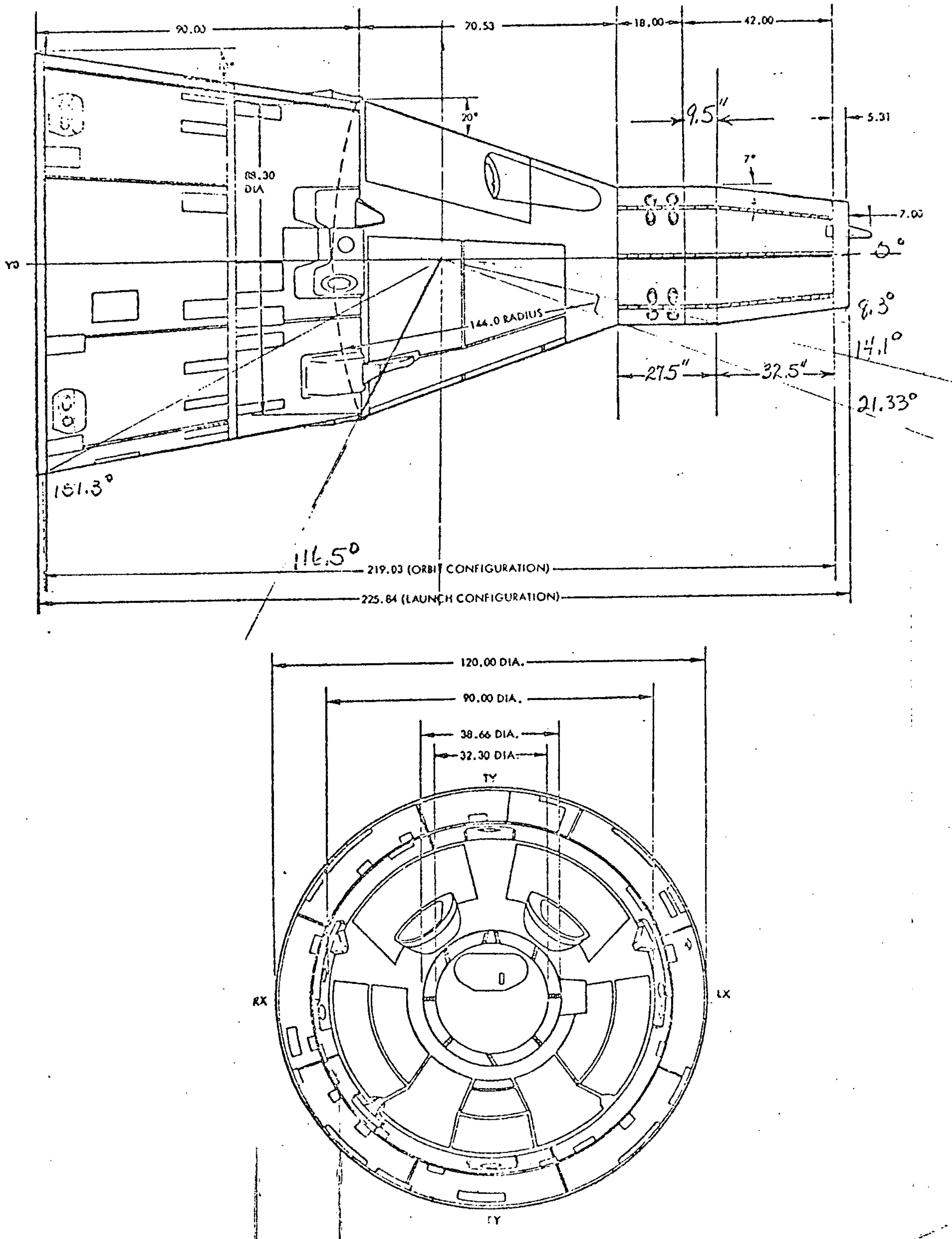


Figure 28.- Spacecraft dimensions.

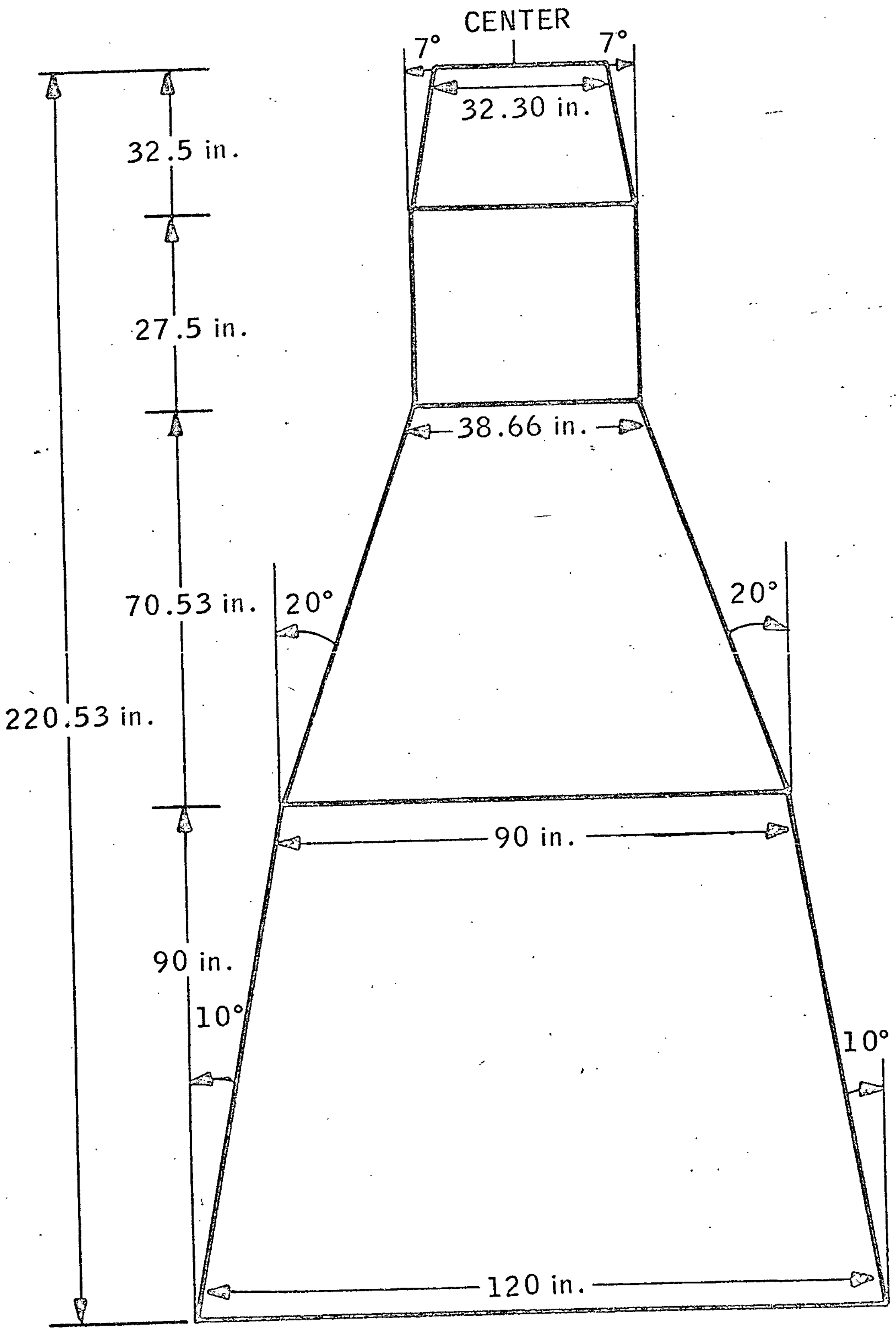


Figure 29.- Gemini profile.

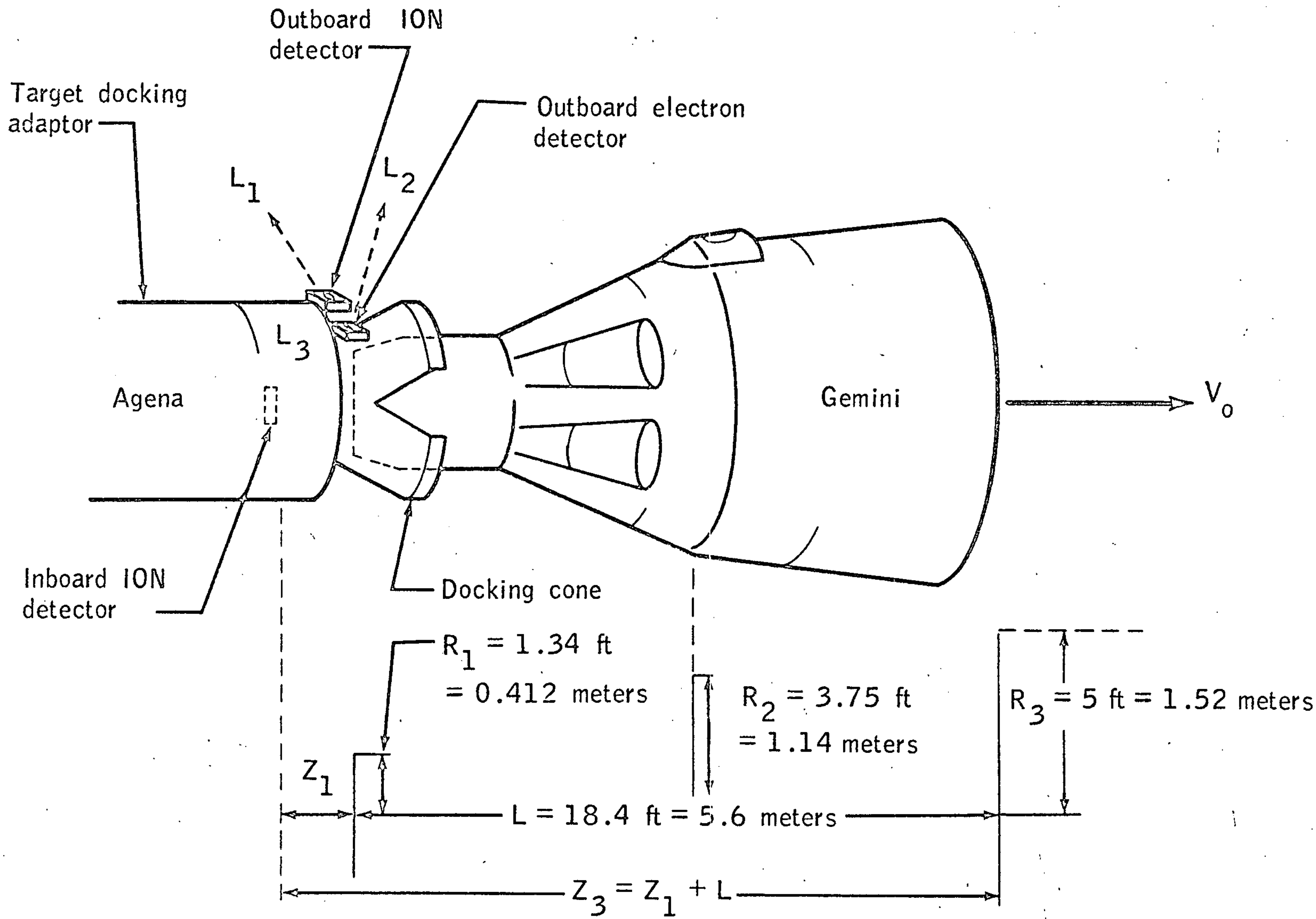


Figure 30.- Geometry of the Gemini S/C docked with the ATV.

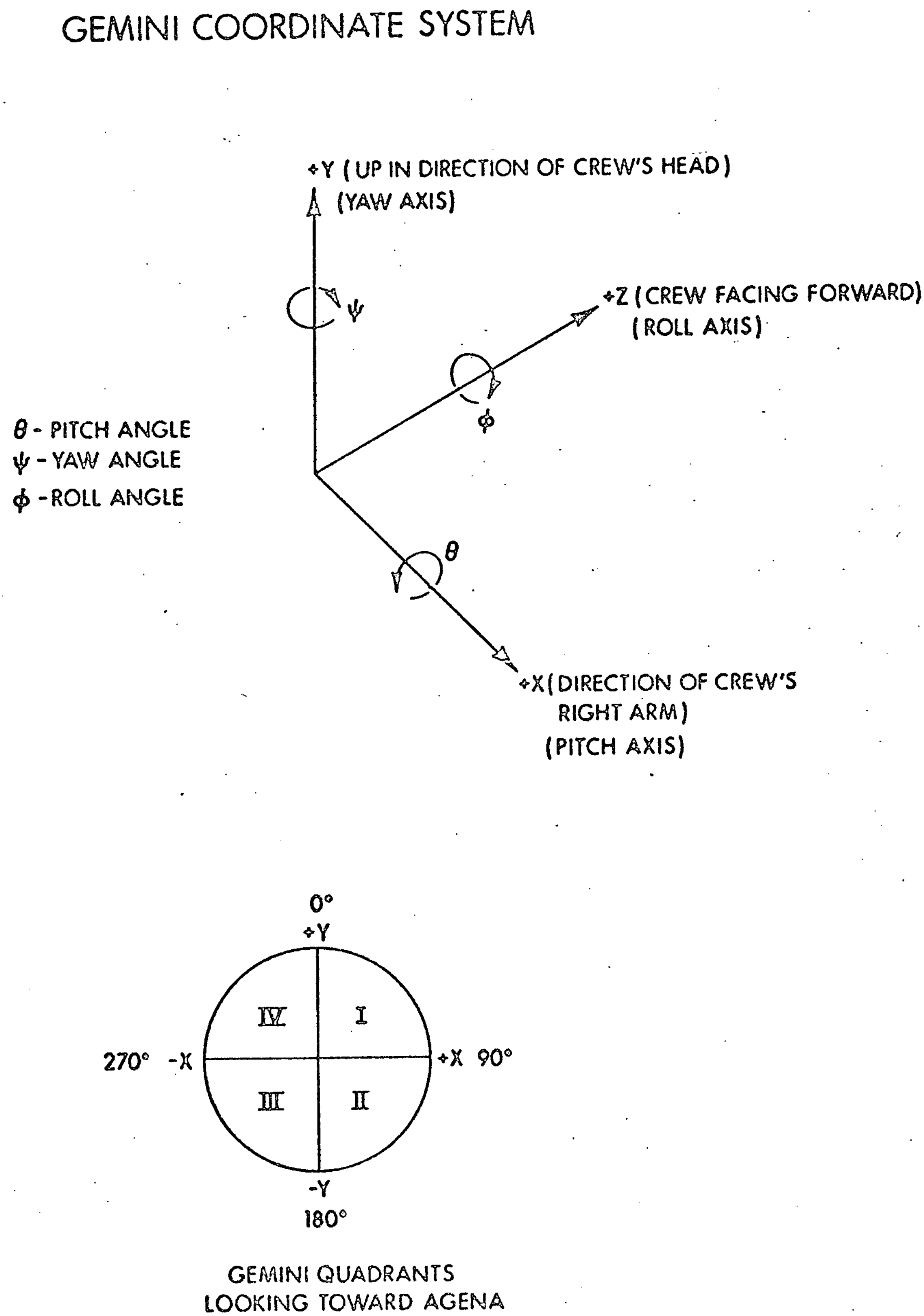


Figure 31.- Gemini coordinate system.

may depend strongly on the material composition of the spacecraft and other related properties of the vehicle surface conditions.

Gemini Flight Control System

The Gemini spacecraft is maneuvered during its orbital flight by use of 16 thrusters mounted on the spacecraft at the locations shown schematically in figure 32. Figure 33 gives the thruster numbers and separates the rotational from the translational thruster firing directions. Eight of the thrusters provided angular motion and eight provided translational displacement. The thrust force per thruster was nominally 90 pounds; the Gemini spacecraft weighed approximately 8000 pounds. The thruster firings were of great interest in the S026 experiment. These firings produced the incremental motions of the Gemini spacecraft relative to the Agena so that the wake mapping could be carried out according to the experiment philosophy which is illustrated in figure 2. However, any time that a thruster was fired it could produce a change in the ambient conditions by injecting foreign chemical species and possibly ionized particles into the surrounding environment. Direct and substantial changes in the S026 sensor responses, which can be correlated with thruster firings, were observed (ref. Results).

Table VII summarizes the location and thrust direction for the 16 Gemini thrusters in a tabular fashion, and identifies the corresponding Gemini bilevel telemetry channel.

OAMS translational thrusters	Thruster number
Aft firing	9-10
Fwd firing	11-12
Left firing	13
Right firing	14
Down firing	15
Up firing	16

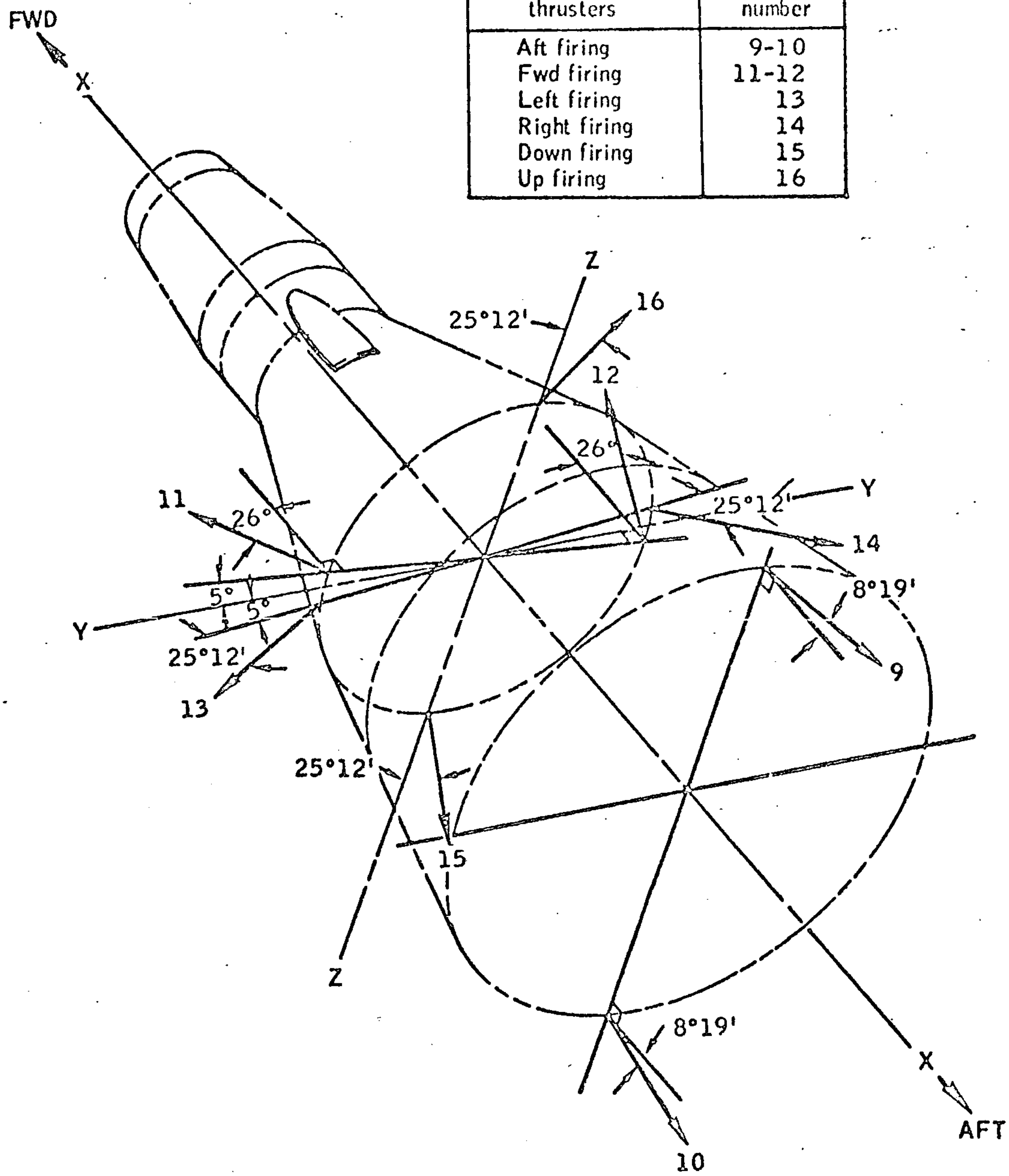
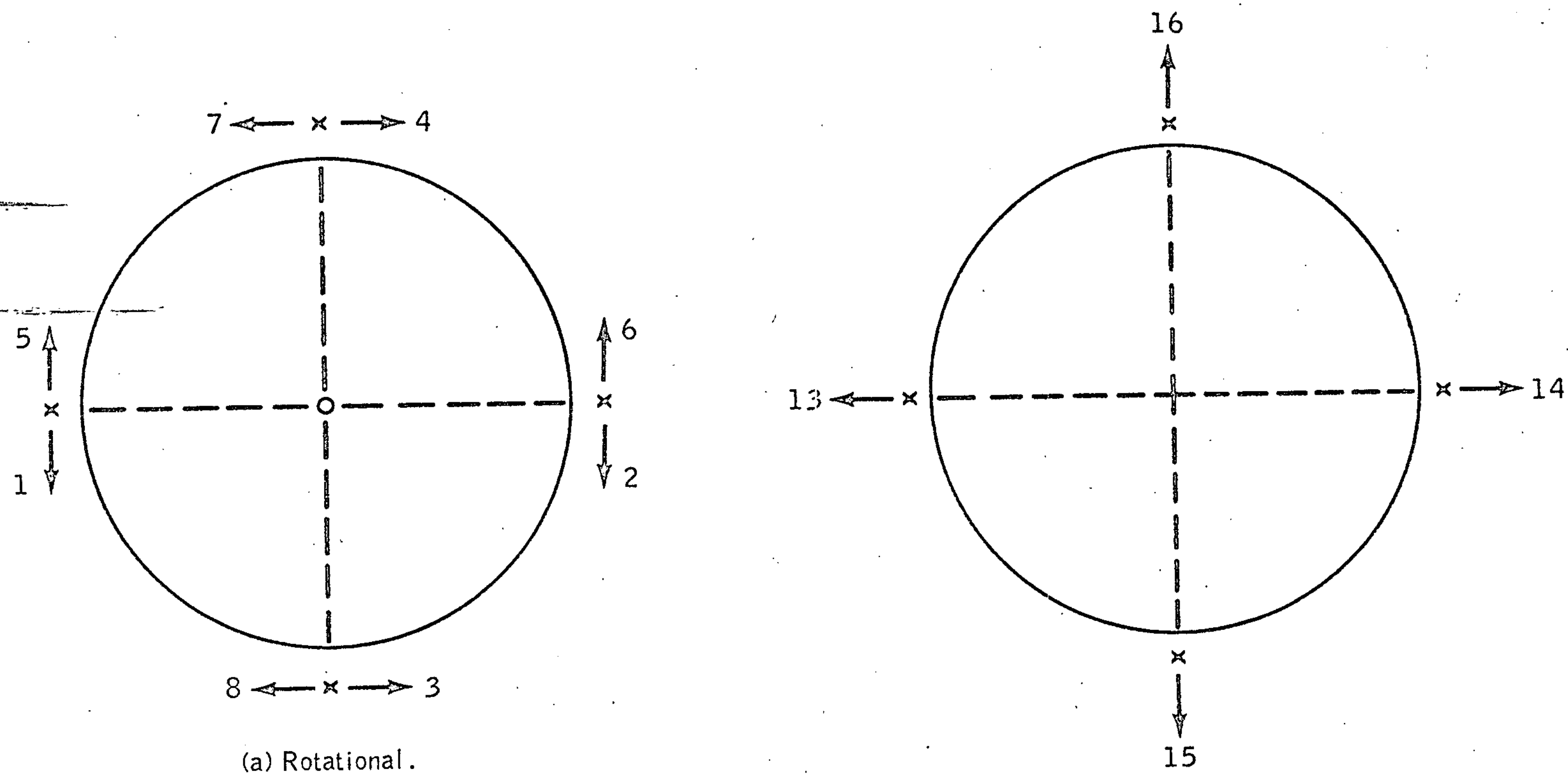


Figure 32.- Effective thrust angles of the orbit attitude and maneuvering system.



(a) Rotational.

(b) Translational.

Figure 33.- Rotational and translational thrusters.

TABLE VII.- GEMINI THRUSTERS

Designation	Location	Direction of fire	Gemini bilevel
(a) Rotational			
TCA 1	LH	Fires down	GE01
TCA 2	RH	Fires down	GE02
TCA 3	Bottom	Fires right	GE03
TCA 4	Top	Fires right	GE04
TCA 5	RH	Fires up	GE05
TCA 6	LH	Fires up	GE06
TCA 7	Top	Fires left	GE07
TCA 8	Bottom	Fires left	GE08
(b) Translational			
TCA 9,10	Top y, bottom y	Fires aft	GE09
TCA 11,12	Left x, right x	Fires forward	GE11
TCA 13	LH	Fires left	GE13
TCA 14	RH	Fires right	GE14
TCA 15	Bottom	Fires down	GE15
TCA 16	Top	Fires up	GE16

Rotation about a roll axis was accomplished by firing thrusters GE01 and GE06. Pitch was achieved when a pair such as GE05 and GE06 were fired. Yaw motion was achieved by firing thrusters GE03 and GE04. The translational set of thrusters, those providing motion along the Gemini longitudinal axis aft or forward, also operated in pairs. Table VIII lists the individual ratings in pounds thrust for the translational thrusters on the Gemini X and Gemini XI flights. The weights of the two spacecraft are also given. These values were used in calculating incremental velocities produced during the maneuvers of the spacecraft for the ion and electron wake mapping function.

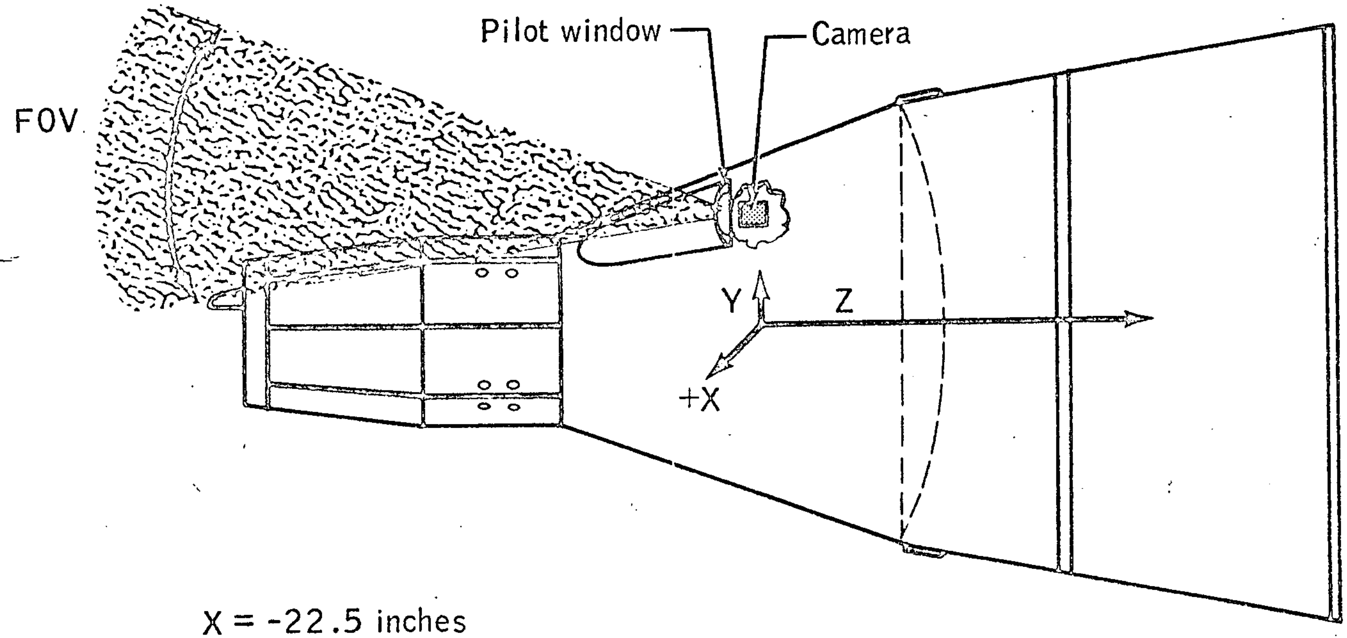
Gemini Camera

A 16 mm time sequence camera, manufactured by the J. A. Mauer Company, was mounted in the Gemini spacecraft by the pilot's window at the coordinates shown in figure 34. This camera can be operated on time exposure, single exposure, or continuous mode at speeds of 1 frame per second or 6 frames per second, corresponding to 1.5 feet per minute and 9.0 feet per minute film speed, respectively. Exposure times of 1/50, 1/100, 1/200, and 1/250 of a second can be selected. The film magazine has a capacity for 80 feet of film. Several interchangeable lenses are available. Their characteristics are summarized in table IX. The lens with the 18 mm focal length was chosen for most of the film data acquisition during the S026 experiment. A bilevel telemetry channel, designated as FD 01 and FD 02 in the Gemini system, indicated when the camera was turned on and off.

TABLE VIII.- THRUSTER VALUES FOR GT-X and GT-XI

Thruster bilevel	GT-X pounds thrust	GT-XI pounds thrust	Direction of thrust
GE09	-190.9	-190.4	-x
GE11	155.2	158.0	+x
GE13	-95.1	-92.6	-y
GE14	96.1	93.9	+y
GE15	-93.6	-95.8	-z fires down
GE16	93.0	96.0	+z fires up

Weight of GT-X is 8,292 pounds; GT-XI is 7,837 pounds.



X = -22.5 inches
Y = 18.6 inches
Z = 118.56 inches

Figure 34.- Gemini camera coordinates.

TABLE IX.- CAMERA LENSES

Focal length	FOV		Closest focus	Aperture range
	Horizontal	Vertical		
5 mm	92° × 73°		0"	f/2.0-f/16
18 mm	40° × 30°		12"	f/2.0-f/16
75 mm	8° × 5°		42"	f/2.5-f/32

RELATIVE POSITION OF THE S/C AND ATV

Coordinate Transformation

The introductory comments observed that the Gemini Agena program provided a unique opportunity to make wake observations with three dimensional flexibility in the experiment. Previous in situ observations of the ionospheric disturbance produced by an orbiting S/C had been limited to the use of a single body with a probe mounted on a fixed boom. The relative position coordinates are simply determined by knowledge of the orbital parameters and vehicle attitude for such a situation. In a two-body experiment to measure the S/C-space plasma interaction by using sensors mounted on one of the vehicles, measurement of the telemetry from the charged particle sensors is only part of the problem. It is also essential that such telemetry be correlated with precise knowledge of the nine coordinates relevant to the attitudes and separations of the two bodies engaged in this experiment according to the velocity, (fig. 2). The nine coordinates to be considered are the three distance coordinates, which give the relative separation between the two vehicles and the six vehicle angle coordinates, which represent the attitude of these vehicles with respect to the orbital velocity vectors. Figures 7 and 31 illustrate the coordinate systems, which are employed on the individual vehicles. Figure 35 shows the relationship between the coordinate systems that are used for the ATV, the S/C, the so-called aero axis, and the inertial platform coordinate frame. Additionally, a system that defines the measurement point of local ion and electron densities with respect to

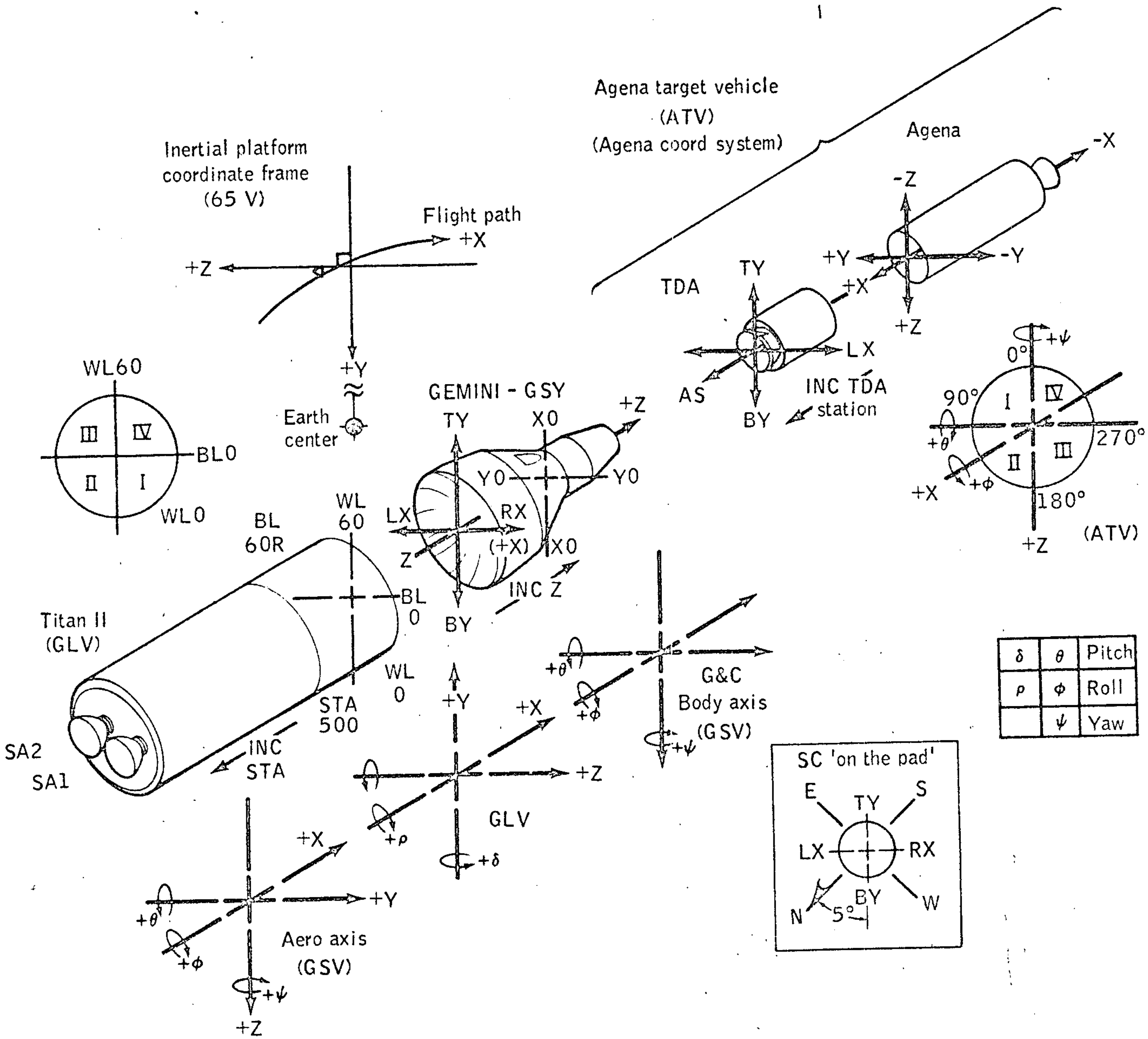


Figure 35.- Comparision of coordinate systems.

appropriate Gemini surfaces was introduced (fig. 30). This is similar to the Gemini S/C system shown in figure 31. Figure 36 shows the coordinate system employed for the film data reduction.

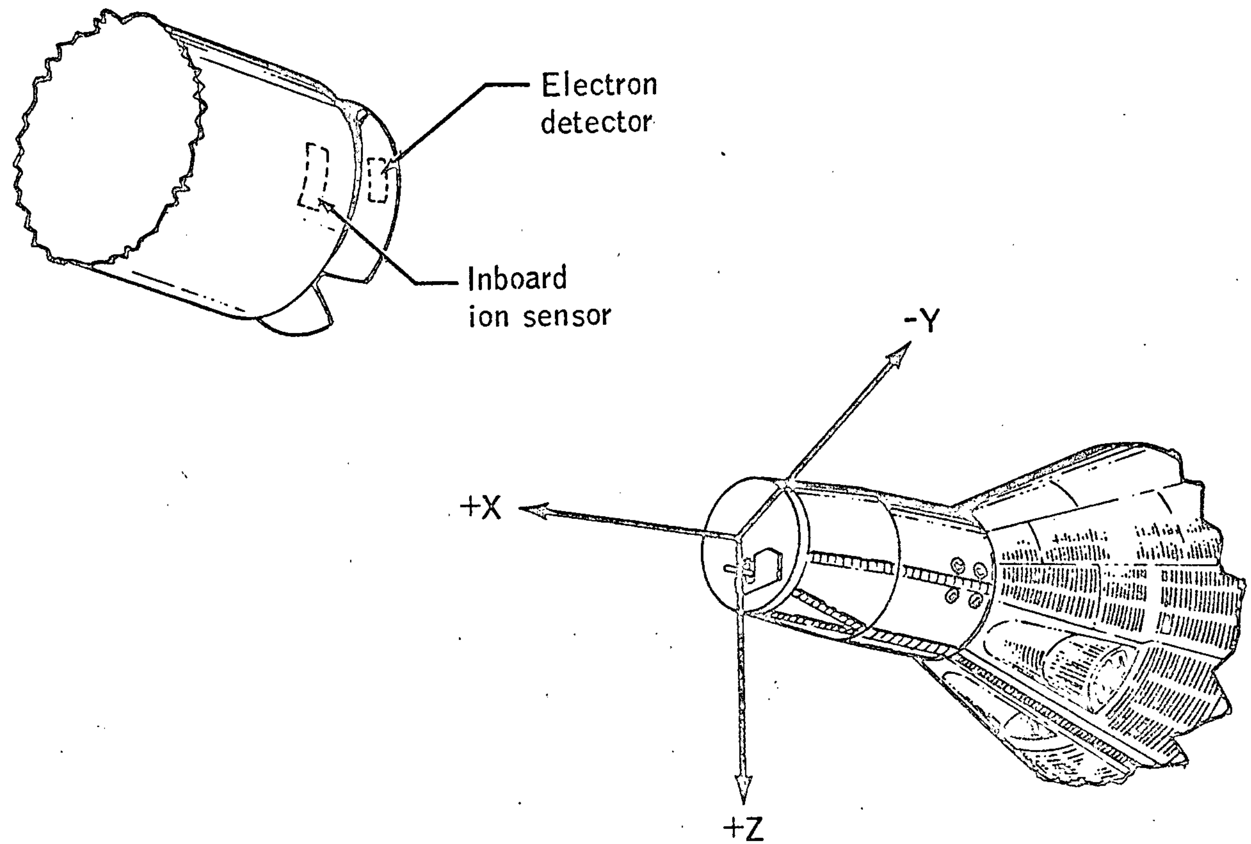


Figure 36.- Coordinate system for S026 film data

Thruster Firings

Incremental motion of the S/C relative to the ATV was achieved by firing the trusters described previously (ref. Flight Control System). By application of equation 6 it is possible, in principle, to obtain the relative flight path.

$$\Delta v_i = \frac{gF_i}{M} \Delta t \qquad (6)$$

where

$g = 32.174 \frac{ft}{sec^2}$

F_i = thrust force in pounds along i^{th} direction

M = mass of Gemini

Δt = thruster firing time

Δv_i = incremental velocity along i^{th} direction

The programming format was set-designed by NASA-MSC according to a memorandum issued by Donald Iloff to Barney Leach and is described in Appendix A. This program had limited success and was used only to supplement the film data for the axial maneuvers.

There is uncertainty in the time span of the thruster firing data; off and on times are accurate only to closest 0.1 second. There is a corresponding uncertainty in the incremental velocity thus computed. Additional complications are introduced if maneuvers cannot be pinned down precisely to an initial starting condition. This turned out to be the case in utilizing this technique for position determination for the Gemini XI data modes, where motion in at least two different directions was involved following an undocking in the TDA-south oriented mission.

Other Sources

The L-band radar was thoroughly investigated as a possible source of useful position information. The resolution of the radar in slant range turns out to be ±50 feet. Whether or not this is a fundamental limitation was not resolved. The use of azimuth and elevation data was considered since the angular measures may have sufficient accuracy to provide important adjuncts to the slant range data available from the film reduction.

The Gemini system also was instrumented with accelerometer transducers, which provided postflight recorded information on incremental accelerations of the Gemini. The units provided on the S/C were not capable of responding to a change in velocity of less than 2 feet per second per second, therefore, this source was not used in the data reduction.

Boresighted Camera

The original proposal for the S026 experiment assumed that systems were already in use for appropriate postflight determination of the relative position coordinates of Gemini and Agena during rendezvous and docking maneuvers. Such a requirement, however, was met only in a very qualitative manner within the existing system.

The most important technique for distance determination relied on the 16 mm movie camera described previously. The task for the reduction of the film data was assigned to NASA-MSC with the experimenter to be provided with tab printouts. Several major problems resulting from equipment malfunction such as no timing marks on FD01 and FD02 channels, were only partially resolved. The discussion of the boresighted camera is compiled from various MSC memoranda and independent calculations. Three different reference objects located on the Agena were used for data reduction from the film.

<u>The rectangluar acquisition light</u>.- Coordinates and dimensions of the rectangular acquisition light are given in figures 4 and 5 are summarized as follows (ref. 1).

The acquisition light is mounted 29.75 inches inboard of TDA station 0.00. In the docked rigidized configuration the small disk of the Gemini (Z station 233.97) is 19.5 inches in from TDA station 0.00. The acquisition light is at S/C Z station 223.75 during the docked rigidized configuration. The light is mounted to the left at 31.5° from the X = 0 reference line. When unfolded, it extends approximately 3 inches past the Agena body (diameter - 60 inches); that is, 33 inches from the Agena center line to its upper left corner. The Z coordinates in the material provided from reference 1 are indentified as the "S/C-Z station." There is a variance of 14 inches between the values given here and the Gemini dimensions listed in figure 30 from reference 4. That is, the coordinates of the small diameter disk are given as:

$$X = 0$$

$$Y = 0$$

$$Z \doteq 233.97 \text{ inches}$$

where the S/C dimension is $L = 219.03$ inches.

It is assumed that the origin of the S/C Z-stations refers to some prelaunch or preorbit configuration undetermined at this writing.

Spiral antenna located at TDA coordinates.-

$$X = 0$$

Y = (base = 30 inches), (top when extended = 115 inches)

Z = centerline at 4.90 inches from TDA station 0.00

= 248.57 (S/C Z station)

Running lights.- The rectangle formed by the running lights, as indicated in figure 4, is located at the following coordinates.

1. Top front running lights

   $X = 30 \sin 34°36' = 17.0$ inches

   $Y = 30 \cos 34°36' = 24.7$ inches

   $Z = 257.5$ inches

2. Top rear running lights

   $X = 30 \sin 34°36' = 17.0$ inches

   $Y = 30 \cos 34°36' = 24.7$ inches

   $Z = 404.1$ inches

3. Bottom front running lights

   X = 0

   Y = -30 inches

   Z = 257.5 inches

4. Bottom rear running lights

   X = 0

   Y = -30 inches

   Z = 394.3 inches

where the Z-station refers to the object distance from the large disk (R_3) of the Gemini S/C.

Film data using the acquisition light and spiral antenna were useful for daylight operations and in maneuvers in the TDA-forward condition; whereas the running lights film image was employed for the nighttime maneuvers with TDA-south orientation.

Figure 37 shows the identification for the position coordinates of the acquisition light rectangle and the spiral antenna as they appeared on a single frame of the 16 mm film. The span in counts refers to the output of the film reading machine in operation at Ellington Air Force Base (EAFB) near NASA-MSC. A program identified as GDOCK was written by MSC personnel to develop distances and relative velocities. This program went through the following iterations.

1. Per communication from Donald E. Iloof to Barney Leach, dated September 8, 1966.

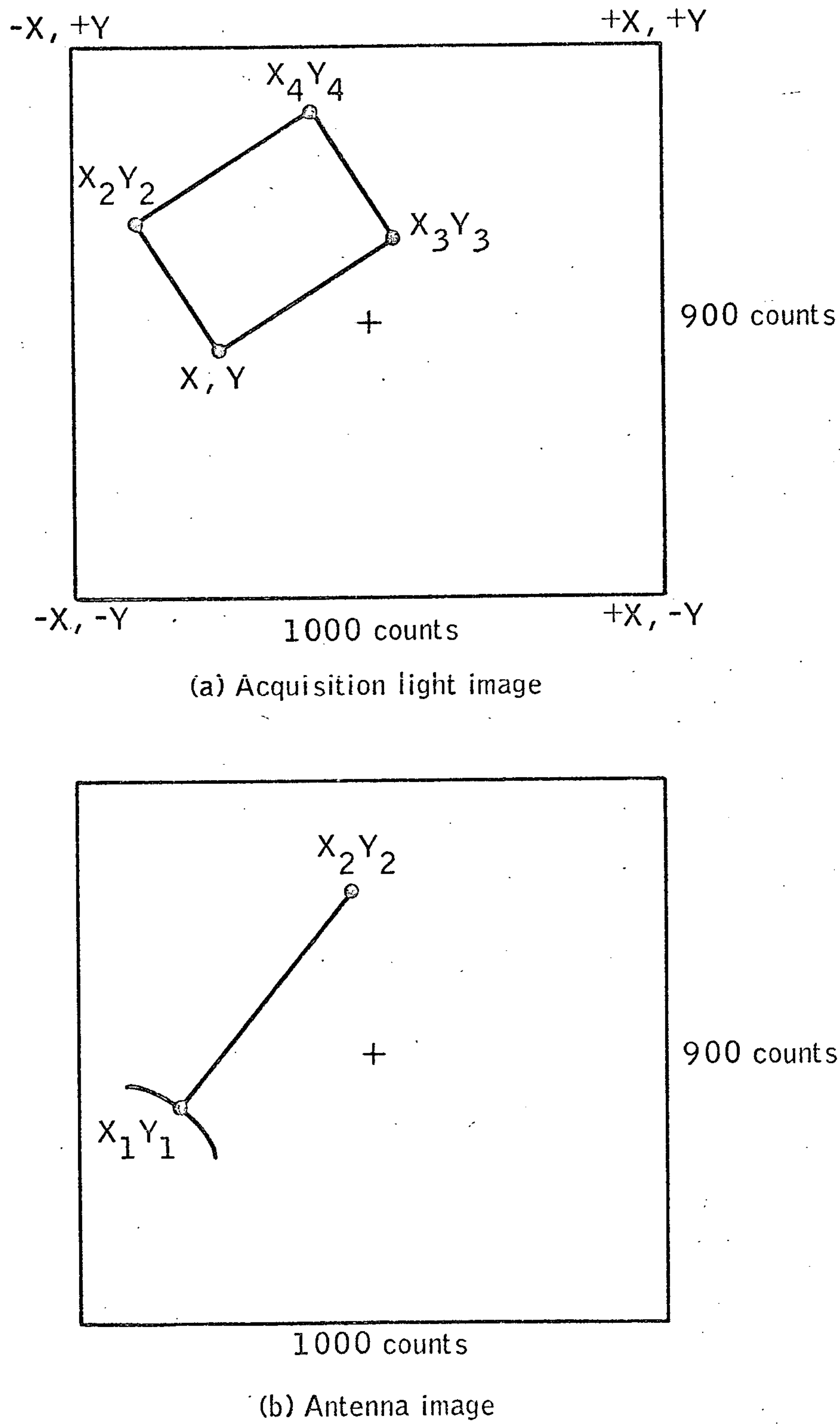


Figure 37.- Position coordinates in a frame of 16 mm film.

2. Per communication from Fred Fulton to Jim Skipworth dated February 20, 1968.
3. Per communication from Robert Bishop to D. B. Medved, dated February 14, 1968.

Appendix B is a compilation of these film reduction procedures.

The film reduction technique was calibrated for a specific and fixed condition; that is, Gemini was docked and rigidized with the Agena. Under these circumstances the situation corresponds to the distance indicated in figure 38.

Several types of transformation were of interest. The most important type utilizes the data obtained at the 16 mm camera position to get the separation between the Gemini short end (R_o) and the apertures of the S026 sensors. For purposes of this discussion it is assumed that only the axial Z distances are significant; that is, the X and Y displacements of acquisition light and camera are small compared to their Z separations. The Z distances are shown in figure 38. For the docked and rigidized condition, D_o, the slant range from camera to acquisition light is as follows.

$$D_o = 100.4 \text{ inches} - 29.75 \text{ inches} + 19.5 \text{ inches} = 90.15 \text{ inches} = 7.5 \text{ feet}$$

The sensor aperture at this condition is z_o = 19.5 inches - 6.4 inches = 13.1 inches from the Gemini short end. In the general case for purely axial displacements, z relates to D as:

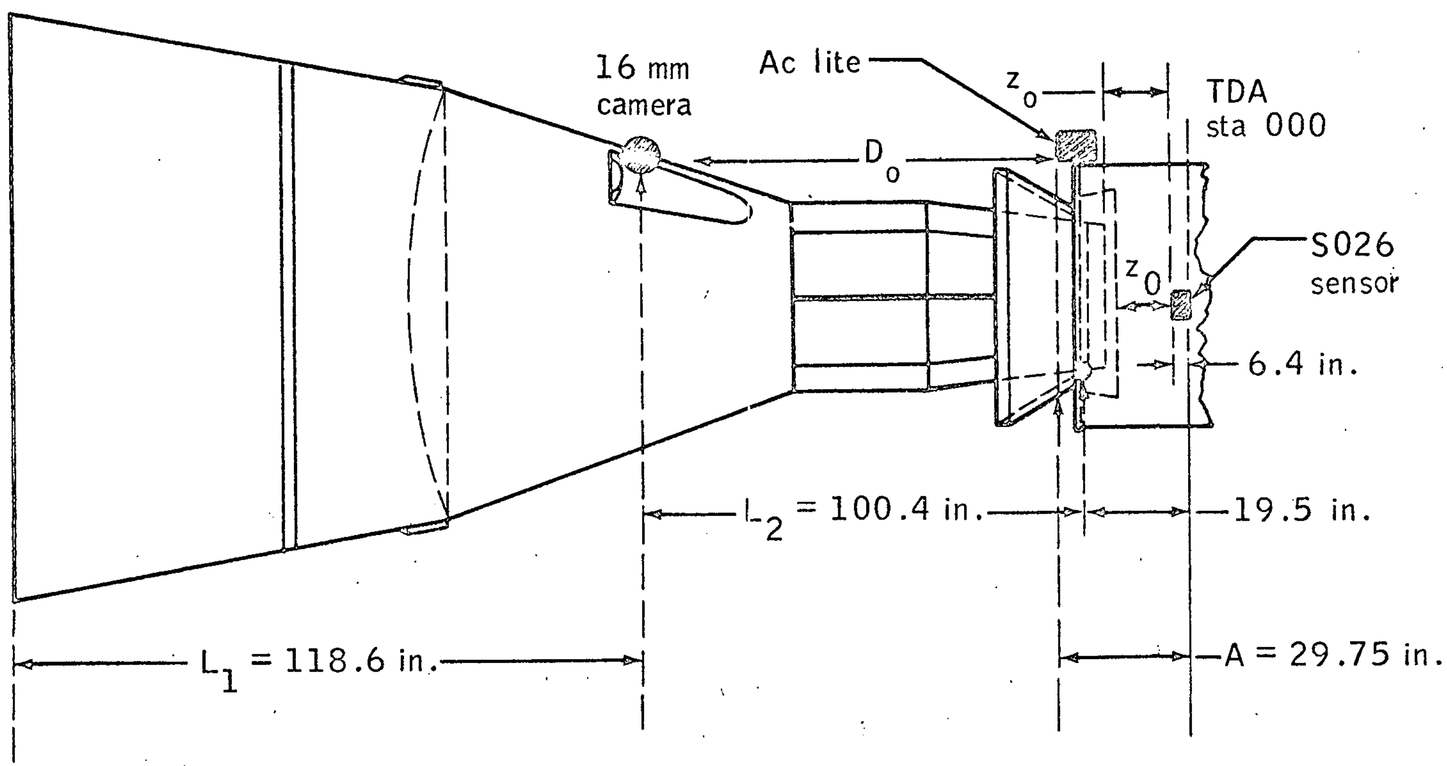


Figure 38.- Geometry for transformation of Gemini film data.

$$L_2 + z_o = D_o + A - 6.4 \text{ inches}$$

or

$$z = D - 77.05 \text{ inches} = D - 6.42 \text{ feet}$$

The validity of these approximations and the use of the camera for the distance determination is demonstrated in the data of figure 39. These are the result of a number of independent measurements obtained on film frames prior to the undocking of Gemini X at 44:40:15 in the S/C ground elapsed time (g.e.t.). The peak of the distribution falls at the point computed as D_o for the docked rigidized condition. Hence film distance data are considered accurate to better than ±0.5 foot for separations on this order.

FLIGHT PLANS AND MODE IDENTIFICATION

The original flight plan proposed for Gemini (ref. 7) was not carried out as a result of the fuel problem which was discovered following the docking of the S/C with the ATV. A decision was made to scrub all experiments and activities involving incremental separation of the two vehicles. Only those activities that could be carried out with the Gemini and Agena docked and using the Agena propulsion systems for maneuvers were considered. The spacecraft and target vehicle remained docked until 44:40:15 S/C g.e.t. Approximately 8 hours prior to the scheduled undocking, the principal investigator worked out a procedure with the flight controller on duty at that time (three o'clock in the morning)

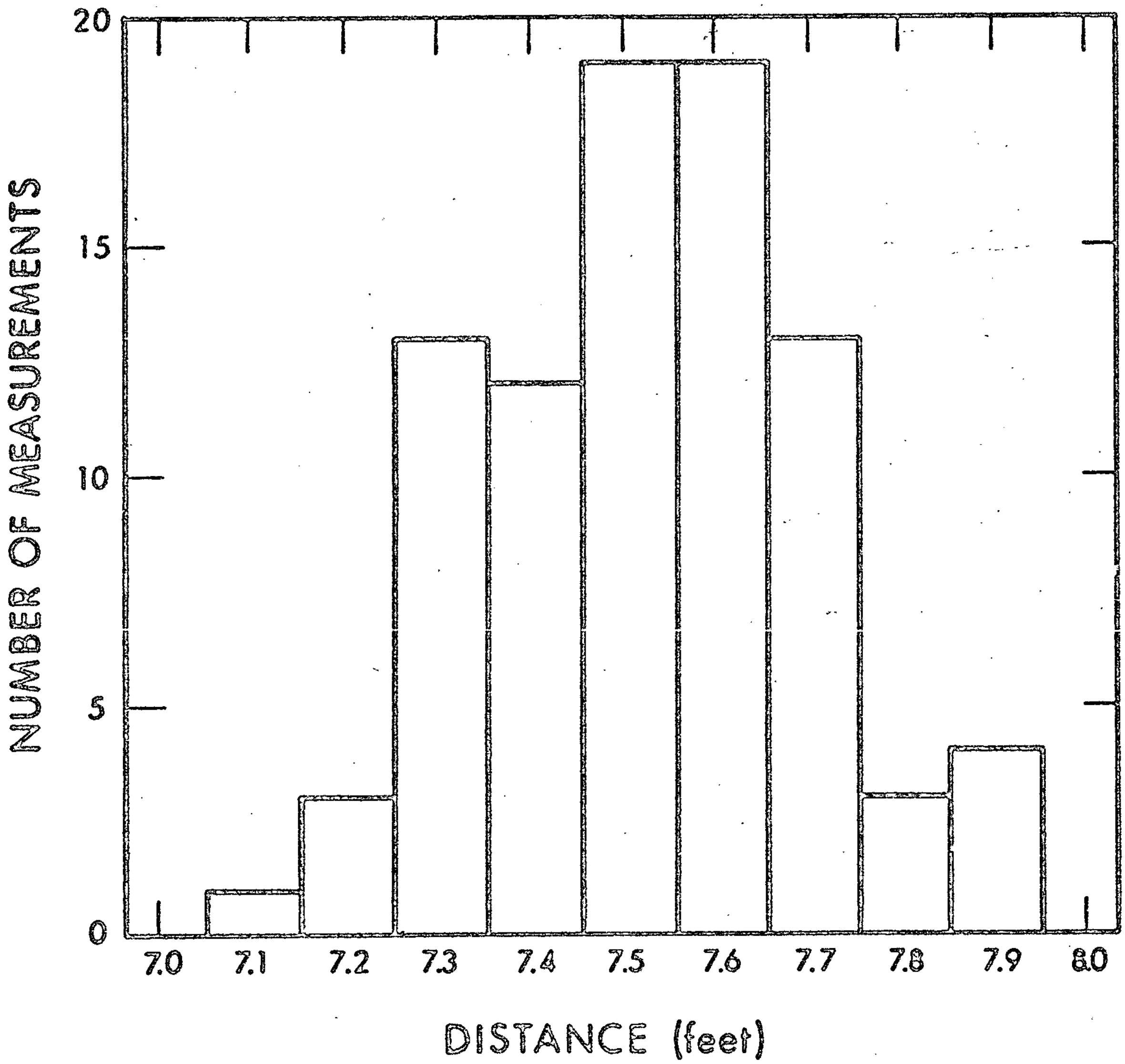


Figure 39.- Slant range measurements (docked configuration). Distance from the camera to the acquisition light - many measurements at 44:40:15 Gemini X g.e.t.

which would allow the departure of the Gemini from the Agena in a manner consistent with an optimum achievement of minimal objectives of the S026 experiment. The planned undocking would take place in the manner shown in figure 40 with the Agena oriented in a TDA-forward position. (Gemini spacecraft is not shown to the same scale in order to indicate spatial maneuvers on the figure.) The plan called for initial separation to a point A where the short end of the spacecraft would be approximately 3 to 5 feet distance from the docking cone drifting in the vicinity of point A for at least 30 seconds. This was to be followed by a downward motion of the vehicle to point B sufficiently far removed from the Agena axis so that ambient conditions could readily be sampled by the inboard ion sensor. Motion along the trajectory from B to C was to be at crew discretion with point C corresponding to their best estimate of realinement of the spacecraft along the Agena axis. A linear departure from C to point D and subsequent spacecraft motion required for rendezvous with the Agena 8 was to be carried out at approximately 1 foot per second. Unfortunately, this plan was arbitrarily changed at the last moment.

Direct axial departure from the Agena was to occur with an incremental velocity on the order of 2 feet per second. The actual departure was carried out more or less along the solid trajectory shown in figure 41 designated as mode U. This plan change produced some serious problems in the analysis of the only useful wake data obtained from the Gemini X experiment. It became impossible to accurately determine the ambient

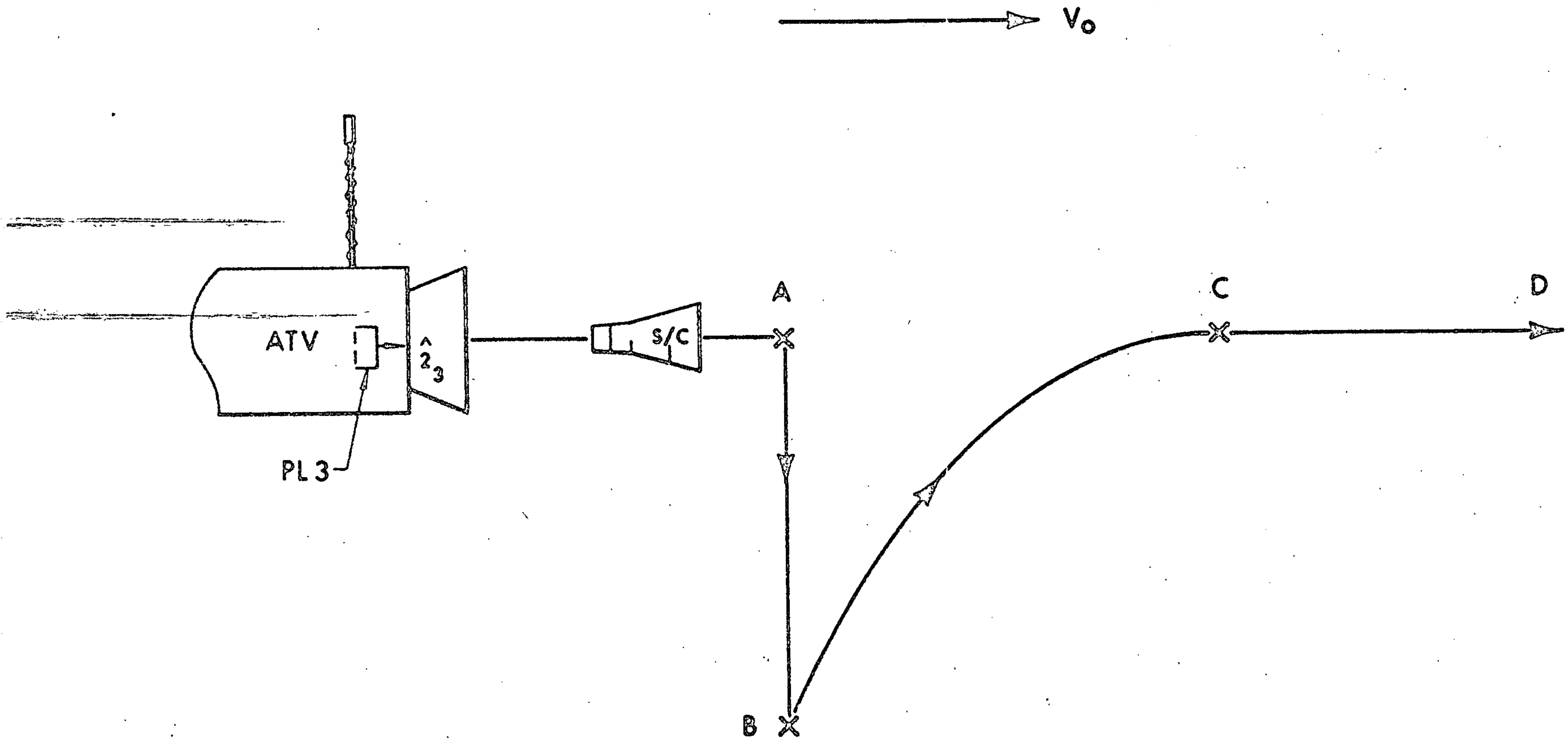


Figure 40.- Final flight plan proposed for undocking of Gemini X (worked out with flight controller at about 36:00 hours S/C g.e.t.).

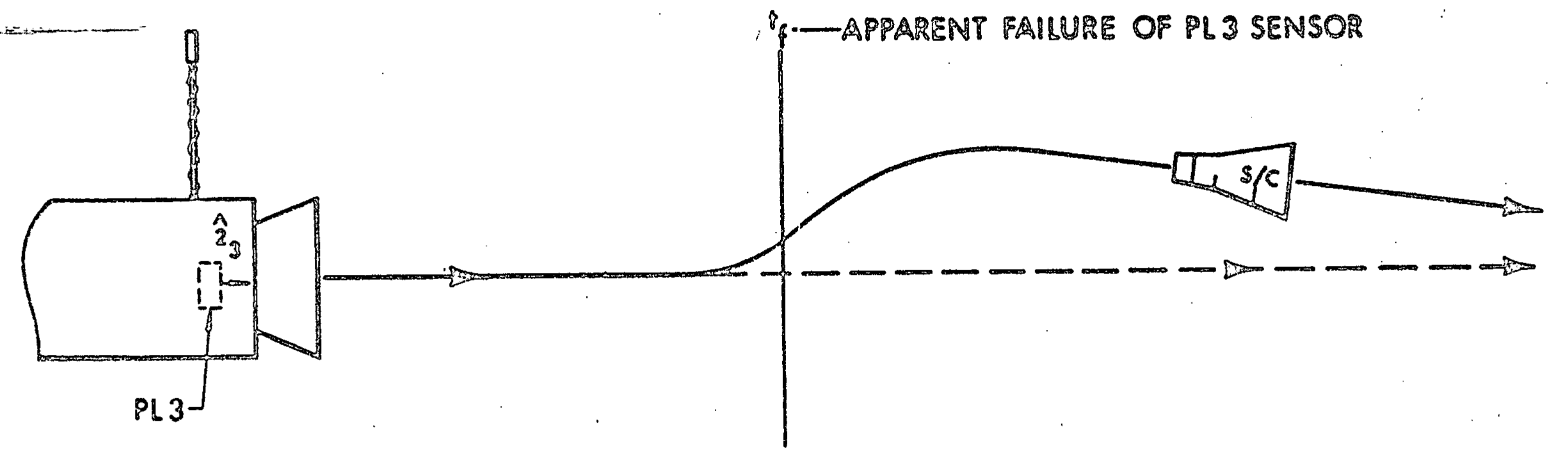


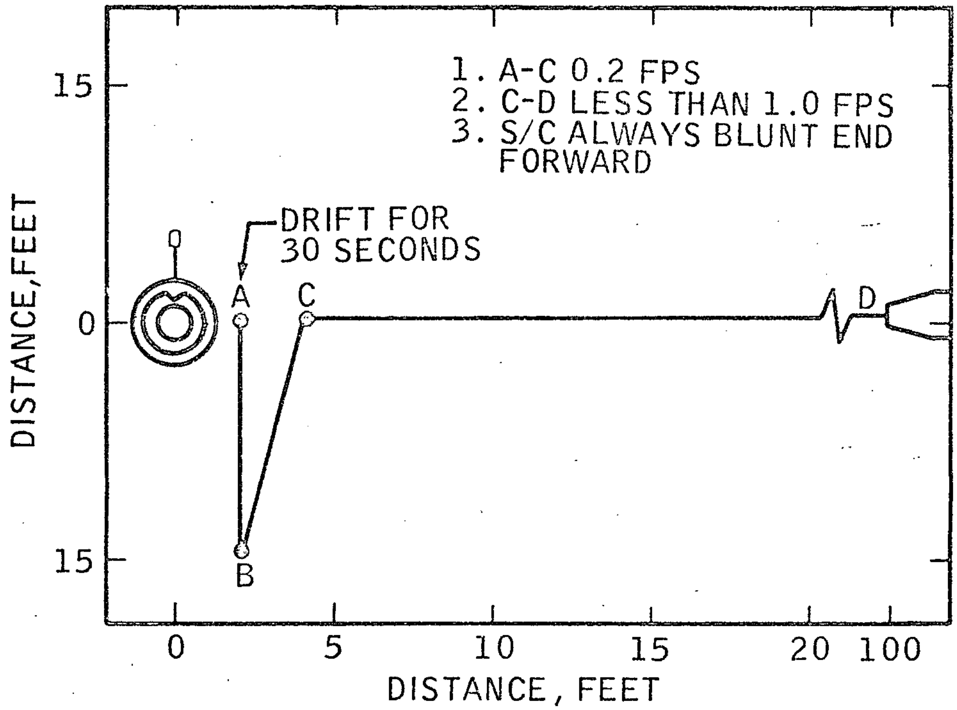
Figure 41.- Actual trajectory followed in undocking of S/C at 44:40:15 S/C g.e.t., mode U.

conditions at the time of undocking. There was an apparent partial failure of the inboard instrument before complete departure. Also, thruster firing activity completely eliminated any chance of obtaining deep wake data.

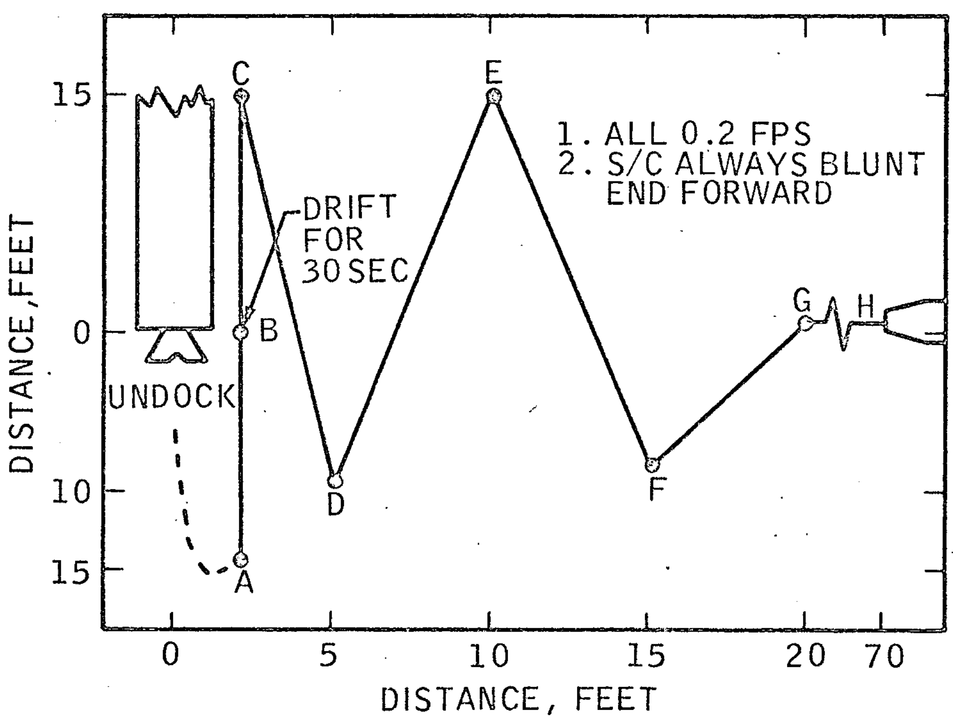
Gemini XI was programed for five separate S026 maneuvers. The flight plan is summarized in figures 42 through 44. Crew instructions and schedule in the flight plan for carrying out each of the modes are shown in tables X and XI. Mode A, mode B sequence 1 (B-01), and mode B sequence 2 (B-02) are all nighttime passes, whereas mode B sequence 3 (B-03) is a daytime pass. The detailed configuration of the nuzzle exercise (part of B-03) is shown in figure 43. This maneuver was added to B-03 at the suggestion of the crew, Pete Conrad and Dick Gordon. It was to be carried out by repositioning the spacecraft as close to the Agena as crew safety would allow and drifting in that position before commencing the actual sequence 3 maneuvers. Figure 44 shows mode C, which was added when permission was granted to the crew for a high altitude elliptic orbit to an apogee of 750 nautical miles using the Agena primary propulsion system. At apogee of this orbit the docked system made a 360° roll maneuver. This maneuver allowed the experimenter to obtain data on body effects at a high altitude where lower mass number ions are predominant.

The crew of Gemini XI was able to carry out an almost textbook performance of the plans. However, some serious problems developed because of the following.

1. Limitations of the Agena tape recorder which resulted in the erasure of most of the important information in mode B-01 and all of mode C.

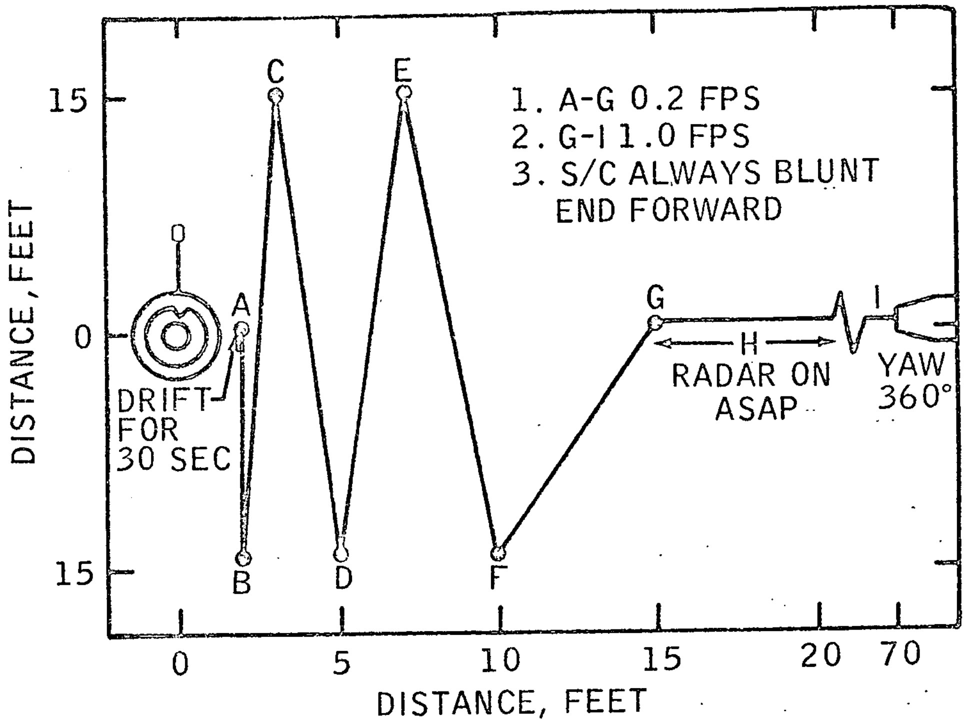


(a) Mode A linear - TDA pointing south from Agena.

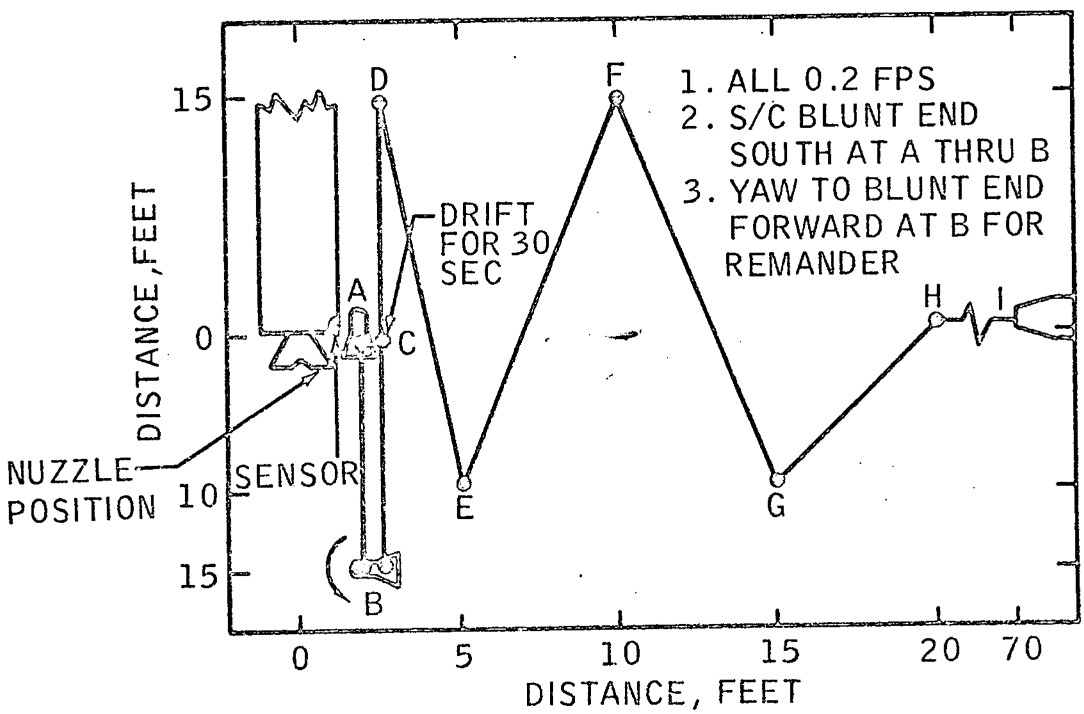


(b) Mode B sequence 1 - out of orbital plane, TDA pointing south from Agena.

Figure 42.- Ion wake measurements, modes A and B



(c) Mode B sequence 2 - in orbital plane, TDA pointing south from Agena.



(d) Mode B sequence 3 - out of orbital plane, TDA pointing south from Agena.

Figure 42.- Ion wake measurements, modes A and B - Concluded.

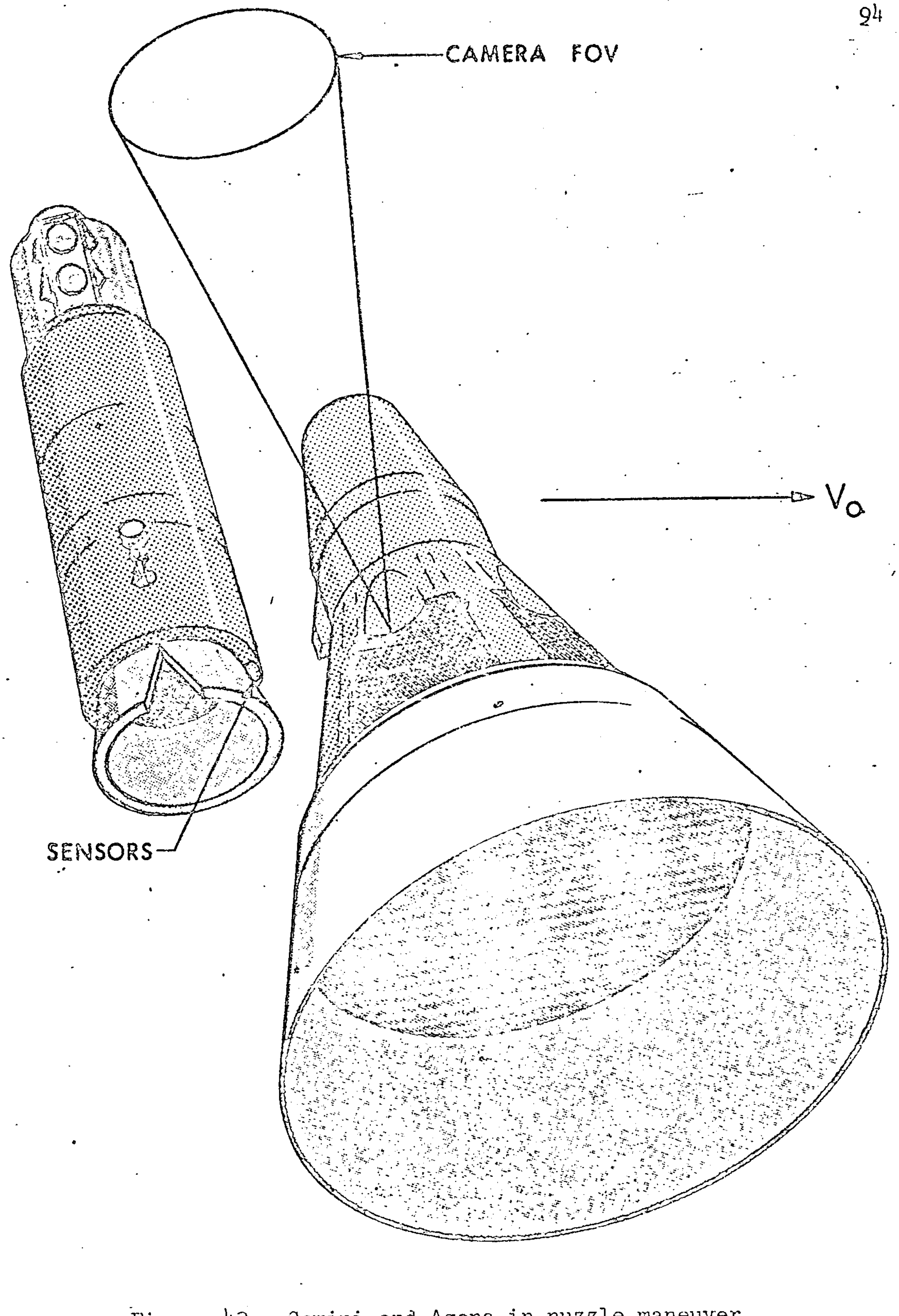


Figure 43.- Gemini and Agena in nuzzle maneuver.

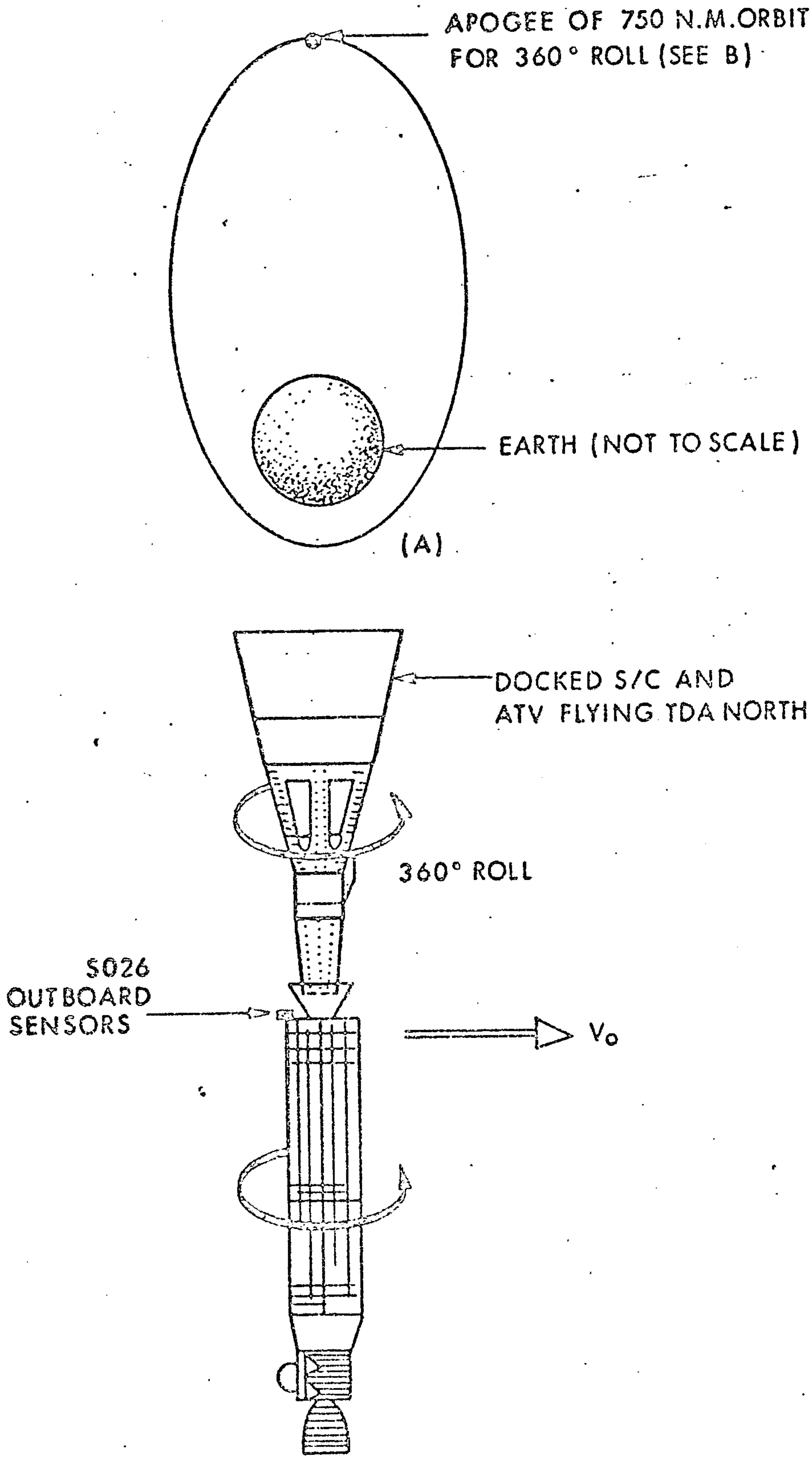


Figure 44.- Mode C at high altitude elliptic orbit.

TABLE X.- GEMINI XI FLIGHT PLAN

00:00 CNV LIFTOFF

SECO-INSERTION BURNS MCC R_D UPDATE

BDA ANT

00:10 INSERTION CHECKLIST
P-SEF AC-PLAT LOAD MODULE 3
RADAR-STBY INSTALL 16 mm Camera
(18mm LENS, 1 fps, f 16, 1/200,00) PLAT

00:20 C-NAV (CATCH UP)

ASC ASC-OUT-OF-PLANE MANEUVER UPDATE
P-ORB RATE A C RATE CMD
RADAR-ON (LOCK-ON) ORB RATE COMP.-ON

00:30 OUT-OF-PLANE BURN
C-RNDZ A C -PUL

RAD-FLOW, EVAP - NORM

TAN TAN-BACKUP TPI UPDATE
(25,26,& 27, X_{BA}, Y_{RA}, R & R at 45:00)

00:40 REPORT OUT-OF-PLANE BURN

START COMP-PUSH A C -RATE CMD
RADAR-STBY
TPI BURN
A C -PUL ORB RATE COMP-OFF

00:50

CRO CRO-GO/NO GO FOR 16-1

REPORT TPI BURN

AC-RATE CMD

01:00

01:00 1st MIDCOURSE CORRECTION

01:10 A C -RATE CMD
2nd MIDCOURSE CORRECTION
C-NAV (CTCH UP) 16 MM CAMERA ON

01:20 HAW TPF
EXT LTS-DOCK
250-ACQ LTS-OFF 500FT
240-SPC DISABLE
EXTEND DOCKING BAR AT 50 FT

01:30 FLY FORMATION

GYM AGENA RCDR-ON
APOLLO SUMP CAMERA-ON

TEX DOCK (TDA NORTH)
APOLLO SUMP + 16 MM CAMERAS-OFF

CNV OAMS CNTL PWR-OFF A C -RATE CMD

01:40 GYRO- TO AGENA RCDR-OFF

BDA TDA SOUTH DROGUE PINS-INSTALL
SURVIVAL LANYARDS-STOW

ANT ANT-AGENA TAPE PLYBK SUIT FAN-NO.1

NUC FM-MODE 1 (S-9) T/M-CMD

01:50 C-ADPT & RNTY-CMD
(ACS OFF OAMS CNTL PWR-ON)

D-3

ASC MASS DETERMINATION
(25 SEC FWD TRANS)

02:00

TABLE X.- GEMINI XI FLIGHT PLAN - Continued

MSC Form 1489 (June 65)

02:00 D-3 UNSTOW 16 MM B/W COLOR

ACS ON

UNDOCK FILM N I COLOR-RENDEZVOUS (30 ft)

02:10 AGENA RCDR ON

16 mm CAMERA (NITE S-26) (18 mm LENS, 1 fps, f4, 1/200,00)

TAN

S-26 MODE B SEQ 01 OUT-OF-PLANE

TAPE 45 (1st TAPE)

02.20

AGENA RCDR OFF

REPOSITION FOR MODE B

16 MM CAMERA OFF

CRO-AGENA TAPE PLYBK

02:30 CRO PURGE FUEL CELLS (1 then 2)

16 MM CAMERA

02:40 S-26 MODE B SEQ.02 IN-PLANE

SEQ.02

02:50 AGENA RCDR OFF

16 MM CAMERA OFF

HAW REPOSITION FOR MODE B HAW-AGENA TAPE PLYBK

16 MM FILM CHANGE FROM B/W AND PUT IN COLOR

GET

03:00 AGENA RCDR ON

GYM S-26 MODE B SEQ 03 OUT-OF-PLANE

03:10 TEX LOAD V_M FOR PPS CAL BURN

16 mm CAMERA (DAY S-26) (18 mm LENS, 1 fps, f16, 1/200,00)

CNV

3

NUZZLE

03:20 ANT SOLOR CORONA

3.25 AGENA RCDR OFF

16 mm CAMERA

PL3-20° DOCK 18 mm LENS, 6 fps, f 16, 1/200, 25')

03:30 RKV RKV-AGENA TAPE PLYBK, CHECK V_M LOAD

ASC

3:33 Rev. 3.34

UNDOCK REINSTALL B&W FILM

03:40 S-26 MODE A LINEAR

P-BEF À C -PLAT AGENA RCDR ON

FLY FORMATION & ALIGN PLATFORM BEF

03:50 TAN

P-ORB RATE E C -RATE CMD

16MM CAMERA AGENA RCDR OFF

DOCK (18 MM LENS, 6fps,f2,1/50,00)

04:00 OAMS CNTL PWR-OFF

TABLE X.- GEMINI XI FLIGHT PLAN - Continued

Time	Station	Event	
04:00		GYRO TO TDA NORTH	
04:10		- 0414 AOS	
	CSQ	CSQ-AGENA TAPE PLYBK CHECK V_M LOAD	
04:20		- 0416 LOS	
		AGENA RCDR ON 16 mm CAMERA (18 mm LENS, 6 fps, f 2,1/200,00) APOLLO SUMP CAMERA ON	
04:30	HAW	OUT-OF-PLANE PPS CALIBRATION BURN (APPROX. 100 FT/SEC) APOLLO SUMP CAMERA OFF AGENA RCDR OFF	
04:40			
	GYM TEX	AGENA TO FC2 P - CAGE (BEF)	
04:50			PLAT ALIGN
4			
05:00		P - ORB RATE AGENA TO FC1	

Time	Station	Event
05:00		
	RKV	RKV-AGENA TAPE PLYBK A C -PUL OAMS CNTL PWR-ON ACS OFF
05:10		
05:20		
	TAN	
05:30		S-29 (DOCKED)
	D-3	
05:40		
	CSQ	
05:50		ACS ON OAMS CNTL PWR OFF A C -RATE CMD
		GYRO TO TDA FWD
06:00		

TABLE X.- GEMINI XI FLIGHT PLAN - Continued

06:00	POWER DOWN EXCEPT PRI B & SEC A-OFF PRI A & SEC B-ON C-OFF P-OFF A C RATE CMD(OFF) HAW	07:00	TAN	
06:10		07:10		EAT PERIOD
06:20	VOX ADJUST	07:20	CSQ	
06:30		07:30		
5				
06:40	RKV CREW STATUS REPORT, PLA UPDATE PURGE FUEL CELLS (2 then 1) Reg. recorder on	07:40	HAW	EAT PERIOD
06:50	DOCKING PRACTICE 16MM CAMERA (18MM LENS, 6 fps, f2, 1/50, 25') Reg. tape dump	07:50		
07:00		08:00		

42:00 TEX

CNV S-11 (DOCKED)

27

ANT ANT - UPDATE V_M FOR RETRO BURN

BDA RETURN TO TDA NORTH & HEADS DOWN

42:10 AGENA RCDR ON

AGENA RCDR OFF

CYI CYI - AGENA TAPE PLYBK

42:20 AGENA RCDR ON

S-5 & S-6 PHOTOGRAPHS

KNO

42:30

42:40 AGENA RCDR - OFF (AFTER 20 MIN)

TAN

R/T S-26 DATA

42:50

28

43:00

43:00 CRO CRO - AGENA TAPE PLYBK

CHECK V_M LOAD

UPDATE GET OF APOGEE

GO TO TDA AFT

ACS ON

R/T S-26 DATA

OAMS CNTL PWR-OFF AC-RATE CMD

43:10

AGENA RCDR - ON

43:20

43:30

AGENA RCDR - OFF (AFTER 20 MIN)

43:40

GYM

TEX TEX - AGENA TAPE PLYBK. CHECK V_M LOAD

AGENA RCDR ON (AFTER PLYBK)

43:50 CNV 16MM CAMERA (18MM LENS 6 fps, f2, 1/200,00)

BDA PPS RETROGRADE BURN

ANT (943 FT/SEC 160NM APOGEE)

AGENA RCDR OFF AGENA TO FC1

C-ADPT - CMD ANT-AGENA TAPE PLYBK

44:00

TABLE XI.- EXPERIMENT S026 ION WAKE MEASUREMENT

PURPOSE

To obtain data on the ambient ion flux at orbital altitudes, to investigate the ionospheric wake of an orbiting spacecraft, and to study the changes in the ion flux and ion wake structure caused by thruster firings.

SPACECRAFT SYSTEMS CONFIGURATION (See Docking Practice)

1. Stabilization Control System - On
2. Orientation - TDA/FORWARD or SOUTH (If heads up)
3. Telemetry - Operating

GEMINI SYSTEMS

1. PLATFORM - ORB RATE AND ALIGNED
2. Rendezvous Radar - Off within 20 ft.

NOTE: Radar on closer may make sensors read false data.

3. ATTITUDE CONTROL - PULSE
4. Camera - Installed (18 mm Lens)
5. Install reticle

NOTE: Load with S0217 for daylight, (f16, 1/200, ∞) or Hi Speed Black and White for Darkness (f4, 1/200, ∞)

PROCEDURES

MODES A & B

1. Record Start Time of Camera and Magazine Number.
2. SEND CMD 041 - RECORD DATA
3. Record RCDR Start Time
4. Following Undocking: (See Undocking Procedures) Perform Maneuvers for Mode as shown.
5. At end of Maneuvers
   CAMERA - OFF
   SEND CMD 030 - RCDR AND T/M OFF

MODE C

High orbit data gathering. Docked Gemini-Agena configuration is TDA-north and heads down so that S026 sensor is gathering data and S-5 and S-6 photos are taken with shaded window. At first Apogee pitch straight down and roll 360° at 1 RPM.

PROPELLANT REQUIRED

40# Prop

2. Failure of the telemetry channel in the Gemini spacecraft which monitored a turning on and off of the 16 mm Maurer camera (channels FD01 and FD03). The failure of these telemetry channels made it impossible to determine the exact timing sequence of the films associated with the S026 spacecraft maneuvers. It became necessary to pin down the position coordinates on the same time base as the Agena telemetry data coming back from the S026 instruments by indirect methods.

3. The inadequacies of the movie camera to provide position information. All of the position data on mode B-03 was practically useless because of incorrect exposure. The night passes were also difficult to interpret because of spurious reflections, et cetera.

RESULTS

FLIGHT PROFILES AND DATA LOGS

Event Summaries

In combining the various data sources (PL telemetry, film, thrusters, et cetera) the key problem lay in accurate determination of the event time; that is, when did a given S026 mode begin and end. Table XII summarizes the pertinent timing data on the S026 modes derived from a variety of sources (voice tapes, private communications from MSC personnel, inspection of trends in the sensor data stream, et cetera). Considerable differences have been found in comparing these various sources for time identification of a particular event. For example, the Gemini Mission Report for G-XI states that S026 mode B-01 commenced at 02:10 S/C g.e.t., whereas the voice tapes record this momentous occurrence at 02:12:12 S/C g.e.t. Voice tape records were relied upon in such cases. Tables XIII and XIV summarize the various events from the sources designated. In addition to the S026 maneuvers there were several types of activity which produced observable effects on the S026 sensors. Of greatest direct interest are the yaw maneuvers of the ATV (refs. 7, 8, and 9). These produce changes in sensor responses resulting from shadowing or "body" effects. Docking and undocking operations and burns of the Agena primary propulsion system (PPS) and secondary propulsion system (SPS) also produced effects on the charged particle sensors. Tables XV and XVI summarize these events. Table XVII provides a detailed mission profile of the GTA-XI. Appendix III gives the actual mission profile for GTA-X.

TABLE XII.- GEMINI S026 MODE TIMES

MODE	OPERATION		S/C-GET
X-U	H-380: Commence Unrigidizing		44:40:16.440
X-U	H-382: S/C released from TDA		44:40:18.503
X-U	H-379: End of motor operation on TDA		44:40:26.214
B-01	02:12:12	to	02:25:50
B-02	02:25:54	to	02:31:52
B-03	03:00:30	to	03:23:00
A	03:46:15	to	03:53:47

TABLE XIII.- AGENA GEMINI X SUMMARY

EVENT	AGENA MISSION REPORT	GEMINI MISSION REPORT	FLIGHT PLAN	VOICE
LIFTOFF - 20:39:46.13 YAW No. 1 UNDKD, GYRO YAW TO + 90°	20:39:46.13 GMT 01:40:40 AET			
S/C LIFTOFF YAW No. 2 to -90° UNDOCKED	22:20:26.64 GMT 03:15:GET			03:16:00 AGTV is TDA N "it's all ready for you"
FIRST DOCKING DKD YAW No. 3 S/C YAW TO 000°	05:40: GET 06:01 GET	05:22:35 (5-32)		between 05:41:40 05:52:47 possible 06:00:49
DOCKED PPS BURN NO.1 (12.05 seconds) GYROCOMPASS TO TDA AFT	07:40 GET	(5-153) 07:38:33.7 (4-15	07:38:17 (14 sec.) 19:00 (exp. update list)	07:37:17
YAW NO. 4 GYRO YAW TO 180° DKD PPS BURN NO.2 (9.43 sec.)	19:30 GET 20:20 GET	 20:20:12 (4-15)	 20:19:56 (GET B) delta t 11	19:46:47 TDA AFT now. "about to burn" 20:19:43
YAW NO. 5 DKD GYRO YAW TO -90°	21:05 GET		21:20 gyro TDA FWD S/C 180° (exp. update list)	"TDA FWD when finished the burn"

TABLE XIII.- AGENA GEMINI X SUMMARY - Concluded

EVENT	AGENA MISSION REPORT	GEMINI MISSION REPORT	FLIGHT PLAN	VOICE
YAW NO. 6 DKD; GYRO YAW TO 000°	22:20 GET		Went to FC-2 22:14 Go to FC-6 at 22:19	
DKS PPS BURN NO. 3 (1.96 sec)	22:35 GET	22:37:06 (4-15) (5-33)		
YAW NO. 7 DKS, GYRO YAW TO - 90°	23:32 GET		23:00 GYRO TDA NORTH S/C 90° (exp. updated list)	
YAW NO. 8 DKD GYRO YAW TO 000°	24:38 GET			
DKD SPS BURN NO: 1(10.40 sec)	27:28 GET	27:45:36		"go" 27:46:04
YAW NO. 9 DKD GYRO YAW TO -90°	39:28 GET			
DKD SPS BURN NO. 2 (16.0 sec)	40:08 GET	41:04:26 (4-15) (5-33)		
YAW NO. 10 DKD GYRO YAW TO 180°	40:55	40:45 (360,311,321) (98)		
DKD SPS BURN NO. 3 (4.10 sec)	41:35	41:35:50 (4-15)(5-33)		"you are go" 41:35:12
YAW NO. 11 DKD GYRO YAW TO 000°	42:38 GET			
FIRST UNDOCKING	44:40 GET			44:40:15 20 ADIOS AGENA

TABLE XIV.- AGENA GEMINI XI SUMMARY

EVENT	AGENA MISSION REPORT	GEMINI MISSION REPORT	FLIGHT PLAN	VOICE
LIFTOFF - 13:05:01.725	13:05:01.725 GMT	13:05:01.725 GMT		
GYRO YAW TO -90°	REV ONE			
S/C LIFTOFF	14:42:26			
S/C SIGHTED	REV TWO	Sighted at 50 feet at 01:25:00 GET		
DOCKING NO. ONE	REV TWO	01:34:07 GET (5-2)		
DOCKED YAW -90° TO +90°	REV THREE	Gyrocompass to TDA South 01:38: - 01:43: (7-8) "Immediately following docking" (page 2)		
UNDOCKING NO. ONE	REV THREE			
ION WAKE EXPERIMENT	REV THREE	Commence 02:10 (7-8)		Commence 02:12:12
DOCKING NO. TWO	REV FOUR	Docking Practice 03:15:00 (5-22)	03:25:00 GET	"Going through Pilot Docking" 03:13:17 GET
YAW +90° TO 000° DKD	REV FOUR			
UNDOCKING NO. TWO	REV FOUR	03:42:00 GET approx.	03:37:00 GET	
UNDOCKING NO. THREE	REV FOUR		03:55:00 GET	
YAW 000° TO -90° DKD	REV FOUR		Gyro TDA North 04:00 - 04:05	
PPS BURN NO. ONE	REV FOUR	04:28:48 GET		

TABLE XIV.- AGENA GEMINI XI SUMMARY - Continued

EVENT	AGENA MISSION REPORT	GEMINI MISSION REPORT	FLIGHT PLAN	VOICE
DKD GYRO YAW TO 180°	REV FIVE	04:36: - 04:43: TDA AFT		
DKD GYRO YAW TO 000°	REV FIVE	05:50: - 05:57: TDA FWD		"S/C at BEF going TDA FWD 05:29:20 GET
UNDOCKING NO. THREE	REV FIVE			
DOCKING NO. FOUR	REV SIX		06:45 - 07:00	
S/C PLATFORM ALIGN	REV TWELVE		16:30 - 17:0	
GYRO YAW TO +90°	REV TWELVE		16:54 - 16:55	17:00:49 "We have just gyrocompassed TDA South "
S-11	REV TWELVE		17:07 GET	
DKD YAW TO -90°	REV THIRTEEN			
DKD YAW TO 000°	REV THIRTEEN		Return to TDA FWD 17:52	
DKD GYRO YAW TO +90°	REV SIXTEEN		23:00 TDA AFT	22:52:13 "Gyro compass t TDA South"
DKD GYRO YAW TO 180°	REV EIGHTEEN		Return to AFT 29:55	27:18:27 "Gyrocompassing

TABLE XIV.- AGENA GEMINI XI SUMMARY - Concluded

EVENT	AGENA MISSION REPORT	GEMINI MISSION REPORT	FLIGHT PLAN	VOICE
GYRO YAW 180° TO 000°	REV TWENTY-SIX			38:59:30 "We are going TDA South then FWD"
DKD PPS BURN NO. TWO	REV TWENTY-SEVEN	40:30:15 Start (166-739nm) 41:31:39 End	40:29:59	40:29:59
DKD CMD YAW TO 180°	REV TWENTY-SEVEN			
BEF-SEF TO S/C	REV TWENTY-EIGHT			43:17:01
DKD PPS BURN NO. THREE	REV TWENTY-EIGHT	43:52:55 Start (739-164nm) 43:54:17 End		
UNDOCKING NO. FOUR	REV THIRTY-TWO	49:51:39.4	approx.49:52	
JETTISON TETHER AND AGENA	REV THIRTY-FOUR			

TABLE XV.- GEMINI X EVENT SUMMARY

TIME	DOCKING	UNDOCKING	YAW (UNDOCKED)	YAW (DOCKED)	BURN
01:40:40	---	---	1 (to +90°)	---	---
03:07		---	2 (to -90°)	---	---
05:40	1	---	---	---	---
06:01	---	---	---	3 (to 000°)	---
07:40	---	---	---	---	1
19:30	---	---	---	4 (to 180°)	---
20:20	---	---	---	---	2
21:05	---	---	---	5 (to -90°)	---
22:20	---	---	---	6 (to 000°)	---
22:35	---	---	---	---	3
23:32	---	---	---	7 (to -90°)	---
24:38	---	---	---	8 (to 000°)	---
27:28	---	---	---	---	(SPS)1
39:28	---	---	---	9 (to -90°)	---
40:08	---	---	---	---	(SPS)2
40:55	---	---	---	10 (to 180°)	----
41:35	---	---	---	---	(SPS)3
42:38	---	---	---	11 (to 000°)	---
44:40	---	1	---	---	---
46:14	---	---	12(to +90°)	---	---
50:20	---	---	13(to 000°)	---	---
68:38	---	---	---	---	(PPS)4
72:26	---	---	----	---	(PPS)5
74:20	---	---	14(to 180°)	---	(PPS)6
79:14	---	---	---	---	(PPS)7
84:26	---	---	---	---	(SPS)8

TABLE XVI.- GEMINI XI EVENT SUMMARY

TIME	DOCKING	UNDOCKING	YAW (DOCKED)	YAW (UNDOCKED)	BURN
	---	---	---	1 (to -90°)	---
01:34:07	1	---	---	---	---
01:38	---	---	2 (-90 to +90)	---	---
	---	1	---	---	---
03:15	2	---	---	---	---
03:42	---	2	---	---	----
04:00	3	---	---	---	---
	---	---	3a (+90 to 0)	---	----
	---	---	3b (0 to -90)	---	---
04:28:48	---	---	---	---	1
04:36	---	---	4 (to 180°)	---	---
05:50	---	---	5 (to 000°)	---	---
	---	3	---	---	---
06:45	4	---	---	---	---
16:54	---	---	6 (to +90°)	---	---
	---	---	7 (to -90°)	---	---
17:52	---	---	8 (to 000°)	---	---
23:00	---	----	9 (to +90°)	---	---
27:18??	---	----	10 (to 180°)	---	---
38:59	---	---	11 (to 000°)	---	---
40:30:15	---	---	---	---	2
43:52:55	---	---	---	---	3
49:51:39	---	4	---	---	---

TABLE XVII.- ACTUAL AGENA GTA-11 MISSION PROFILE

Revolution	EVENT	GET TIME
1	LIFTOFF - 13:05:01.725	
	145# ACS GAS ON ORBIT	
	GYRO YAW TO -90° (RTC)	
	TAPE DUMP (CRO)	
	RST TIMER RST	
	RADAR LOCK-ON	
2	SPACECRAFT LIFTOFF	14:42:26 (GMT)
	GAVE GO FOR DOCKING	00:49:58
	DOCKED	01:34:07
3	DKD GYRO YAW -90° TO +90°	01:41:38
	UNDOCKING	02:12:12
	COMMENCE S-26	02:12:12
	COMPLETE MODE B SEQ 01	02:25:54
	START MODE B SEQ 02	02:25:54
	START PURGE	02:27:44
	SEQ 02 COMPLETE	02:31:52
	START S-26 MODE B SEQ 03	03:00:37
	18" TO SENSORS	03:01:01
	NEAR TDA	03:02:04
	COMPLETED S-26	03:13:17
4	DOCKING	03:19:20
	YAW +90° TO 000° DKD	
	UNDOCKING	03:42:00
	COMMENCE S-26 MODE A	03:46:15
	COMPLETE S-26 MODE A	03:53:47
	DOCKING	04:00:00
	YAW 000° TO -90° DKD	04:28:48
	PPS BURN NO. ONE	04:28:48
5	DKD GYRO YAW TO 180°	04:47:05
	DKD GYRO YAW TO 000°	05:29:20
	UNDOCKING	06:45:00
6	DOCKING	06:50:00
	RST TIMER RST	07:44:12
7-11	SLEEP	
12	RST TIMER RST	16:11:50
	GYRO YAW TO +90°	17:00:49
13	DKD YAW TO -90°	
	GND PREFORMED CLOCK TEST	18:35:54
	DKD YAW TO 000°	

TABLE XVII.- ACTUAL AGENA GTA-11 MISSION PROFILE - Concluded

14	EVA PREP	
15		
16	DKD GYRO YAW TO +90°	22:52:13
	RST TIMER RST	23:21:22
	AGENA GOES INERTIAL FOR EVA	23:36:09
17	EVA	24:02:07
	INSTALL AGENA TETHER	24:15:00
	COMPLETE EVA	24:35:00
18	DKD GYRO YAW TO 180°	27:18:27
19		
20		
21	RST TIMER RST	31:30:19
22-25	SLEEP PERIOD	
26	RST TIMER RST	38:54:30
	GYRO YAW FROM 180° TO 000°	38:59:30
27	DKD PPS BURN NO. TWO	40:29:59
	DKD CMD YAW TO +180°	40:16:30
28	DKD PPS BURN NO. THREE	ap43:50:00
	GYRO BEF-SEF TO THE S/C 000° TO 180°	43:03:42
	YAW TO 180°	43:52:55
29	EVA PREP	44:17:32
	RST TIMER RST	45:30:53
30	EVA	46:04:56
31		
32	UNDOCKING	49:50:50
33	AGENA AND S/C SPINNING TOGETHER	51:26:31
34	JETTISON TETHER AND AGENA	53:03:57
	AGENA TO FC-1 (COMMENCE)	53:07:18
35	RST TIMER RST	54:20:13
36-40	SLEEP PERIOD	

Data Handling

The S026 sensor output was identified as group 31 in the Agena data stream. It was available in both real time (R/T) and tape dump (D/T). Tab printouts and computer tapes were obtained for most of the events listed in tables XII through XVII. The tab printout data format is illustrated in table XVIII. A listing of this PL-data (group 31) available from Gemini X is given in table XIX. The position of the ATV is given by the tracking station symbol. Appendix D shows the flight path explicitly, and defines the symbols. Oscillograms of the PL-data were also obtained and are available in roll form for the times listed in tables XX and XXI. A typical example of the O-gram data is given in figure 45. Time markers are read according to the code shown in figure 46. The time thus obtained is Greenwich mean time (Gmt) and is transformed to g.e.t. (ground elapsed time) by noting the liftoff data given in tables XVIII and XIX. A third source of data is provided by strip charts at NASA-MSC which were connected to the Eastern Test Range by a high data rate hard line. No time markers are available except as second marks as shown in figure 47. These were used for qualitative "quick-look" scan for preparation of interim experiments reports. The data available in this format are listed in tables XXII and XXIII. Quantitative chart plots were also obtained at Kennedy Space Center (KCS), an example being given in figure 48. The code for reading the time is explained in figure 49. Data available in this format are summarized in tables XXIV and XXV.

TABLE XVIII.- AGENA FLIGHT TEST DATA FOR GEMINI

S026 EXPERIMENT

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 18.534		97.00			
44 40 18.550	0.00	89.00	0.00	42.5	57.4
44 40 18.566		90.00			
44 40 18.581	5.00	93.00	0.00		
44 40 18.597		103.00			
44 40 18.613	0.00	100.00	0.00		
44 40 18.628		87.00			
44 40 18.644	10.00	97.00	0.00		
44 40 18.659		102.00			
44 40 18.675	10.00	104.00	0.00		
44 40 18.691		97.00			
44 40 18.706	10.00	102.00	0.00		
44 40 18.722		91.00			
44 40 18.738	2.00	98.00	0.00		
44 40 18.753		94.00			
44 40 18.769	12.00	100.00	0.00		
44 40 18.784		101.00			
44 40 18.800	0.00	104.00	0.00		
44 40 18.816		92.00			
44 40 18.831	4.00	93.00	0.00		
44 40 18.847		101.00			
44 40 18.863	6.00	99.00	0.00		
44 40 18.878		98.00			
44 40 18.894	14.00	98.00	0.00		
44 40 18.909		105.00			
44 40 18.925	6.00	101.00	0.00		
44 40 18.941		93.00			
44 40 18.956	10.00	96.00	0.00		
44 40 18.972		106.00			
44 40 18.988	10.00	95.00	0.00		
44 40 19.003		99.00			
44 40 19.019	11.00	91.00	0.00		
44 40 19.034		91.00			
44 40 19.050	12.00	85.00	0.00		
44 40 19.066		93.00			
44 40 19.081	20.00	90.00	0.00		
44 40 19.097		93.00			
44 40 19.113	13.00	87.00	0.00		
44 40 19.128		74.00			
44 40 19.144	0.00	55.00	0.00		
44 40 19.159		45.00			
44 40 19.175	41.00	47.00	0.00		
44 40 19.191		51.00			
44 40 19.206	37.00	43.00	0.00		
44 40 19.222		40.00			
44 40 19.238	44.00	37.00	0.00		

GROUP ID 31

TABLE XIX.- GEMINI X GROUP 31

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
0	*-00:04:42 - 00:00:13	MCCK	294	R/T
0	* 00:00:00 - 00:09:15	MCCK	262	R/T
0	* 00:04:16 - 00:04:23	CRO	266	D/T
0	* 00:06:42 - 00:19:59	CRO	264	D/T
0	* 00:15:12 - 00:23:13	CYI	265	R/T
0	* 00:18:23 - 00:20:24	CRO	266	D/T
0	* 00:18:47 - 00:19:59	CRO	266	D/T
0	* 00:35:06 - 00:43:39	TAN	325	R/T
0	* 00:50:53 - 00:57:19	CRO	254	R/T
0	* 00:50:53 - 01:00:23	CRO	326	R/T
0	* 01:00:21 - 01:01:09	CRO	266	D/T
0	* 01:10:54 - 01:20:00	CTN	295	R/T
0	* 01:17:37 - 01:24:55	HAW	267	R/T
0	* 01:28:22 - 01:37:33	GYM	263	R/T
0	* 01:35:14 - 01:44:46	ETR	257	R/T
0	* 01:35:16 - 01:44:46	ETR	296	D/T
1	00:00:55 - 00:08:50	ANT	253	R/T
1	00:00:55 - 00:08:50	ANT	277	R/T
1	00:04:16 - 00:17:10	HAW	268	D/T
1	00:04:46 - 00:11:20	CRO	297	R/T
1	00:06:28 - 00:08:50	ANT	272	R/T
1	00:11:20 - 00:19:59	CRO	269 x	D/T
1	00:16:30 - 00:19:59	HAW	270	D/T
1	00:18:22 - 00:18:24	HAW	270	D/T
1	00:18:47 - 00:20:24	HAW	270	D/T
1	00:19:48 - 00:20:03	HAW	270	D/T
1	00:38:46 - 00:38:55	HAW	270	D/T
1	00:50:58 - 01:00:24	CRO	297	R/T
1	01:00:28 - 01:01:08	HAW	270	D/T
1	01:09:36 - 01:16:25	RTK	338	R/T

* AGENA GET (Prior to Spacecraft Liftoff)

TABLE XIX.- GEMINI X GROUP 31 - Continued

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
1	01:11:07 - 01:20:38	HAW	255	R/T
1	01:23:13 - 01:32:28	GYM	256	R/T
1	01:28:16 - 01:35:48	RTK	338	R/T
1	01:30:14 - 01:39:33	CNV	274	R/T
1	01:39:35 - 01:39:33	CNV	274	R/T
1	01:39:35 - 01:41:17	ANT	275	R/T
2	01:46:14 - 01:53:39		280	
2	02:07:50 - 02:11:01	TAN	327	R/T
2	02:21:57 - 02:29:57	CRO	276	R/T
2	02:47:06 - 02:56:13	HAW	278	R/T
2	02:58:56 - 03:08:00	GYM	258	R/T
2	03:06:30 - 03:13:29	CNV	279	R/T
2	03:09:10 - 03:11:52		280	R/T
2	03:12:52 - 03:19:22	ANT	281	R/T
2	03:14:15 - 03:19:22	ANT	259	R/T
3	03:22:21 - 03:29:41	RKV	260	R/T
3	04:06:14 - 04:13:32	CSQ	261	R/T
3	04:10:40 - 04:12:20		280	
3	04:19:24 - 04:27:27	RTK	339	R/T
3	04:35:07 - 04:42:51	GYM	340	R/T
4	04:56:22 - 05:05:41	RKV	328	R/T
4	05:40:38 - 05:49:58	CSQ	65	R/T
4	05:45:12 - 05:54:24	CSQ	248	R/T
4	05:58:37 - 06:08:03	HAW	248	D/T
5	07:31:27 - 07:39:56	RTK	341	R/T
5	07:33:56 - 07:42:50	HAW	298	R/T
6	08:07:22 - 08:12:59	RKV	351	R/T
6	08:12:59 - 08:21:33	RKV	352	R/T
12	19:45:57 - 19:56:40	GYM	312	R/T
12	19:51:59 - 20:00:50	CNV	311	R/T
12	19:57:12 - 20:07:46	ANT	310	R/T
13	20:17:06 - 20:25:40 -	CYI	299	R/T
13	20:45:02 - 20:55:14	CRO	342	R/T
14	22:32:11 - 22:40:36	CTN	313	D/T
14	22:48:57 - 22:57:17	HAW	314	R/T

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
15	23:12:22 - 23:22:23	NAT	353	R/T
15	23:24:18 - 23:29:22	CYI	360	R/T
15	23:31:49 - 23:37:43	KNO	354	R/T
17	27:23:47 - 27:32:04	CSQ	315	R/T
19	30:50:30 - 30:51:00	ETR	300	D/T
25	39:50:24 - 40:01:25	CYI	343	R/T
25	41:02:39 - 41:06:08	ETR	302	D/T
25	39:39:45 - 39:49:03	ANT	316	R/T
26	41:16:08 - 41:21:59	CNV	329	R/T
26	41:16:11 - 41:21:58	CNV	317	R/T
26	41:16:15 - 41:27:15	ANT	344	R/T
26	41:31:42 - 41:38:00	CYI	66	R/T
26	41:31:43 - 41:34:18	ETR	303	D/T
26	41:31:42 - 41:38:00	CYI	301	R/T
26	41:34:18 - 41:38:00	ETR	300	D/T
26	41:36:31 - 41:43:35	KNO	318	R/T
26	42:36:39 - 42:38:07	TAN	319	R/T
27-28	44:28:13 - 44:39:17	GBI	62	D/T
27-28	44:30:11 - 44:40:30	GTK	63	D/T
27-28	44:31:47 - 44:42:11	BDA	245	R/T
27-28	44:33:12 - 44:42:09	ANT	61	R/T
27-28	44:33:12 - 44:40:59	ANT	35	R/T
27-28	44:43:21 - 44:53:54	CYI	60	R/T
27-28	44:57:45 - 45:06:32	CTN	156	R/T
28	45:18:48 - 45:20:18	ETR	302	D/T
28-29	46:05:37 - 46:17:13	MCCK	247	R/T
28-29	46:11:04 - 46:20:50	ANT	67	R/T
28-29	46:41:48 - 46:51:53	TAN	244	R/T
29	47:23:48 - 47:34:25	HAW	345	R/T
29	47:26:03 - 47:30:10	RTK	330	R/T
29	47:31:34 - 47:32:09	ETR	302	D/T
29	47:35:47 - 47:46:39	GYM	355	R/T
29-30	47:42:49 - 47:54:41	CNV	320	R/T
30	47:48:24 - 47:59:19	ANT	361	R/T

TABLE XIX.- GEMINI X GROUP 31 - Continued

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
30	48:02:52 - 48:13:51	ASC	346	R/T
30	48:35:34 - 48:46:00	CRO	356	R/T
30	48:58:27 - 49:04:27	RTK	331	R/T
30	49:01:10 - 49:12:14	HAW	347	R/T
30	49:13:41 - 49:24:15	GYM	332	R/T
30-31	49:20:48 - 49:31:01	CNV	357	R/T
30-31	49:26:28 - 49:36:40	ANT	358	R/T
31	49:40:43 - 49:51:07	ASC	348	R/T
31	50:14:36 - 50:21:20	CRO	338	R/T
31	50:23:49 - 50:29:59	CSQ	334	R/T
31	50:35:51 - 50:45:05	RTK	349	R/T
42	68:18:35 - 68:29:20	CRO	362	R/T
45	72:24:20 - 72:36:26	ANT	321	R/T
45	73:13:14 - 73:25:32	CRO	306	R/T
45	73:19:05 - 73:30:04	MCCK	304	R/T
45	73:25:32 - 73:34:12	CRO	307	R/T
45	73:26:56 - 73:42:08	CSQ	335	R/T
45-46	73:47:24 - 73:59:38	HAW	305	R/T
46	74:01:23 - 74:11:07	GYM	336	R/T
46	74:08:50 - 74:17:34	INV	322	R/T
46	74:14:09 - 74:24:38	ANT	337	R/T
46	74:21:41 - 74:39:51	RKV	323	R/T
46	75:15:21 - 75:31:47	CSQ	350	R/T
46	75:37:47 - 75:48:29	HAW	363	R/T
49	78:56:42 - 79:08:17	CSQ	324	R/T
49	79:04:53 - 79:12:34	RKV	308	D/T
49	79:15:47 - 79:22:51	RKV	364	R/T

TABLE XIX.- GEMINI X GROUP 31 - (Continued)

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
0	00:02:25 - 00:09:12 *	MCCK	500	R/T
0	00:05:06 - 00:12:48 *	ANT	401	R/T
0	00:13:42 - 00:19:59 *	CRO	411	R/T
0	00:15:33 - 00:22:19 *	CYI	410	R/T
0	00:34:34 - 00:43:31 *	TAN	412	R/T
0	00:51:00 - 01:00:23 *	CRO	413	R/T
0	01:13:32 - 01:19:43 *	CTN	414	R/T
0	01:17:24 - 01:24:29 *	HAW	402	D/T
0	01:00:22 - 00:30:49 *	KNO	411	R/T
0	01:28:23 - 01:37:34 *	GYM	403	R/T
0	01:37:12 - 01:44:44 *	MCCK Q	414	R/T
0	-00:02:00 - 00:09:12	MCCK		R/T
1	-00:00:02 - 00:09:10	MCCK	153	R/T
1	00:03:24 - 00:12:12	ANT	415	R/T
1	00:17:54 - 00:26:15	ASC	416	R/T
1	00:49:14 - 00:58:01	CRO	405	R/T
1	01:14:14 - 01:23:39	HAW	1	
1	01:26:29 - 01:35:01	GYM	407	R/T
1	01:29:57 - 01:39:01	TEX	406	R/T
1	01:33:32 - 01:42:01	MCCK	408	R/T
1	01:38:42 - 01:48:16	ANT	417	R/T
2	01:52:46 - 02:02:35	ASC	418	R/T
2	02:10:00 - 02:16:00	TAN	11	R/T
2	02:10:17 - 02:15:07	TAN	42	R/T
2	02:14:46 - 02:15:08	CRO		R/T
2	02:25:30 - 02:32:59	CRO	5	D/T
2	02:31:56 - 02:37:45	HAW	7	D/T

TABLE XIX.- GEMINI X GROUP 31 - (Continued)

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
2	02:31:56 - 02:42:00	HAW	7	D/T
2	02:37:45 - 02:52:04	HAW	7-2	D/T
2	02:42:00 - 02:52:04	HAW	2	D/T
2	02:50:20 - 02:59:25	HAW	121	
2	02:58:02 - 03:00:08	HAW	3	
2	03:00:12 - 03:05:00	HAW	4	R/T
2	03:05:00 - 03:14:00	TEX	122	R/T
2	03:10:00 - 03:15:52	HAW	123	R/T
2	03:10:00 - 03:16:01	MCCK	409	R/T
3	03:15:20 - 03:22:29	ANT	6	R/T
3	03:24:54 - 03:32:14	RKV	127	R/T
3	03:29:37 - 03:37:02	ASC	128	R/T
3	03:46:18 - 03:53:22	TAN	43	R/T
3	03:46:32 - 03:53:45	TAN	638	R/T
3	03:52:29 - 03:55:47	CSQ	129	R/T
3	03:52:31 - 03:52:55	TAN	150	R/T
3	03:53:44 - 03:54:37	TAN	150	R/T
3	03:58:14 - 04:11:39	TAN/CSQ	131	R/T
3	04:09:34 - 04:16:46	CSQ	130	R/T
4	04:59:33 - 05:09:09	RKV	600	R/T
4	05:22:03 - 05:30:26	TAN	601	R/T
4	05:43:56 - 05:53:14	CSQ	602	R/T
4	06:02:07 - 06:11:26	HAW	603	R/T
5	06:35:46 - 06:44:29		642	R/T
5	06:57:00 - 07:05:36	TAN	604	R/T
5	07:19:53 - 07:28:47	CSQ	605	R/T
5	07:39:14 - 07:46:36	HAW	662	R/T

TABLE XIX.- GEMINI X GROUP 31 - (Continued)

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
7	09:55:35 - 10:03:46	ASC	611	R/T
7	10:07:01 - 10:09:01	KNO	606	R/T
7	10:32:09 - 10:40:52	CSQ	608	R/T
8	11:23:38 - 11:33:01	RKV	607	R/T
8	11:30:29 - 11:39:08	ASC	609	R/T
8	12:07:38 - 12:17:02	CSQ	610	R/T
10	16:10:56 - 16:18:22	ANT	612	R/T
11	16:21:13 - 16:30:37	CYI	613	R/T
11	16:58:56 - 17:04:38	CRO	614	R/T
11	17:46:00 - 17:54:36	ANT	420	R/T
12	17:48:14 - 17:53:46	BDA	615	R/T
12	17:57:14 - 18:06:20	CYI	421	R/T
12	18:05:31 - 18:09:52	KNO	422	R/T
12	18:32:49 - 18:42:05	CRO	610	R/T
14	22:24:44 - 22:33:59	TEX	617	R/T
14	22:34:07 - 22:41:59	ANT	619	R/T
14	22:34:07 - 22:44:59	ANT	619	R/T
15	22:44:44 - 22:51:09	CYI	426	R/T
15	22:51:35 - 22:53:55	ASC	423	R/T
15	22:51:43 - 22:58:43	KNO	424	R/T
14	22:28:19 - 22:37:59	CNV	618	R/T
15	23:19:49 - 23:29:16	CRO	620	R/T
15	23:45:30 - 23:54:12	HAW	432	R/T
15	24:00:30 - 24:09:35	TEX	433	R/T
17	26:52:12 - 27:19:56	TEX	428	R/T
17	26:56:43 - 27:05:41	HAW	427	R/T
18	27:17:16 - 27:25:52	GTK	429	R/T

TABLE XIX.- GEMINI X GROUP 31 - (Continued)

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
18	27:19:30 - 27:24:52	GTK	429	R/T
18	27:23:09 - 27:26:40	ANT	430	R/T
18	27:30:15 - 27:39:39	RKV	431	R/T
18	27:37:05 - 27:42:35	ASC	621	R/T
18	27:52:35 - 28:00:08	TAN	622	R/T
18	28:14:51 - 28:22:33	CSQ	639	R/T
19	29:50:07 - 29:59:16	CSQ	662	R/T
19	30:08:12 - 30:17:37	HAW	662	R/T
20	31:04:31 - 31:10:41	TAN	623	R/T
20	31:26:32 - 31:33:22	CSQ	625	R/T
20	31:43:58 - 31:53:22	HAW	624	R/T
21	32:18:27 - 32:26:40	RKV	626	R/T
21	32:26:59 - 32:32:34	ASC	627	R/T
25	38:51:47 - 39:00:34	CYI	434	R/T
25	38:58:36 - 39:02:58	KNO	435	R/T
25	40:16:01 - 40:24:27	ANT	436	R/T
26	40:35:38 - 40:39:05	KNO	628	R/T
26	41:55:17 - 42:01:03	CYI	148	R/T
26	41:57:15 - 42:03:01	TEX	132	
26	41:59:27 - 42:08:49	GBI	133	
26	41:59:36 - 42:08:08	CNV	134	
27	42:01:23 - 42:14:19	CYI	149	
27	42:02:18 - 42:11:45	ANT	135	
27	42:14:00 - 42:24:00	CYI	139	
27	42:36:39 - 42:38:01	TAN	319	R/T
27	42:50:07 - 43:01:03	CRO	140	
27	43:01:03 - 43:11:32	CRO	141	R/T

TABLE XIX.- GEMINI X GROUP 31 - (Continued)

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
27	43:15:43 - 43:21:31	CTN	154	
27	43:15:00 - 43:23:14	CYI	136	
27	43:21:31 - 43:31:54		155	
27	43:23:14 - 43:30:01	CYI	137	D/T
27	43:43:00 - 43:51:40	TEX	143	R/T
27	43:46:14 - 43:55:48	CNV	144	
27	43:51:46 - 43:55:53	CYI	138	
28	44:01:02 - 44:10:38	CYI	145	
28	44:08:42 - 44:17:40	KNO	640	R/T
28	44:22:39 - 44:29:32	TAN	629	R/T
28	44:37:24 - 44:46:41	CRO	641	R/T
29	46:53:34 - 47:02:34	TEX	630	R/T
30	47:17:25 - 47:25:52	ASC	631	R/T
30	47:48:43 - 47:57:37	CRO	632	R/T
30	48:13:58 - 48:23:05	HAW	633	R/T
30	48:29:48 - 48:38:31	TEX	634	R/T
30	48:38:21 - 48:47:38	ANT	635	R/T
31	49:49:55 - 49:58:57	HAW	146	
31	50:05:20 - 50:13:45	TEX	147	
32	50:39:23 - 50:49:51	HAW	662	R/T
32	51:07:27 - 51:16:19	HAW	151	D/T
32	51:16:19 - 51:24:14	HAW	152	D/T
32	51:25:46 - 51:34:40	HAW	437	R/T
32	51:26:09 - 51:26:47	HAW	151	D/T
33	53:01:57 - 53:10:48	HAW	438	R/T
34	54:00:48 - 54:08:11	TAN	636	R/T
34	54:38:45 - 54:46:13	HAW	637	R/T

TABLE XIX.- GEMINI X GROUP 31 - (Concluded)

S/C REV	S/C GET	WHERE	ITEM NO.	TYPE
	03:46:33 - 03:53:36			R/T
	07:38:53 - 07:47:16			R/T
	25:48:05 - 25:54:08	ANT	389	R/T
	28:51:47 - 39:00:34			R/T
	42:37 - 43:23			R/T
	43:39 - 43:47			R/T
	75:52:18 - 75:52:24	HAW	409	
	77:06:43 - 77:17:00	HAW	409	

TABLE XX.- GEMINI X O-GRAMS

1.	03:21:00	-	03:30:00	GET	REV 3-4
	01:41:20	-	01:50:00	GMT	
	04:56:24	-	05:05:34	GET	REV 4-5
	03:16:50	-	03:26:00	GMT	
	06:32:24	-	06:41:00	GET	REV 5-6
	04:52:50	-	05:01:20	GMT	
	08:07:24	-	08:22:00	GET	REV 6-7
	06:27:50	-	06:42:00	GMT	
2.	09:48:00	-	10:04:00	GET	REV 7-8
	08:08:40	-	08:24:20	GMT	
	11:29:00	-	11:45:00	GET	REV 8-9
	09:49:08	-	10:05:30	GMT	
	13:11:00	-	13:26:00	GET	REV 9-10
	11:31:20	-	11:46:30	GMT	
3.	14:55:00	-	15:04:00	GET	REV 10-11
	13:15:20	-	13:24:30	GMT	
4.	26:37:00	-	26:48:00	GET	REV 17-18
	00:57:43	-	01:08:20	GMT	
	28:14:00	-	28:26:00	GET	REV 18-19
	02:34:12	-	02:46:30	GMT	
	29:52:00	-	30:04:00	GET	REV 19-20
	04:12:30	-	04:24:05	GMT	
5.	31:30:00	-	31:41:00	GET	REV 20-21
	05:50:00	-	06:01:00	GMT	
	33:08:00	-	33:20:00	GET	REV 21-22
	07:28:50	-	07:40:15	GMT	
	34:46:00	-	34:58:00	GET	REV 22-23
	09:06:14	-	09:18:20	GMT	
	36:24:00	-	36:34:00	GET	REV 23-24
	10:44:20	-	10:54:50	GMT	
6.	44:43:00	-	44:54:00	GET	REV 28-29
	19:03:43	-	19:14:50	GMT	

TABLE XX.- GEMINI X O-GRAMS - Concluded

7.	49:37:00	-	49:47:00	GET	REV 31-32
	23:57:20	-	00:07:30	GMT	
	51:13:00	-	51:16:00	GET	REV 32-33
	01:33:13	-	01:36:30	GMT	
	52:51:00	-	53:02:00	GET	REV 33-34
	03:11:00	-	03:22:00	GMT	
	54:28:00	-	54:40:00	GET	REV 34-35
	04:48:40	-	05:00:15	GMT	
	56:05:00	-	56:19:00	GET	REV 35-36
	06:25:55	-	06:39:00	GMT	
8.	57:42:00	-	57:57:00	GET	REV 36-37
	08:02:30	-	08:17:15	GMT	
	59:23:00	-	59:34:00	GET	REV 37-38
	09:43:10	-	09:54:25	GMT	
	61:03:00	-	61:09:00	GET	REV 38-39
	11:23:00	-	11:29:40	GMT	
9.	72:35:00	-	72:49:00	GET	REV 46
	22:55:00	-	23:09:10	GMT	
	74:22:00	-	74:41:00	GET	REV 47
	00:42:00	-	01:01:00	GMT	
10.	76:06:00	-	76:31:00	GET	REV 48
	02:29:44	-	02:51:37	GMT	
	77:59:00	-	78:22:00	GET	REV 49
	04:19:10	-	04:42:50	GMT	
	79:50:00	-	80:01:00	GET	REV 50
	06:10:34	-	06:21:30	GMT	
11.	81:27:00	-	81:39:00	GET	REV 51
	07:47:38	-	07:59:50	GMT	
	83:05:00	-	83:17:00	GET	REV 52
	09:25:00	-	09:37:09	GMT	

TABLE XXI.- GEMINI XI O-GRAMS

1.	-			REV 0-1
	13:55:58 -	14:05:50	GMT	
	00:49:00 -	00:56:00	GET	REV 1-2
	15:31:02 -	15:41:34	GMT	
	02:23:00 -	02:33:00	GET	REV 2-3
	17:05:58 -	17:15:54	GMT	
2.				REV 1/2
3.				REV 3/4
4.	03:24:00 -	03:34:00	GET	REV 3-4
	18:06:21 -	18:16:10	GMT	
	04:59:00 -	05:10:00	GET	REV 4-5
	19:41:00 -	19:52:30	GMT	
	06:35:00 -	06:46:00	GET	REV 5-6
	21:17:33 -	21:28:00	GMT	
	08:12:00 -	08:21:00	GET	REV 6-7
	22:54:03 -	23:03:30	GMT	
5.	16:58:00 -	17:06:00	GET	REV 11-12
	07:40:47 -	07:48:15	GMT	
	18:32:00 -	18:43:00	GET	REV 12-13
	09:14:33 -	09:25:00	GMT	
	20:07:00 -	20:18:00	GET	REV 13-14
	10:49:55 -	11:00:26	GMT	
	21:43:00 -	21:54:00	GET	REV 14-15
	12:25:52 -	12:36:18	GMT	
	23:19:00 -	23:30:00	GET	REV 15-16
	14:01:38 -	14:12:03	GMT	
	24:55:00 -	25:05:00	GET	REV 16-17
	15:37:17 -	15:47:33	GMT	
	26:32:00 -	26:38:00	GET	REV 17-18
	17:14:33 -	17:20:36	GMT	

TABLE XXI.- GEMINI XI O-GRAMS - Continued

6.	30:42:00 - 30:51:00	GET		REV 20-21
	21:24:00 - 21:33:40	GMT		
	32:18:00 - 32:27:00	GET		REV 21-22
	23:00:10 - 23:09:30	GMT		
	33:53:00 - 34:04:00	GET		REV 22-23
	00:35:45 - 00:46:09	GMT		
	35:29:00 - 35:39:00	GET		REV 23-24
	02:11:14 - 02:21:40	GMT		
	37:05:00 - 37:13:00	GET		REV 24-25
	03:47:45 - 03:55:22	GMT		
7.	40:29:00 - 40:34:00	GET		REV 26-27
	07:11:02 - 07:16:02	GMT		
8.	47:48:00 - 47:58:00	GET		REV 30-31
	14:30:26 - 14:40:56	GMT		
	49:24:00 - 49:33:00	GET		REV 31-32
	16:06:45 - 16:15:15	GMT		
9.	63:57:00 - 64:05:00	GET		REV 40-41
	06:39:14 - 06:47:02	GMT		
	65:30:00 - 65:41:00	GET		REV 41-42
	08:12:55 - 08:23:24	GMT		
	67:06:00 - 67:16:00	GET		REV 42-43
	09:48:27 - 09:58:55	GMT		
10.	67:42:00 - 68:03:00	GET	(DUMP)	REV 42-43
	10:24:55 - 10:45:02	GMT		
11.	72:53:00 - 73:02:00	GET		REV 47
	15:35:50 - 15:44:25	GMT		
	74:28:00 - 74:38:00	GET		REV 48
	17:10:00 - 17:20:50	GMT		
	76:03:00 - 76:14:00	GET		REV 49
	18:45:57 - 18:56:56	GMT		
	77:42:00 - 77:51:00	GET		REV 50
	20:24:05 - 20:33:00	GMT		
	79:19:00 - 79:28:00	GET		REV 51
	22:01:55 - 22:10:40	GMT		
	80:56:00 - 81:06:00	GET		REV 52
	23:28:00 - 23:48:55	GMT		

12.	86:38:00	-	86:40:00	GET	REV 55
	05:20:07	-	05:22:12	GMT	
	88:10:00	-	88:20:00	GET	REV 56
	06:52:13	-	07:02:06	GMT	
	89:46:00	-	89:57:00	GET	REV 57
	08:28:24	-	08:39:42	GMT	
	91:23:00	-	91:34:00	GET	REV 58
	10:05:21	-	10:16:30	GMT	
	93:00:00	-	93:11:00	GET	REV 59
	11:42:29	-	11:53:30	GMT	
13.	11:30:58	-	11:41:08	GMT	REV 90

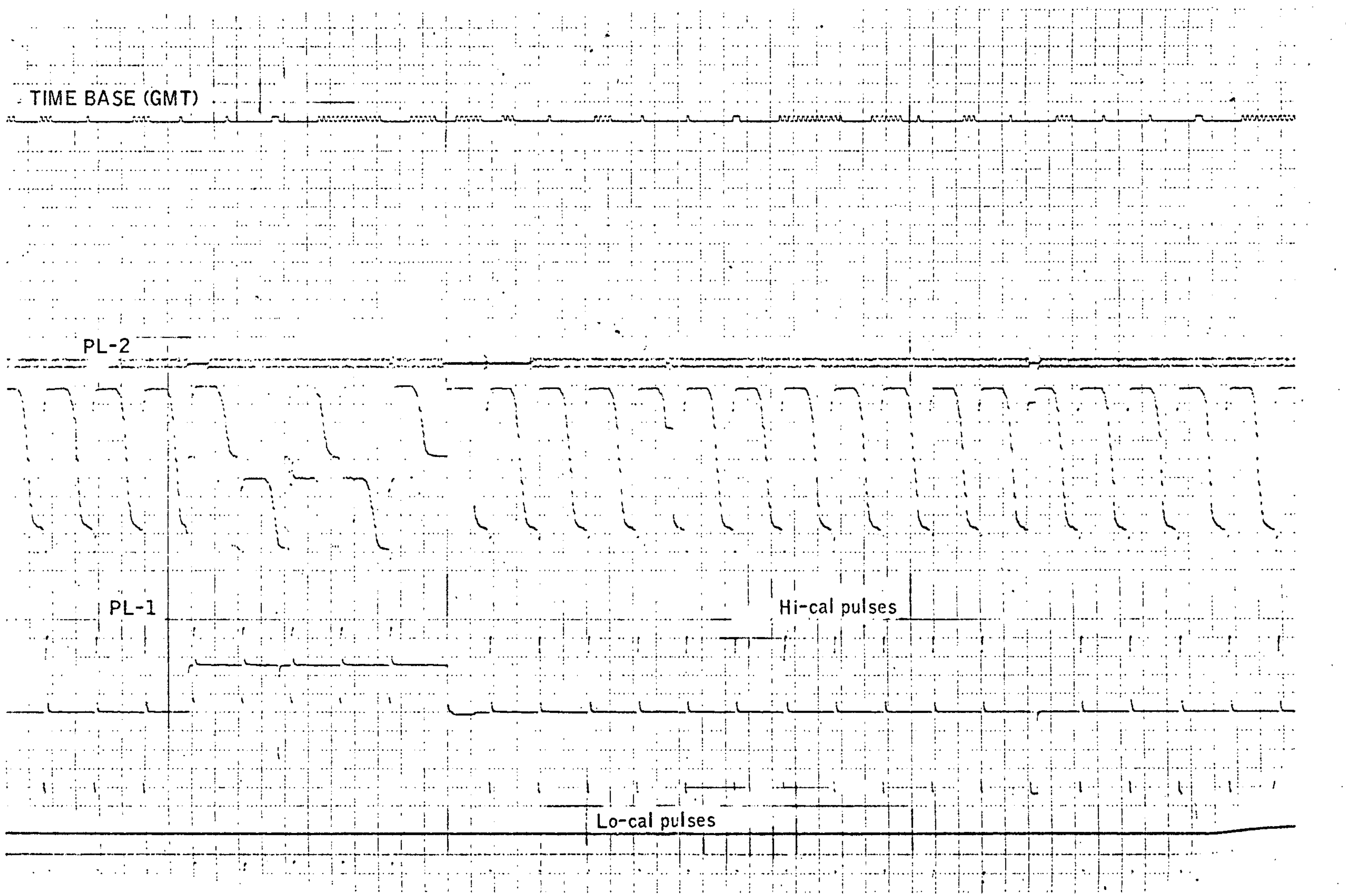


Figure 45.- Oscillogram sample (1 cm per second).

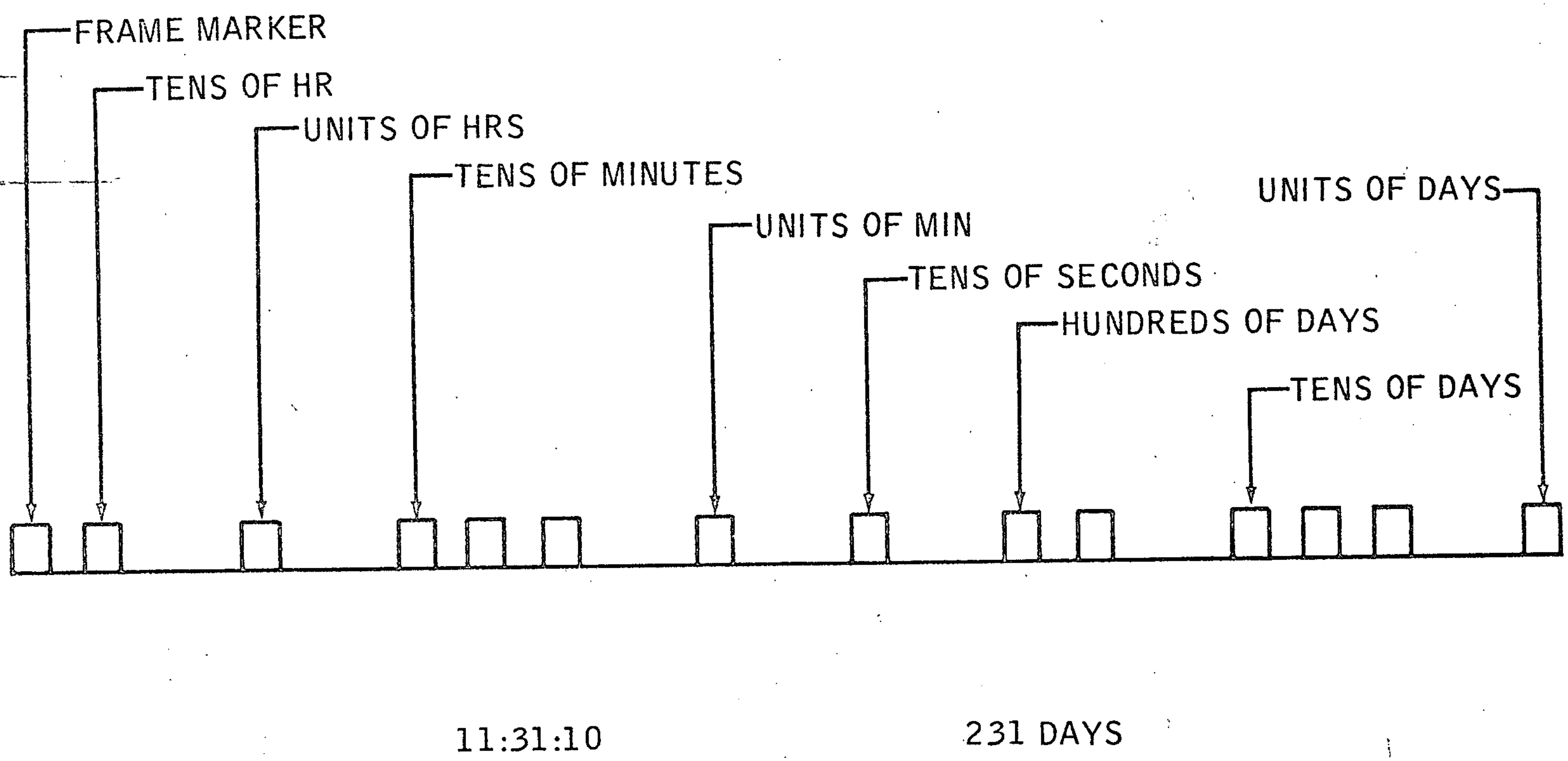


Figure 46.- How to read time on tapes and O-grams

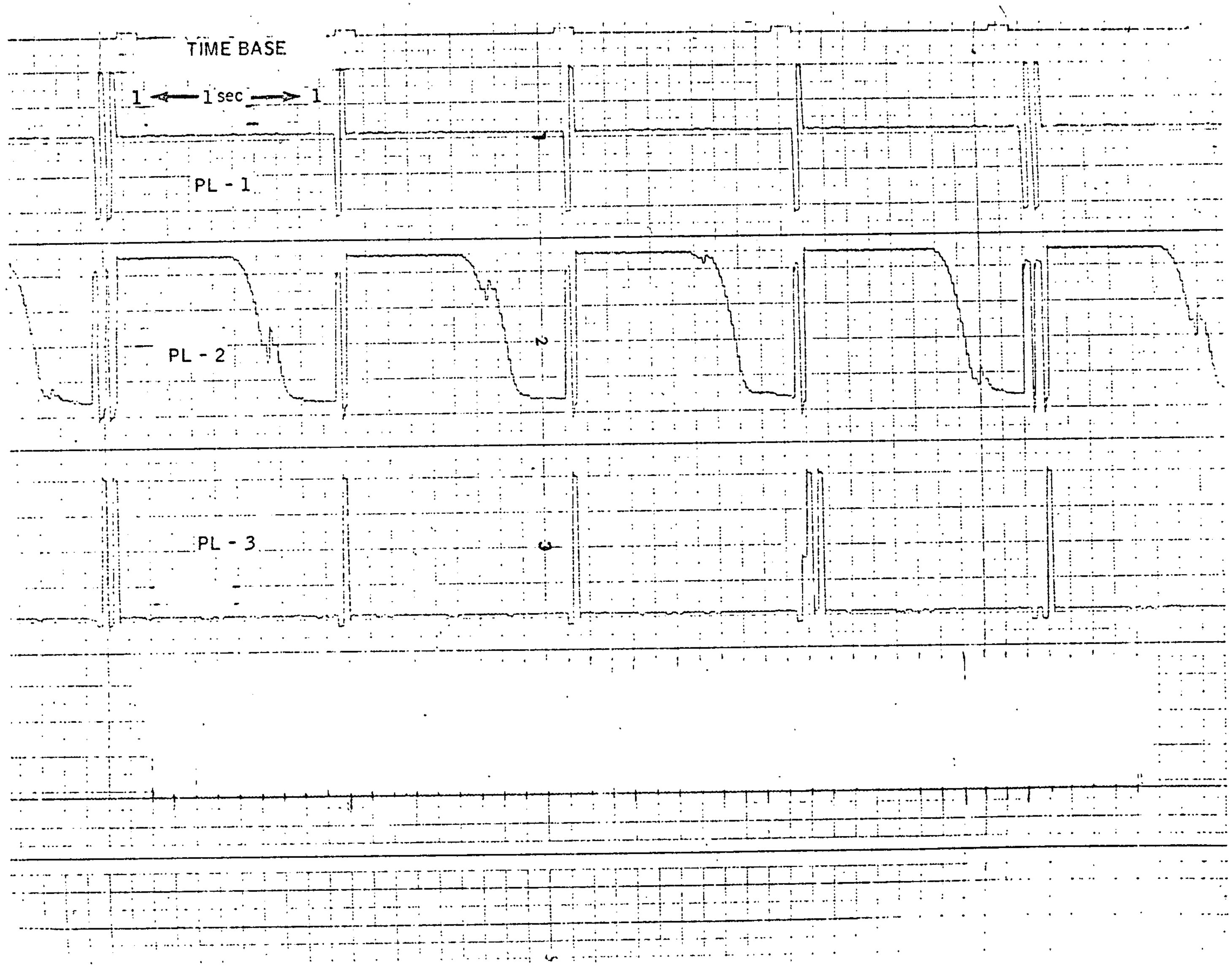


Figure 47.- Chart traces available from ETR at MSC mission control via hard line connection.

TABLE XXII.- GEMINI X, ETR - MSC

1.	01:27:28 - 01:38:00	GET			
	23:47:54 - 23:58:26	GMT	REV 1/2		
2.	03:10:59 - 03:25:45	GET			
	01:31:25 - 01:46:11	GMT	REV 2/3		
3.	21:31:00 - 21:42:00	GET			
	19:51:26 - 20:02:26	GMT	REV 13/14		
	TAN - Preliminary S-EVA				
4.	23:00:00 - 23:20:00	GET			
	21:20:26 - 21:40:26	GMT	REV 14/15		
	Stand-up EVA TDA North				
5.	26:30:00 - 26:37:00	GET			
	00:50:26 - 00:57:26	GMT	REV 16/17		
	TDA Forward, Docked Many changes, D-5 Experiment				
6.	43:00:24 - 43:02:00	GET			
	17:20:50 - 17:22:26	GMT	REV 27		
	Dock Configuration TDA Forward Preliminary Umbilical EVA				
7.	44:06:00 - 44:11:00	GET			
	18:26:26 - 18:31:26	GMT	REV 27		
	Agena Gemini Docked Configuration				
8.	44:30:00 - 44:42:00	GET			
	18:50:26 - 19:02:26	GMT	REV 27/28		
	44:40:15 -- Undocking				
9.	69:09:30 - 69:17:00	GET			
	19:29:26 - 19:37:00	GMT	REV 42/43		
	Ambient				
10.	72:28:00 - 72:41:10	GET			
	22:48:26 - 23:01:36	GMT	REV (After Splashdown)		

1.	19:19:00	-	19:30:00	GET		
	10:01:26	-	10:12:26	GMT		REV 12/13
	20:57:00	-	21:05:00	GET		
	11:39:26	-	11:47:26	GMT		REV 13/14
	CNV Passes Ambient					
2.	22:30:00	-	22:42:00	GET		
	13:12:26	-	13:24:26	GMT		REV 14/15
	24:06:00	-	24:18:00	GET		
	14:48:26	-	15:00:26	GMT		REV 15/16
	24:05 Umb EVA		TDA South		CNV	
3.	25:40:00	-		GET		
	16:22:26	-		GMT		REV 16/17
		-	26:54:00	GET		
		-	17:36:26	GMT		REV 17/18
4.	26:03:00			GET		
	16:45:26			GMT		REV 17

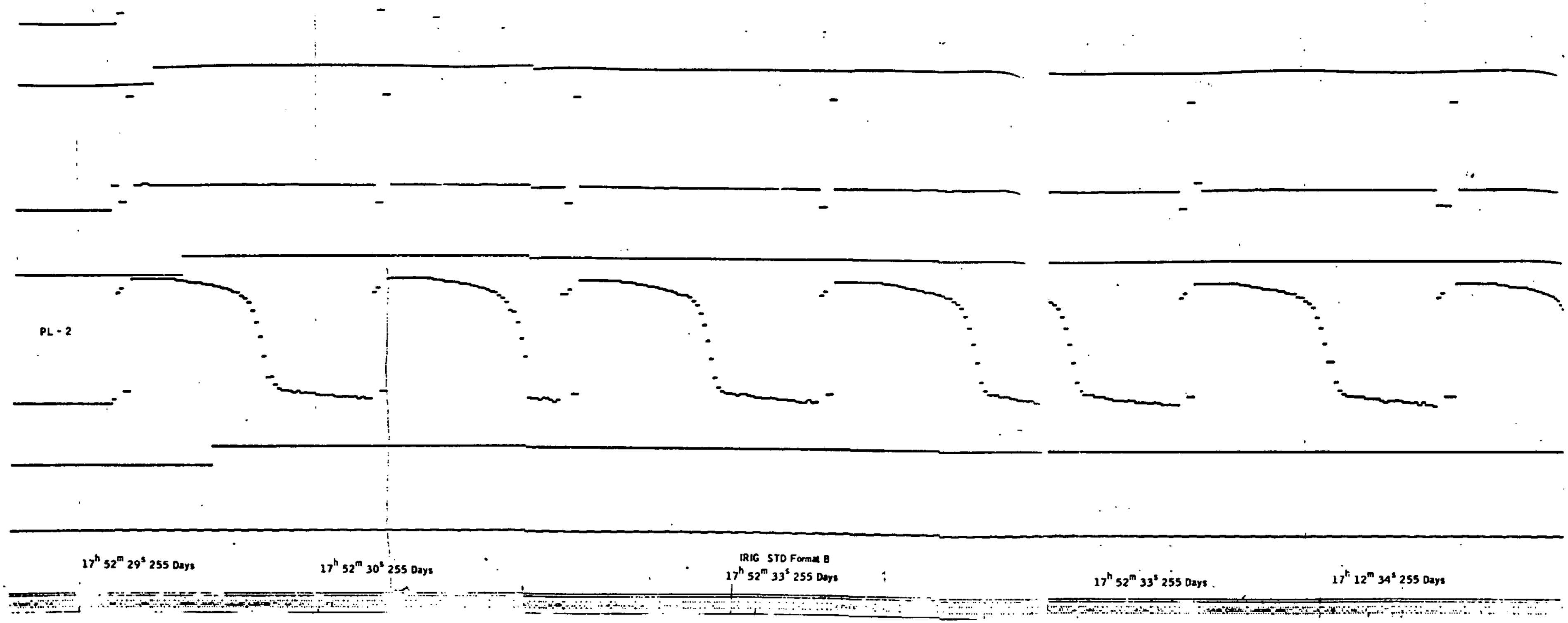
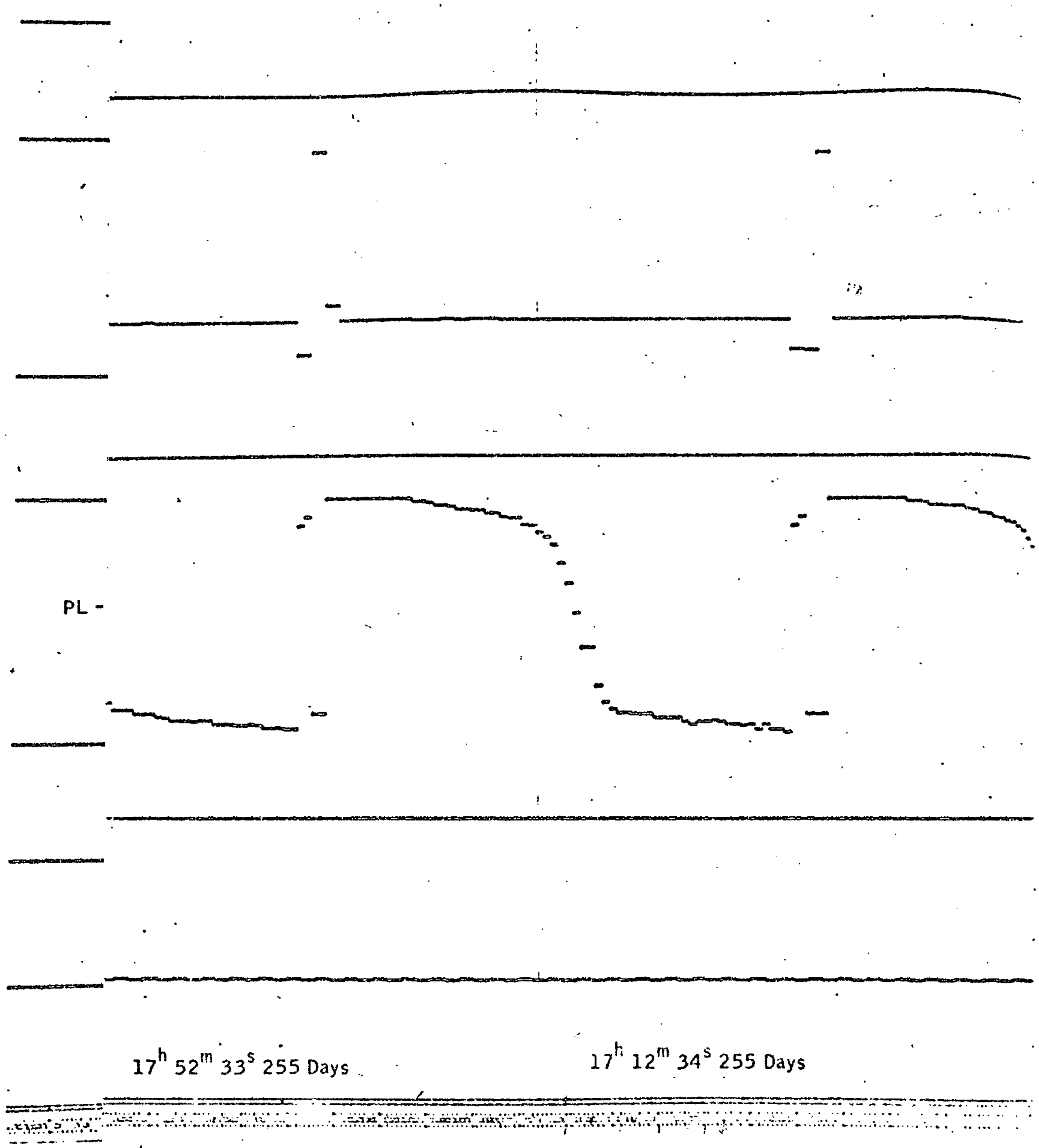


Figure 48.- The KSC traces of PL data.


PL
17h 52m 33s 255 Days
17h 12m 34s 255 Days

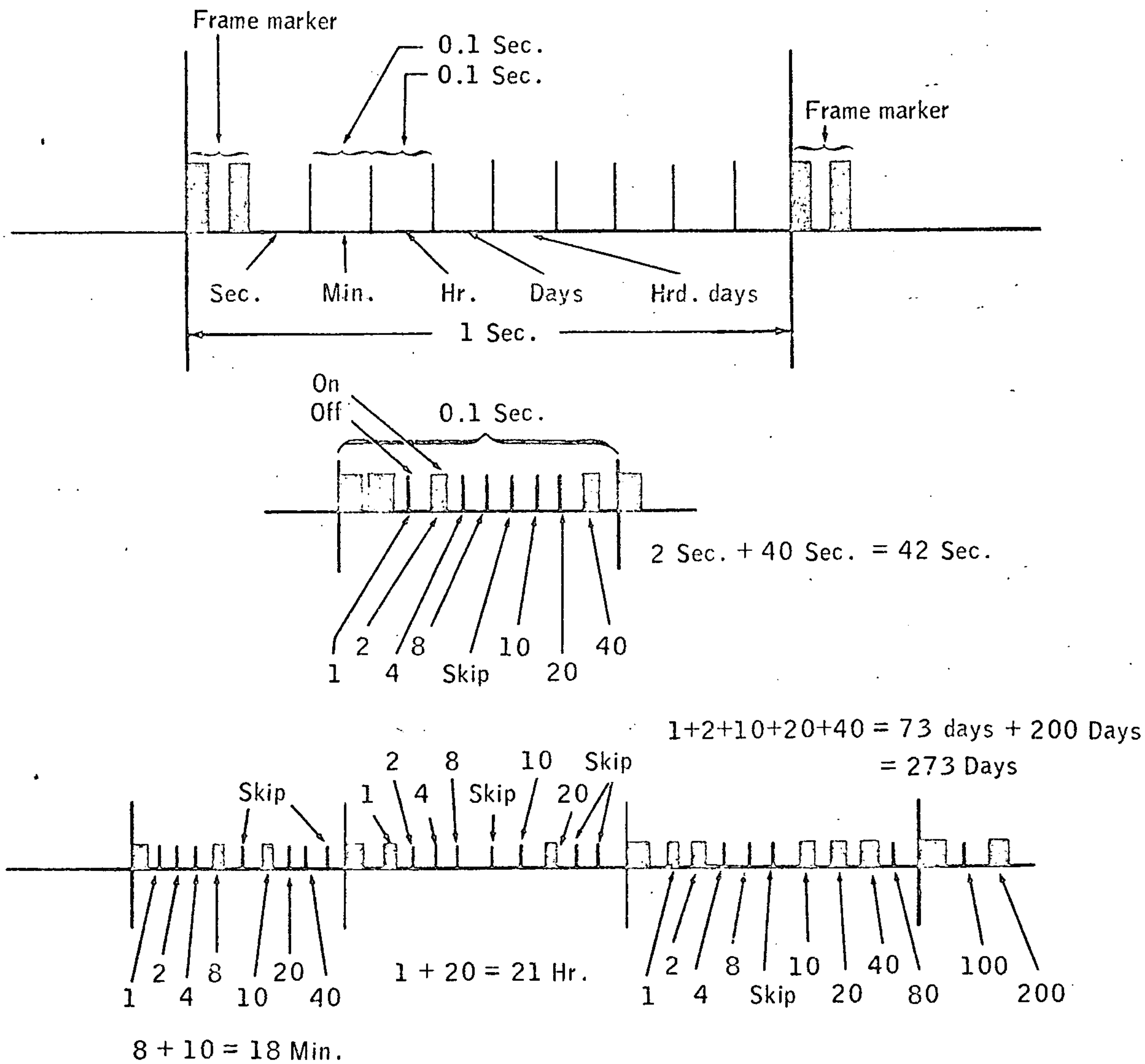


Figure 49.- Code for reading time markers on KSC charts.

TABLE XXIV.- KSC GEMINI X

1.	Prelaunch 15:32Z - 15:44Z				Record 1-5	
2.	Prelaunch 18:01Z - 18:11Z				Record 1-5	
3.	Prelaunch 20:10Z - 20:12Z				Record 1-5	
4.	Prelaunch 20:25Z- 20:27Z				Record 1-5	
5.	00:00:58	-	00:03:58	GET	Record 1-5	
	22:21:24	-	22:24:24	GMT		Rev 0/1
6.	01:30:19	-	01:33:19	GET	Record 1-5	
	23:50:45	-	23:53:45	GMT		Rev 1/2
7.	01:33:33	-	01:36:37	GET	Record 1-5	
	23:53:59	-	23:57:03	GMT		Rev 1/2
8.	01:36:50	-	01:39:33	GET	Record 1-5	
	23:57:16	-	23:59:59	GMT		Rev 1/2
9.	03:08:41	-	03:13:38	GET	Record 1-5	
	01:27:07	-	01:34:04	GMT		Rev 2/3
10.	21:30:23	-	21:37:55	GET	Record 1-5	
	19:50:49	-	19:58:21	GMT		Rev 13/14
11.	21:38:16	-	21:40:30	GET	Record 1-5	
	19:58:42	-	20:00:56	GMT		Rev 13/14
12.	23:06:44	-	23:07:54	GET	Record 1-5	
	21:27:10	-	21:28:20	GMT		Rev 14/15
	23:08:04	-	23:14:22	GET	Record 1-5	
	21:28:30	-	21:34:48	GMT		Rev 14/15
13.	23:14:29	-	23:17:45	GET	Record 1-5	
	21:34:55	-	21:38:09	GMT		Rev 14/15
14.	24:45:40	-	24:53:14	GET	Record 1-5	
	23:06:06	-	23:13:40	GMT		Rev 15/16

TABLE XXIV.- KSC GEMINI X - Concluded

15.	24:53:20	-	24:55:11	GET	Record 1-5	
	23:13:46	-	23:15:37	GMT		Rev 15/16
16.	26:22:23	-	26:29:59	GET	Record 1-5	
	00:42:49	-	00:50:25	GMT		Rev 16/17
17.	26:30:18	-	26:31:33	GET	Record 1-5	
	00:50:44	-	00:51:59	GMT		Rev 16/17

TABLE XXV.- KSC GEMINI XI

1.	Prelaunch	Record 1-5	
2.	Prelaunch	Record 1-5	
3.	Prelaunch 11:10:36 - 13:17:51 GMT	Record 1-5	
	NOTE: Shroud Removal Approx. Agena Launch	13:11:20 13:05:01.8	
4.	00:02:00 - 00:07:00 GET 14:40:34 - 14:49:48 GMT	Record 1-5	Rev 0/1
5.	01:33:34 - 01:42:44 GET 16:16:00 - 16:25:10 GMT	Record 1-5	Rev 1/2
6.	03:10:03 - 03:16:52 GET 17:52:29 - 17:59:18 GMT	Record 1-5	Rev 2/3

The PL-data availability and event summaries are combined in two master charts (appendix E).

As noted earlier, the S026 sensor data are only part of the problem. A large number of variables must be included in any meaningful interpretation of these results. These variables can be categorized in two major groups as follows.

1. Environmental - such as ephemeris, sun angles, magnetic fields (MSC-3)

2. Vehicle relative position and attitude coordinates - such as Agena group 8 or Gemini groups 17 and 19, bilevels, and computer words

Much of these data, furnished the experimenter in tab form, has been further developed. Gemini thruster duration is discussed in Flight Control System and C03E trajectory was provided by FOD.

Agena controlled gas impulse.- Telemetered values of control gas temperature (D70), control gas pressure (D59), and tables of constants were used to compute corrected temperature, corrected pressure, weight remaining, and available impulse versus elapsed time.

Agena turbine speed tabulations.- A special program was available for converting turbine speed to RPM and the velocity meter readout to GPS. These parameters and the vehicle time word were printed versus elapsed time.

Agena command function status monitor data.- All command function status monitor data were tabulated versus elapsed time. These were bilevel event data and were tabulated only when any one bit changed. Further information is found under Agena Bilevels.

Ephemeris.- From the trajectory tape (C03E) furnished by FOD, CAAD strips out time, geocentric latitude, longitude, and altitude. For special times of interest, the parameters B (earth magnetic field in gauss) and L (altitude in earth radii) can be computed. The tabular output consists of the following.

Time	Latitude in degrees
Altitude in feet	Longitude in degrees
Latitude in radians	LD in degrees
Longitude in radians	B in gauss
Altitude in km	L in earth radii

Since geocentric longitude is equivalent to geodetic longitude, no distinction was made in the ephemeris headings. However, the latitudes in columns 3 and 6 are geocentric latitudes. The eighth column headed by LD is the geodetic latitude in degrees.

Thruster valves (OAMS).- This program computed the number of times that a thruster valve opened and the number of times that it stayed open for more than one-tenth of a second. The number of valve openings was determined by counting each time the bilevel data for each thruster changed from a zero to a one. The number of valve openings for more than one-tenth of a second was determined by counting the number of times the bilevel data indicated a one for two or more consecutive samples.

The total number of valve openings and the number of openings for over one-tenth second were tabulated versus elapsed time from liftoff in 15 minute increments. Also, an indication of how much data were bad or missing was printed for each computer run.

Sun angles.- A program existed within CAAD to tabulate the spacecraft look angle with respect to the sun.

The body right-hand system with origin at the center of mass of the spacecraft was the reference system. The tabulated output included the analog telemetered gimbal angles in degrees. If the platform was off, these angles were received as some constants, which resulted in meaningless look angles.

The look angles were the elevation angle and the azimuth angle. The elevation angle, in degrees, was the angle between the X-Y plane and the line of sight to the sun. If the tabulated angle was positive, the sunlight was illuminating the bottom part of the spacecraft. With a negative elevation angle, the sunlight would be in the astronaut's face.

The azimuth angle was positive in the first and second quadrants of the X-Y plane. The positive Y axis would be +90 degrees. The negative X axis would be positive or negative 180 degrees. The negative Y axis would be minus 90 degrees.

When the spacecraft entered the twilight zone, the look angles were followed by a P to indicate a penumbra region. When the spacecraft was in the earth's shadow, the look angles were not tabulated.

The components of the spacecraft velocity relative to the earth are tabulated in the E format. The velocity units are in feet per second.

In looking at a sample of the data, the first line would have a g.e.t. of hours:min:sec. The pitch, yaw, and roll are the next three columns. If the number in the next column reads -0.3P, this indicates the sun is three tenths of a degree above the X-Y plane. If the number in the next column reads 66.1P, this indicates the sun is 66.1 degrees to the right of the nose of the spacecraft. The P following each angle indicates the spacecraft was changing either from light to dark or from dark to light. The I-component of velocity indicates the velocity in the X-direction. The number 3.19486 +003 would be read as 3194.86 feet per second. The J-component, -2.05531 +004 would be read as -20553.1 feet per second. The negative sign indicates the spacecraft was moving leftward.

Examples of group 8 data and Gemini group 17 (attitude) are listed in tables XXVI and XXVII.

TABLE XXVI.- AGENA GROUP 8

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TABLE XXVII.- GEMINI GROUP 17

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RELATIVE POSITION INFORMATION

Film Data

Most of the film data were only marginally usable. Camera malfunctions, incorrect exposures, loss of timing signals, and timing gaps occurred.

Table XXVIII lists film data supplied to the Experimenter by NASA-MSC. No input was available for mode B-01 or B-03. The time assignments were determined indirectly only. The film data status for each of the S026 modes is summarized in the following paragraphs.

G-X mode U.- The G-X mode U provided the best and most est and most reliable film data available. There was a stationary reference for calibration and timing objectives (fig. 40).

G-IX initial docking and mode B-03 (mag no. 197).- Color daytime exposures were used to record the initial rendezvous and docking at approximately 01:35 S/C g.e.t. and mode B, sequence 03. All other S026 modes were night passes (table X) so that a film change was necessary. The exposure setting on the camera apparently malfunctioned at 03:00 S/C g.e.t. The following analysis of events used indirect methods to compensate for timing signal malfunctions.

1. From the beginning of the film proceeding to the first acquisition of a light (or reflection) from the target vehicle was 11 frames. The light was only in view for 3 frames and appeared in the upper left corner. There were 132 black frames before the light came back into view for another 3 frames.

TABLE XXVIII.- REDUCED FILM DATA SUPPLIED BY MSC

GT X	S/C g.e.t.		Mode
1. Acquisition light (BOSCAR reader)	44:39:59:62	44:40:39:62	u
2. Acquisition light (TELECORDEX reader)	44:40:16:28	44:40:23:62	u
3. Spiral Antenna (BOSCAR reader)	44:40:39:78	44:41:11:45	u
GT XI			
1. Top Running lights (BOSCAR reader)	2:29:2.0	2:31:36	B-02
2. Bottom Running lights (BOSCAR reader)	2:27:46	2:29:01	B-02
3. Status lights (TELECORDEX reader)	3:41:36	3:43:29	A
4. Acquisition light (reflection from side) and upper running light (TELECORDEX reader)	3:45:22	3:50:12	A
5. Top running lights (TELECORDEX reader)	3:51:59	3:55:12	A

2. There were 72 black frames before the Agena vehicle came into view again for a total of 34 frames. The Agena came into view on the left side of the frame. It appeared that at 01:10 S/C g.e.t. the 16-mm camera was turned on while the Gemini was in the catchup mode with the Agena flying TDA north. In order to rendezvous with the Agena, the Gemini flew below and slightly ahead of the Agena to come up on its left side. The Agena was then inspected from the docking cone to the engine end and back again. The target vehicle went out of view at that time for another 18 frames.

3. The next view of the Agena was of the docking cone. The Gemini was repositioned for docking. There were approximately 762 frames of the actual docking. The camera was then stopped and the film removed.

4. The 16-mm color film was reinserted into the camera at approximately 03:00 S/C g.e.t. At the beginning of this part of the film there were 72 black frames; this could be the nuzzle exercise. A deep dip in the ion density occurred at approximately 03:01:10 S/C g.e.t. Although the crew could look out of the left window and view the sensors at approximately 6 to 12 inches away, the field of the camera was forward. It was also possible that these black frames occurred during the repositioning from the nuzzle (point A to points B and C). During most of this time, A→B→C, the Agena was also outside of the camera field of view.

In the next 69 frames there appeared to be out-of-plane cuts for sequence 03. A light would come in from the right side and proceed to the left, at which time two lights would appear and then disappear. The following 61 frames were black. In the next 11 frames a small white light appeared in the lower right side of the frame. The next 114 frames were black, followed by a period of 69 frames which contained a far away view of the Agena entering from the right to the middle of the frame and then disappearing. It appeared that at this time mode B, sequence 03 had been completed.

There were then 101 black frames, followed by 128 frames of two lights which entered from the right and proceeded to the left, followed by 124 black frames. This was possibly the repositioning from position I to the formation required for docking.

5. The film was removed (exposing six frames) and reinserted. This was followed by 702 frames of the Agena-Gemini in docked formation. This probably corresponded to the out-of-plane pulse per second (PPS) calibration burn, which occurred at the end of the film (at about 04:30 S/C g.e.t., over HAW). Table XXIX summarizes the color film analysis.

The modes B-01, B-01 and A (flight plan) were all carried out under nighttime conditions. The unequivocal identification of Agena lights was made difficult by spurious reflections. Table XXX summarizes an early analysis of the black and white film. A more precise determination is described in the discussion of specific results (mode A). Apendix F presents the results supplied to the PI by NASA-MSC.

TABLE XXIX.- COLOR FILM ANALYSIS S026 MAG #197

S/C-g.e.t.
Proposed

TIME	VIEW	EVENT	TIME	FRAMES
01:17:41-01:17:52 (from flight plan)	Nothing		11 sec f/beg.	11
01:17:52-01:17:55	Sm. White lt. in top 1 ft.	End view of TDA	3 sec (1f.p.s.)	3
01:17:55-01:20:17	Nothing		132 sec = 2:22	132
01:20:17-01:20:20	Same lt	" " " "	3 sec.	3
01:20:20-01:21:32	Nothing		72 sec = 1:12	72
01:21:32-01:22:06	l.h. side of Agena from TDA to eng. & back to TDA	The initial rendezvous with the Agena and inspection of it (TDA North)	34 sec	34
01:22:06-01:22:24	Nothing		18 sec	18
01:22:24-01:35:06	TDA enters from left	The Gemini is on the left side of TDA, swings around it a line itself and docks, camera kept on after docking	762 sec = 12:42 (if frame rate is 1 f.p.s.; if actually 6f.p.s., t = 2.07)	762
	Blank	Camera stopped		
3:00:37-3:01:49	Nothing	Mode B - Seg 3 "nuzzle" exercise Pt. "A" in which the Agena would be out of camera's view.	72 sec = 1:12	72

TABLE XXIX.- COLOR FILM ANALYSIS S026 MAG #197 (Concluded)

S/C-g.e.t. Proposed TIME	VIEW	EVENT	TIME	FRAMES
3:01:49-3:02:58	Alt. comes in from lower rt. to left, 2 lts. appear in middle & then disapp.	B1 to D1 (See diag.)	69 sec = 1:09	69
3:02:58-3:03:59	Nothing	Δ	61 sec = 1:01	61
3:03:59-3:04:10	Sm. lt. in lower r.h. side	D" to E'	11 sec	11
3:04:10-3:06:04	Nothing	γ	114 sec = 1:54	114
3:06:04-3:07:13	Faint, far-away view of Agena from rt. to middle & disapp.	E" - F'	69 sec = 1:09	69
3:07:13-3:09:04	Nothing	β	101 sec = 1:51	101
3:09:04-3:11:12	2 lts. enter from left - rt.	f" - G'	128 sec = 2:08	128
03:11:12-03:13:17	Nothing	α	124 sec = 2:04	124
03:13:16-03:13:22	Blank	Camera stopped and film is removed	6 sec	6
04:30-04:31:57	Gemini-Agena in docked formation	Out of plane PPS calibration burn appears in last 2 - 3 frames	117 sec = 1:57	702 (6 f.p.s.

TABLE XXX.- BLACK AND WHITE FILM ANALYSIS - S026 EXPERIMENT

S/C g.e.t. Proposed Time	View	Event	Time	Frames
02:12:12 - 02:20:59	Agena undocked and repositioning for Sequence 01, Mode B	Mode B, sequence 01 (because of data loss, no analysis of this sequence is made)	8 min/47 sec. (1 fr./sec.)	527
02:25:54 - 02:27:48	Closeup view of Agena (righthand side) goes out of view at the top and comes back in from the top	Mode B, Sequence 02, from point A to B to B1 (see diagram)	1 min/54 sec	104
02:27:48 - 02:28:20	Agena appears in the middle of the frame and goes to the bottom (there are four lights)	B1 to C	32 sec	32
02:28:20 - 02:31:24	Photo lights appear in the bottom and move to the top of the frame	C to C1 to D	3 min/4 sec	184
02:31:24 - 02:33:27 (02:31:52 end)	Four lights that were at the top move to the bottom of the frame	D to E	2 min/3 sec	123
	— —	Camera stopped	6 sec	6
03:46:15 - 03:50:19	Undocking of Agena, repositioning to righthand side	Linear mode A - undocking to point A (BEF) (see diagram)	4 min/4 sec	244
03:50:19 - 03:53:00	Closeup view of Agena righthand side TDA	Point A (BEF) to point B and back to acquisition of lights	2 min/41 sec	161
03:53:00 - 03:59:44 (03:53:47 end)	One light remains in view in middle of screen	The Gemini is moving straight back, away from the Agena from point C to D	6 min/44 sec	404
03:59:44 - 03:59:56	Two lights appear in middle of frame 1 inch apart	same as above	12 sec	12
	--	Film stopped - started again		
	The Gemini/Agena dock and	Gemini/Agena docked	1 min (6 fr./sec.)	357

GENERAL PROPERTIES OF THE S026 DATA STREAM

Outboard Ion (PL-1)

The outboard ion detector (PL-1) operated continuously from liftoff until shutdown of the Agena on flights of Gemini X and Gemini XI. There was no apparent malfunction in its performance during either of these missions. The ion currents were relatively consistent with the expected variation in their magnitudes as a function of Agena orientation. The change in the outboard ion readings during an Agena yaw is illustrated in figure 50. This figure also shows the orientation effects on the other sensors.

There was a major question with respect to the relative magnitudes of the outboard sensor (PL-1) and the inboard ion sensor (PL-3). More specifically, under conditions of the TDA-forward orientation, an estimate of relative ion currents indicated that the ratio I_3/I_1, where I_3 is the current to PL-3 and I_1 the current to PL-1, should have been of the same order as the effective Mach number of the vehicle through the ionosphere. That is, the ratio of the currents should have been directly related to the relative magnitudes of the orbital velocity of the Agena and the ion thermal velocity. In most cases investigated for both Gemini X and XI the values for PL-1 when compared with PL-3 were consistently higher than predicted. Examples are shown in figure 51. Hypotheses to explain this effect on the basis of electric field-enhanced deflections of ions in a direction of the PL-1 sensor were not rigorously tested against the data.

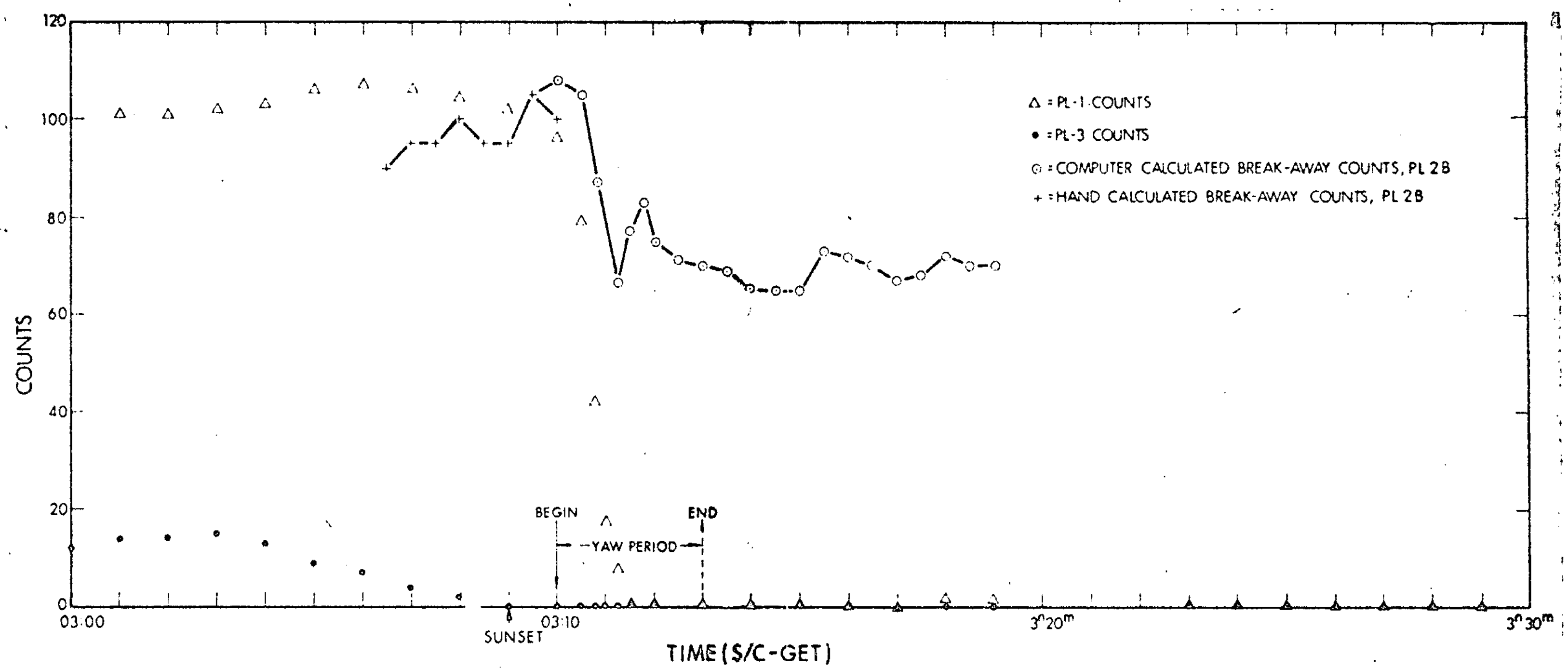


Figure 50.- Agena yaw effects on PL data, GT-X from TDA-south to TDA-north.

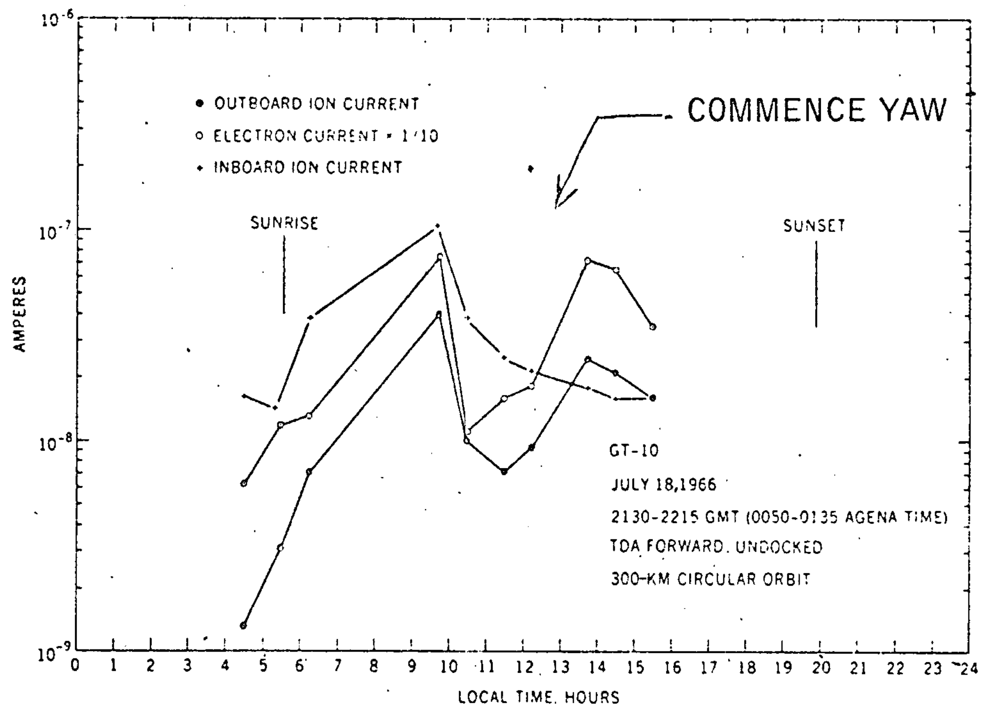


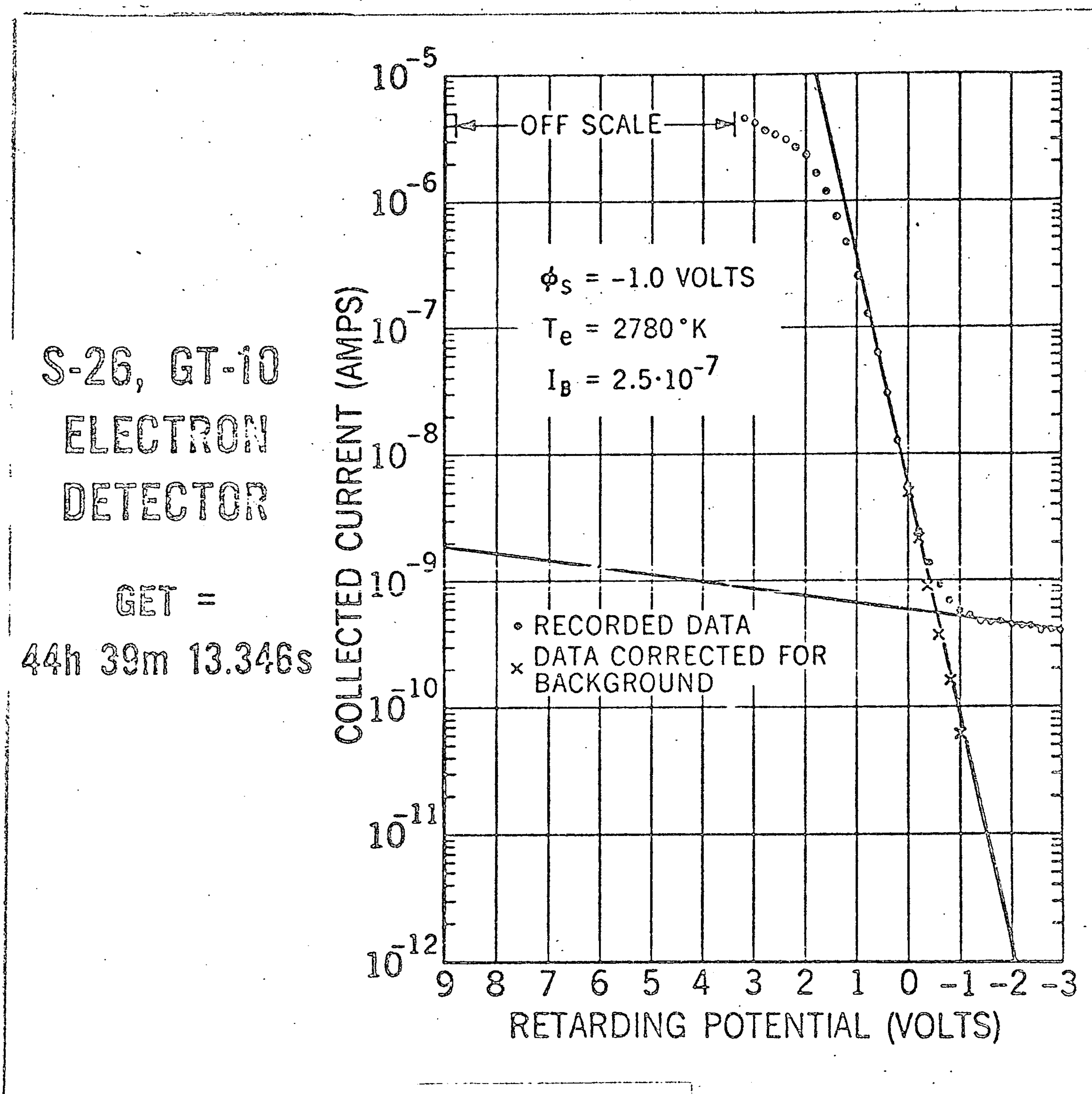
Figure 51.- Sensor currents (00:50 to 01:35 Agena g.e.t.).

The Outboard Electron Sensor (PL-2)

Figure 52 (a) shows typical behavior of the electron sensor as observed during the Gemini missions. In figure 52 (b), two retarding potential plots prior to and after completion of this (yaw) maneuver are shown. The following points were noted.

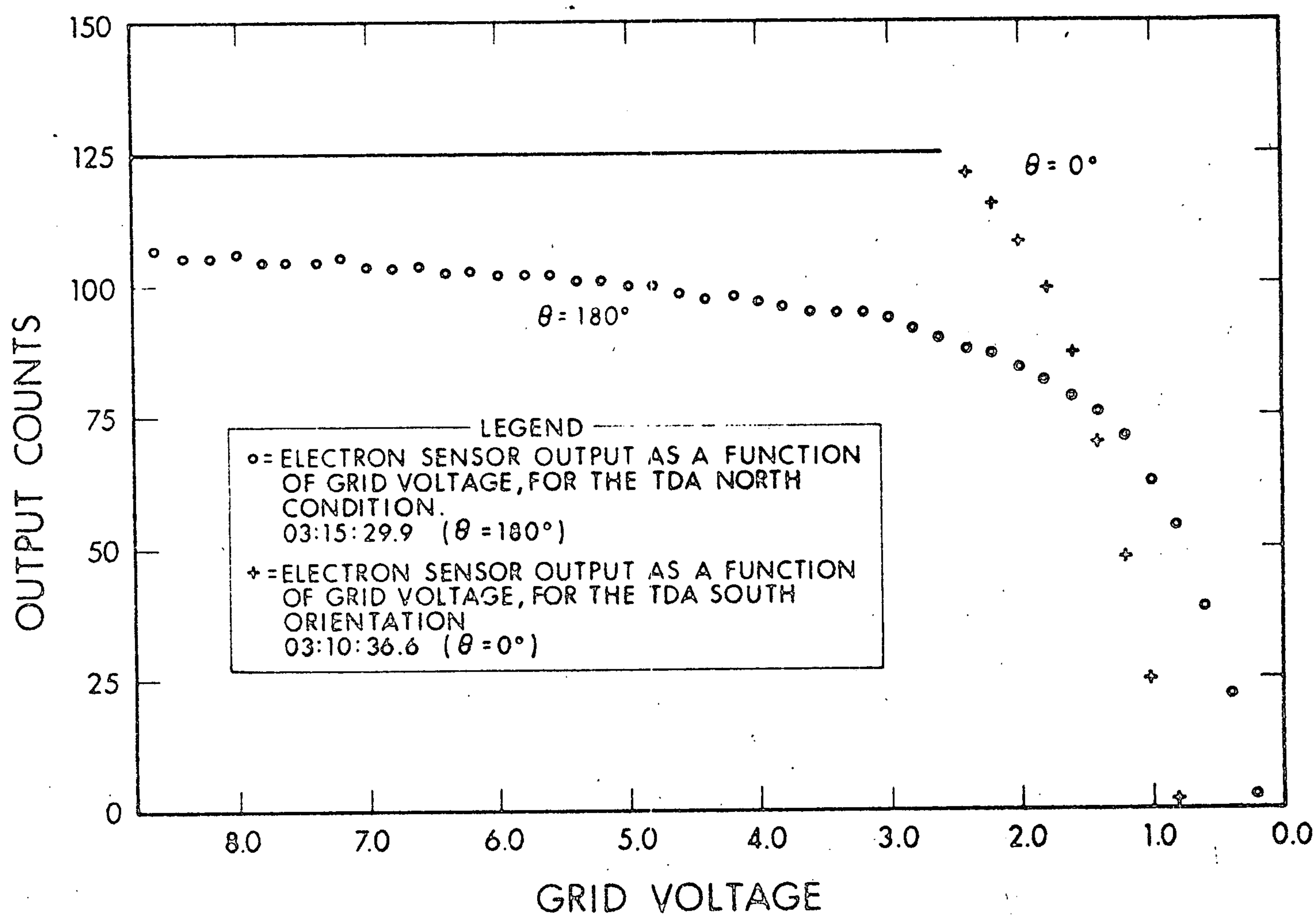
1. The Gemini X electron sensor current was saturated under daylight conditions and in "normal" orientation. It was these saturation effects that led to a modification of the Gemini XI electron sensor aperture in the intervening five-week period between the two flights of Gemini X and Gemini XI. The reduction in aperture area by a factor of 10 was a major mistake. Although this change did allow observation of most of the electron current during each sweep cycle (fig. 53) the important part of the data, which is the linear portion on a logarithmic scale at or near the space potential, suffered serious degradation. Whereas the data from Gemini X had five to seven points per sweep in the linear portion, the reduction in aperture size for Gemini XI gave, at most, four points in the linear portion of the electron characteristic. Attempts were made during the evolution of the Program Electron to rectify this situation by using all of the data in the RPA curve.

2. Residual tails on the electron current were observed in much of the data. A comparison of figure 53 with figure 54 gives an illustration of this effect. A scan of tab printout data for both missions showed that the electron tail occurred only during local daylight.



(a) Plot in daylight.

Figure 52.- Typical Gemini X PL-2 plots.



(b) Plots before and after yaw.

Figure 52.- Typical Gemini X PL-2 plots. (Concluded)

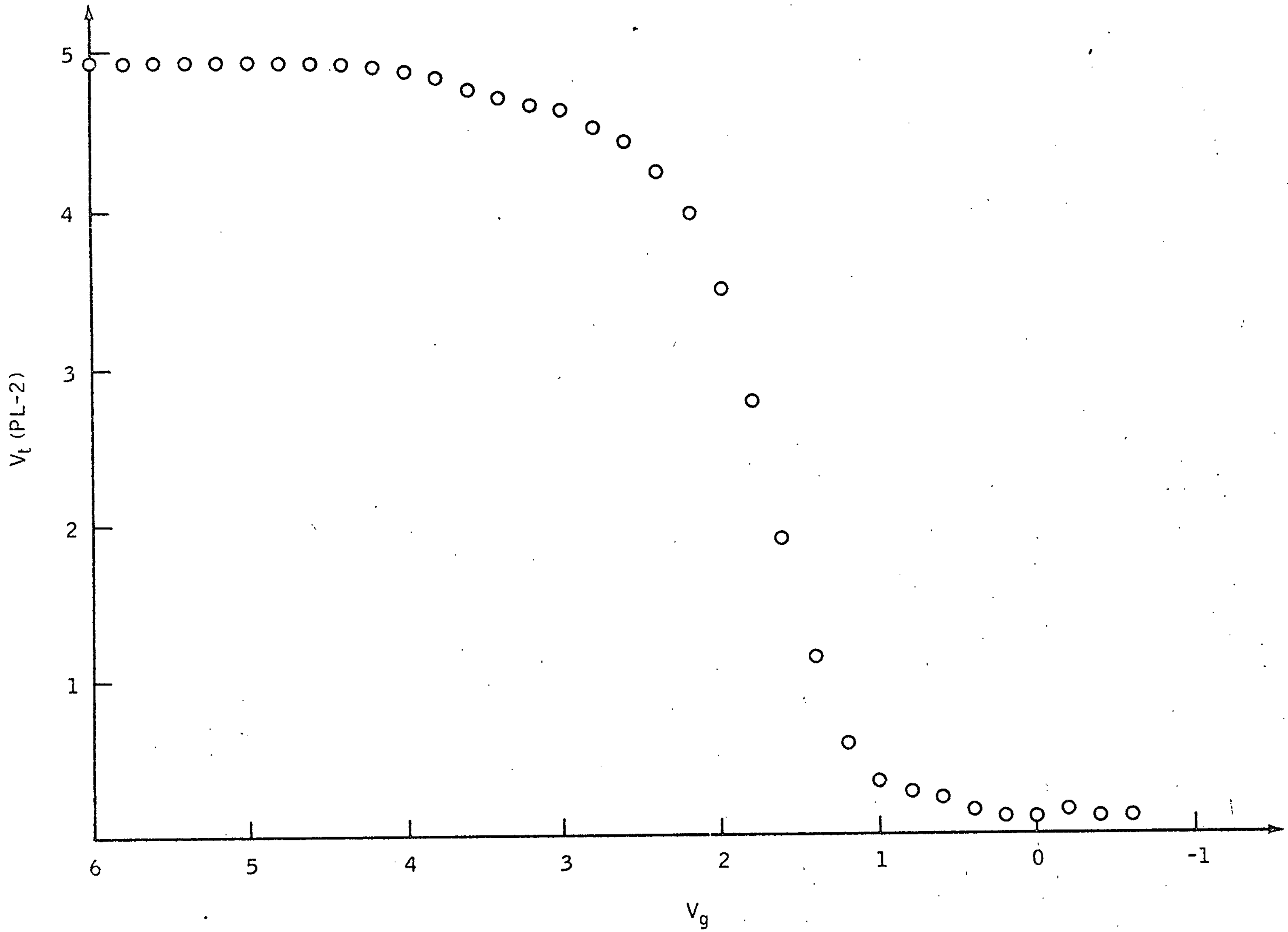


Figure 53.- Typical PL-2 plot in daylight for GT-XI (03:15:59:922 g.e.t.).

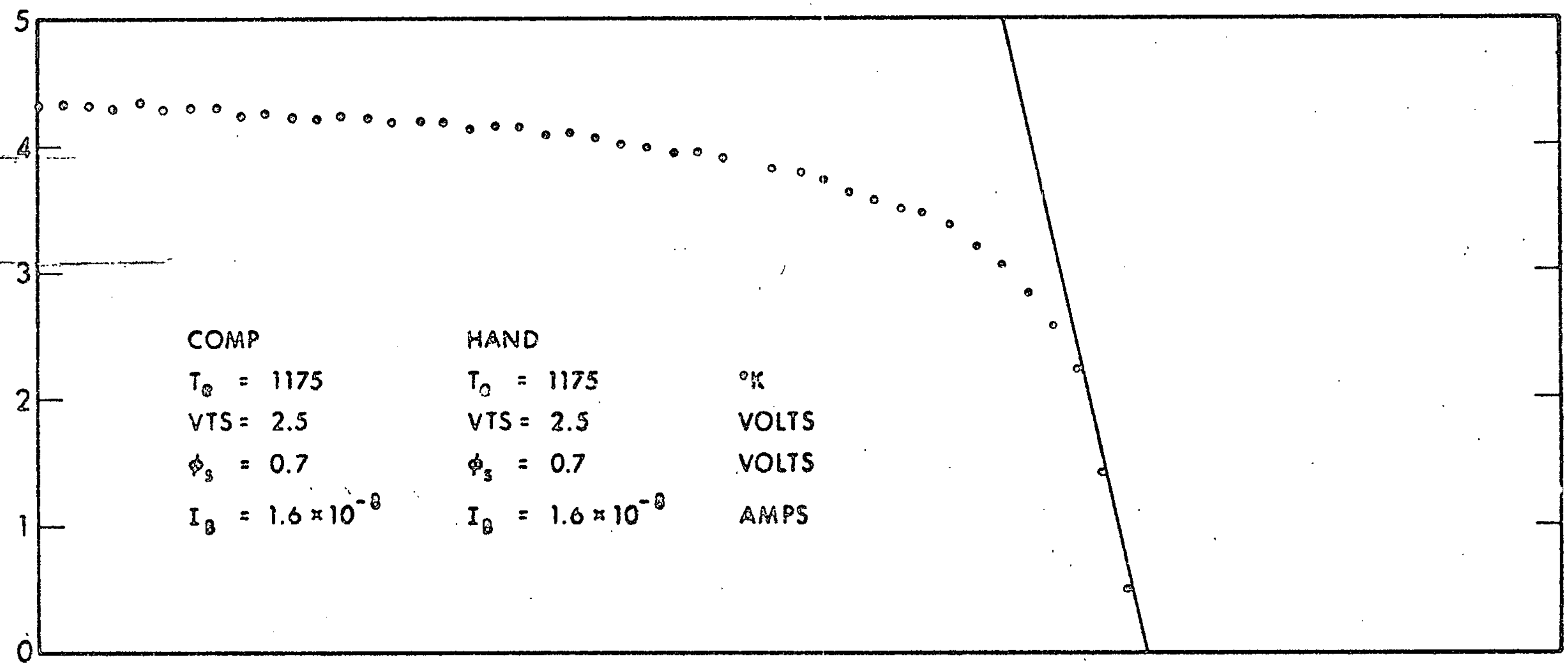


Figure 54.- GT-XI PL-2 at 03:46:40.3 (local night time).

These data were interpreted as the result of photoelectron emmission from vehicle surfaces. A computer program was developed utilizing sunrise and sunset data provided to the Experimenter by MSC (appendix G). It was shown as a result of the computer test program described above that the appearance and disappearance of these tails were consistently associated with local sunrise and sunset, respectively. An interesting phenomenon was noted in these studies. There was apparently a time lag in the heating of the ion part of the ionosphere constituents during sunrise. The onset of photoelectron tails with a concomitant change in electron temperature was associated with sunrise, in most cases, within one second. The ion temperature (T_+) was inferred from the ratio I_3/I_1 for the TDA-forward condition. There was a perceptible change in these values correlated with sunrise but with delays on the order of minutes. A more quantitative study of this phenomenon could prove most fruitful in determining energy transfer mechanisms under transient conditions in the ionosphere.

The Inboard Ion (PL-3)

The data from the inboard ion sensor were the most questionable, particularly during the flight of Gemini X. Figure 50 shows the behavior of PL-3 during a yaw maneuver where it was exposed to the ion stream velocity. A comparison of the inboard ion sensor with the outboard ion detector during normal flight of the Agena, with the Gemini not in its vicinity, was not part of this program.

Data Anomalies and Special Effects

The most serious problem encountered in the data reduction was the apparent malfunction of the inboard ion sensor following the undocking of the Gemini spacecraft from the Agena during the Gemini X mission. Considerable effort went into analyzing long-term trends of the data in orbits contiguous to this undocking. Some of the data, which were generated as a result of this study, is given in figures 55 to 58. Additional material is supplied in Appendix H. The undocking occurred close to sunset time, when large changes in electron and ion concentration occur. For a period of more than 30 hours subsequent to the undocking the inboard ion sensor was obviously reading only partial currents. That is, under conditions of TDA-forward, the inboard ion sensor reading was always less in magnitude than the outboard ion reading.

The inboard ion sensor also showed anomalous behavior under conditions wherein the Agena was docked with the Gemini in the TDA-forward orientation. For this case, no discernible reading from the telemetry of this sensor was expected. However, a residual current was observed in the docked configuration when the system was in daylight. A residual current also appeared on the inboard sensor in a TDA-south orientation. In this condition as well as in the docked TDA-forward orientation, there should have been sufficient blocking of the inboard sensor from the ionosphere to give zero voltage in the telemetry output. In both sets of these anomalous readings, no direct correlation with possible magnetic field effects was found.

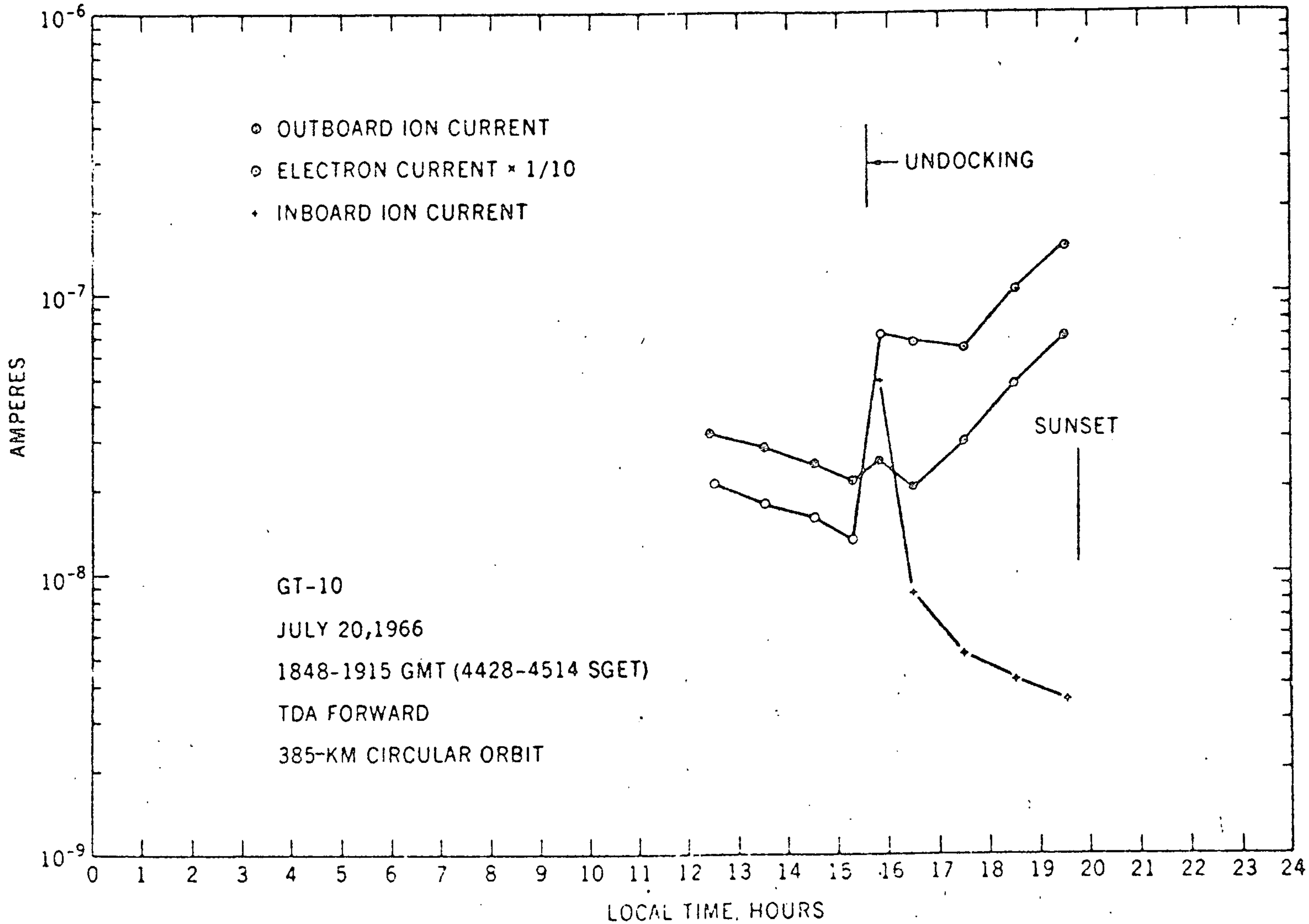


Figure 55.- Sensor Currents (44:28 to 45:14 S/C g.e.t.).

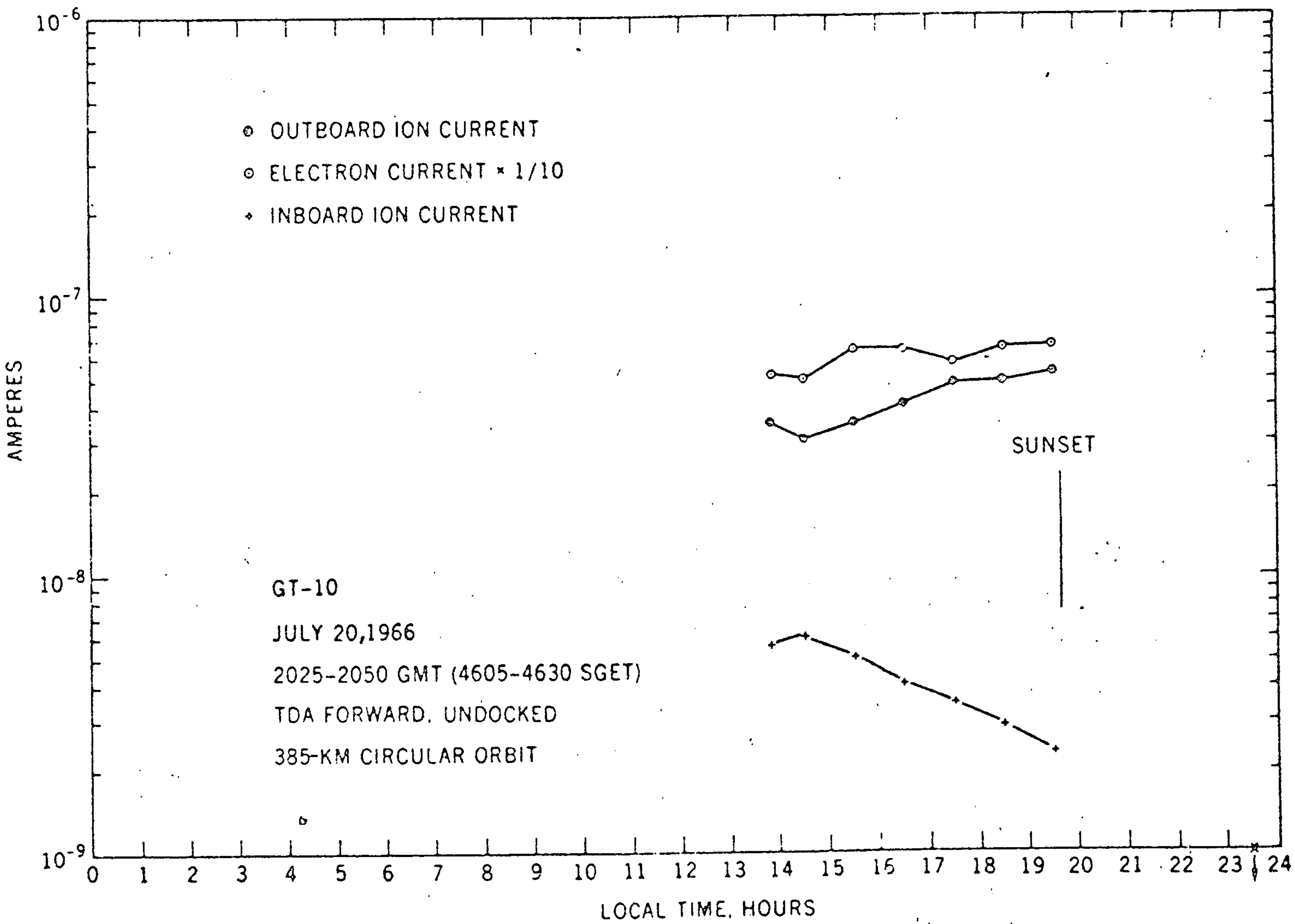


Figure 56.- Sensor currents (46:05 to 46:30 S/C g.e.t.).

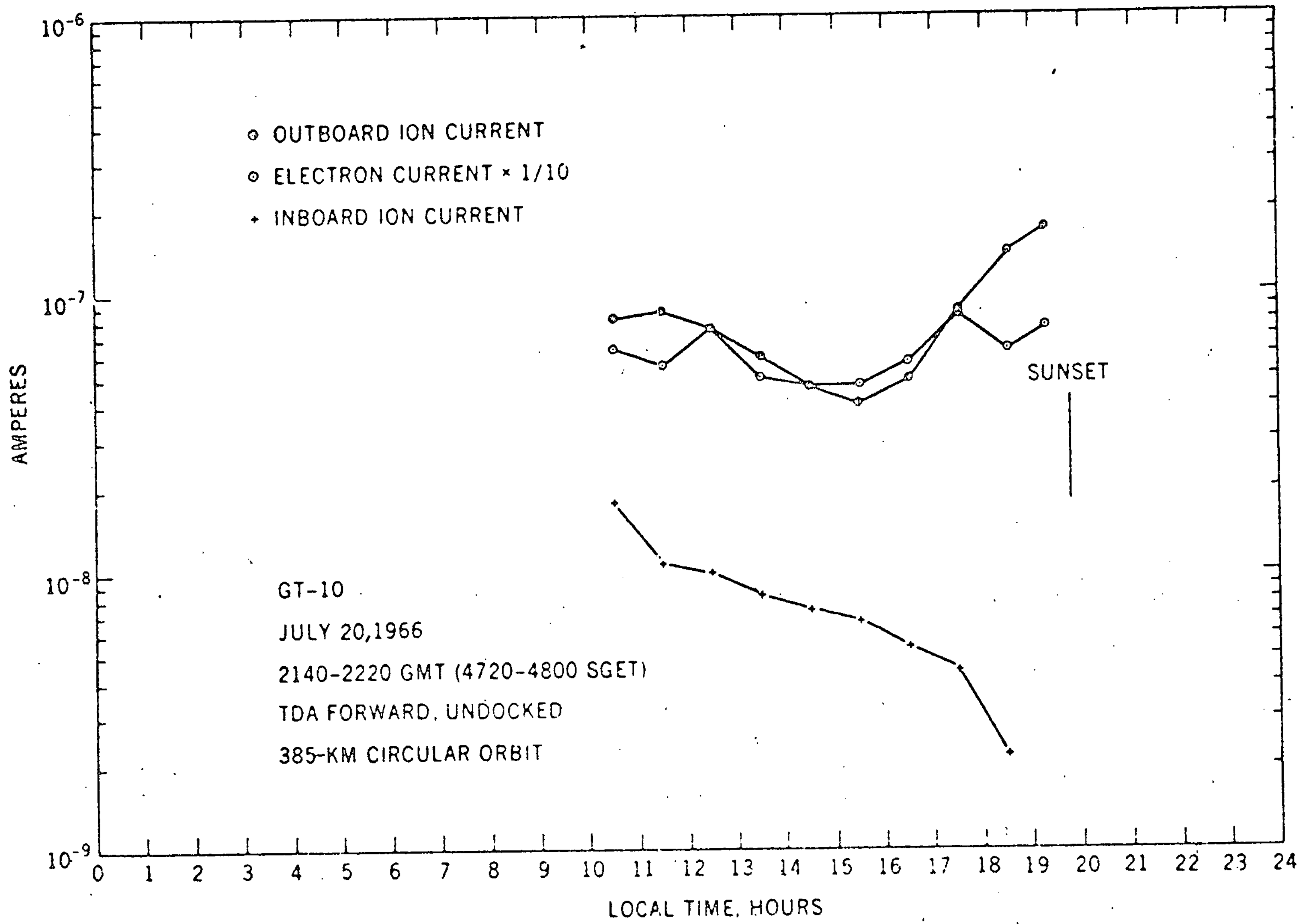


Figure 57.- Sensor currents (47:20 to 48:00 S/C g.e.t.).

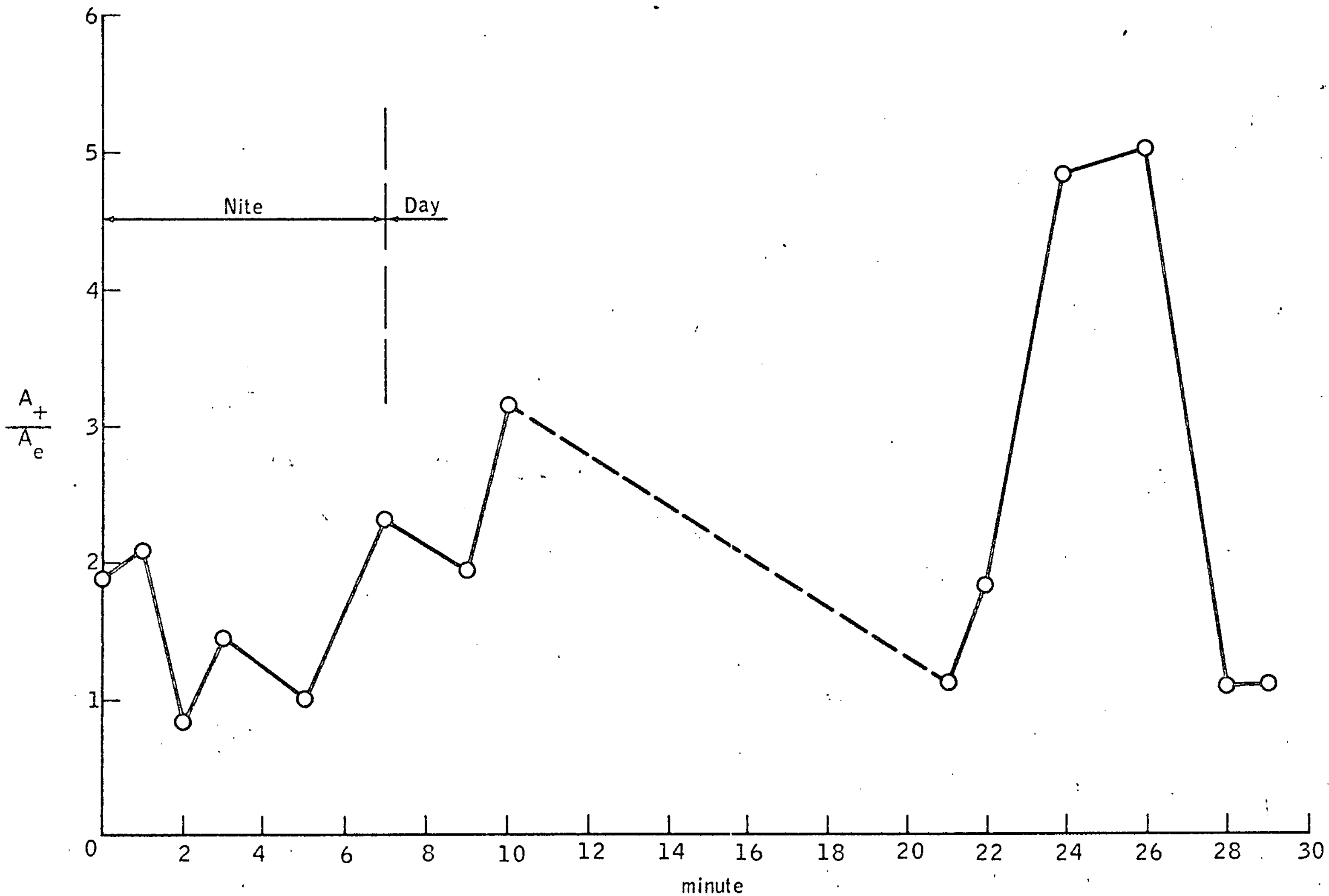


Figure 58.- Gemini X TDA-F PL-2 and 3 (start 00:50:53.712 Agena g.e.t.).

The effect of Gemini thruster firings on the ion and electron sensors was expected to be quite manifest. Generally speaking, thruster firing produced a decrease in the current output from all three sensors. In some cases, the output from the electron sensor was enhanced by a thruster firing. It was not clear whether these effects were the result of additional electrons being produced by contamination of the ionospheric species from the thrust exhaust or from additional scattering effects. In special cases, when output was zero as in PL-3 for TDA-south, transient spikes showing temporary increases could be correlated with thruster firings. The introduction of a contaminant by dumping and purging of the Gemini system was manifest during one of the maneuvers.

PROGRAM ELECTRON

Straight Line Techniques

Figure 59 schematically illustrates the relationships between the potentials on the vehicle, ϕ_O, the ionospheric plasma potential, $\phi_1 = \phi_S$, and the time-varying probe potential ϕ_2 (t). A linear approximation to the time variation of the stairstep voltage applied to the exterior grid of the electron sensor was used. Equation 7 gives the electron current delivered to the probe as a function of the potential difference $(\Delta\phi)$, which is the amount that the probe was negative with respect to the space ionospheric plasma. No attempt was made to define any functional relationship between the current and the various potentials for cases where ϕ_2 was greater than ϕ_1 (fig. 59, shaded region).

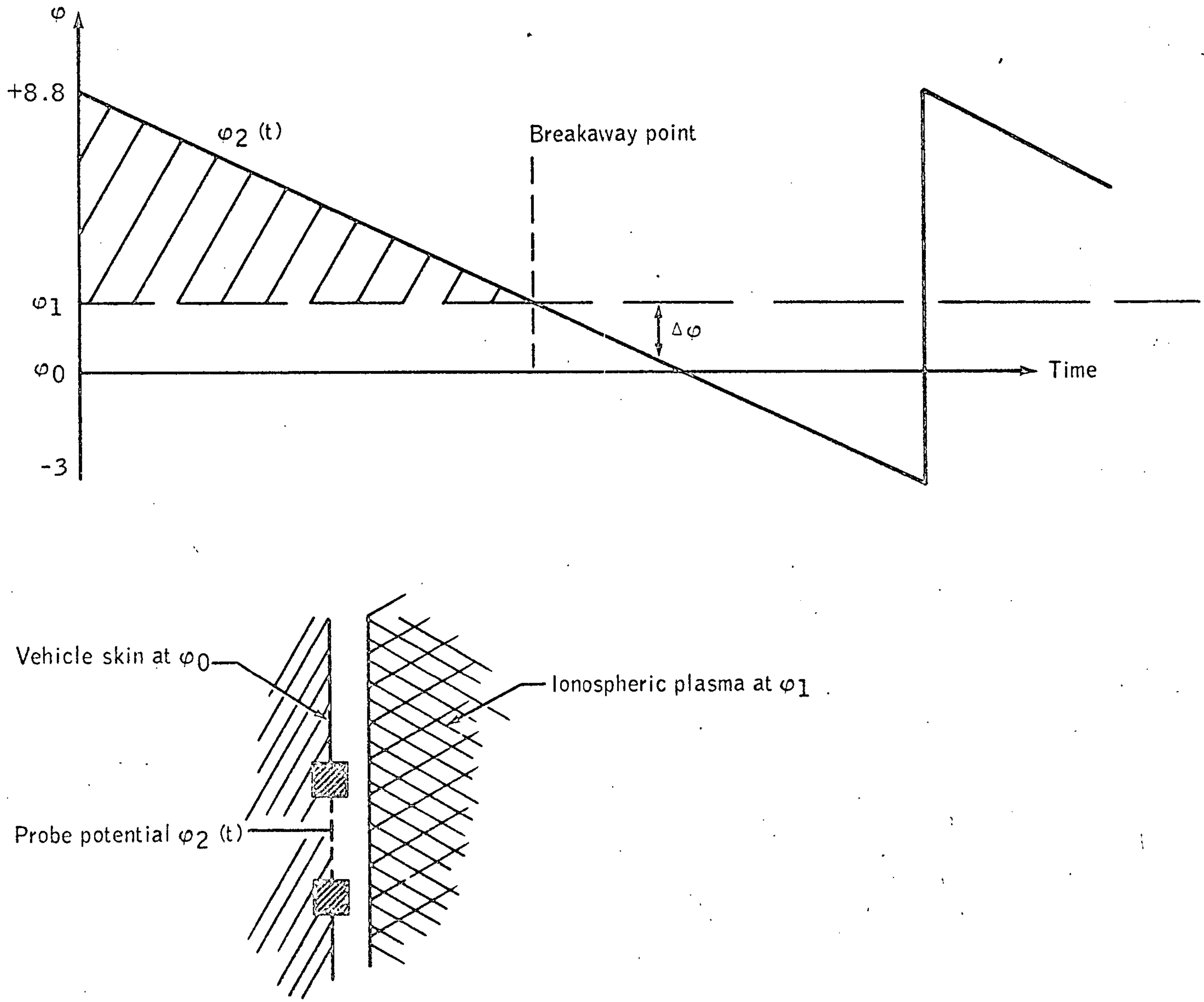


Figure 59.- Potentials between sensor, vehicle, and plasma.

$$i = i_o \exp\left[-q\Delta\phi/kT\right] \tag{7}$$

for

$$\Delta\phi \gtrless 0$$

$$\Delta\phi \equiv \phi_1 - \phi_2 \tag{7-a}$$

$$\text{At } \Delta\phi = 0,\ i = i_o \equiv I_B \tag{7-b}$$

The point at which the curve of output telemetry volts as a function of applied grid voltage diverges from linear slope is identified as the value at which $\Delta\phi = 0$ (fig. 52). Since the telemetry voltage is related to the logarithm of the current (equation 4), the variation of output telemetry with grid voltage or time is considered to be linear under the conditions $\Delta\phi \gtrless 0$. That is to say

$$V_t = \frac{q}{2.3\ k}\ \frac{1}{T_e}\ \Delta\phi(t) + V_{tB} \tag{8}$$

where V_{tB} is the telemetry voltage for $\Delta\phi = 0$. In this linear portion, equation 8 can be used for determination of the electron temperature from the slope. Steeper slopes designate lower temperatures.

In summary, three quantities are to be obtained from the measured variation of the telemetry voltage output with the stairstep voltage applied to the outermost grid as follows.

1. The electron temperature determined as the inverse slope of the linear portion of the curve

2. The value of vehicle potential

3. The value of local electron density

Identification of breakaway point V_{tB} provides a measure of vehicle potential relative to the surrounding ionospheric plasma. The ionospheric plasma potential is usually positive with respect to the space vehicle (fig. 59). This is usually the case for conditions in which the electron thermal velocities are high compared to the ion accretion velocity (the vehicle velocity). By determining that value of grid voltage ϕ_2, which corresponds to the breakaway point, the value of vehicle potential relative to the ionospheric plasma is effectively found.

The current read by the PL-2 channel, for the case $\Delta \phi = 0$, is identified in the data tabs as I_B or I_2 (B for breakaway and 2 for PL-2). It may be identified with the expression for electron current I_e given as equation 2. Thus, depending upon the context, a variety of symbols has been used to designate the same quantity as follows.

$$I_e = I_B = I_2 = i_o \qquad (9)$$

It was the task of the computer program, designated as Program Electron, to scan the data stream of PL-2 and provide output tabs on local electron current, local electron temperature, and space potential. The normalized space potential (ϕ_n), defined as $\phi_n \equiv \phi_s/kT_e$, is also pointed out. Inasmuch as the derivation of the electron density from current values represents use of a considerable number of assumptions, most of the data printout used electron current which is a measurable value, instead of electron density. Current ratios were used because wake measurements emphasized the ratios of local densities at different positions in the wake.

The problem of double samples resulting from the use of an asynchronous sampling technique has been considered. The stairstep rate of 1/60 of a second per step results in double samples; that is, two samples taken during the same stairstep of the grid voltage. Double samples should occur every 16 points since the sample rate was 64 times a second. It is therefore incumbent upon any computer program to eliminate such samples as a possible source of error in measuring the three parameters associated with the electron component.

Appendix J summarizes the various approaches which were tried. These included a least-squares hyperbolic method in which the data are assumed to approach an hyperbola rotated through approximately a 45° angle. Iteration techniques were extremely slow in converging. Attempts to fit the data to a polynomial of degree three by the least-squares cubic method did not work very well either.

A new technique was developed during the preparation of this report. Early results obtained from this technique have been encouraging. Almost all of the data analyses and reductions on PL-2 as reported in this document were accomplished by fairly crude methods. The first of these is identified as the two least-square-lines method (fig. 60). The saturated part of the data is used to determine a least-square straight line, choosing the first nine points after the last calibrate pulse; that is, those points corresponding to a variation from +8.8 to +7.0 volts on the external grid. If the data are in the so-called full saturation condition (that is, the output telemetry voltage exceeds 125 counts or 5 volts as in the "$\theta = 0°$" plot of figure 52) they are scanned through the first point after saturation. The last seven points are used to determine the second least-squares straight line. The slope of this line is then used to compute the electron temperature. The point where the second line crosses the first line is used to compute space potential and current flowing to the probe at the space potential values.

The second method included a technique for removing the high energy tails and the double samples as well as using the breakaway point concept (fig. 61). Instead of handling the grid potential as a time-dependent variable, it is considered a completely independent variable in which a double sample merely duplicates the same point in the plot, since it occurs at the same step of this grid voltage. The data are scanned until a double sample is found in the region away from saturation with the grid potential being given in the following equation.

$$V_g = +8.8 - 0.2(N-1) \tag{10}$$

where the value of N is obtained by counting points in the stairstep following the last calibrate pulses. The final program employed is listed in appendix J and can be outlined as follows.

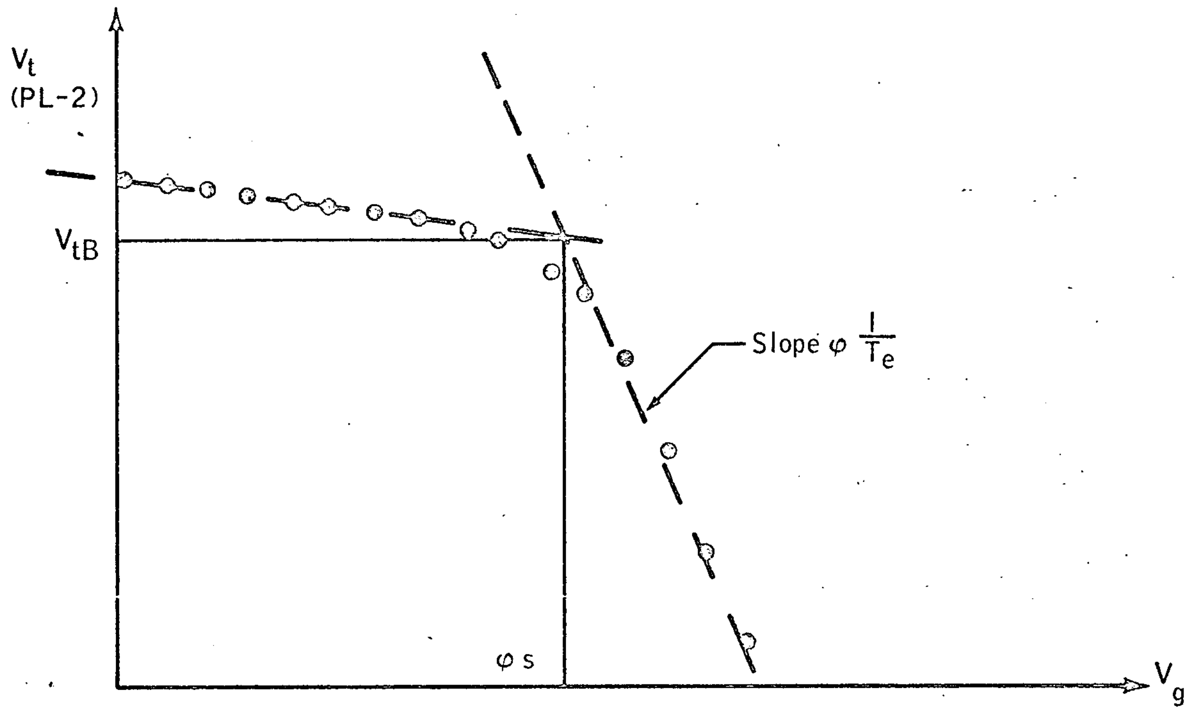


Figure 60.- Illustrating two least-square line methods.

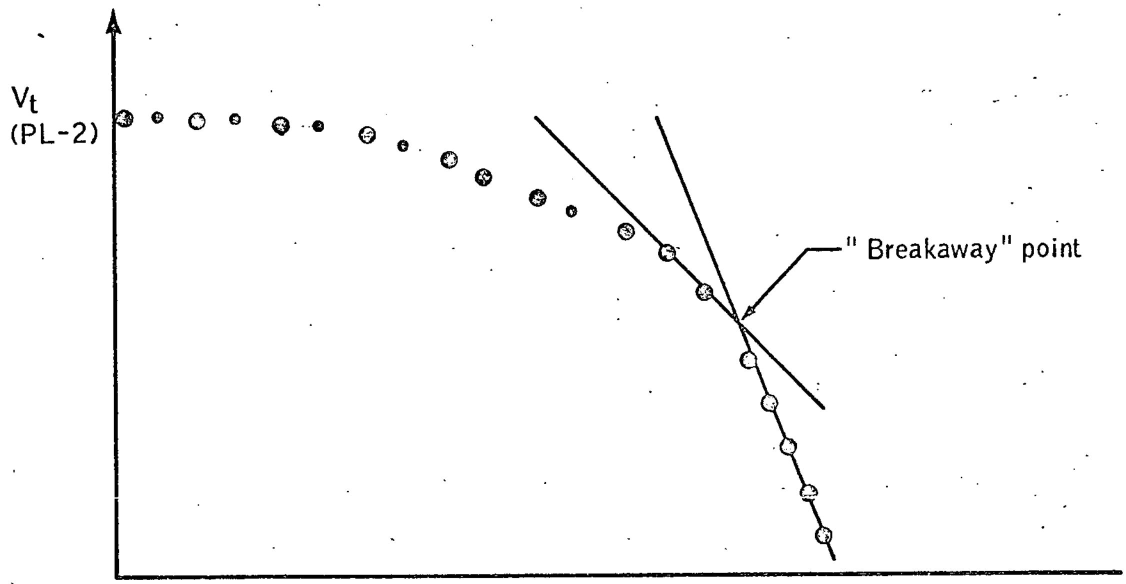


Figure 61.- Illustrating breakaway technique.

1. The data are fetched from the input data tape and converted to telemetry volts, if necessary. The double samples are eliminated by the method described above. Only clean data of the type illustrated in figure 52 are left.

2. The various quantities of interest are evaluated with the last five points used to fit a least-squares stair line and the maximum deviation of the five points from this line is calculated.

3. The data are then scanned from right to left to find the first point whose distance from the line is greater than this maximum deviation. This point and the next one up are used to determine a second line. The point where this new line intersects the original least-squares line is taken to be the breakaway point.

Comparison of the computer technique and results obtained with hand-plotting are shown in table XXXI. Although much data were generated using computer programs it was necessary to rely on hand plotting and visual interpretation to supplement the computer output.

The Fitting of Analytic Functions to Probe Data

Simple and unsophisticated techniques (straight line techniques) for processing the electron sensor data for the Gemini plasma wake experiment have been described previously. The analysis consisted primarily of identifying the linear portion of the curve (the slope of which was inversely proportional to the electron temperature), and then determining the point at which linearity ends (the breakaway point) for the calculation of electron density and space potential.

TABLE XXXI.- COMPARISON OF COMPUTER PROCESSED DATA WITH HAND PLOTTED DATA

Computer				Hand Plots		
Time, g.e.t.	Temp. °	V_{tb}	Φ_s	Temp. °	V_{tb}	Φ_s
1:34:15.5				3600	4.5×10^{-9} 2.0	3.0
1:34:30.4				3200	2.5×10^{-9} 2.2	2.9
1:34:45.3				3000	3×10^{-8} 2.8	3.0
1:36:31.0				2400	4.5×10^{-9} 2.0	1.9
1:37:00.8				2450	9×10^{-9} 2.25	2.2
1:37:31				2300	1.03×10^{-8} 2.4	2.1
1:39:20.6	1937	2.15	1.9	2650	8.5×10^{-8} 3.25	2.7
1:39:36.6	2023	2.74	2.1	2150	2.75	2.2
1:40:20.3	1721	3.03	2.2	1450	2.25	1.7
1:40:28.9	1654	3.32	2.1	2250	3.0	2.4
1:40:47.0	1787	2.99	2.5	1400	3.0	1.5
1:40:55.7				1700	1.05×10^{-8} 2.5	2.0
1:41:14.7	1859	3.0	2.3	1650	2.5	2.1
1:41:54.2	1552	2.64	2.4	1700	2.75	2.5

This procedure was fairly straightforward and generally worked quite well. However, it was realized that this approach was designed to be of only limited applicability and that a more sophisticated analysis would be ultimately needed. This was specially true in the case of Gemini XI, where often the data curve had been shifted so far down that none of the linear portion was left to work with. Thus, a significant part of this report concerns the retrieval of information from these truncated data curves.

The seriousness of this problem was illustrated by results recently obtained from a computer program that provided a derivative of the functions illustrated in figure 52. The idea in providing such a program as a test for the validity of the conclusions was simply that, if the data were in the linear portion of the function as given in this figure or equation 8, the derivative should be constant. This is not the case, particularly with the Gemini XI data. A sample of these results is given in figure 62.

Selecting the Function

The analysis schemes previously described were seriously limited in that they tried to measure everything by using only the last few points of data (the linear portion of the curve) while all the rest of the curve was ignored. In principle, the complete curve contains information about the plasma and therefore any good analysis should embody all the data.

It seems reasonable to consider trying to fit some kind of a curve to the complete set of data, and then use this curve to determine the plasma parameters (T_e, ϕ_s, I_B), instead of trying to extract them directly from only a few points of data.

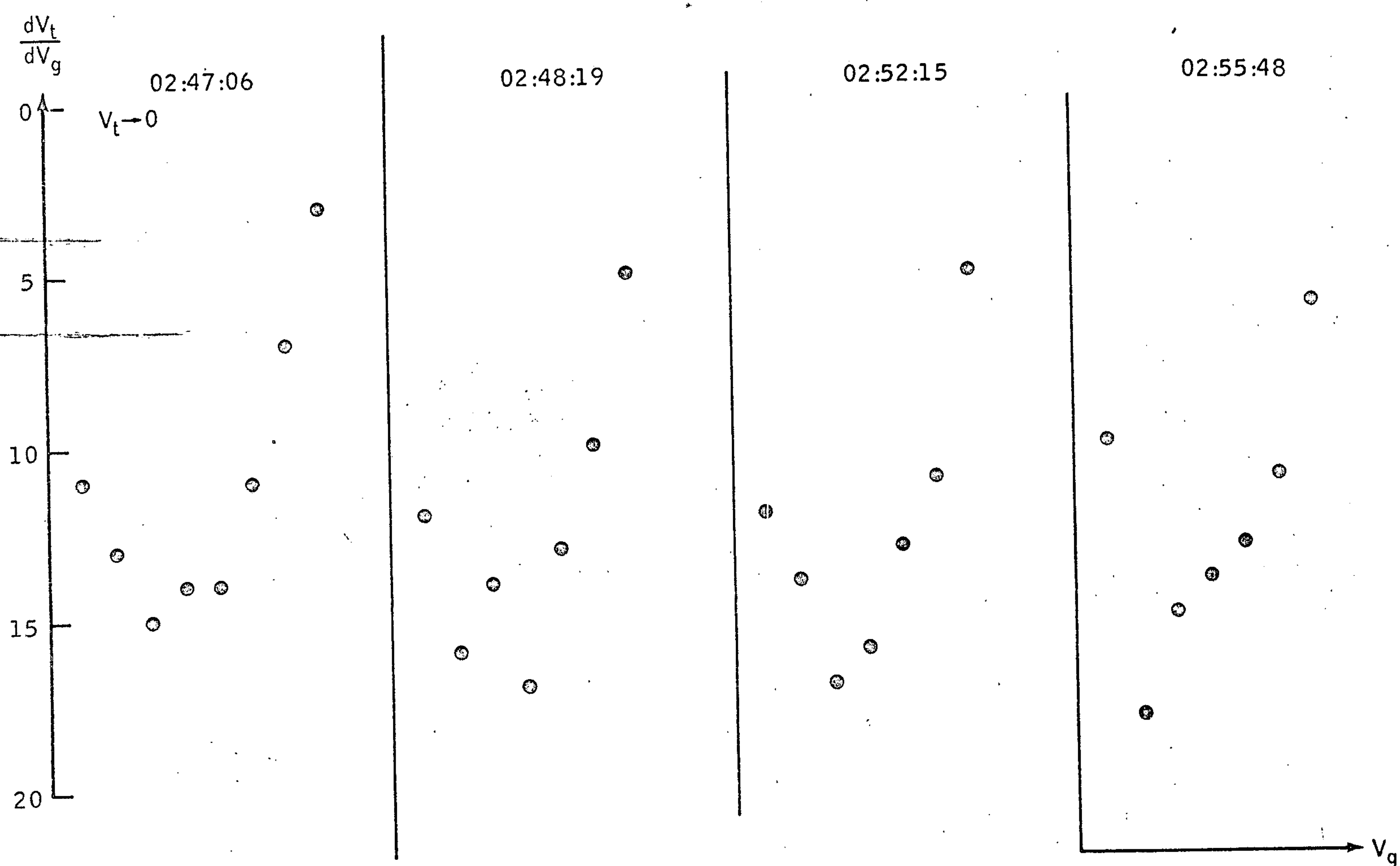


Figure 62.- Test of temperature slopes.

The problem of selecting a function to fit the data is not easy. There is no theory for analytically describing the form of curves such as those in figure 52 beyond the linear portion; that is, for $\Delta\phi < 0$, or $i > 1$. The left portion of the curve appears to be fairly linear also, and this further complicates the problem. A function which would behave linearly on one extreme, bend in a smooth curve (at the level), and end by becoming linear again would be desirable. One such function, but by no means the only such function*, is a hyperbola which has been rotated through an appropriate angle, as its two branches asymptotically approach straight lines.

The Hyperbolic Equation

The equation of an unrotated hyperbola centered at the origin is given by:

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1. \qquad (11)$$

When the origin of coordinates is translated to the position $-h$, $-k$, the equation for the hyperbola becomes:

$$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1. \qquad (12)$$

*Although the calculations to be presented will be performed for a specific function (the translated-rotated hyperbola), the method is general enough to be applied to any functional representation.

Finally, when the coordinate axes are rotated through an angle, Θ , the expression becomes:

$$\frac{[(x-h)\cos\theta + (y-k)\sin\theta]^2}{a^2} - \frac{[(y-k)\cos\theta - (x-h)\sin\theta]^2}{b^2} = 1 \qquad (13)$$

Solving for y the expression is:

$$y(xia,b,h,k,\theta) = k + \frac{(x-h)\sin\theta\cos\theta\,(a^2+b^2)}{a^2\cos^2\theta - b^2\sin^2\theta} \qquad (14)$$

$$\pm\frac{\sqrt{(x-h)^2\sin^2\theta\cos^2\theta(a^2+b^2)^2-(a^2\cos^2\theta-b^2\sin^2\theta)[(x-h)^2(a^2\sin^2\theta-b^2\cos^2\theta)+a^2b^2]}}{a^2\cos^2\theta - b^2\sin^2\theta}$$

where the negative sign in the last term is chosen because the data are fitted to only the left half of the curve (fig. 63).

After selecting the function, the values of the five parameters (a, b, h, k, Θ) that will make the function best fit the data must be determined.

Since the function, y (xja, b, h, k, Θ), is nonlinear in the five parameters (a, b, h, k, Θ), the standard classical least-squares approach cannot be applied. Instead, an iterative procedure based on the generalized Newton-Rophson method can be applied.

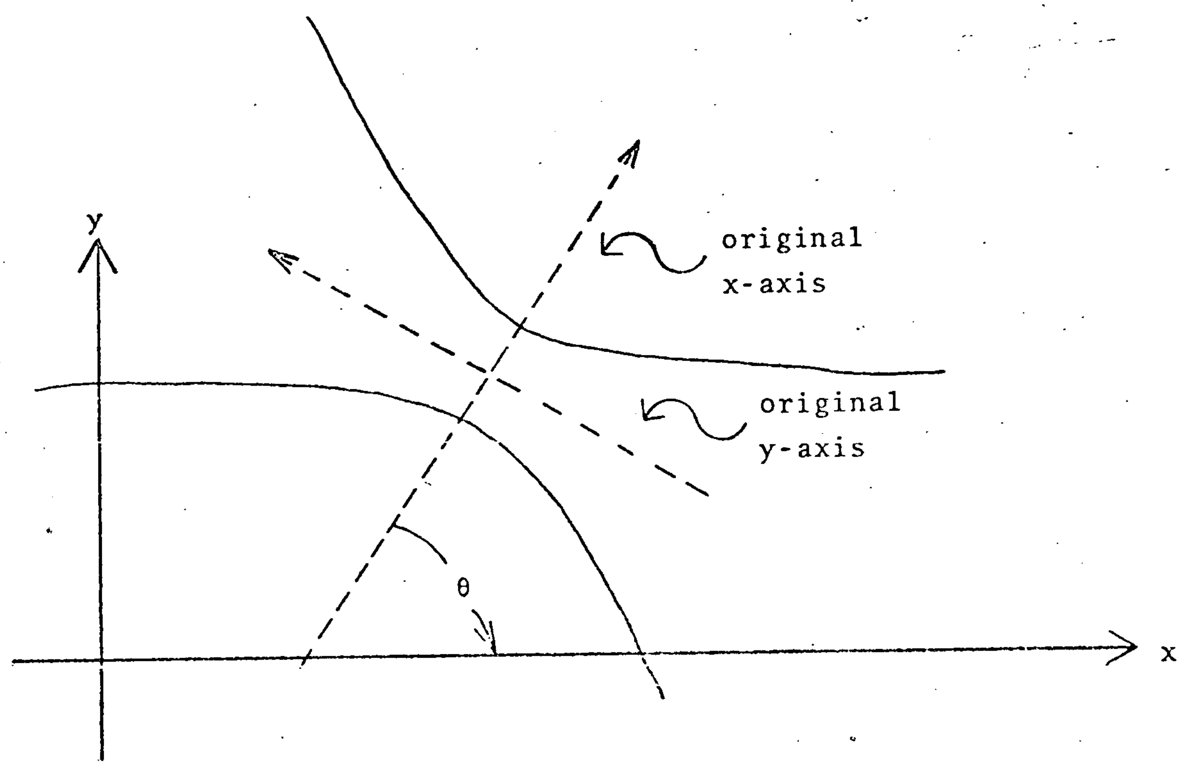


Figure 63.- The rotated/translated hyperbola; y(xja, b, h, k, θ).

The vector $\vec{F}$ is defined as

$$\vec{F} = \begin{pmatrix} F_1 \\ F_2 \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ F_n \end{pmatrix}, \qquad F_i = y_i - y(X_i) \tag{15}$$

where y_i is the observed (actual) value at X_i, and $y(X_i)$ is the estimated value based on initial guesses at the five parameters. This error vector ($\vec{F}$) will be a minimum when the five parameters attain their proper values.* The function, $|\vec{F}|^2$, is minimized to minimize $\vec{F}$. The scaler is defined as

$$p \equiv |\vec{F}|^2 = \vec{F}^T\vec{F} = \sum_{i=1}^{n} [y_i - y(X_i)]^2 \tag{16}$$

Thus, minimizing p is the same as least-square fitting the data.

Another vector, $\vec{M}$, is defined to be a vector whose components are the five model parameters.

$$\vec{M} \equiv \begin{pmatrix} a \\ b \\ h \\ k \\ o \end{pmatrix} \tag{17}$$

---

*Theoretically, if model, y(X;a, b, h, k, o), was actually the correct one (discussed under Selecting the Function) then $\vec{F}$ could actually be zero at the proper set of parameter values.

The scaler function p will be a minimum when:

$$\vec{D} \equiv \frac{\partial p}{\partial \vec{M}} = 0 \qquad (18)$$

The zero (s)* value of $\vec{D}$ is found by the previously mentioned Newton-Rophson method. Thus, in step, i, of the iteration the adjustment to the vector, $\vec{M}$, that will drive the vector, $\vec{D}$, to zero is calculated.

$$\vec{D} + \frac{\partial \vec{D}}{\partial \vec{M}} \Delta \vec{M} = 0, \qquad (19)$$

$$\vec{M}_{i+1} = \vec{M}_i + \Delta \vec{M}. \qquad (20)$$

However,

$$\vec{D} = \frac{\partial p}{\partial \vec{M}} = \frac{\partial}{\partial \vec{M}} \vec{F}^T \vec{F} = 2 \frac{\partial \vec{F}^T}{\partial \vec{M}} \vec{F} \qquad (21)$$

The tensor, G, is defined as

$$G = \frac{\partial \vec{F}}{\partial \vec{M}} = (n \times 5) \text{ matrix}, \qquad (22)$$

---

*If the initial guess at the five model parameters is close to being correct, there should be only one zero of interest. If the guess is not close enough on the initial guess, then it will converge on some other local minimum, if it converges at all.

where

$$G_{ij} = \frac{\partial F_i}{\partial M_j} \tag{23}$$

Thus:

$$\vec{D} = 2\,\tilde{G}\,\vec{F} \tag{24}$$

$$\frac{\partial \vec{D}}{\partial \vec{M}} = 2\,\tilde{G}\,G + 2\,\frac{\partial \tilde{G}}{\partial \vec{M}}\,\vec{F} \tag{25}$$

If p is close to the minimum, then p behaves like a quadrative in $\vec{M}$. This means that $\vec{F}$ is almost linear in $\vec{M}$. Since G was defined as the derivative of F (with respect to $\vec{M}$) then this means that G is practically constant. Thus the term, $2\,\frac{\partial \tilde{G}}{\partial \vec{M}}\,\vec{F}$ is almost zero and can be ignored.

Substituting equations (24) and (25) into (19) gives

$$\tilde{G}\,G\,\Delta\vec{M} = -\tilde{G}F \tag{26}$$

Equation 26 represents five linear simultaneous equations in the unknown five changes to the model parameters, $\Delta\vec{M}$. These can now be solved for by standard procedures to complete one step in the iteration process. When the vector $\vec{DM}$ becomes small, the iteration ends and the problem is solved.

This procedure was applied to Gemini XI electron data at 2:43:53.6 and after about six iterations the function f(X; a, b, h, k, o) converged from its initial guess, (the circled, O, points in figure 64) to its least-square fit (the boxed, □, points). The actual data are the triangled, Δ, points. The program that performed the analysis is listed in appendix H. As can be seen from the figure, the agreement between the actual data and the least-square fitted function is remarkable good.

With the analytic functional representation of the data, the plasma parameters, T_e, Φ_S, and I_B can be found.

Values for T_e are inversely proportional to the slope of the linear part of the data. Thus the slope of the asymptote line to the hyperbola can be calculated.

Return to the equation for an unrotated, untranslated hyperbola and solve for y:

$$y = b\left(\frac{X^2}{a^2} - 1\right)^{1/2} = \frac{b}{a}(X^2 - a^2)^{1/2} \qquad (27)$$

The slope of the asymptote is the limit of dy/dX as X approaches ∞.

$$\frac{dy}{dX} = \frac{bX}{a}(X^2 - a^2)^{-1/2} \qquad (28)$$

$$\lim_{X\to\infty} \frac{dy}{dX} = \frac{b}{a} \lim_{X\to\infty} \frac{X}{(X^2 - a^2)^{1/2}} \qquad (29)$$

$$= \frac{b}{a} \lim_{X\to\infty} \left[\frac{1}{1 - (\frac{a}{X})^2}\right]^{1/2} = \frac{b}{a}$$

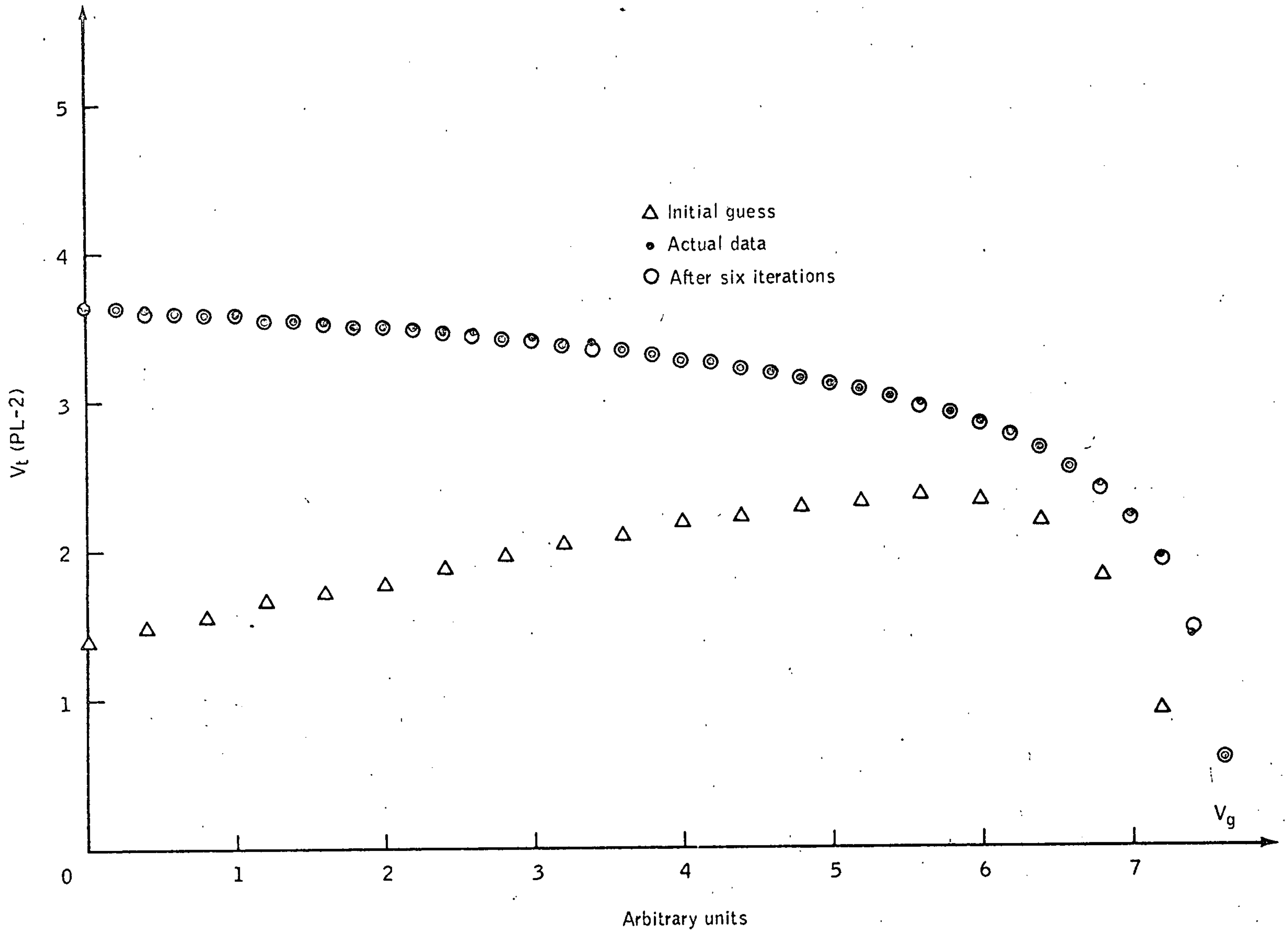


Figure 64.- Comparison of least square rotated hyperbola technique with expermental data.

Thus, if the coordinate axes are rotated through an angle, Θ, then the resulting slope for the asymptote becomes:

$$\text{asymptote slope} = \tan\left[\tan^{-1}\left(\frac{b}{a}\right) - \theta\right] \qquad (30)$$

from which T_e can be directly calculated.

The problem of determining the value of ϕ_S (and subsequently I_B) is not quite so straightforward. At this time the methods will have to be tested on actual data before they can be accepted.

What seems to be the most straightforward approach is to remember the definition of breakaway point as being that point where the curve (the hyperbola) starts to deviate from its straight line portion (the asymptote line). Thus the breakaway point may be defined as the place where the difference between the hyperbola and its asymptote exceeds a certain amount, ε. The breakaway point may also be defined as the point where the ratio of ε to the calculated value of the hyperbola starts to exceed a certain limiting ratio.

There are a variety of such schemes to try and only after a certain amount of experimenting can the method that will supply satisfactory results be determined, if such a method exists.

Description of Electron Program for S026 Data

The program derives from each data set the vehicle-plasma potential ϕ_S, the electron temperature T_e, the background current, and the electron density n_e. It has the capability to derive both a high temperature and a low temperature for the electrons if both components are actually there, but there are generally not enough data points to separate the high temperature component from the background current.

The sequence of operations used by the program is as follows:

1. The data are searched to find two points such that there is a large drop in the output current.

$$P_i - P_{i+1} > 50c \qquad (31)$$

This drop will normally occur only between the second and third calibration points. The letter c represents the telemetry output unit, either one count or 0.04 volt. The program next backs up until it finds two other points such that there is a large increase in the current.

$$P_{j+1} - P_j > 50c \qquad (32)$$

The P_j is the last data point in a data set, and P_{j+1} is the first calibration point before the next data set.

2. Because of the discrepancy between telemetry rate (64/sec) and the retarding voltage staircase rate (60/sec), the telemetry can measure the electrometer output twice before the sweep voltage changes. Four pairs of these double points occur each second. A pair is found by locating four data points such that

$$P_1 > P_2 + 4c \qquad (33)$$

$$P_3 - P_2 \leq 1c \qquad (34)$$

$$P_3 > P_4 + 4c \qquad (35)$$

These conditions assure locating a double point in the steep or retarding portion of the curve, the only section where the double point is easily noticed. Since double points occur once every 0.25 second, the program can pick them regularly after having found the first pair. They are checked frequently to make sure that they remain within one count of each other. If not, the search is run over again.

3. Once the first calibration point has been located and the double points found, the program selects a complete data set of 64 points beginning with the 4 calibration points, and assigns the proper retarding voltage values to the 60 collected current values. The steepest part of the retarding curve is located by finding the maximum difference d between two successive current values on a semi-log plot; that is, by using the telemetry signal values. Once the maximum value of $d_i = P_i - P_{i+1}$ is located, it is compared to d_{i-1}, d_{i-2}, et cetera, until a d_n is found such that $d_n/d_i < f$. The fraction f can be preset to any desired value; at present it is 0.85. The point P_{n+1} is then defined as the breakpoint. With the calibration points, the program computes the collected current from the telemetry signal. Call the telemetry signal c_1 which

corresponds to the 2 x 10^{-6} ampere calibration, and c_2 for 1.0 x 10^{-10}. By requiring the collected current I to equal the stated currents at c_1 and c_2, and by having I depend exponentially on the telemetry signal c, the resulting equation is

$$I = 10^{-10} \times (2 \times 10^4)^{\left(\frac{c-c_2}{c_1-c_2}\right)} \qquad (36)$$

4. Using the portion of the curve that includes the breakpoint and all points with a lower retarding voltage value, the program fits a formula by a least-squares iteration method. The formula

$$I = \alpha_1 + \alpha_2 e^{-\alpha_3 \tau} + \alpha_4 e^{-\alpha_5 \tau} \qquad (37)$$

has three terms that correspond to a background current, a low-electron energy component, and a high-energy electron component. The symbol τ is a running index equivalent to the retarding voltage, with $\tau = 1$ corresponding to 8.8 volts; $\tau = 1$, 8.6 volts; . . . $\tau = 60$, -3.0 volts. For the first data set, the iterations begin with a set of α's fed in by the program user. Thereafter, the α's computed from one data set are used for the beginning of the next data set.

5. The α's are used to compute the physical parameters of interest:

$$T_e = \frac{2.32\times10^3}{\alpha_3} \text{ (low energy)} \tag{38}$$

$$T_e' = \frac{2.32\times10^3}{\alpha_5} \text{ (high energy)} \tag{39}$$

$$n_e = \frac{2.26\times10^{13} I_B}{\sqrt{T_e}} \text{ electrons/c.c., GT-10} \tag{40}$$

$$n_e = \frac{2.54\times10^{14} I_B}{\sqrt{T_e}} \text{ electrons/c.c., GT-11} \tag{41}$$

$$I_B = \text{current at the breakpoint} \tag{42}$$

$$\text{Background current} = \alpha_1 \tag{43}$$

The spacecraft potential ϕ_s is also printed out, and equals the negative of the retarding potential at the breakpoint.

The background and high-energy tail are not well defined because the retarding voltage goes no lower than -3.0 volts. It may be advantageous at times to set $\alpha_4 = \alpha_5 = 0$ in order to save computer time.

SPECIFIC MODE MAPPINGS

GEMINI X, MODE U

A more or less axial mapping of the Gemini X ion wake was achieved during the only undocking carried out in that mission. Much of the near wake data is masked by a large amount of thruster operation. This effect, although regrettable from the S026 Experimenter's viewpoint, was deemed necessary by the flight controller in order to achieve the separation velocity said to be required for later rendezvous with the Agena 8 shell. The undocking sequence spans about three seconds with the first noticeable effects occurring at 44:40:15.874, S/C g.e.t.

The ephemeris information for the mode U data period is given in table XXXII. A continuous data stream for the S026 instruments is available for about 9 minutes prior to the undocking operation. Examples for this condition are given in table XXXIII. Residual readings on the ion detector (PL-3) of 14 to 15 counts were observed, indicating a local ion current under conditions of a fully docked configuration as $I_3 = 2 \times 10^{-10}$ amperes. The undocking sequence is summarized in table XXXIV.

The most important data obtained in this mode involve the variation of the telemetry volts in the PL-3 channel (inboard ion sensor) as the separation between the Agena and Gemini increased. Figure 65 illustrates the variation in the 20-second period following the undocking, demonstrating clearly the blanking effects of thruster firings on the sensor readings. The data tab run for all three charged-particle sensors in the period of

TABLE XXXII.- EPHEMERIS INFORMATION FOR MODE U, GEMINI X

SEC.	ELAPSED TIME HR. MIN. SEC.	SECTION TIME SEC.	CASE TIME SEC.	GMT DAY HR.MIN.SEC.	GEOD. LATITUDE DEG. MIN. SEC.	ORBIT	LONGITUDE DEG. MIN. SEC.	
	GEOC. LAT. DEGREES	GEOD. LAT. DEGREES	LONGITUDE DEGREES	ALTITUDE FEET	RANGE NAUT. MI.	AERO.VELOCITY FEET/SECOND	AERO GAMMA DEGREES	AERO AZIMUTH DEGREES
	X LOAD FACTOR G UNITS	Y LOAD FACTOR G UNITS	Z LOAD FACTOR G UNITS	ORBIT RADIUS FEET	THRUST POUNDS	WEIGHT POUNDS	MACH NUMBER	Q BAR PSF
	INERTIAL VEL. FEET/SECOND	INERT. GAMMA DEGREES	INERT. AZM. DEGREES	RELATIVE VEL. FEET/SECOND	REL. GAMMA DEGREES	REL. AZIMUTH DEGREES	GEOD. GAMMA DEGREES	GEOD. AZM. DEGREES
	ETA DEGREES	ALPHA DEGREES	BETA DEGREES	DRAG POUNDS	AERO.NORM. POUNDS	PHI NORM. DEGREES	BODY PITCH DEGREES	BODY AZIMUTH DEGREES
	X FEET	Y FEET	Z FEET	X DOT FEET/SECOND	Y DOT FEET/SECOND	Z DOT FEET/SECOND		
	PERIGEE ALT. NAUT. MILES.	APOGEE ALT. NAUT. MILES	PERIG.LONG. DEGREES	PERG.GEOD.LAT. DEGREES	PERIG.DECL. DEGREES	APOG.LONG. DEGREES	APOG.GEOD.LAT. DEGREES	INCLINATIO DEGREES
	ECCENTRICITY	PERIOD MINUTES	PERIG.ARG. DEGREES	ECCEN.ANOMALY DEGREES	TRUE ANOMALY DEGREES	LONG.ASC.NODE DEGREES	PERG.PASS.TIME SECONDS	SEMI-MAJ.AXI FEET
	ALTITUDE NAUT.MI.	TRACK NAUT.MI.	ORBIT RADIUS NAUT.MI.	FR POUNDS	CENTRAL ANGLE DEGREES	V/VR	DELTA V FEET/SECOND	ROLL DEGREES

TABLE XXXII.- EPHEMERIS INFORMATION FOR MODE U, GEMINI X (concluded)

6081..000	44 40 15.000	0.	-319.000 2 19	0 41.000	28 51 58.933	28	-51 22 17.809
2.870394E 01	2.886637E 01	-5.137219E 01	1.265312E 06	1.538634E 03	2.378651E 04	1.651785E-03	9.346906E 01
-1.263735E-07	0.	0.	2.217581E 07	0.	7.608000E 03	2.798413E 01	6.123881E-08
2.520243E 04	1.062252E-02	9.327015E 01	2.378551E 04	1.146574E-02	9.346304E 01	1.651785E-03	9.346906E 01
0.	0.	0.	9.014494E-04	0.	0.	1.651785E-03	9.346556E 01
-1.072108E 07	-1.622923E 07	1.063089E 07	2.061124E 04	-1.444639E 04	-1.258691E 03	0.	0.
2.082373E 02	2.129712E 02	-9.272217E 01	2.844564E 01	2.829330E 01	7.571402E 01	-2.844544E 01	2.887388E 01
6.481423E-04	9.225803E 01	7.899006E 01	1.694649E 01	1.695731E 01	1.397666E 02	1.600901E 05	2.218558E 0[illegible]
2.084086E 02	-1.177561E 03	3.649676E 03	-1.924171E-07	-2.310498E 01	0.	-0.	0.
30845.000	44 40 45.000	30.000	-289.000 2 19	1 11.000	28 44 10.665	28	-49 18 33.604
2.857437E 01	2.873630E 01	-4.927654E 01	1.265323E 06	1.649419E 03	2.378651E 04	-1.154973E-03	9.459579E 01
-1.263668E-07	0.	0.	2.217595E 07	0.	7.608000E 03	2.798413E 01	6.123555E-08
2.520233E 04	1.115523E-02	9.433709E 01	2.378651E 04	1.181921E-02	9.459570E 01	-1.154973E-03	9.459586E 01
0.	0.	0.	9.613986E-04	0.	0.	-1.154973E-03	9.459579E 01
-1.099663E 07	-1.665319E 07	1.080674E 07	2.101427E 04	-1.381179E 04	-1.671415E 03	0.	0.
2.082784E 02	2.130160E 02	-9.119489E 01	2.858721E 01	2.843504E 01	7.724119E 01	-2.858701E 01	2.887417E 01
6.487512E-04	9.225677E 01	8.042614E 01	1.746781E 01	1.747897E 01	1.397620E 02	1.601121E 05	2.218970E 07
2.084104E 02	-1.066824E 03	3.649700E 03	-1.983213E-07	-2.088408E 01	0.	0.	0.
30875.000	44 41 15.000	60.000	-259.000 2 19	1 41.000	28 34 11.811	28	-47 11 12.363
2.840663E 01	2.856995E 01	-4.718726E 01	1.266302E 06	1.760219E 03	2.378653E 04	-3.921633E-03	9.571820E 01
-1.263801E-07	0.	0.	2.217610E 07	0.	7.608000E 03	2.798419E 01	6.124204E-08
2.520225E 04	1.146852E-02	9.539600E 01	2.378655E 04	1.215141E-02	9.571820E 01	-3.921633E-03	9.571821E 01
0.	0.	0.	9.615001E-04	0.	0.	-3.921633E-03	9.571620E 01
-9.460471E 06	-1.705776E 07	1.055043E 07	2.139237E 04	-1.315918E 04	-2.082190E 03	0.	0.
2.083184E 02	2.130706E 02	-8.959211E 01	2.871465E 01	2.850205E 01	7.884366E 01	-2.871446E 01	2.887453E 01
6.508339E-04	9.225973E 01	8.192909E 01	1.792222E 01	1.793369E 01	1.397571E 02	1.661332E 05	2.218983E 07
2.084009E 02	-9.560673E 02	3.649724E 03	-2.039169E-07	-1.866944E 01	0.	0.	0.
30905.000	44 41 45.000	90.000	-229.000 2 19	2 11.000	28 22 3.661	20	-45 8 18.369
2.820711E 01	2.836768E 01	-4.510564E 01	1.266249E 06	1.871035E 03	2.378065E 04	-6.835704E-03	9.683033E 01
-1.[illegible]4131E-07	0.	0.	2.217626E 07	0.	7.608000E 03	2.798430E 01	6.125801E-08
2.[illegible]219E 04	1.178148E-02	9.644501E 01	2.378555E 04	1.246140E-02	9.683033E 01	-6.835704E-03	9.683034E 01
0.	0.	0.	9.617507E-04	0.	0.	-6.835704E-03	9.683033E 01
-8.813286E 06	-1.744256E 07	1.048183E 07	2.174664E 04	-1.249124E 04	-2.490539E 03	0.	0.
2.083543E 02	2.131169E 02	-8.795039E 01	2.882250E 01	2.860952E 01	8.047948E 01	-2.882230E 01	2.887499E 01
6.520484E-04	9.226060E 01	8.345903E 01	1.834959E 01	1.836136E 01	1.397524E 02	1.661587E 05	2.218999E 07
2.083961E 02	-8.453501E 02	3.649750E 03	-2.091735E-07	-1.646246E 01	0.	0.	0.
60935.000	44 42 15.000	120.000	-199.000 2 19	2 41.000	28 7 47.780	28	-43 1 57.334
2.797025E 01	2.812994E 01	-4.303309E 01	1.266164E 06	1.981067E 03	2.378879E 04	-9.285171E-03	9.793026E 01
-1.264653E-07	0.	0.	2.217641E 07	0.	7.608000E 03	2.798445E 01	6.128331E-08
2.520213E 04	1.203138E-02	9.748229E 01	2.378679E 04	1.274726E-02	9.793038E 01	-9.285171E-03	9.793029E 01
0.	0.	0.	9.621479E-04	0.	0.	-9.285171E-03	9.793028E 01
-8.159902E 06	-1.780711E 07	1.040103E 07	2.207514E 04	-1.180364E 04	-2.695909E 03	0.	0.
2.083907E 02	2.131640E 02	-8.619353E 01	2.891358E 01	2.870130E 01	8.224216E 01	-2.891338E 01	2.887551E 01
6.562515E-04	9.226157E 01	8.510438E 01	1.868149E 01	1.867353E 01	1.397477E 02	1.661835E 05	2.219021E 07
2.083842E 02	-7.348119E 02	3.649776E 03	-2.145073E-07	-1.420460E 01	0.	0.	0.
60965.000	44 42 45.000	150.000	-169.000 2 19	3 11.000	27 51 25.967	28	-40 58 13.652
2.769655E 01	2.785721E 01	-4.097092E 01	1.266049E 06	2.092703E 03	2.378606E 04	-1.185791E-02	9.901624E 01
-1.265302E-07	0.	0.	2.217657E 07	0.	7.608000E 03	2.798466E 01	6.131768E-08
2.520209E 04	1.227690E-02	9.850810E 01	2.378690E 04	1.300727E-02	9.901624E 01	-1.185791E-02	9.901824E 01
0.	0.	0.	9.626876E-04	0.	0.	-1.185791E-02	9.901626E 01
-7.489052E 06	-1.815097E 07	1.030011E 07	2.237803E 04	-1.111273E 04	-3.298068E 03	0.	0.
2.084262E 02	2.132084E 02	-8.430955E 01	2.896215E 01	2.882804E 01	8.412548E 01	-2.898194E 01	2.8878[illegible]
6.628236E-04	9.226380E 01	8.685930E 01	1.886376E 01	1.887000E 01	1.397430E 02	1.662109E 05	2.219[illegible]

TABLE XXXIII.- THE PL DATA BEFORE COMMENCEMENT OF MODE U

100

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 14.222		********			
44 40 14.238	66.00	********	15.00		
44 40 14.253		********			
44 40 14.269	66.00	********	15.00		
44 40 14.284		********			
44 40 14.300	66.00	********	15.00		
44 40 14.316		********			
44 40 14.331	66.00	********	14.00		
44 40 14.347		********			
44 40 14.363	66.00	********	14.00		
44 40 14.378		********			
44 40 14.394	66.00	********	15.00		
44 40 14.409		********			
44 40 14.425	66.00	********	14.00		
44 40 14.441		********			
44 40 14.456	66.00	********	15.00		
44 40 14.472		********			
44 40 14.488	66.00	********	14.00		
44 40 14.503		********			
44 40 14.519	65.00	********	15.00		
44 40 14.534		********			
44 40 14.550	66.00	********	15.00	42.5	57.4
44 40 14.566		********			
44 40 14.581	66.00	********	14.00		
44 40 14.597		********			
44 40 14.613	66.00	********	14.00		
44 40 14.628		********			
44 40 14.644	66.00	123.00	14.00		
44 40 14.659		122.00			
44 40 14.675	66.00	121.00	14.00		
44 40 14.691		119.00			
44 40 14.706	66.00	117.00	14.00		
44 40 14.722		115.00			
44 40 14.738	66.00	111.00	14.00		
44 40 14.753		106.00			
44 40 14.769	66.00	100.00	15.00		
44 40 14.784		100.00			
44 40 14.800	66.00	94.00	14.00		
44 40 14.816		86.00			
44 40 14.831	66.00	76.00	15.00		
44 40 14.847		60.00			
44 40 14.863	66.00	50.00	14.00		
44 40 14.878		49.00			
44 40 14.894	66.00	40.00	14.00		
44 40 14.909		33.00			
44 40 14.925	66.00	29.00	14.00		

GROUP 10 31

TABLE XXXIV.- UNDOCKING SEQUENCE FOR MODE U, GEMINI X

Time	Event
44:40:15.874	First effects noted on PL-1
44:40:15.905	First effects noted on Pl-3
44:40:16.440	Commence unrigidizing
44:40:16.738	Second thruster firing effects
44:40:17.825	Commence third firing for Δt = 1.3 seconds
44:40:18.503	Spacecraft release

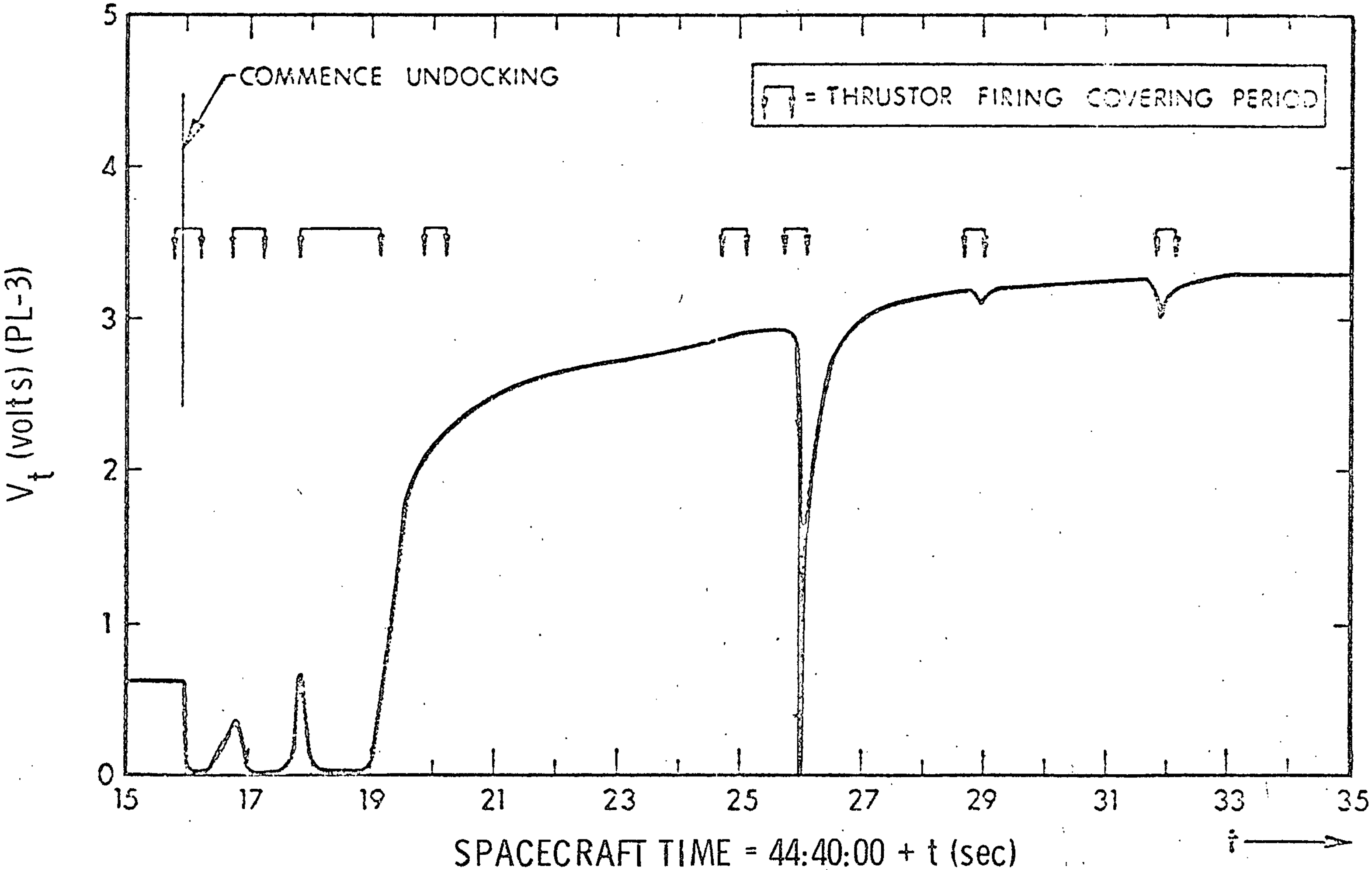


Figure 65.- Inboard ion sensor telemetry volts as a function of time.

interest is provided in this report in appendix H-I. Included in other sections of appendix H are the data stream summaries for thruster firings, Gemini vehicle orientation, film analysis, PL data reduction, and S/C ΔV during this period. The results of the thruster firing analysis leading to a characterization of the vehicle separation as a function of time after undocking is included as appendix H-VI. Figure 66 and table XXV summarize the correlation in separation between vehicles with the same time base as the PL data. There is good agreement in the film and thruster distance computations at the initial separation (order of 5 percent agreement). Consistently higher values are obtained with the thruster data, and at a 15-meter separation the discrepancy is on the order of 20 percent. The thruster program results may have built-in incremental velocity bias errors and are not considered to be as reliable as the film data. As discussed earlier, the determination of separation utilizing film could be checked against known geometry values and in this case was found accurate to at least 2 percent of the value measured. Long term variation in the telemetry output for both inboard and outboard ion sensors using the computed values of the distance is shown in figure 67 (a), (b), (c), and (d). It is observed that after reaching an apparent stationary value at 82 to 83 counts (3.32 volts), the inboard ion sensor began to exhibit a slow decline. This decline in value, which has been the subject of considerable investigation, results in uncertainty in the value of ambient ion density.

Computer calculations of the electron temperature, the electron current at breakaway, and the space potential have been carried out for

TABLE XXXV.- AXIAL DISTANCES FROM GEMINI TO INBOARD ION SENSOR

	z_1 (meters) *		z_2 (meters) **	
S/C g.e.t.	Film	Thrustor	Film	Thrustor
44:40:15.800	0.516	0.486	6.10	6.07
44:40:19.769	1.15	1.36	6.75	6.95
44:40:21.284	1.55	1.97	7.14	7.56
44:40:25.222	2.82	3.69	8.41	9.26
44:40:33.801	8.36	10.6	13.9	16.2

* z_1 = distance from the short end

** z_2 = distance from the blunt end

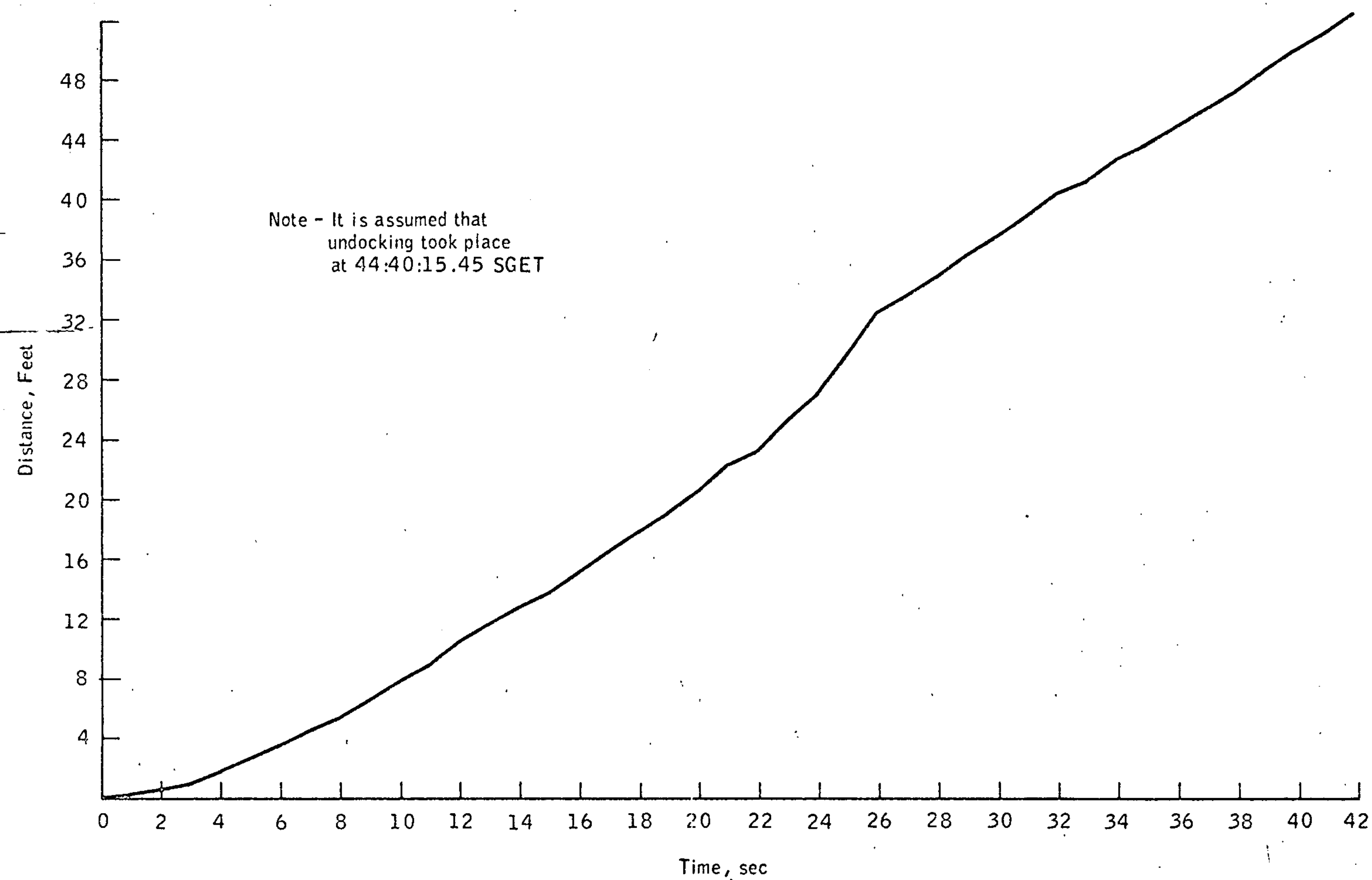
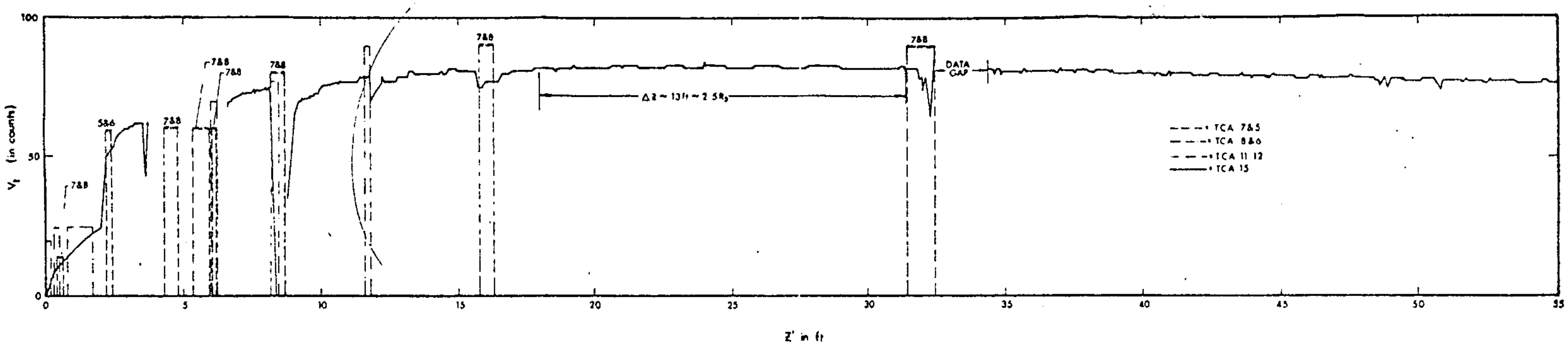
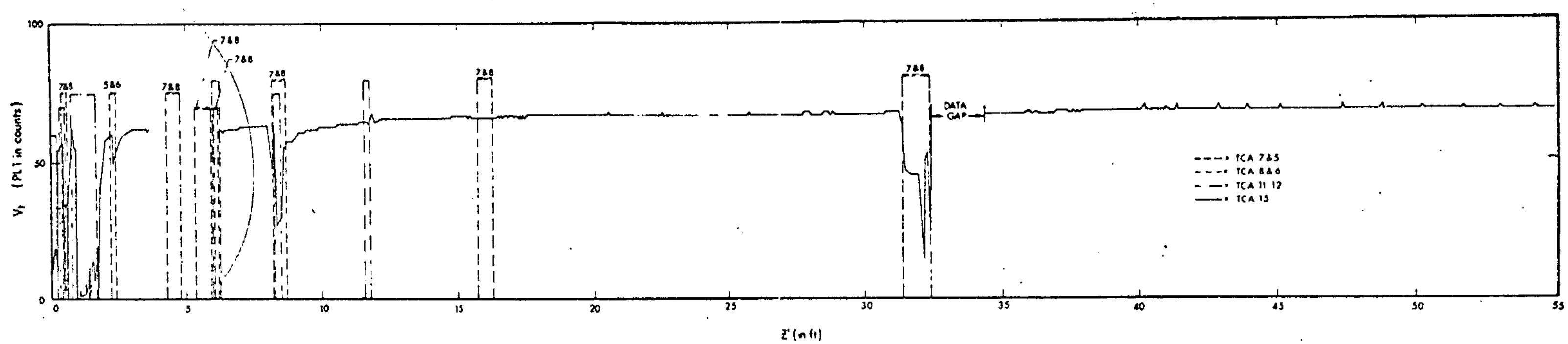


Figure 66.- Distance from Gemini to ion sensor as a function of time after undocking.



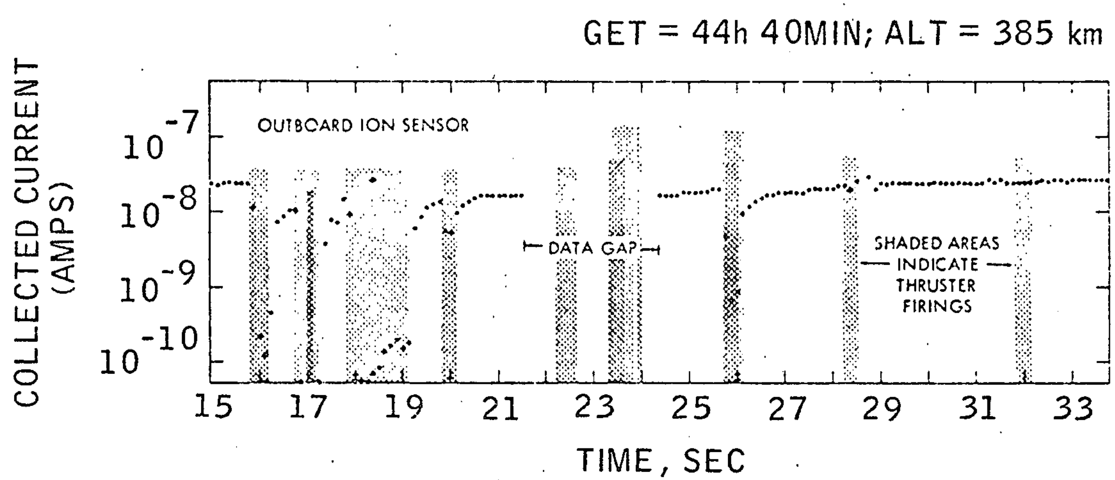
(a) Long term variation, inboard during docking.

Figure 67.- Sensor values during docking and undocking.



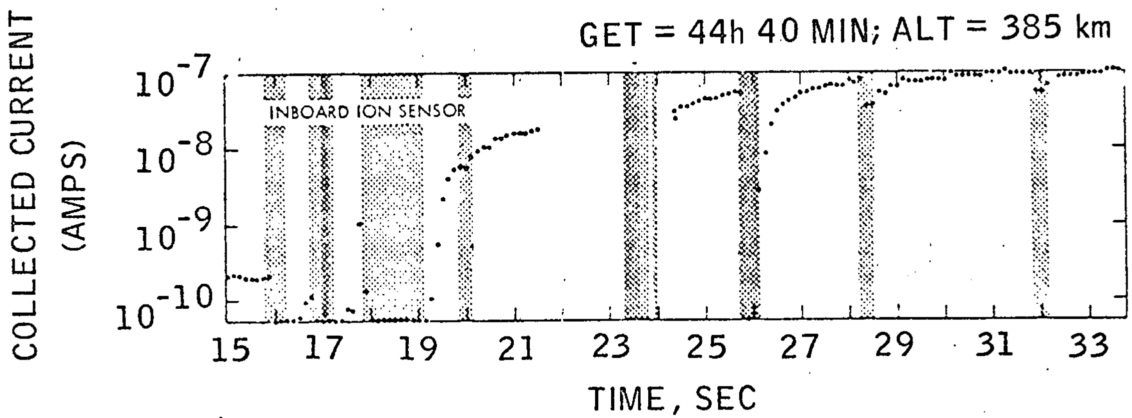
(b) Long term variation, outboard during docking.

Figure 67.- Sensor values during docking and undocking. (continued)



(c) Outboard current during undocking.

Figure 67.- Sensor values during docking and undocking. (Continued)



(d) Inboard current during undocking

Figure 67.- Sensor values during docking and undocking. (Concluded)

an extensive period of time before, during, and after undocking. These are provided as appendix J-8. Figure 68 illustrates the difference in the appearance of the retarding potential curves for the electron sensor just prior to undocking and at a vehicle separation on the order of 45 feet. The mode U undocking occurred late in the afternoon (local time) and it is likely that changes in ambient atmosphere conditions were being superimposed on the wake effects. To isolate the wake phenomena from such possible fluctuations in the ambient ionosphere during the time of the measurement, the electron temperature and computed densities are plotted as a function of local time for the orbit of mode U and for the two successive orbits following (figs. 69 and 70). Although there is some effect of ambient changes, the decrease in electron temperature and the increase in electron density observed during the undocking were much greater than those associated with such changes in the ambient condition. It has been suggested (ref. 11) that the ambient effects can be correlated with variations in geomagnetic latitude. For example, on each of the three orbits investigated the Agena achieved maximum latitude of 29° north near 1500 hours local time, which is the position of maximum electron temperature and minimum electron density in the ambient variations displayed in figures 69 and 70. Figure 71 shows the variation of electron temperature as a function of geomagnetic latitude for the second orbit following the undocking.

Figure 72 shows the variation of space potential, electron temperature, and electron density with a Gemini-Agena separation (calculated using

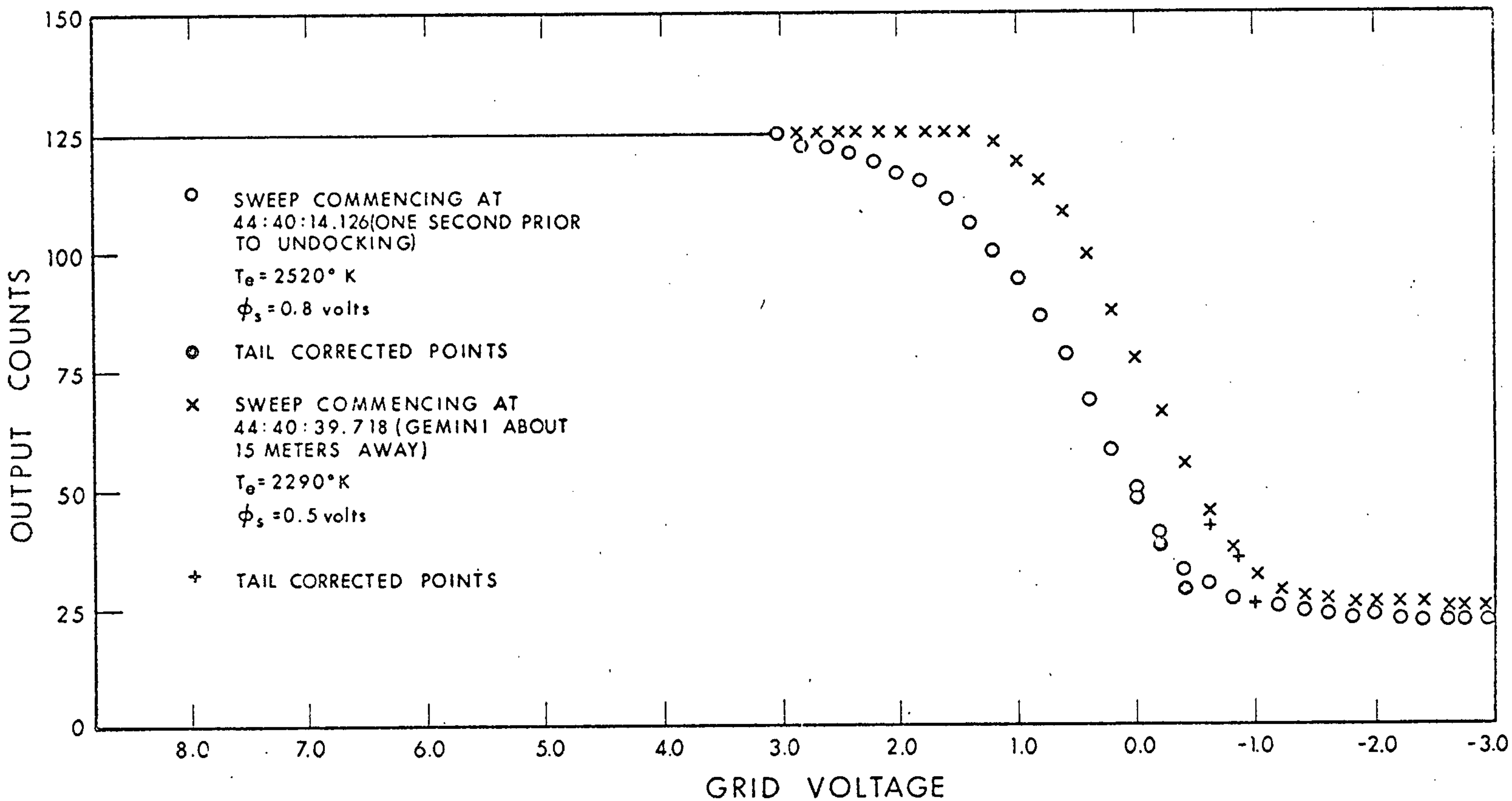


Figure 68.- Comparison of electron sensor output before and after mode U undocking.

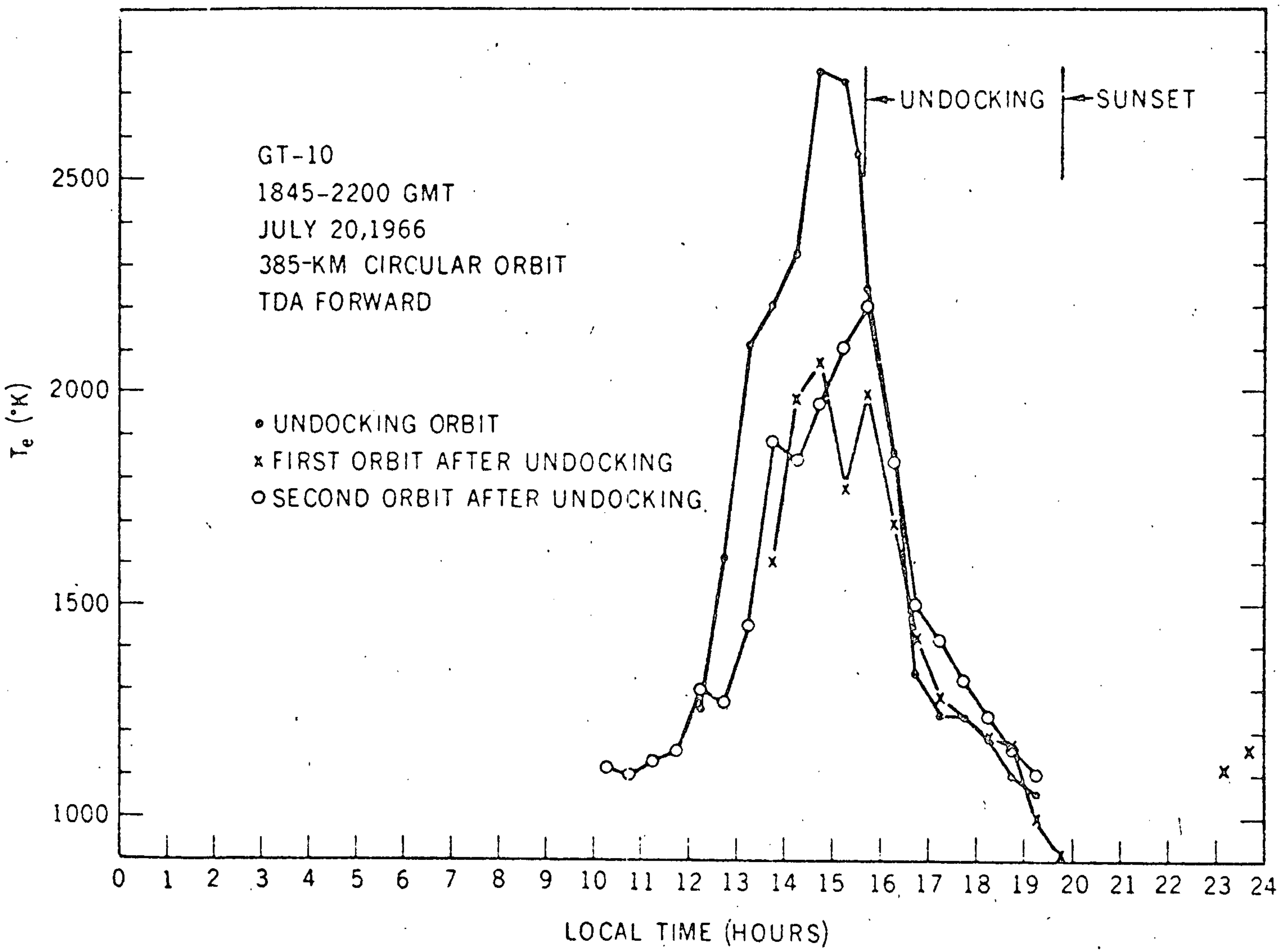


Figure 69.- The T_e for undocking orbit and two orbits following.

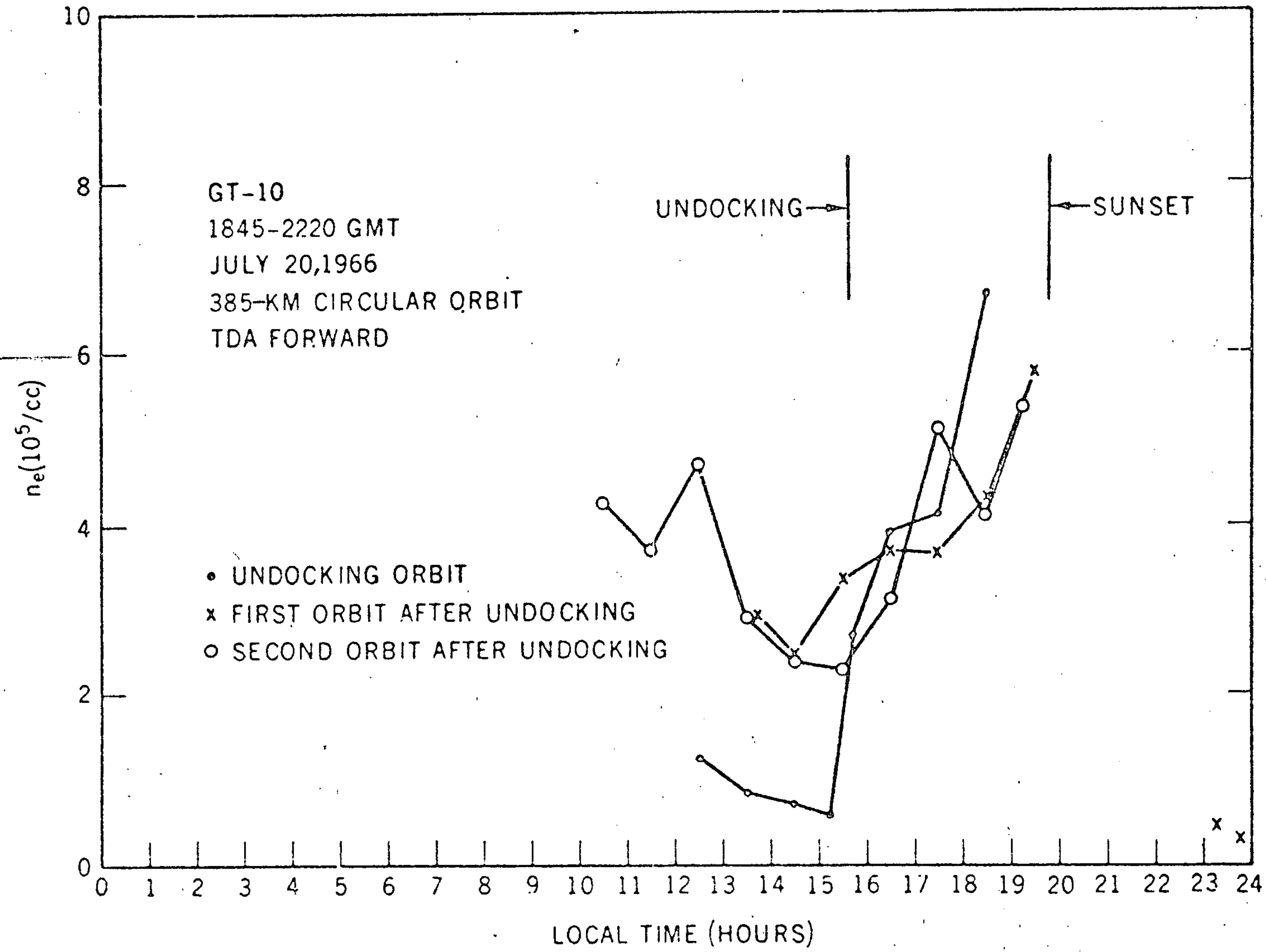


Figure 70.- The n_e for undocking orbit and two orbits following.

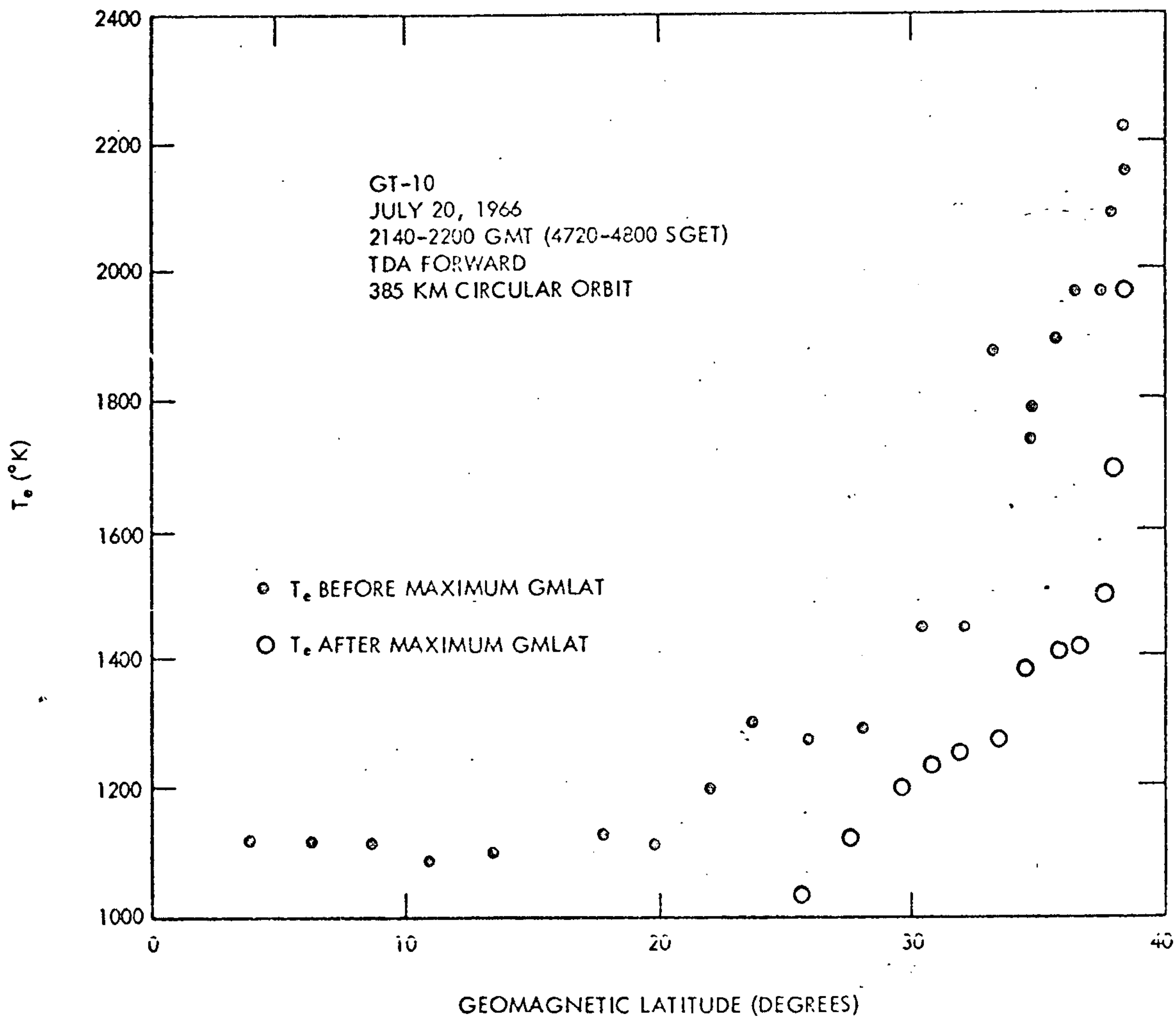


Figure 71.- The T_e versus geomagnetic latitude for second orbit after undocking.

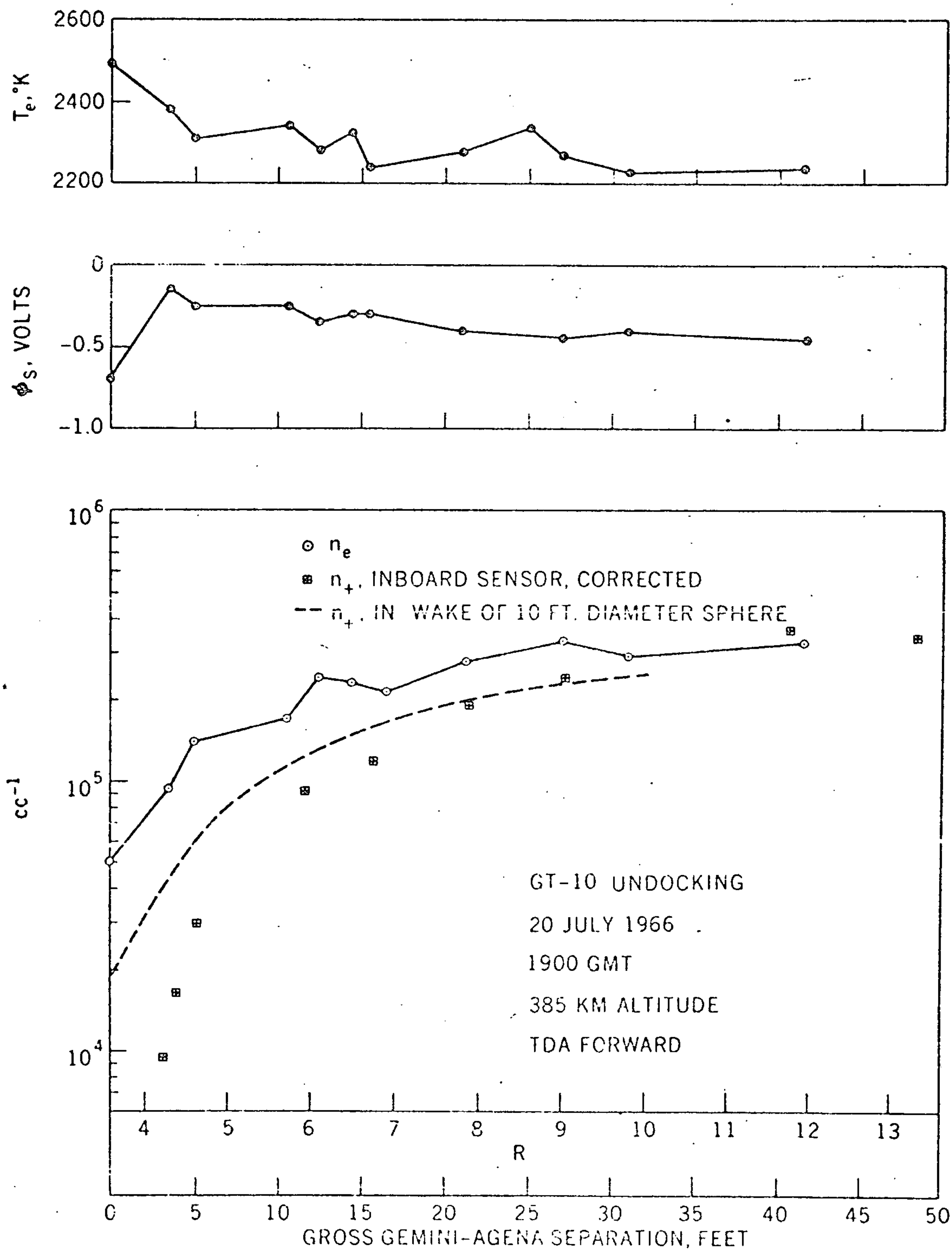


Figure 72.- Axial wake profile for Φ_s, T_e, and densities.

thruster firings). A correction procedure for the inboard sensor data was used (ref. 11). The data of interest for axial variation should be restricted to times less than 44:40:41 S/C g.e.t. Examination of the film record shows that a strong thruster firing at this point resulted in motion of the Gemini upward and to the right so that the departure was no longer a purely axial one. It is observed that the partial failure of the inboard ion sensor apparently occurred at this time. The distance of the Gemini short end from the inboard ion sensor at this point was on the order of 25 feet.

MODE A, GT XI

The wake mapping maneuver designated as mode A was carried out during a nighttime pass over the coast of South Africa at approximately 03:45 S/C g.e.t. Inspection of the film record and Gemini angle orientations show that the maneuvers commenced with an undocking in a TDA-south position. The Gemini S/C was positioned so that its longitudinal axis lined up with the bisector between the two outboard sensors (fig. 41). Subsequent transverse and axial maneuvers as called for in the flight plan were carried out in almost classic textbook fashion by the Gemini XI crew. However, two serious problems developed as follows.

1. Data acquisition problems in the telemetry links during the initial downward pass from point A to B caused loss of the near wake PL data in the period from 03:45 to 03:46:18 (fig. 73). Thus a substantial portion of the transverse maneuver between points A and B is not available

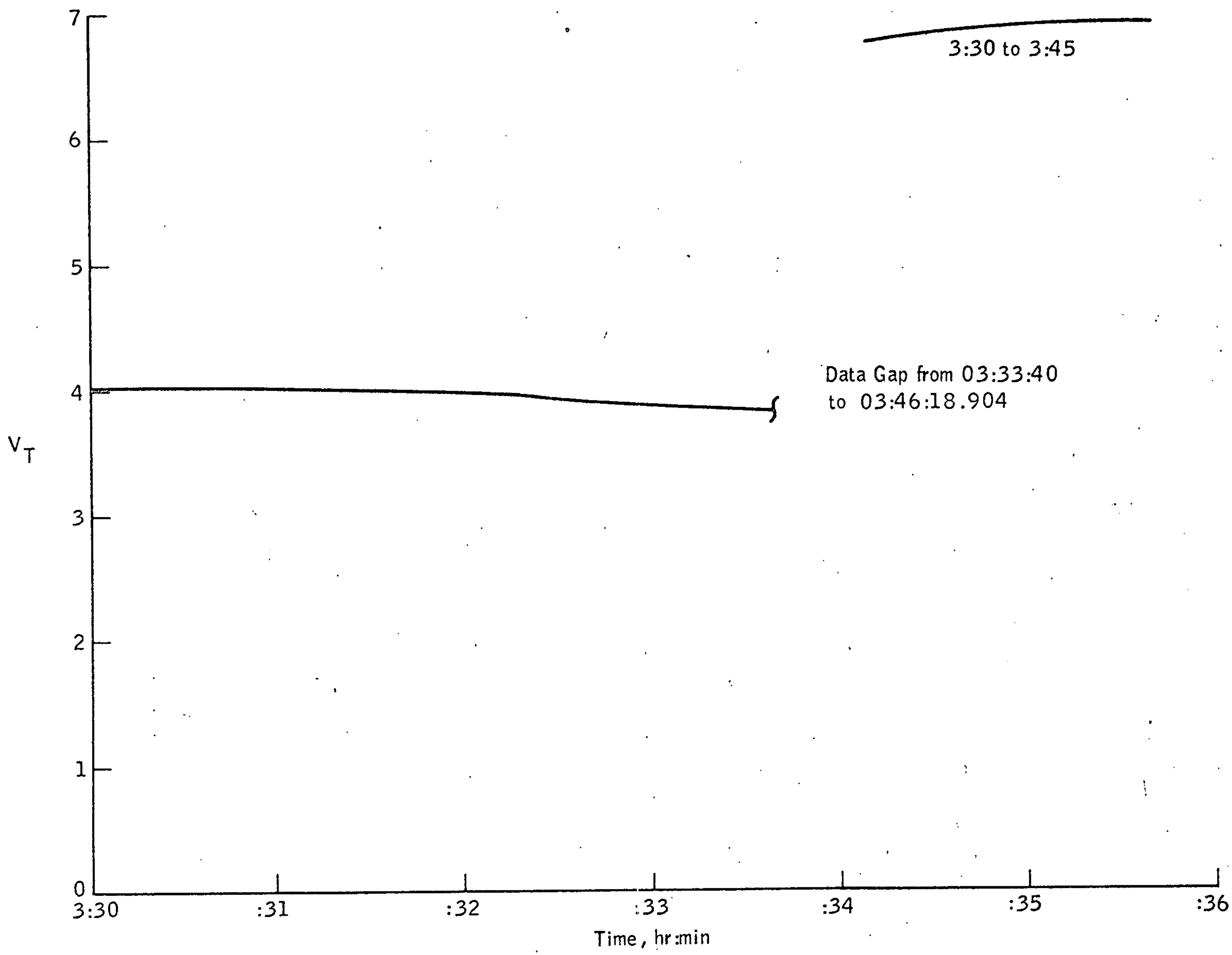


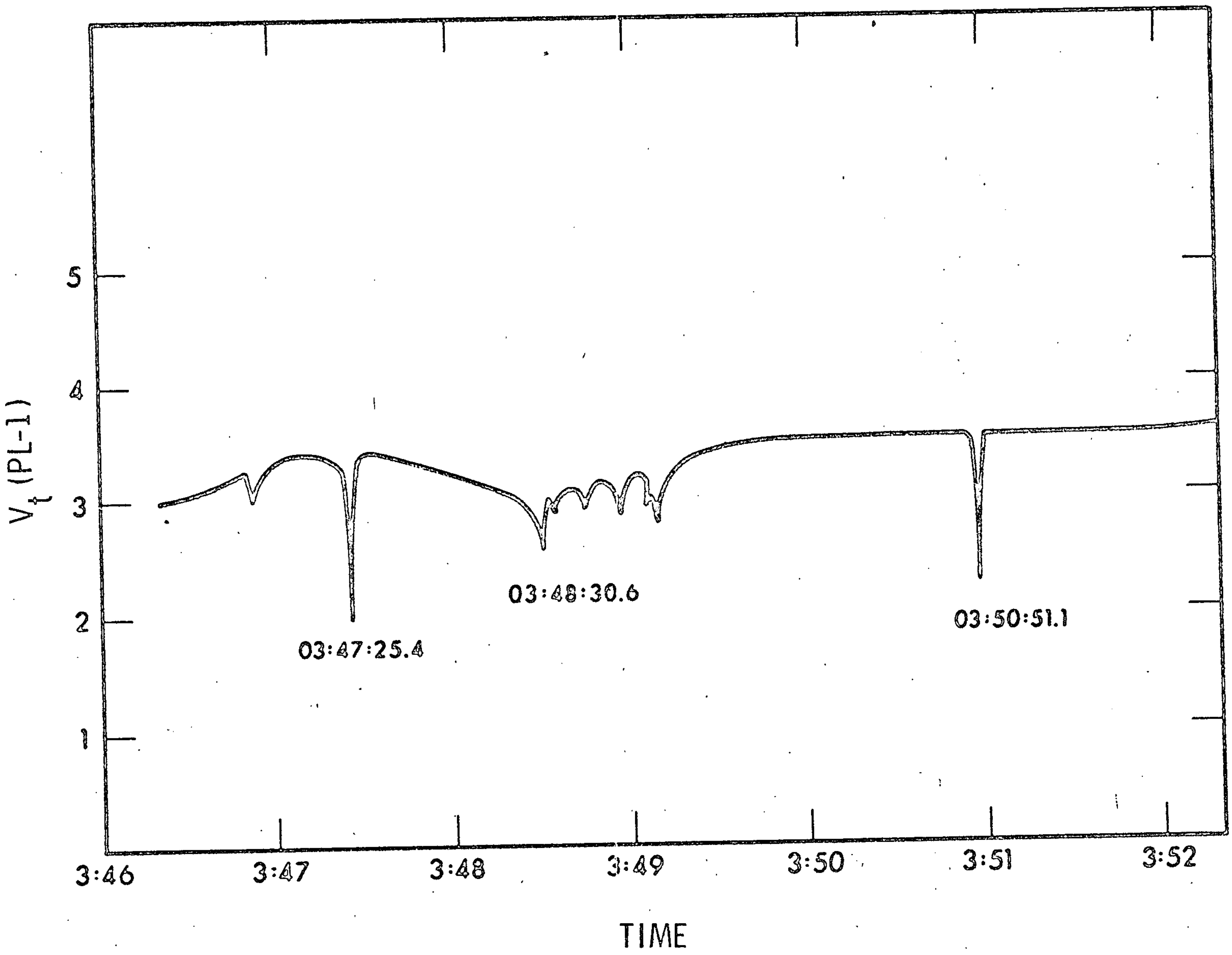
Figure 73.- Behavior of PL-1 as a function of time prior to mode A.

in the tab runs. A considerable effort was exerted by NASA/MSC to retrieve this information. The results of this effort; and information on ephemeris, spatial separation, the Gemini attitude angles, and the PL data tab runs are available at MSC.

2. The film data had no time synchronization marks. Apparently, the timing channels FD01 and FD03 on the Gemini malfunctioned.

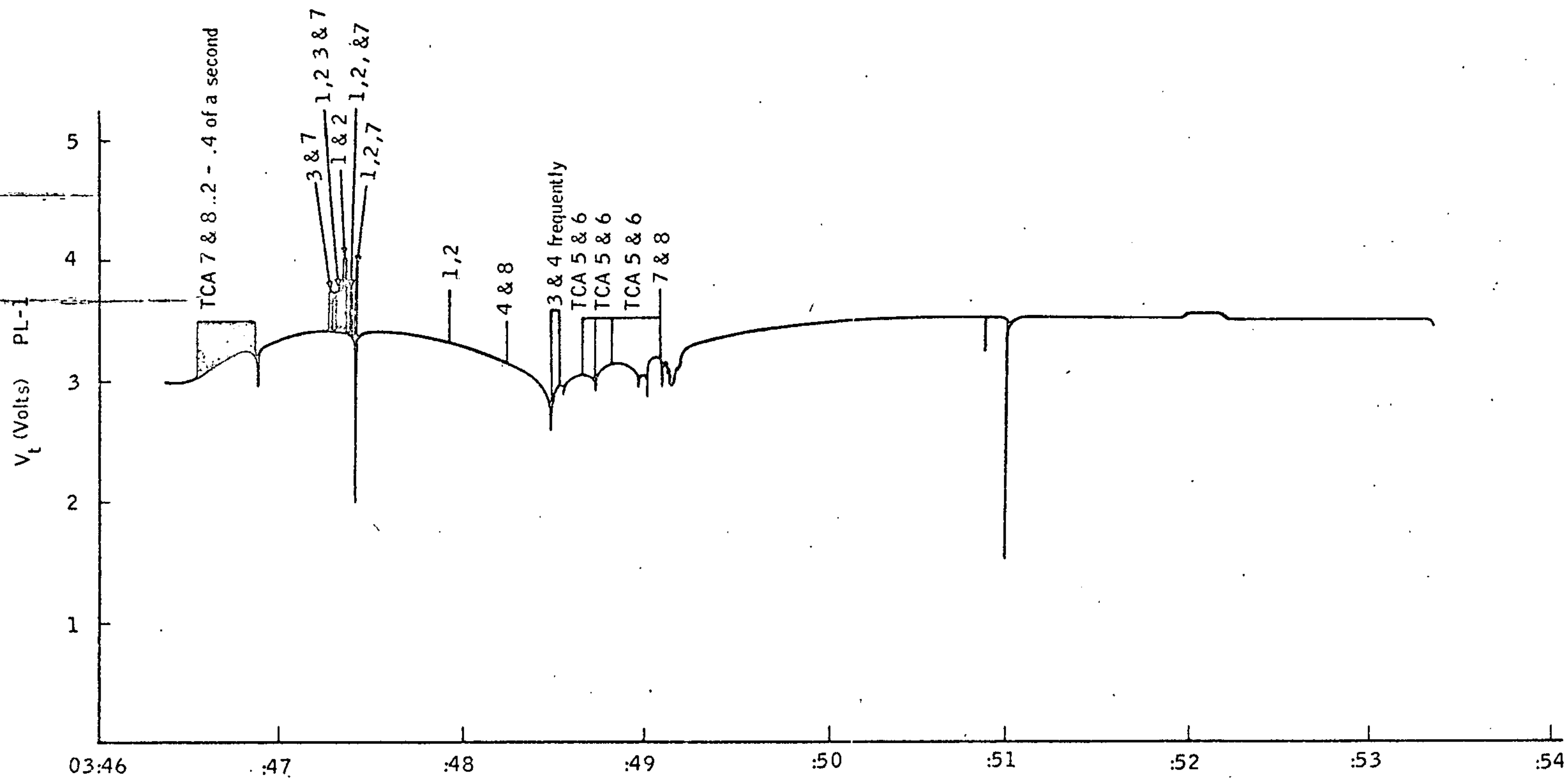
Figure 74(a) shows the variation of the outboard ion sensor telemetry voltage over the nominal time period designated for mode A in the flight plan. The departure of this plot from a smooth variation is identified as the result of thruster firings (fig. 74 (b)). A detailed plot for PL-1 at acquisition of signal (AOS) is given in figure 74(c).

The outboard electron sensor data were scanned in the manner shown in figure 75 prior to the use of hand plotting and computer programs. Figure 75 shows the variation of the saturation value of PL-2; the value at V_g = +8.8 volts corresponds to the first point following the calibrate pulses. Such data, originally considered as only suggestive, became most useful in view of the difficulties encountered with Program Electrons in the presence of extensive thruster firing activity. The PL-3 channel, as expected, shows zero output for TDA-south except at short intervals identified with thruster activity (fig. 76). The data of figures 74(a) and 75 are presented on an expanded vertical scale on the same time base in figure 77. Also shown in figure 77 is the tentative assignment of positions according to the flight plan of figure 42(a). As noted above, the initial point A was reached before data acquisition so that the



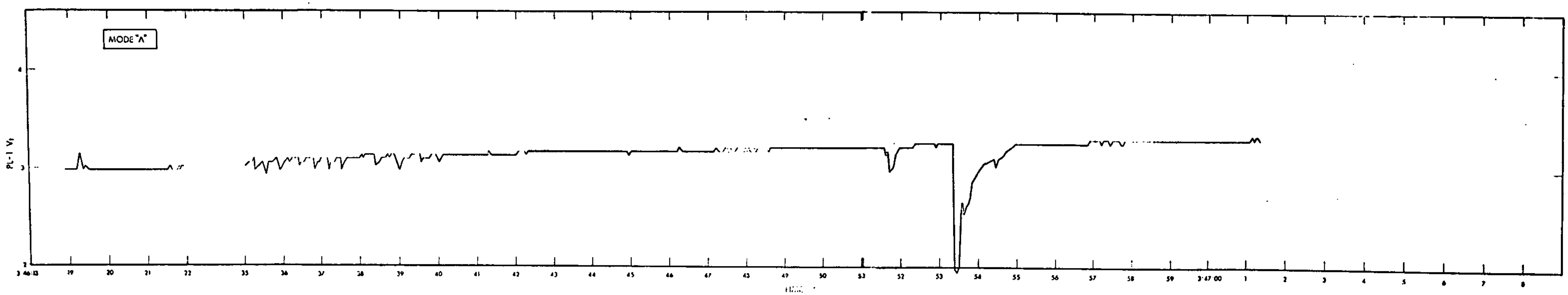
(a) PL-1 as a function of time.

Figure 74.- Mode A PL-1 relationships.



(b) Correlation of PL-1 downspikes with thruster firings.

Figure 74.- Mode A PL-1 relationships. (Continued)



(c) Detail at acquisition of signal for PL-1.

Figure 74.- Mode A PL-1 relationships. (Concluded)

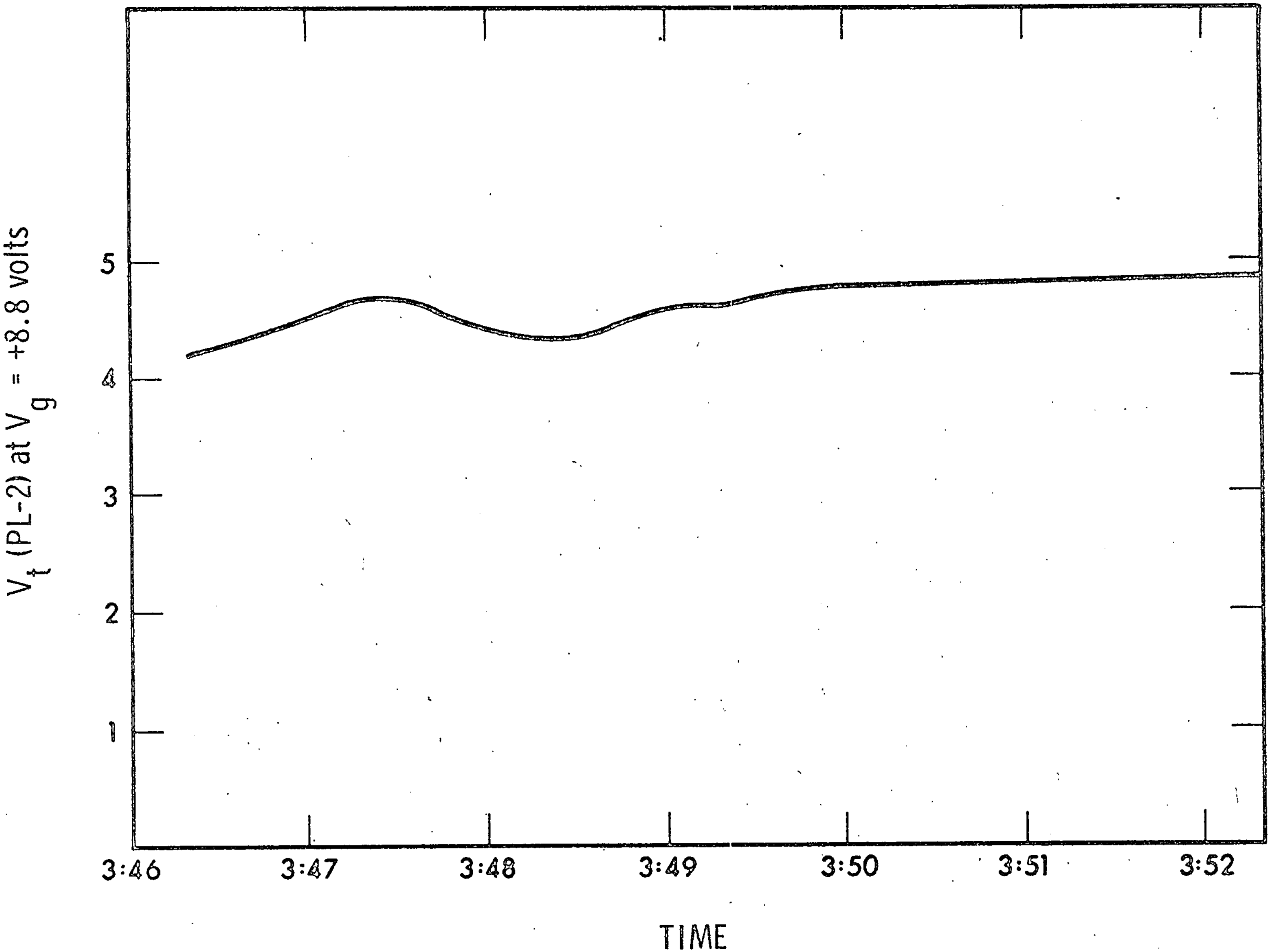


Figure 75.- Mode A PL-2 sensor readings, voltage versus time.

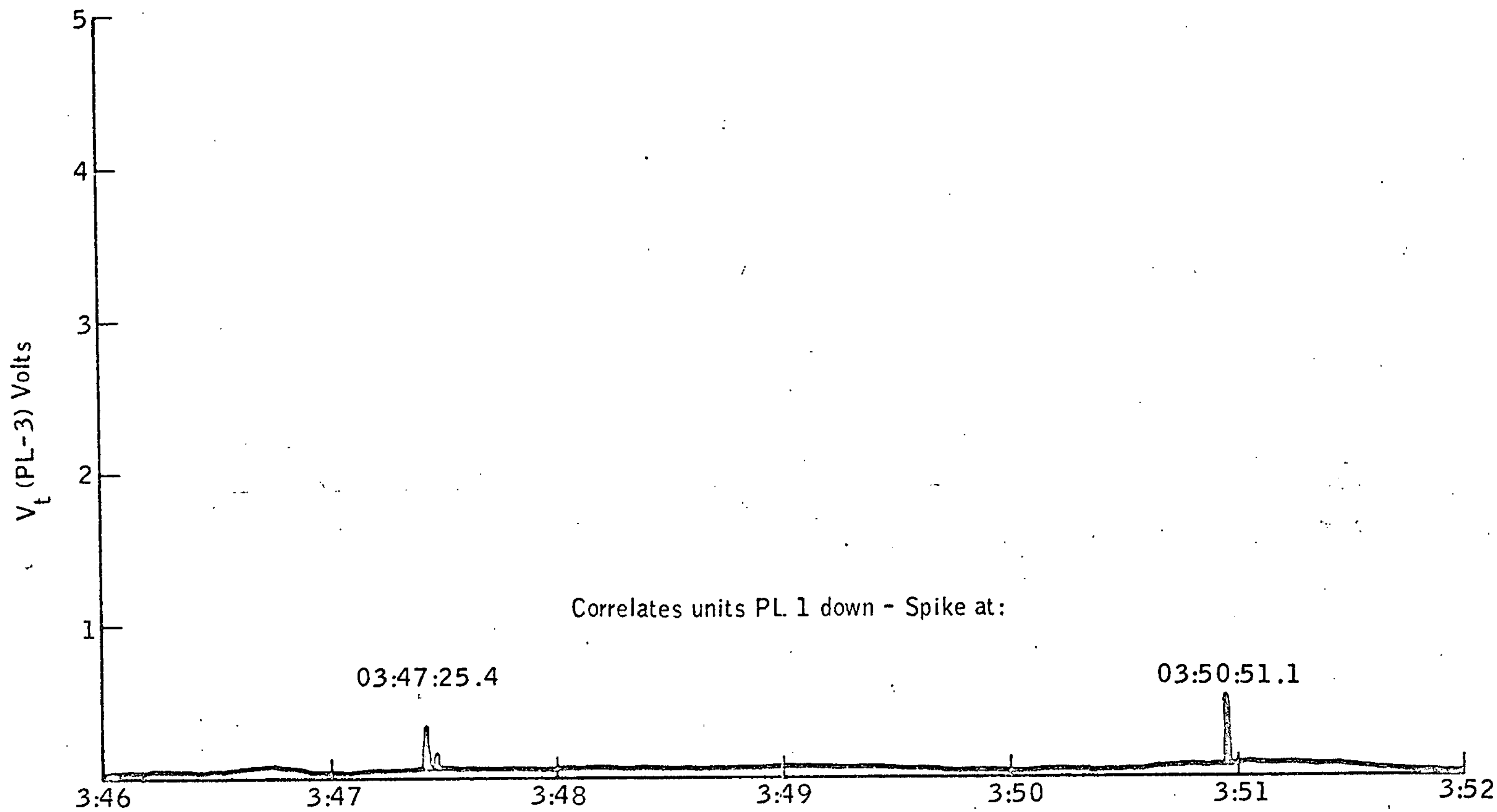


Figure 76.- Mode A PL-3 sensor readings, voltage versus time.

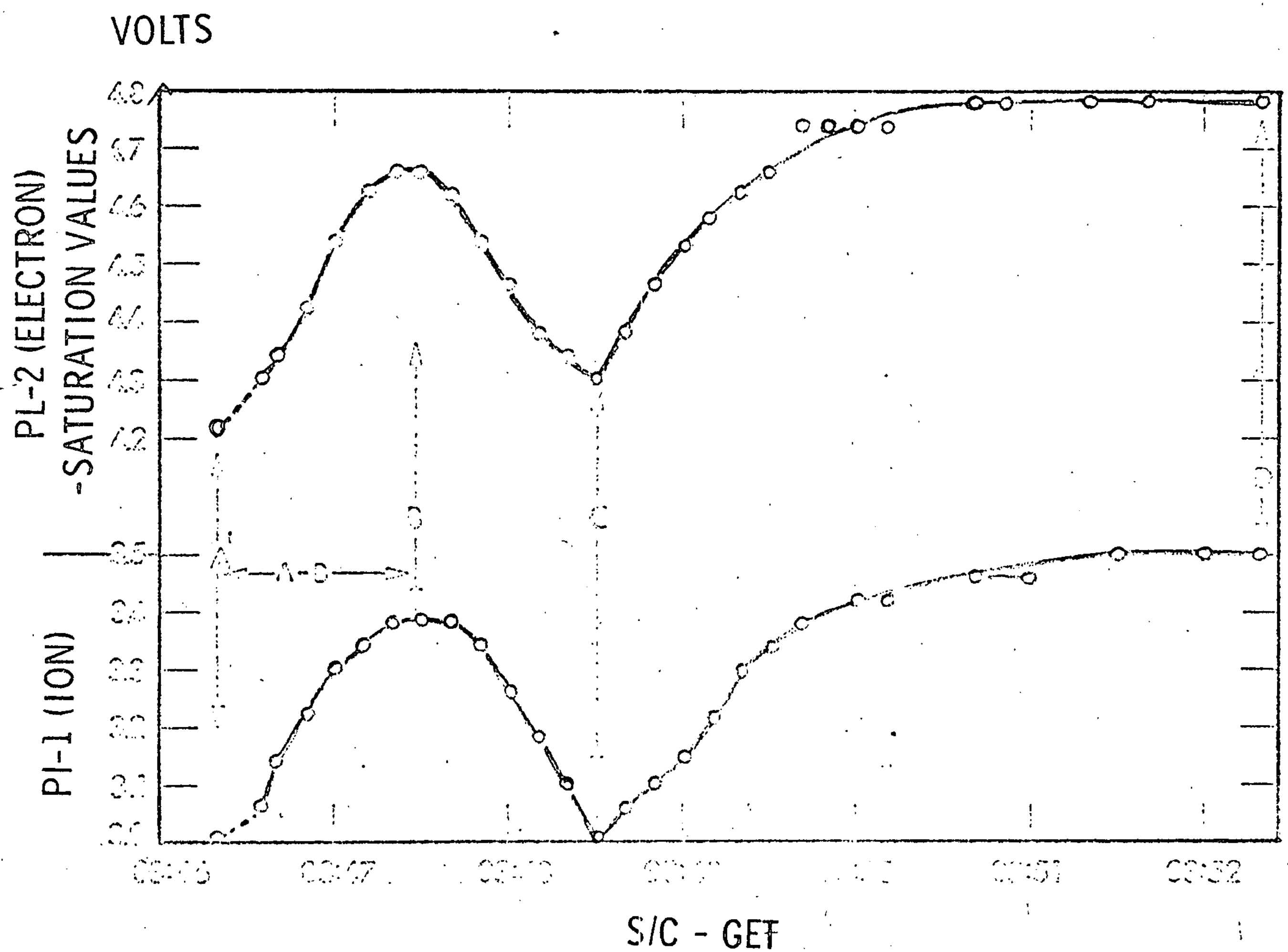


Figure 77.- Variation of PL-1 and PL-2 on same time base.

point A' is somewhere between A and B. As the data are interpreted, the variations shown in figure 77 are described as resulting from the following maneuvers; figure 42 (a) supplements this discussion.

1. There is a monotonic increase in both currents as the Gemini moves downward taking its wake out of the Agena sensors; that is, both currents approach ambient unperturbed readings. At the time of approximately 03:47:24, where the data peak, it is assumed that point B in the flight plan was reached and Gemini motion reversed. Figure 74(b) shows a large amount of thruster firing activity at this point.

2. The drop in currents from 03:47:30 to 03:48:30 g.e.t., is assumed to result from upward motion of the Gemini.

3. The increases in current for times following 03:48:30 are assumed to result from a linear axial departure.

Figures 78 and 79 give the computer calculated values of current to outboard ion sensor (I_A) and current to outboard electron sensor (I_B) for the time period of mode A.

Figures 77 to 79 were essential in determining the relative position coordinates when there were no timing marks available on the film. A visual inspection of the Gemini XI film record on a film reader allowed the identification of that part associated with mode A. A particular frame was then associated with point C and thus given a time assignment by using figure 77; that is, point C corresponds to 03:48:30 S/C g.e.t.

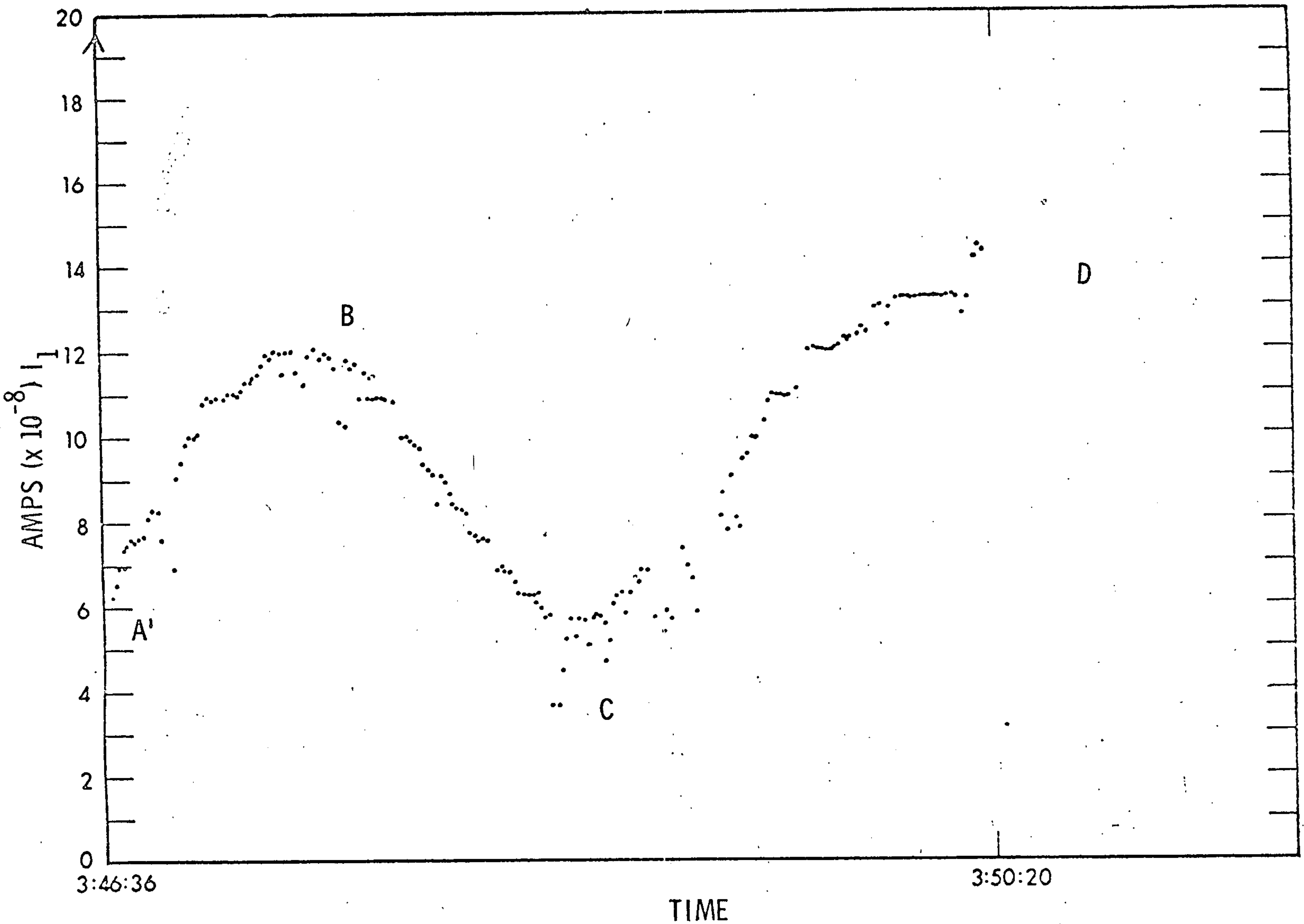


Figure 78.- Program output for ion current to PL-1 sensor during mode A.

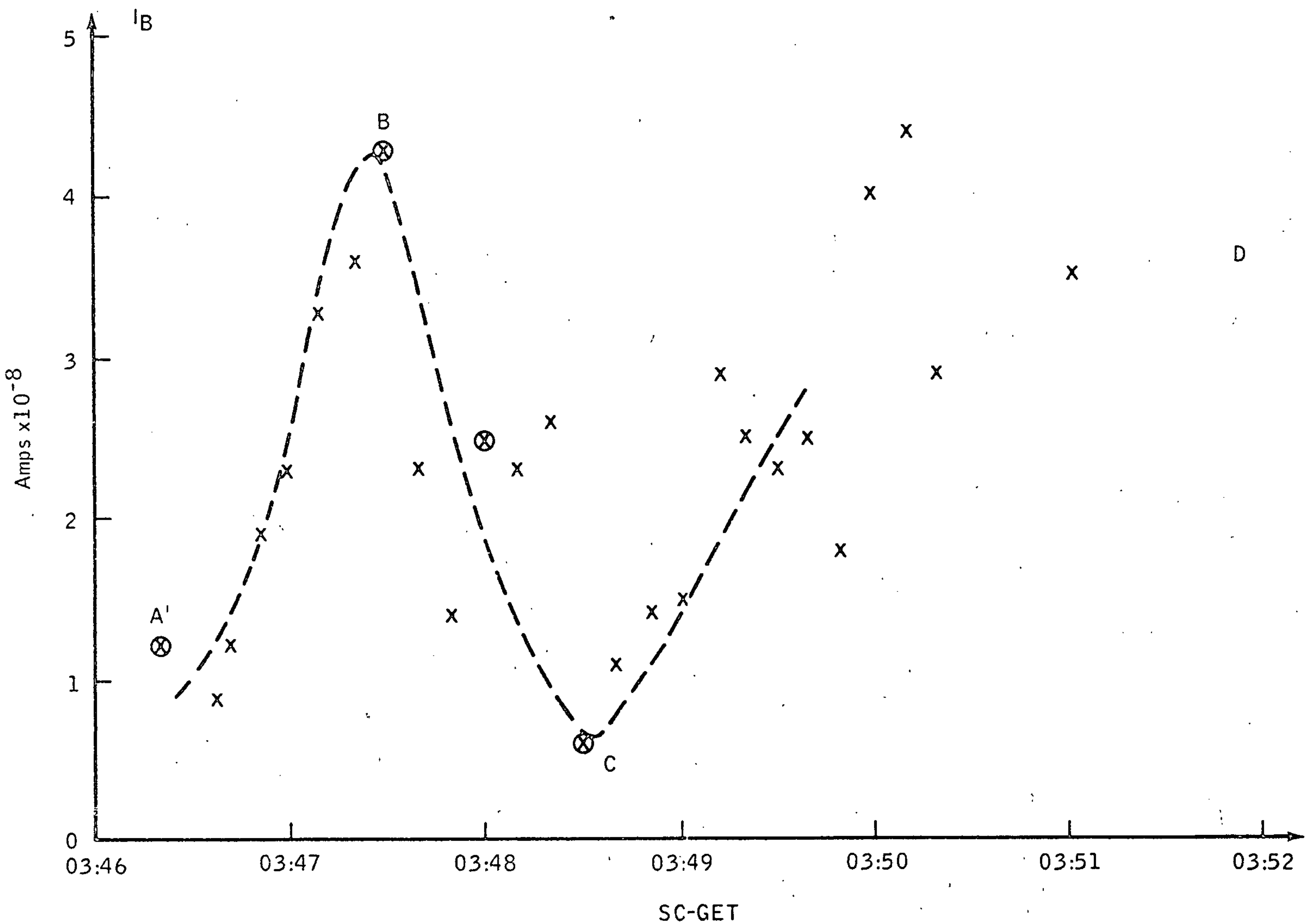


Figure 79.- Program electron output for electron current during mode A.

With this key identification, it is possible to count frames. The camera ran at one frame per second. The technique is illustrated in table XXXVI. The relative position coordinates were obtained from the film data by NASA/MSC personnel using this table as a guide. The tabulations of film data reduction are available as appendix XI-B. Plots of the sensor currents as functions of separation are given in figure 80. Table XXXVII and XXXVIII summarize the pertinent data.

As part of the attempts to pin down the time variation of the mode A sequence, schematic drawings of the Gemini S/C relative to the orbital velocity vector were generated. Three of these are given in figure 81. Part (a) shows the S/C as it was oriented prior to the undocking from the Agena. Part (b) gives an intermediate orientation just before achievement of the alinement characteristic of the mode A maneuver; about one minute prior to the point A as designated in table XXXVI. Part (c) is typical of the way in which the Gemini XI astronauts were able to maintain nominal orientation throughout the mode.

Thruster firings are summarized in figure 82 and "clean data" regions are indicated. Most of the program electron printouts (appendix H) are restricted to these regions because the computer program has a high rejection for the data affected by thruster activity.

The retarding potential characteristic of the electron sensor exhibits informative changes at different parts of mode A. Figure 83 compares the plots at the mode extremes (points A' and D) whereas figure 84 (a) compares the PL-2 traces for points B and C. Figure 84 (b) compares the plots for points C and D. Figures 85 to 87 show the variation of electron temperature (T_e), S/C potential (ϕ_s), and normalized potential (ϕ_n) during the mode A maneuvers.

TABLE XXXVI.- GEMINI XI FILM ANALYSIS

FRAMES	DESCRIPTION	AMOUNT OF FRAMES	SEC. TIME	POINT IN MODE	ASSIGNED TIME S/C-GET	PL
1 - 18	Docked	18	18	--	03:41:36 - 03:41:54	
19 -125	Undocking, repositioning, then out-of-sight	106	106	--	03:41:55 - 03:43:40	
125-239	Out-of-View	115	115	--	03:43:41 - 03:45:35	
240-259	Returns to view and remains in same position	20	20	A	03:45:36 - 03:45:55	
260-275	S/C Moves downward	16	16	--	03:45:56 - 03:46:11	
276-313	Agena Goes out of view	38	38	--	03:46:12 - 03:46:49	* 3.4
314	Lights Disappear	1	1	A'	03:46:50	3.2
315-349	Lights remain Out	35	35	--	03:46:51 - 03:47:25	3.0
350	Lights appear	1	1	B'	03:47:26	4.4
351-322	One light in view					
351-413	Lights in view	63	63	--	03:47:27 - 03:48:29	4.4
414	Agena in View	1	1	C	03:48:30	2.9
415-720	Linear Departure	305	305	--	03:48:31 - 03:53:36	3.0
721-731	In complete darkness	10	10	D	03:53:37 - 03:53:47	3.5
732-802	Lights in view (approaching AGT)	71	71	--	03:54:57	
803	Agena in view	1	1	--	03:54:58	
804						

*PL-1,2,3 all begin at 03:46:18

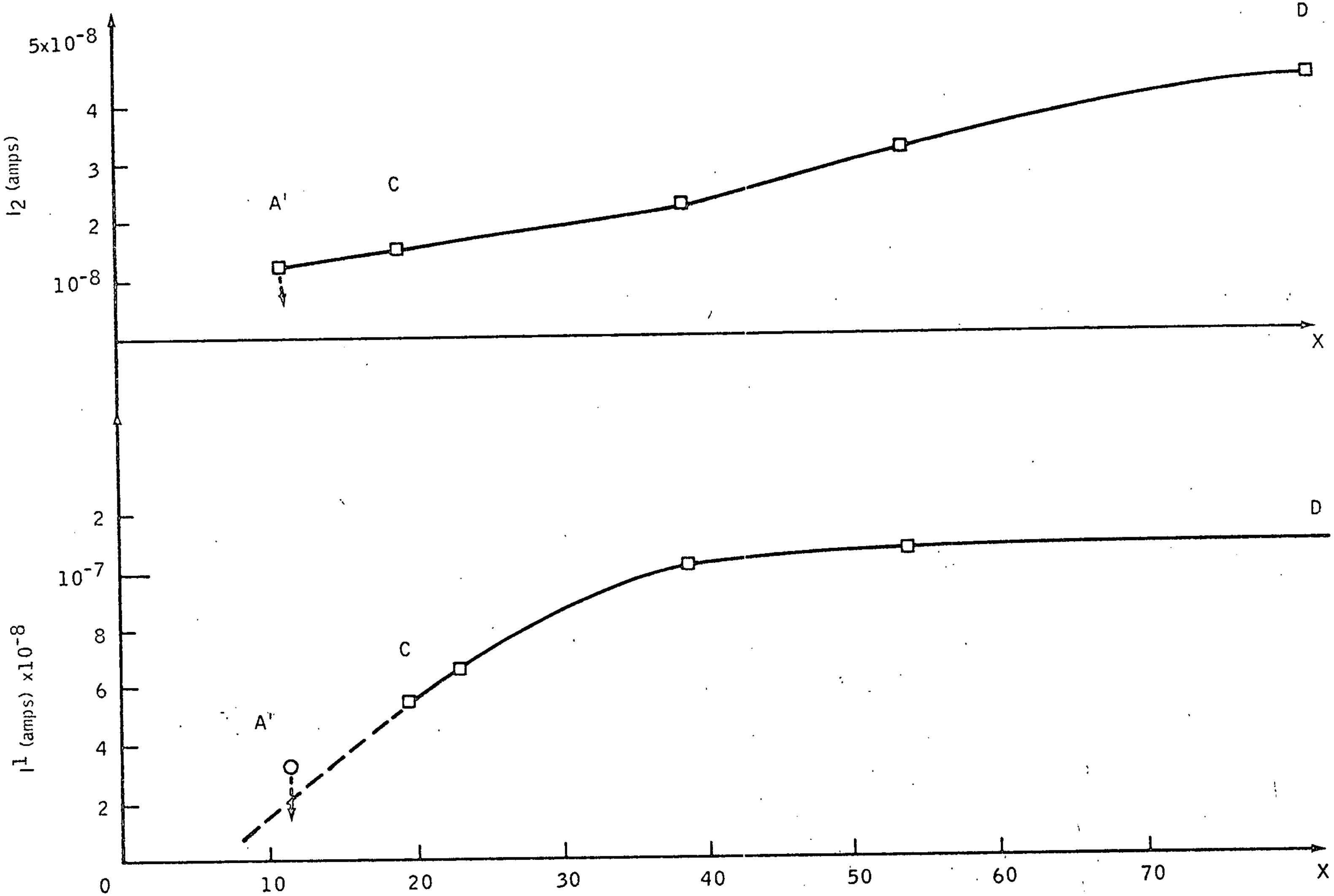


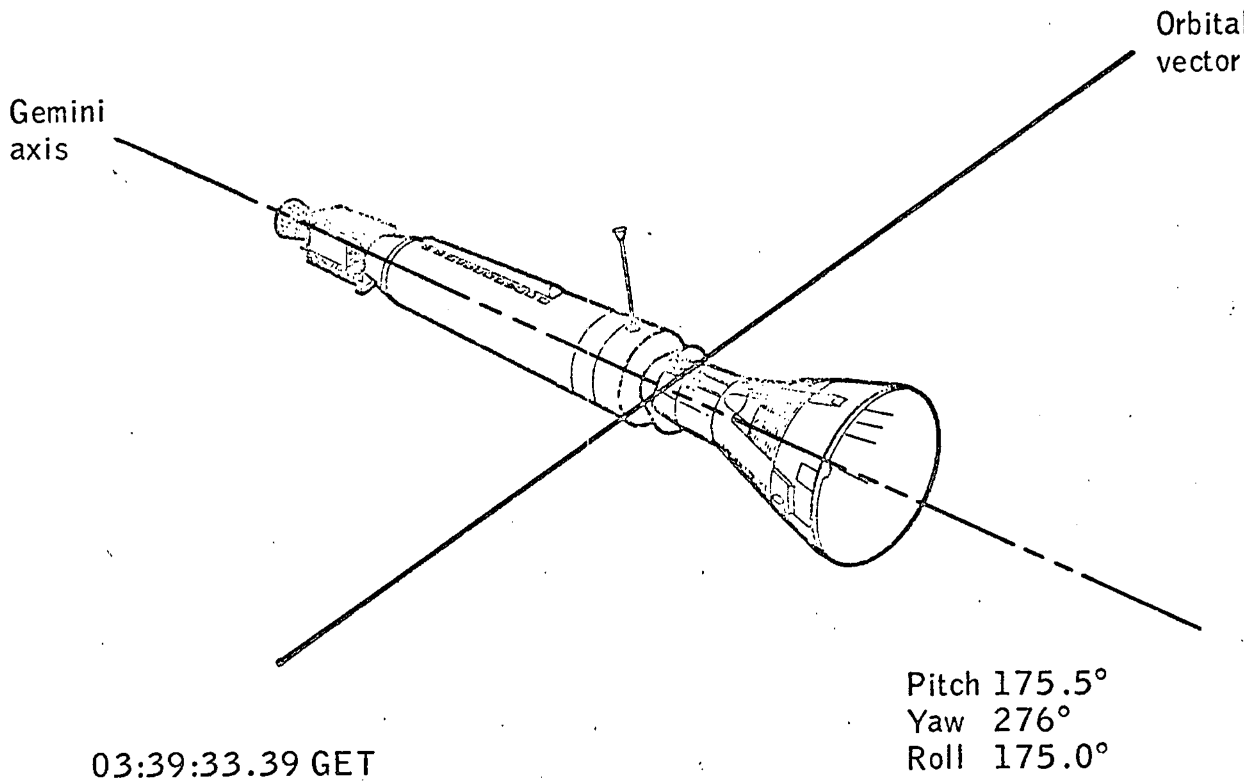
Figure 80.- Variation of sensor currents with distance.

TABLE XXXVII.- MODE A THRUSTER ACTIVITY AND FILM DATA

Spacecraft g.e.t.	Mode point	PL data		Thruster activity	Film data
		VTS	PL-2		
03:45:36 to 03:45:55	A	not abailable		None between 03:46:00, then up (16) and forward (12, 11)	S/C stationary until 03:45:56 (4-sec disrupt), then moves down at ∿ 0.2 f.p.s.
03:45:55	A'	4.22	2.98	None, calculate position =	Calc. pos. = 18 x 0.15 = 2.4, film shows z = 3.7 ft at 03:46:08, last frame read: x = 11.5, y = 2.6
03:46:50 to 03:47:25	Near B	4.46 4.66	3.22 3.38	Fire down at 03:47:23.945 for 0.7 sec, assume reverse direction	Lights disappear, calc: z = 7.5 ft z = 12.5 ft
03:47:39	B	4.62	3.38	Fire (14) -right at 03:47:29	None reduced, lights appear at 03:47:26, assume motion at 0.2 f.p.s., calc. z = 12.5 - 6.8 = 5.7, film shows 4.9 (6-frame average)
03:48:00		4.46 4.34 4.14	3.26 3.06 2.94	Left and right Fire up at 03:48:28.921 Fire down at 03:48:31.621	x y z 18.07 3.53 1.30 19.44 2.96 0.05 Δz ∿ 0.15 f.p.s.
03:48:30	C	4.30	2.90	Fire up at Fire forward at 03:48:34	
03:48:40	C	4.42	3.06	Fire forward at 03:48:58	
03:49:00		4.46	3.14		25.09 -1 Δx ∿ 0.3 f.p.s.
03:49:30		4.70	3.34		37.46 -4 Δx ∿ 0.4 f.p.s.
03:50:00		4.74	3.42		50 -4 Δx ∿ 0.4 f.p.s.
03:51		4.74	3.42		
03:53		4.80	3.75		

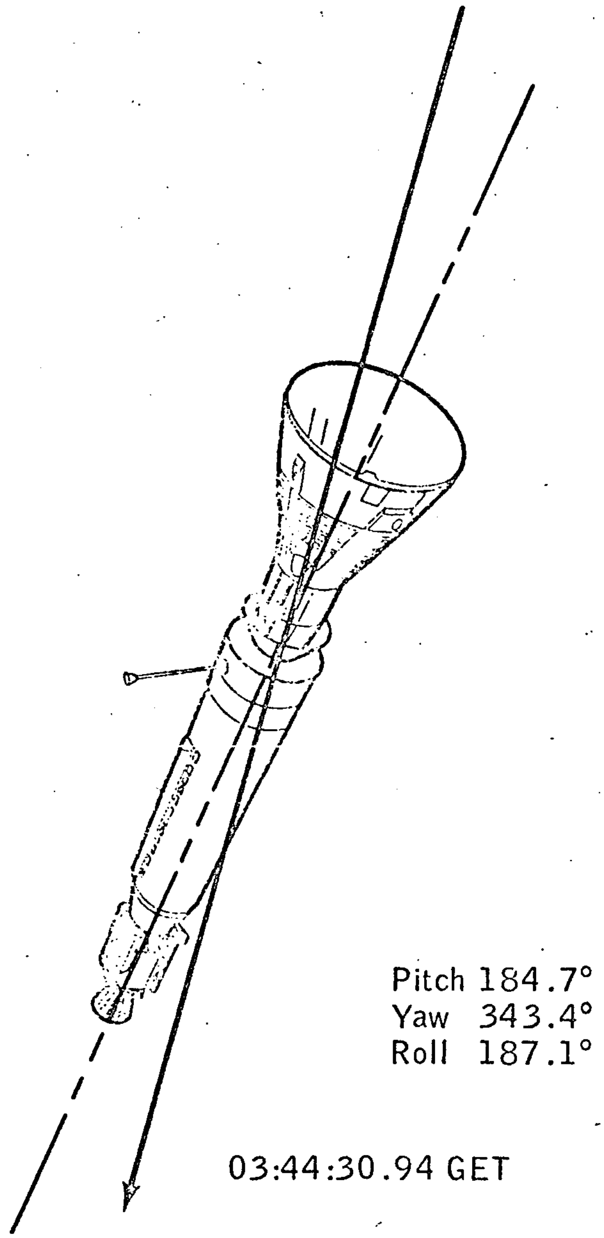
TABLE XXXVIII.- MODE A DATA SUMMARY

Spacecraft g.e.t.	Position x	Position y	Position z	I_1	I_2	Φ	T_e	Φ_n	
03:46:08 to 03:46:18	(11.43)	(2.65)	(-3.5)	3.4×10^{-8}	1.2×10^{-8}	0.6	0.14	4.27	
03:46:50			7	7.56×10^{-8}	1.9×10^{-8}	0.8	0.105	7.59	
03:47:21			12	1.2×10^{-8}	3.6×10^{-8}	1.0	0.098	10.55	B
03:47:24			12.5	1.2×10^{-7}	4.4×10^{-8}	0.8	0.079	10.24	
03:47:40									
03:48:00	14.4	4.17	5.3	8.39×10^{-8}	2.5×10^{-8}	1.0	0.106	9.48	
03:48:20	16.5	4.26	2.4	6.29×10^{-8}	2.6×10^{-8}	0.8-1.0	0.111	7↔9	C
03:48:40	19.44	2.96	0.05	5.67×10^{-8}	1.1×10^{-8}	0.6	0.1	5.85	
03:48:52	22.80	2.63	-1.27	6.57×10^{-8}	1.6×10^{-8}	0.6	0.101	5.97	
03:50:12 03:50:13	54.36	-0.53	-6.11	1.32×10^{-7}	34×10^{-8}	0.8	0.091	8.92	
03:49:45	43.86	-1.48	-5.01	1.22×10^{-7}	2×10^{-8}	0.6	0.084	7.31	
03:49:34	39.66	-0.16	-4.1	1.1×10^{-7}	2.3×10^{-8}	0.6	0.100	6.03	
03:52:42	120 calculated			1.58×10^{-7}	2.5×10^{-8}	0.8	0.073	11.24	
03:53:58	160 calculated			1.58×10^{-7}	4×10^{-8}	0.8	0.08	10.38	



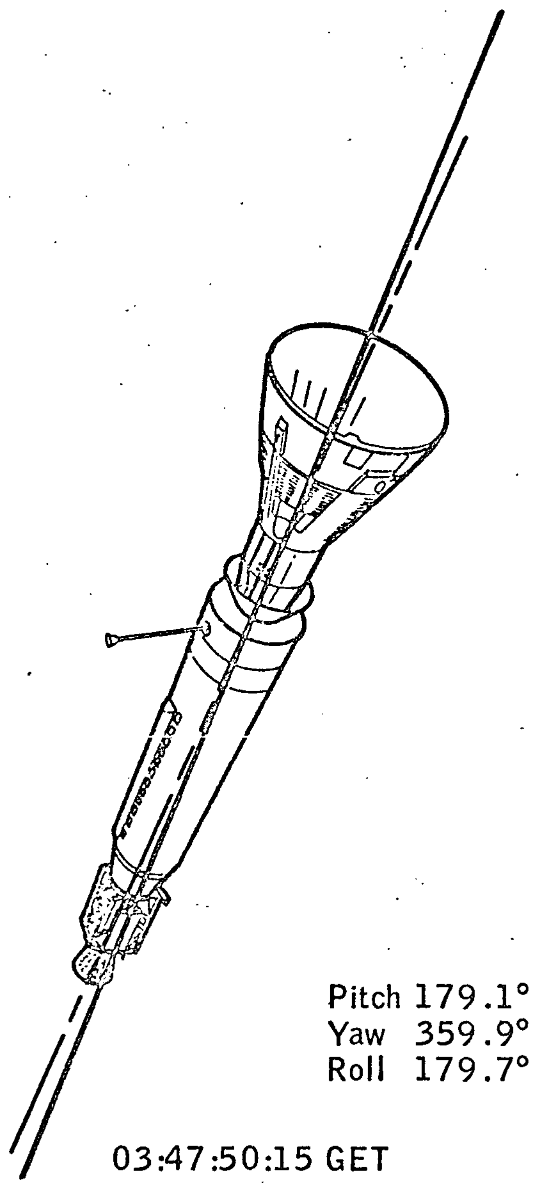
(a) Orientation prior to mode A (docked with Agena, TDA-south).

Figure 81.- Spacecraft orientation.



(b) Orientation approximately one minute before point A.

Figure 81.- Spacecraft orientation. (Continued)



(c) Typical orientation during mode A.

Figure 81.- Spacecraft orientation. (Concluded)

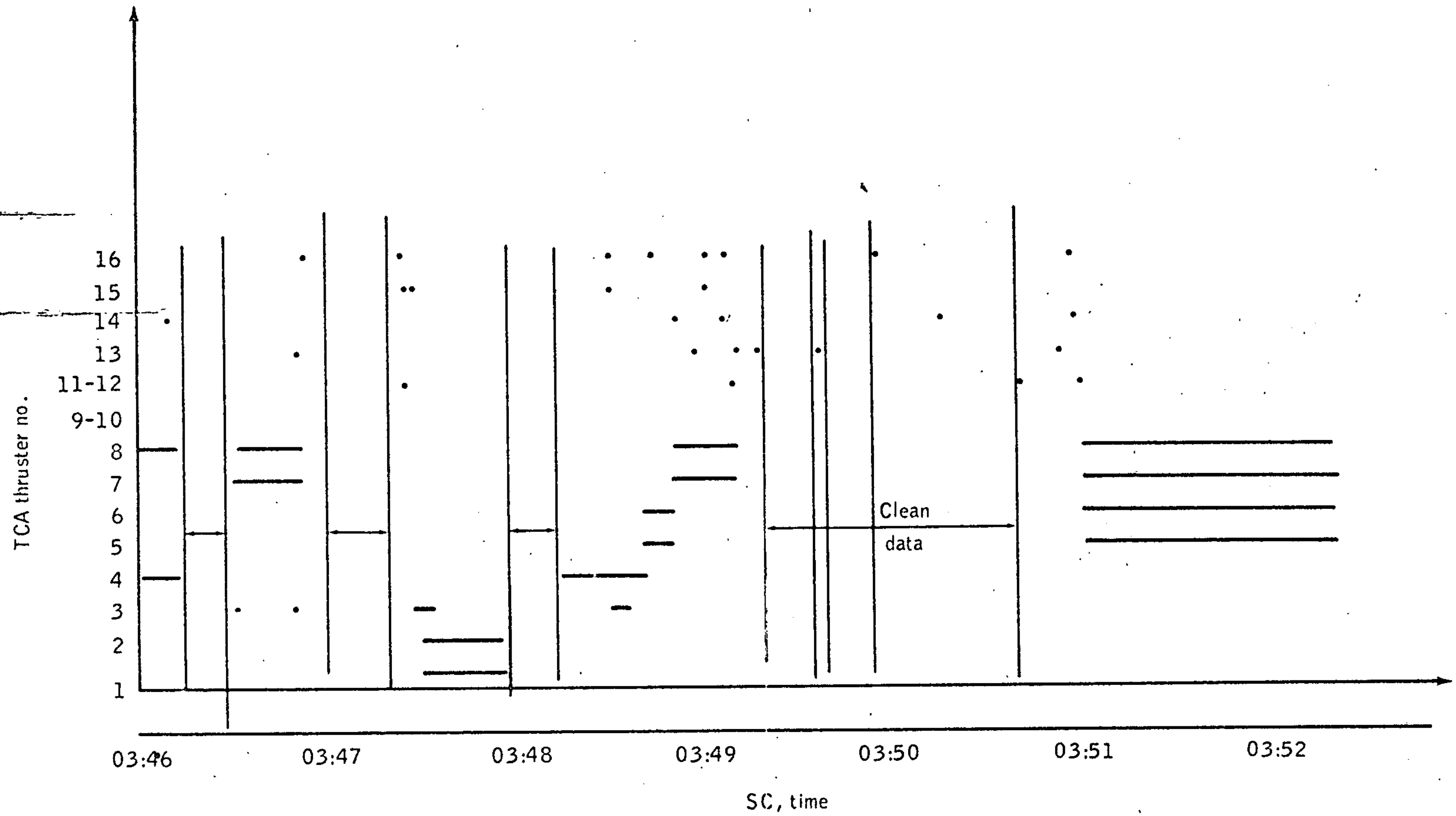


Figure 82.- Mode A thruster firing as a function of spacecraft g.e.t.

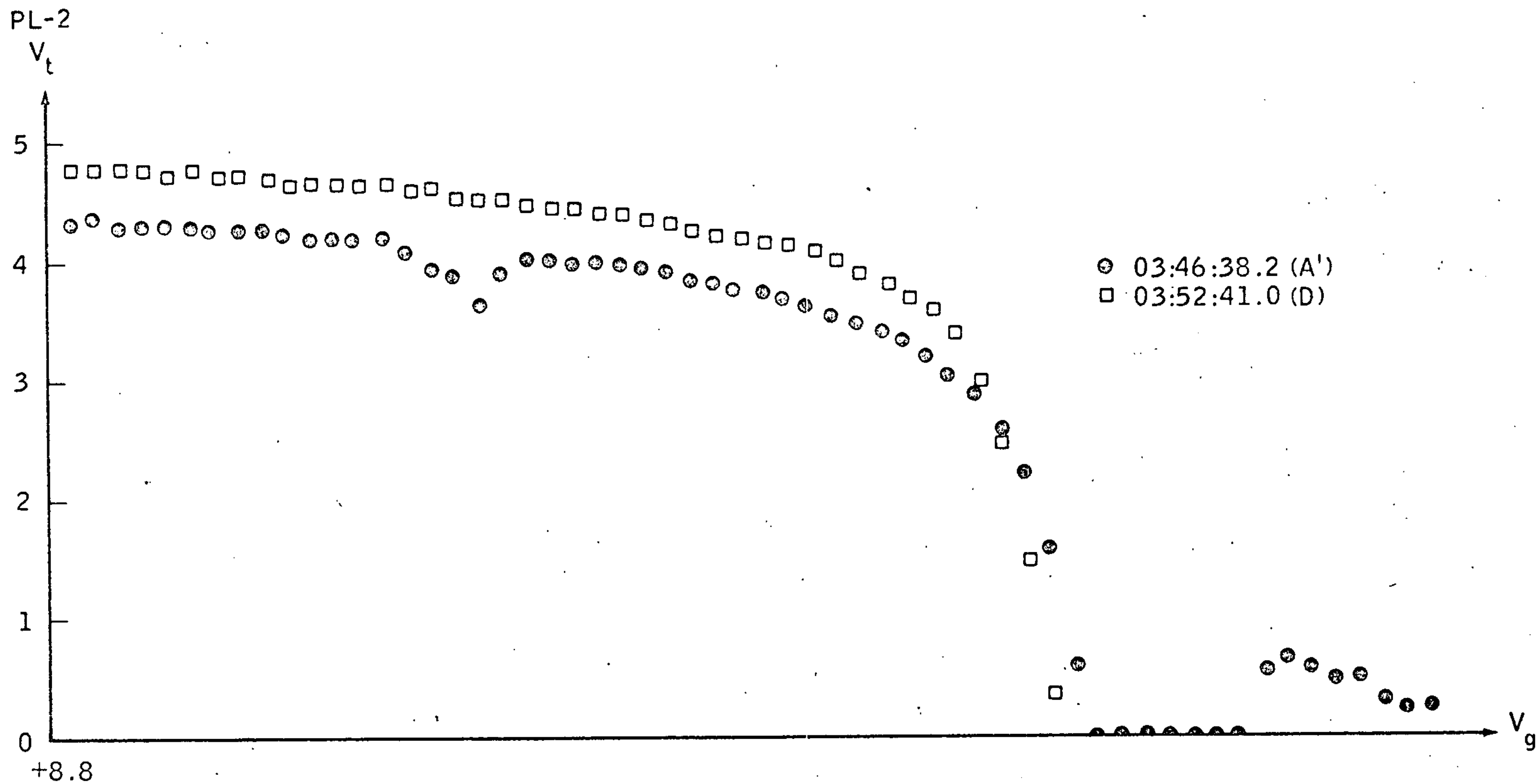
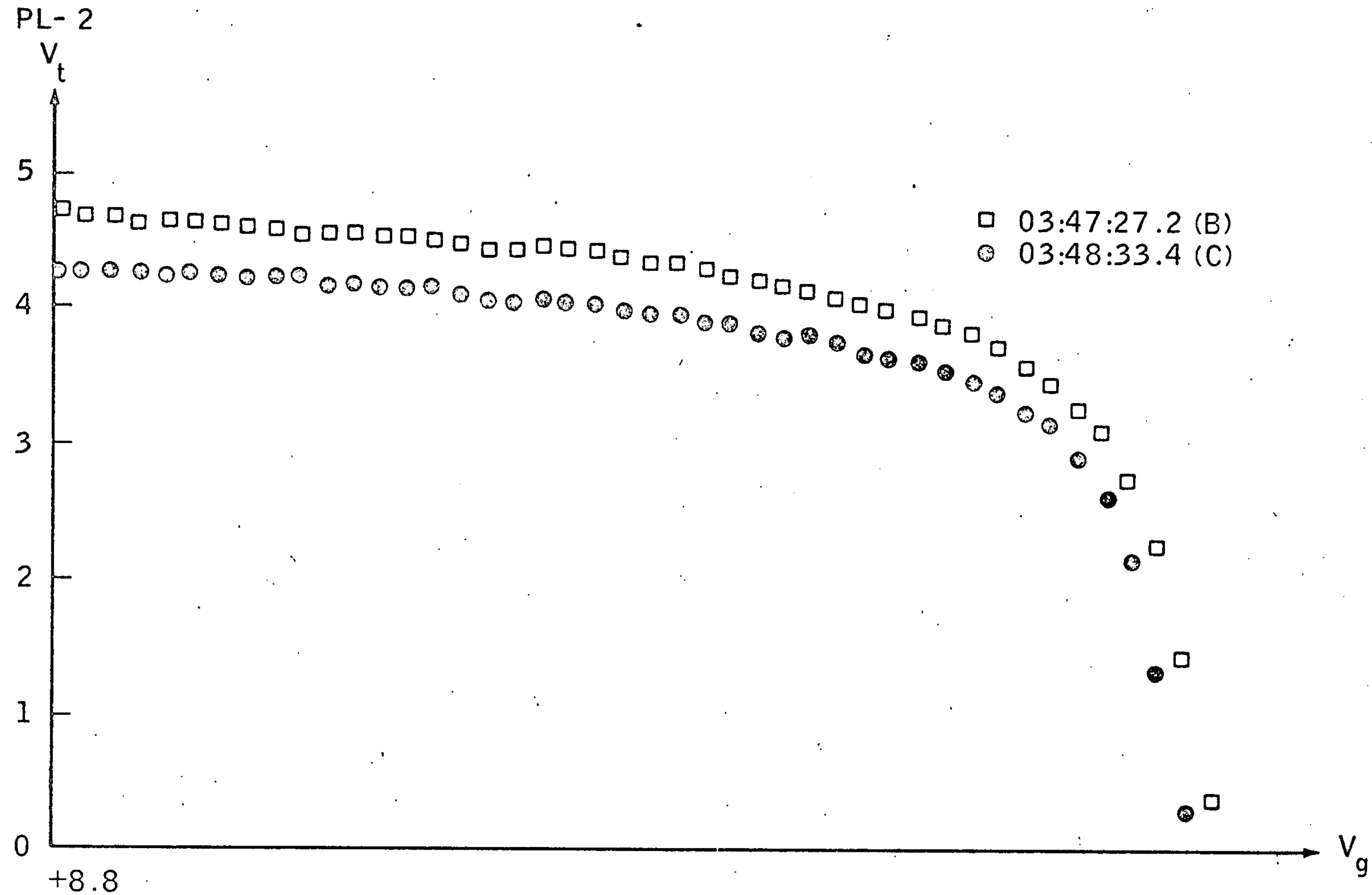
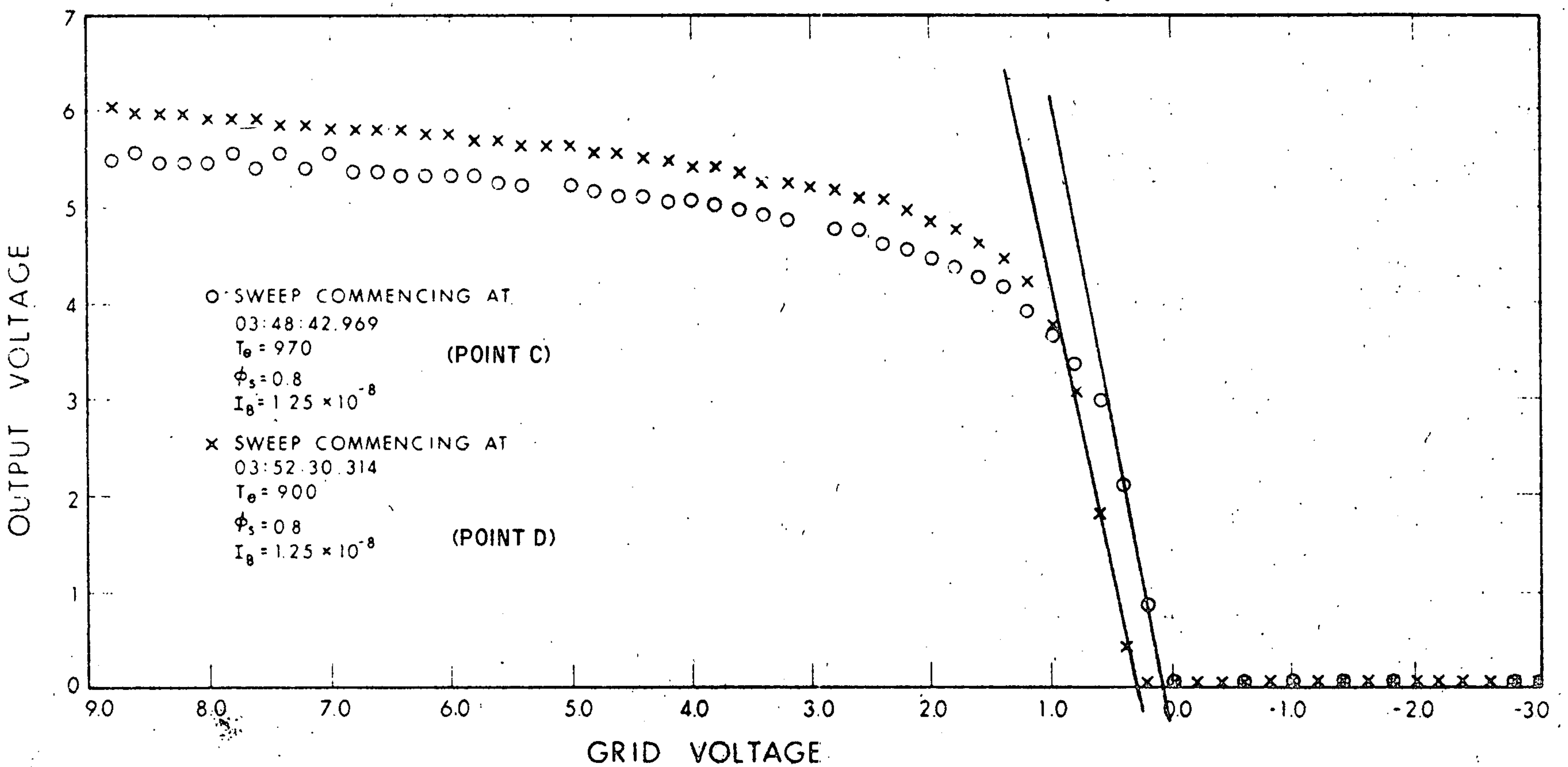


Figure 83.- Comparison of PL-2 plots for near wake and ambient conditions.



(a) Plots at low point of down pass B and axial point C.

Figure 84.- Comparison of PL-2 plots.



(b) Plots at points C and D.

Figure 84.- Comparison of PL-2 plots. (Concluded)

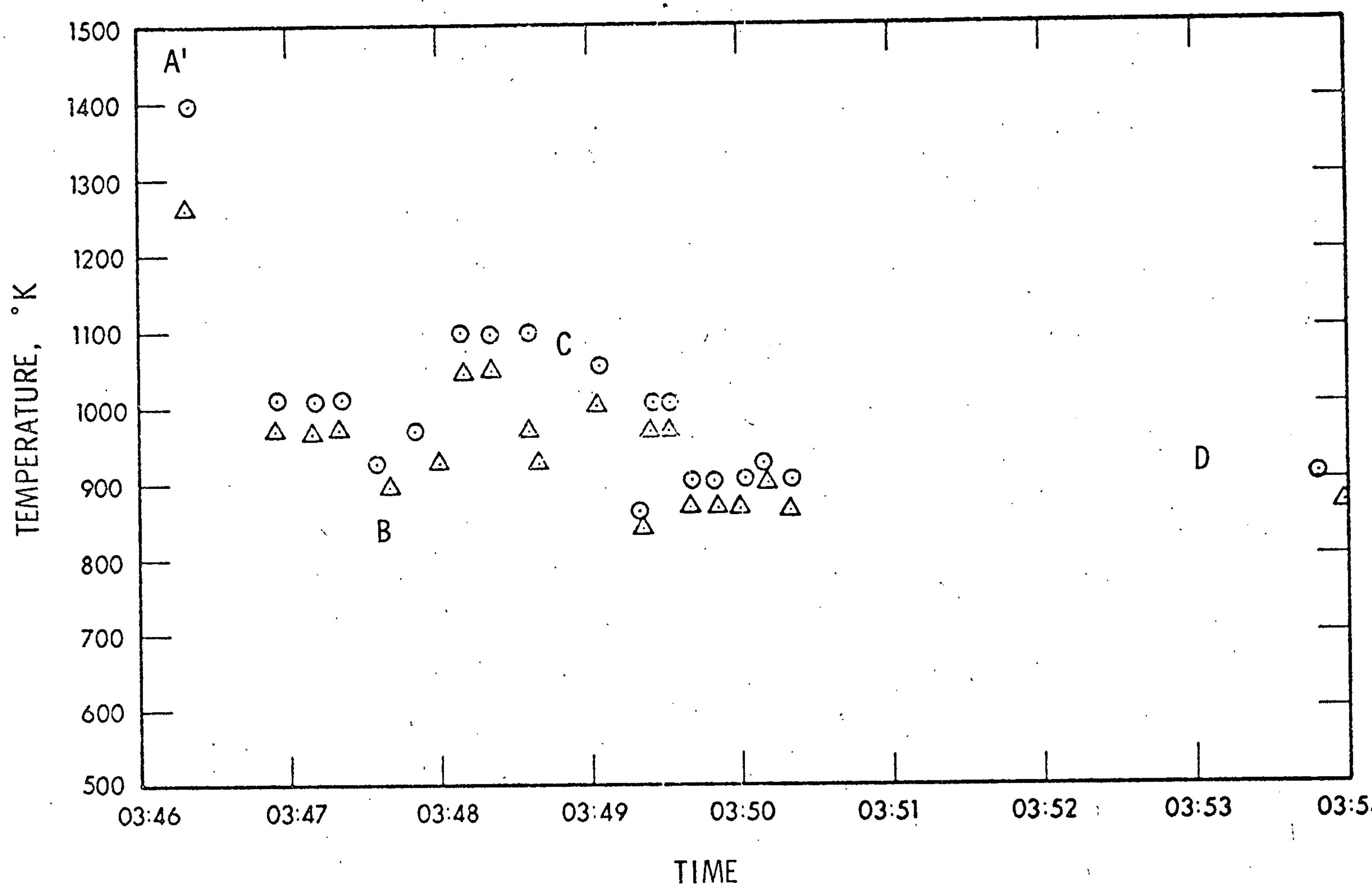


Figure 85.- Comparison of program electron results and hand computations on electron temperature (T_e), mode A.

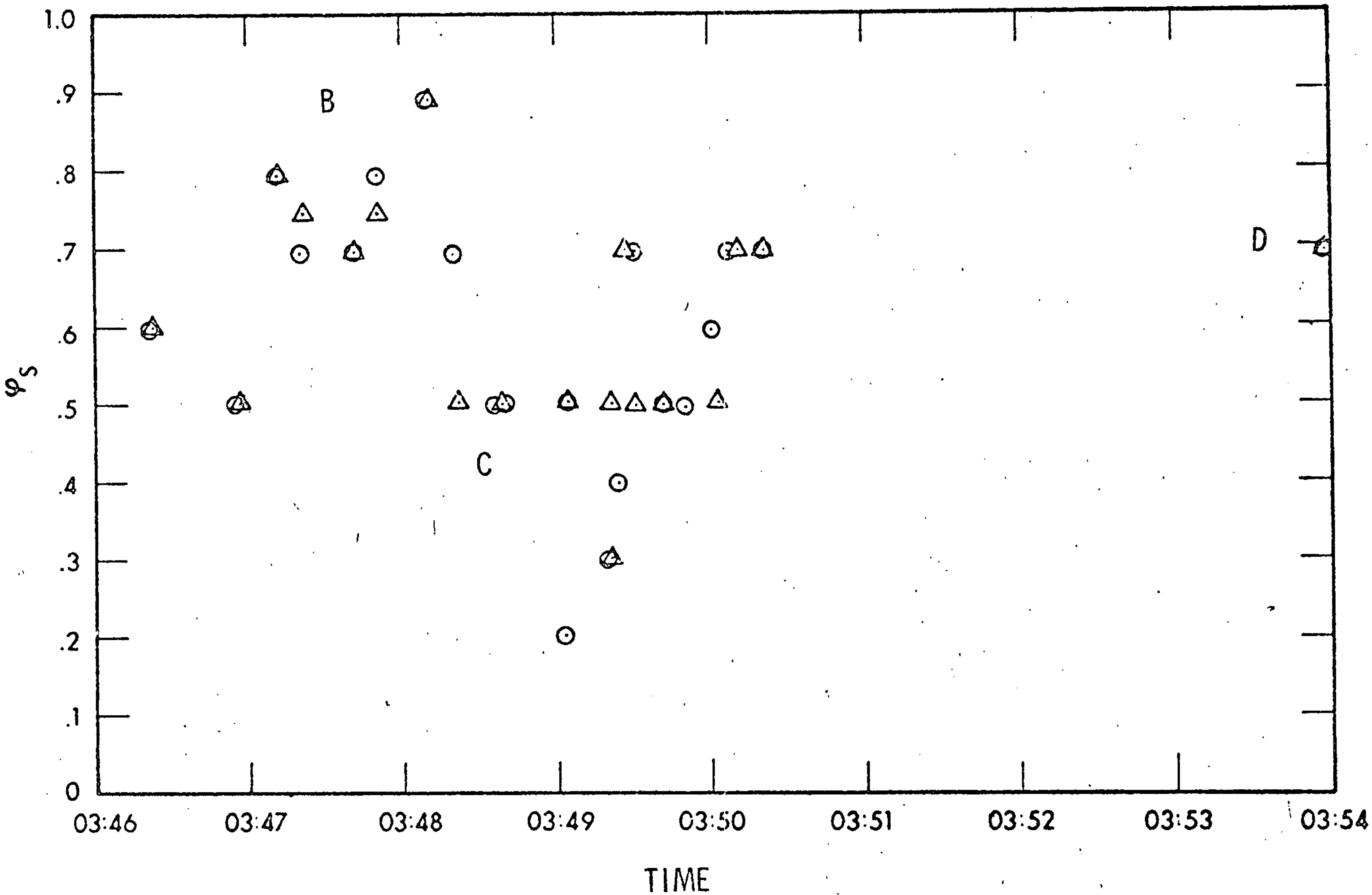


Figure 86.- Comparison of program electron results and hand computations on spacecraft potential (Φ_s), mode A.

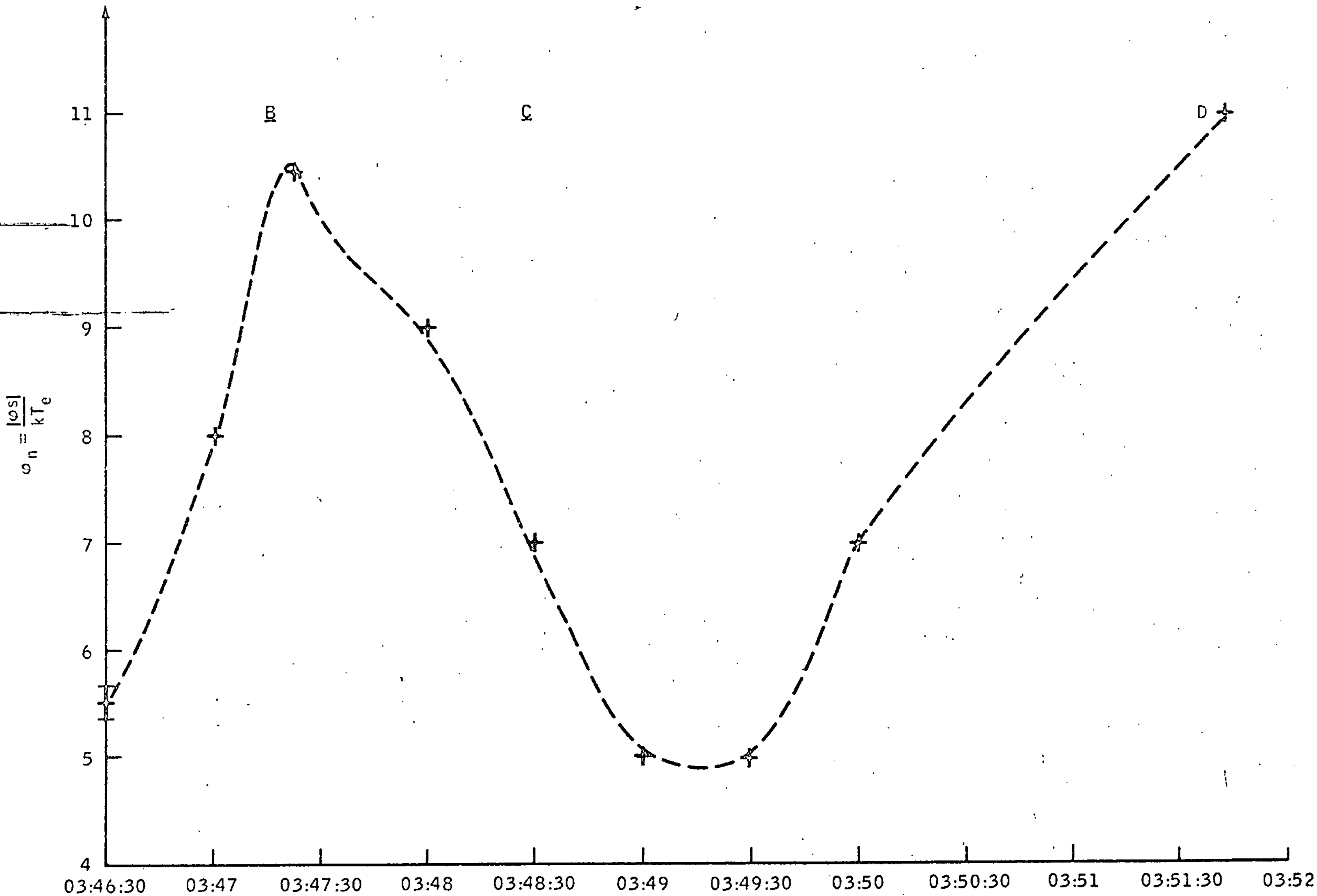


Figure 87.- Normalized potentials (Φ_n) variations during mode A.

Finally, figures 88 and 89 present a concentrated data dose for T_e and ϕ_s prior to the mode A undocking (03:36:01.375 to 03:36:59.439 S/C g.e.t.) and in the vicinity of point B in the mode A (03:47:00.500 to 03:47:59 S/C g.e.t.).

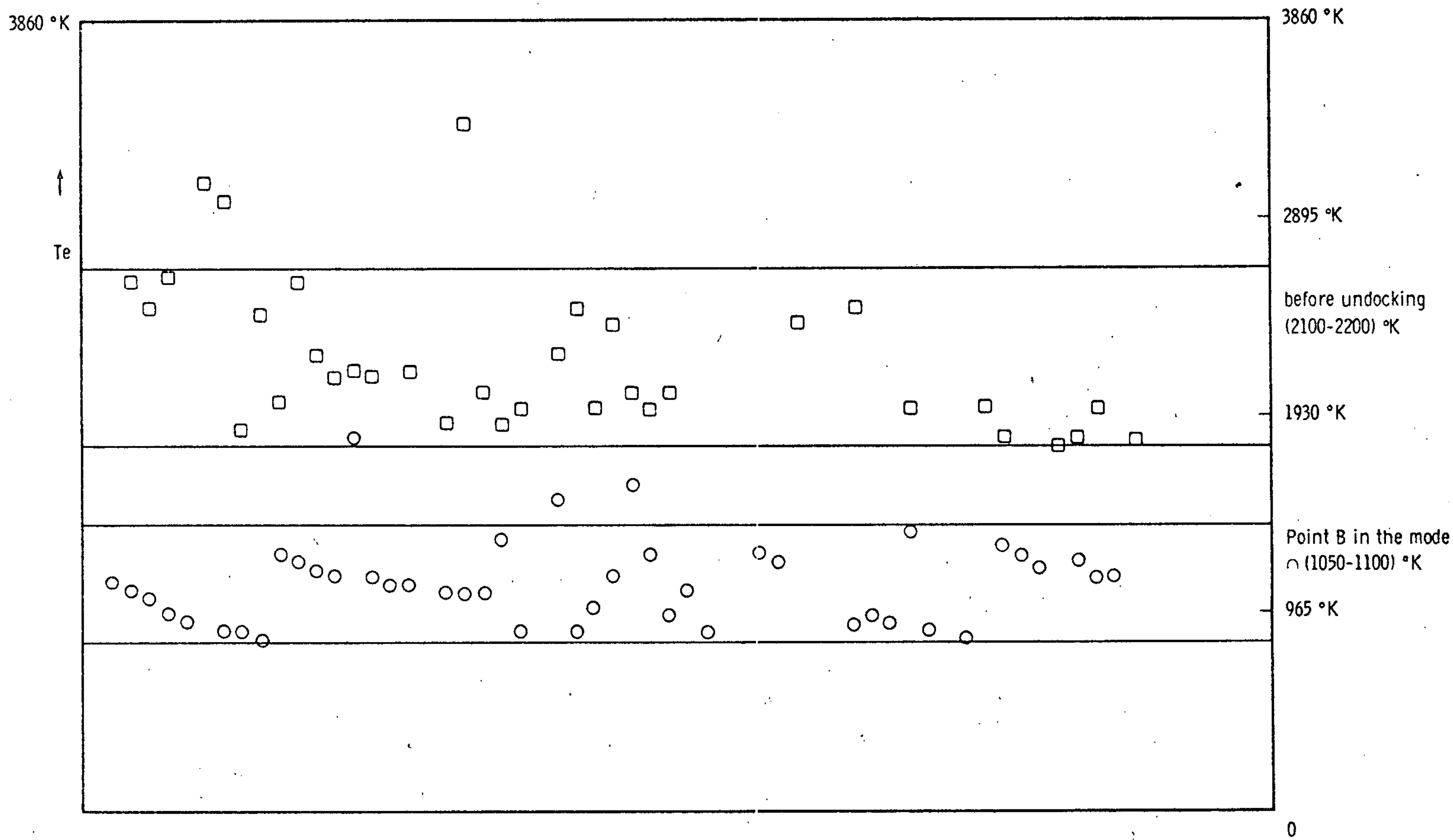


Figure 88.- The T_e (°K) before and after undocking, mode A.

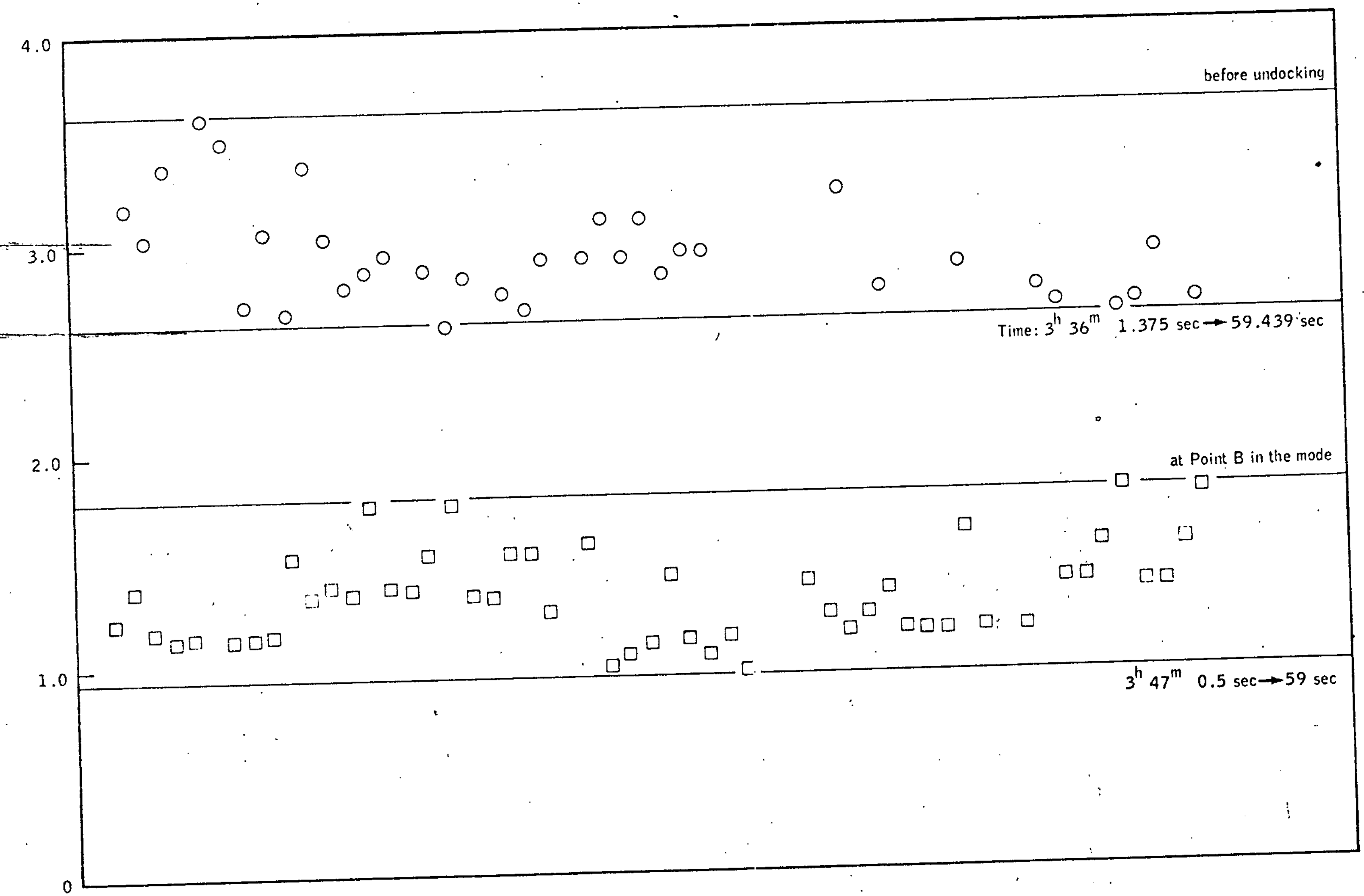


Figure 89.- The Φ_s before and after undocking, mode A.

MODE B-01 (OUT-OF-ORBITAL PLANE)

According to pilot voice tapes, undocking and positioning for mode B, sequence 01 commenced at 02:12:12 spacecraft g.e.t. with the Agena in the TDA-south orientation. The S/C-ATV was over Tannanarive, Madagascar, and had entered darkness. The crew records show that the maneuvers of mode B-01 occupied more than 13 minutes with completion noted at 02:25:54 spacecraft g.e.t. on the voice tapes. Inspection of thruster firing bilevels for this period shows a firing of GE 09 (aft) for 0.6 second at 02:22:47 spacecraft g.e.t. It was concluded that this event signified the termination of the maneuver.

Much of the data from B-01 was not available as a result of Agena tape erasure. The problem was further compounded by inadequate coverage of film data. Figure 90 shows the missing PL data gap to occur almost over the entire B-01 maneuver. Since film data for this mode were not reduced, it was necessary to use the thruster firing bilevels (GE 01-16) and the computer word tabulation (group 31 of the S/C-DK01, DK02, and DK03) for the appropriate attitude angles.

Rendezvous and docking of the S/C with ATV occurred over the USA at the end of the first orbit. The mode B-01 commenced after a docked yaw to the TDA-south orientation. Undocking time was determined by inspection of the GE thruster records. It is determined as occurring at 02:11:10.048 S/C g.e.t. (table XXXIX). Figure 90 plots the PL-1 telemetry volts as a function of time. The missing PL data apparently was lost when the crew ran the tape recorder for mode B-02. Real time coverage was lacking over

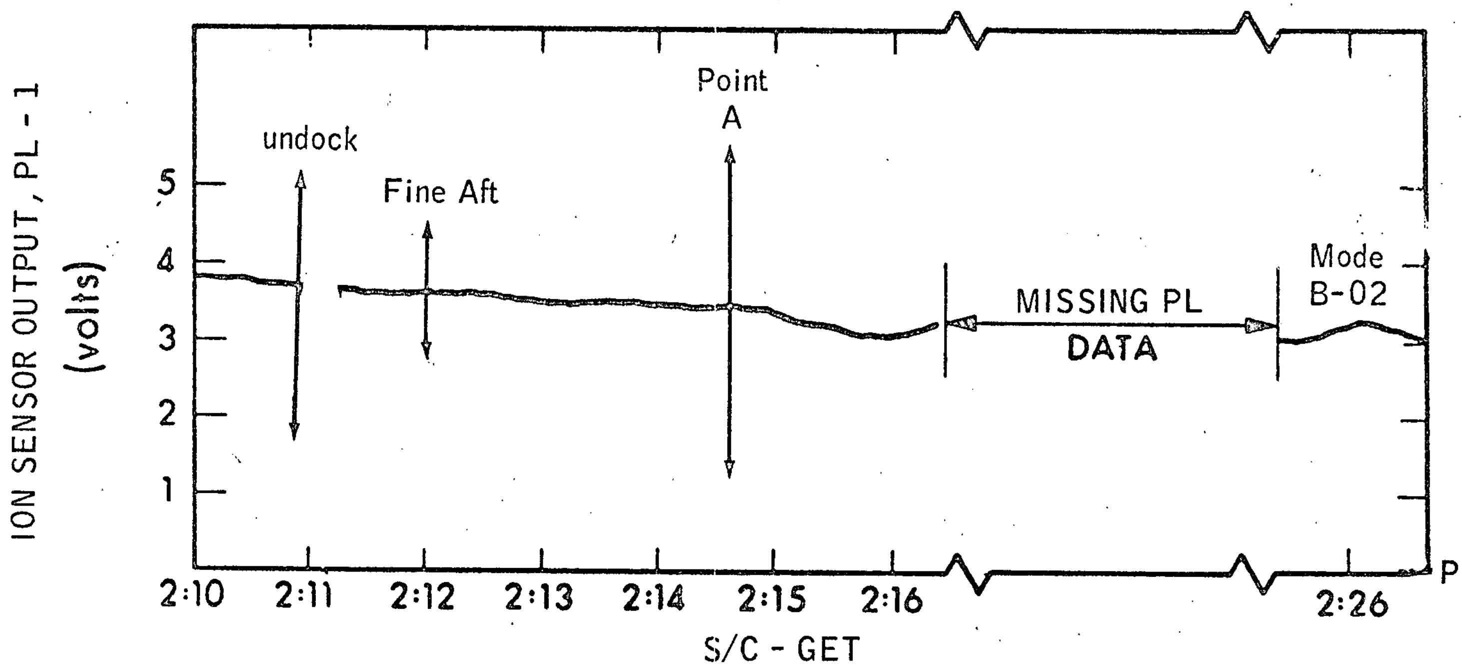


Figure 90.- PL-1 for mode B-01 showing data erasure during most of this maneuver.

TABLE XXXIX.- MODE B-01 SUMMARY

S/C g.e.t.	V_1 (PL-1)	V_{TS} (PL-2)	Thrusters bilevel tabs GE 01-01b	Attitudes OK-01,-02,-03
				σ ψ φ
02:10:17.636	3.78	4.98	None	39 275 33
02:11:10.048 (undock)	3.66	4.90	3 sec. all fire	51 273 46
02:12:02.848	3.58	4.86	0.3 sec. fire Aft	48 274 46
02:12:12			Pilot says we are in Mode B-01	
02:14:34.8	3.46	4.78	Rot. thrustors case for 1 min.	185 349 180
02:14:28 (Pt. A)	3.42	4.78	Trans. thrustors cease for 2 min. after GE13 fires left	
02:15:07	3.26	4.62	No thrust	184 356 182
02:15:14	3.18	4.54	No thrust	
02:15:30	2.86 to 3.18	4.46	No thrust	
02:16:00	2.86 to 3.18	4.46	No thrust	184 5.6 186
02:16:20	3.26	4.50	GEB fires left	
02:16:47	3.34	4.62	GE16 fires up	
02:17:03 (Point C?)	No data	No data	GE14 fires right	190 2.5 182
02:16:50	3.38	4.74		188 4.3 180

the Indian Ocean between Tannanarive, Madagescar, and Canaveron, Australia. Before LOS at TAN, a substantial portion of the A-B-C leg of this sequence was telemetered; however, these data are reduced.

Point A is the initial position of the mode and is determined by scanning the thruster fire data for an AFT burn following the undocking. Such a 0.3 second firing occurs at 02:12:02.848 S/C g.e.t., about one minute after the undocking. Another firing occurs almost two minutes later at 02:13:57.823 S/C g.e.t. These are followed by firing of GE 11 (forward) at 02:14:10.023 and GE 13 (left) at 02:14:28.024 S/C g.e.t. The rotational thrusters stop firing at 02:14:34 S/C g.e.t. Finally, the S/C attitudes at 02:14:30 are 185° for pitch, 350° for yaw, and 180° for roll. The rapid drop in the S026 sensor output in the time interval from 02:14:30 to 02:15:45 S/C g.e.t. is assumed to result from motion of the S/C in the BEF orientation across their field of view along the A-B-C trajectory illustrated in figure 42(b). Point C is assumed to be reached shortly after GE 14 fires (right) at 02:17:03 S/C g.e.t.

The simultaneous variation of V_1 and V_{TS} is plotted in figure 91 (fig. 77 for mode A). The data from Tannanarive station are full of glitches. In most of the passes over this station, including the one for mode B-01, PL-2 has frequent spikes (V_T = 5.10) during each cycle. As noted on figure 91, PL-1 appears to oscillate between the values of 2.86 and 3.18 volts during the dip in readings associated with passage of the S/C past point B. Timing gaps appear at 02:16:01.429 to 02:16:20.446 as well as a clock glitch extending from 02:16:21.430 to 02:16:46.446.

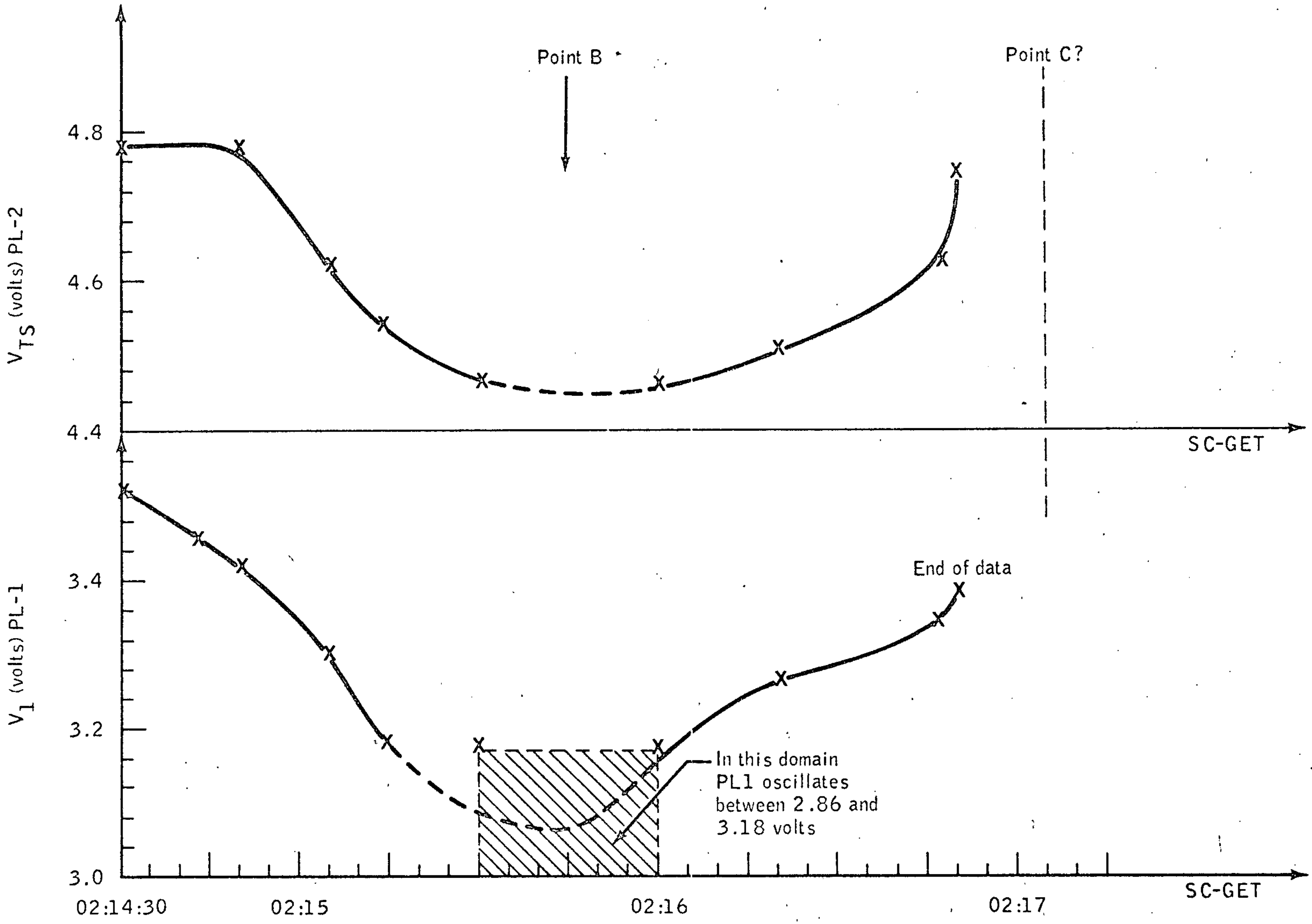


Figure 91.- Simultaneous variation of PL-1 and PL-2 in mode B-01, A-B-C leg.

The hour and minute scales in this period read 20:28 S/C g.e.t. instead of 02:16 in the printed tab.

No film data were reduced for this mode, but two different tabs using thruster-firings computer programs were supplied by MSC. The results were not good, as can be seen from inspection of table XL where data for XYZ coordinates from these tabs are compared with the best estimates of the S/C-ATV relative position coordinates. Subscript 1 refers to data extracted from the run identified as sequence number 100006 and subscript 2 refers to listable output from sequence 00005 (5) dated 8/2/67. There is wide disagreement in X and Y coordinates for these two runs, and there is a considerable deviation of both results from the estimates based on table XL and the flight plan. Figure 91 consequently represents the best effort to plot the spatial variation of ions and electrons in the wake of the S/C along a trajectory designated as ABC.

In figure 92 (a), (b), and (c) the PL-2 retarding potential plots are compared for conditions as follows.

(a) About 1 minute before undocking and 3 minutes after undocking while maneuvering the S/C into position A of the flight plan

(b) At the beginning of the transverse cut (A) and near the dip in the middle (B)

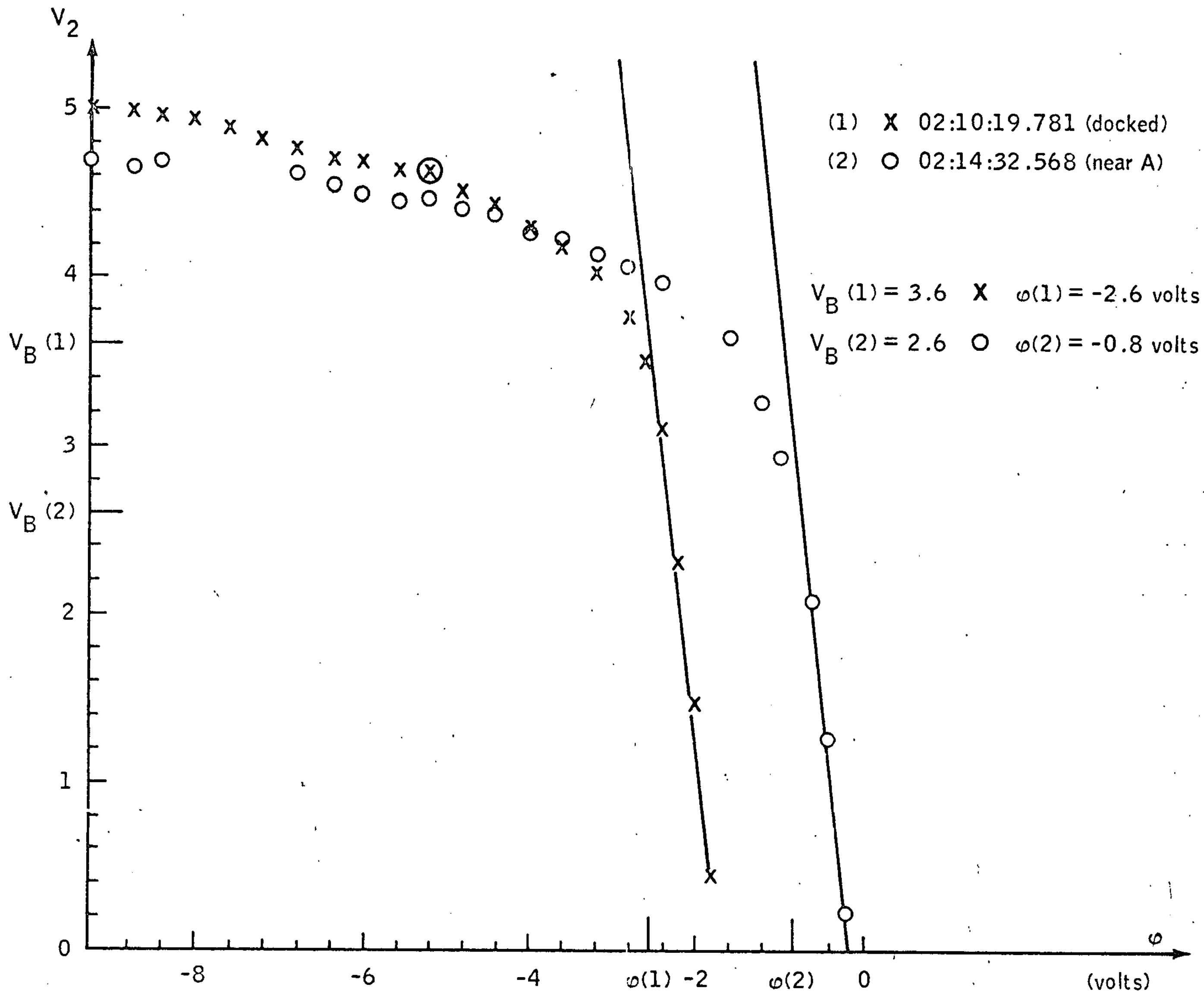
(c) At the position B and somewhere in the vicinity of C

Whereas the maximum variation in PL-1 was about 0.75 volt or a ratio

$$N_T/N_C \simeq 10^{-0.75} = 0.18. \qquad (44)$$

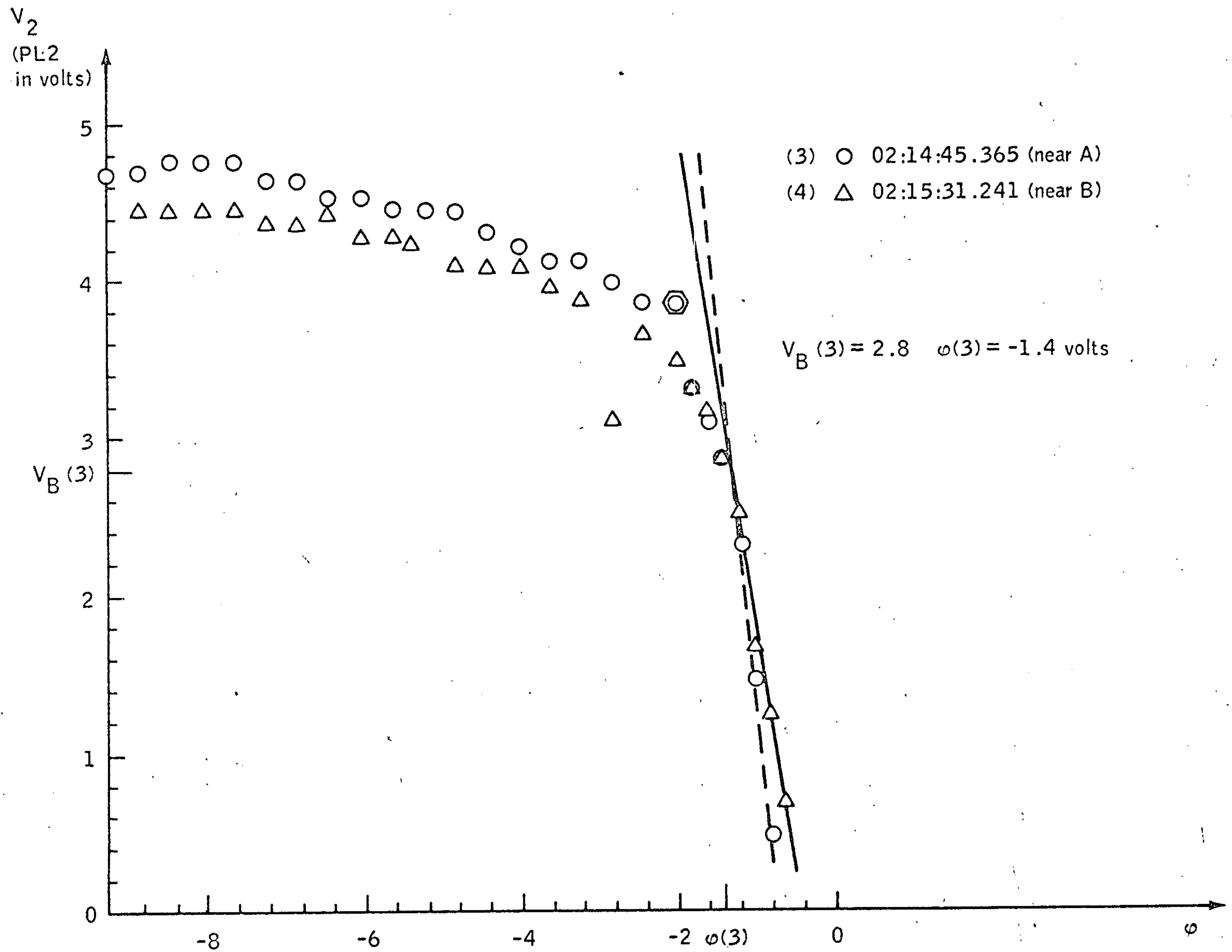
TABLE XL.- RELATIVE POSITION OF S/C AND ATV FOR MODE B-01

Time S/C g.e.t.	Position of S/C (use Fig. 2-40b) from analysis of table 4-8	MSC analysis of position from thrustor					
		X_1	X_2	Y_1	Y_2	Z_1	Z_2
02:11:10	Docked	0	-	0	-	0	-
02:11:13	Undocked	0	-	0	-	0	-
02:11:44	Undocked & moving	0	0.1	-0.2	0	0	0
02:12:02	Undetermined	2.2	20	-3	-0.8	0	0
02:14:28	Point A						
	x-5', y≥15', z=0	-11	153	-31	-12	10	10
02:15:45	Point B	-3.3	238	-51	-23	16	16
	x≥5', y=0, z=0						
02:16:08	Between B&C	-0.9	263	-57	-27	18	18



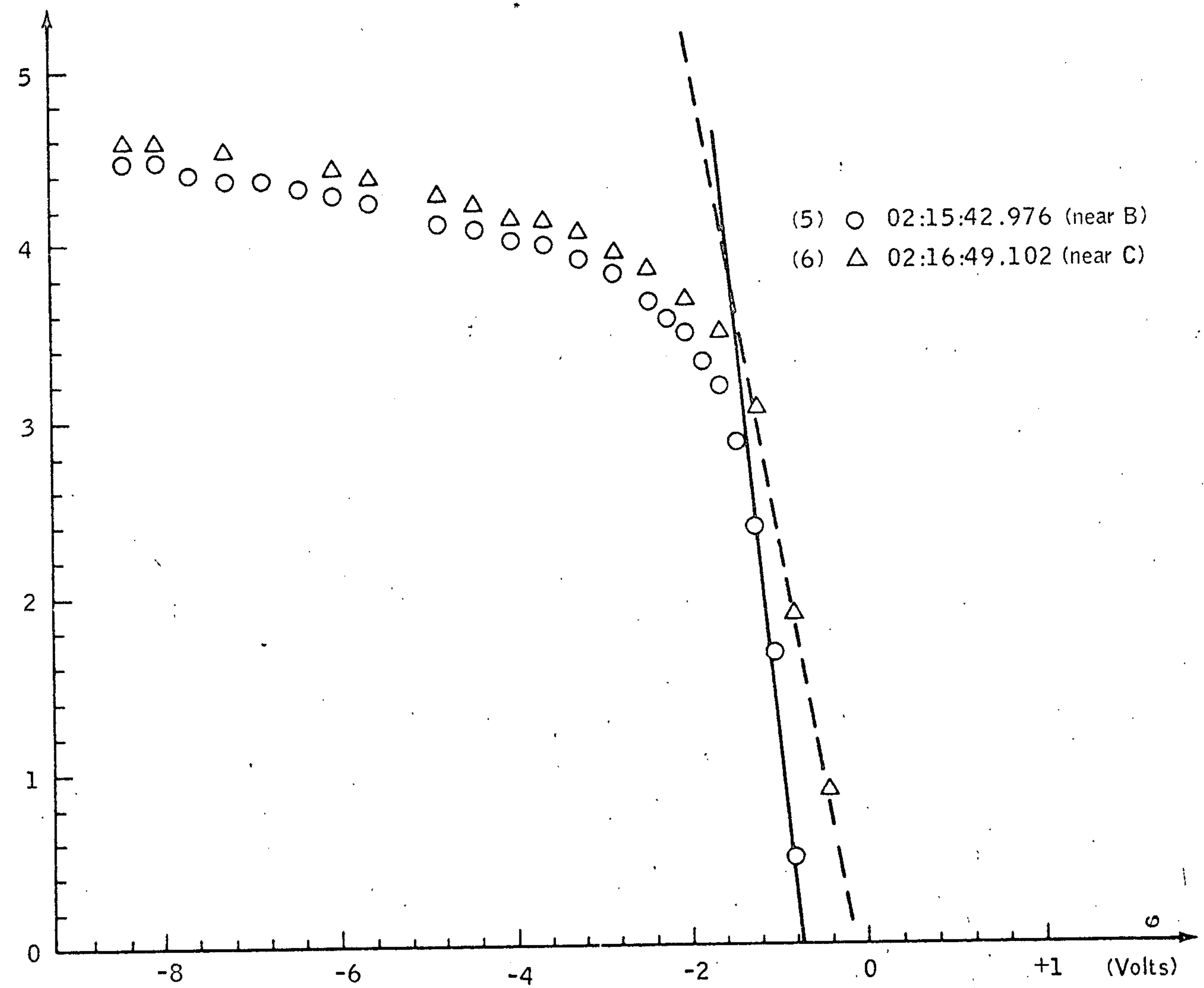
(a) Plots before and after docking.

Figure 92.- Comparison of PL-2 plots.



(b) Plots for points A and B.

Figure 92.- Comparison of PL-2 plots. (Continued)



(c) Plots for points B and C

Figure 92.- Comparison of PL-2 plots. (Concluded)

The analysis of figure 92 gives V_B at point C as 3.2 and V_B in the vicinity of B as 2.5. Hence

$$N_e/N_o = 10^{-0.8} = 0.16 \tag{45}$$

There is a large change in measured potential of the vehicle relative to the space plasma between the docked and the undocked cases. This change is much larger than the variations in Y in traversing the wake.

MODE B-02 (IN-ORBITAL PLANE)

According to the film data received from NASA/MSC on March 13, 1968, the first reduced frame is at 02:27:46 S/C g.e.t. with the S/C-ATV separation 25.6 feet. From the pilot voice tape at 02:25:54 they stated: "Tape completed mode B sequence 1. We are doing mode B sequence 2. In another ten minutes we will be through." At 02:31:52 it was stated that sequence 02 was completely finished. It is noted in the thruster firing record that at 02:22:47 GE 09 (AFT) fired for 0.6 second indicating a return toward the ATV after completion of B-01; that is, the S/C moved from position G-H of figure 42 (b) to point A of figure 42 (c).

The PL data coverage is complete except for the initial maneuver around point A indicated in the summary table for mode B-01 (table XLI) and in figure 93. The relative position coordinate information supplied in both film reduction and in thruster program analysis is contradictory and obviously incorrect.

TABLE XLI.- MODE B-02 SUMMARY

S/C g.e.t.	V_1 (PL-1)	V_{TS} (PL-2)	Thrusters	Attitudes		
				σ	ψ	φ
02:22:47	--	--	Fire GE09 for 0.6 sec (AFT)	185	359	186
02:25:04 to 02:25:11	--	--	Intermitent fire of GE 11 (forward)	188	6	183
02:25:30	2.94	4.34	No fire	190	6	181
02:25:43 (below A)	3.06	4.38	Fire up (move down) GE 16 also Fwd. GE 11	190	6	181
02:25:57 to 02:26:05 (Point toward 8)	3.18	4.46	Fire down (GE 11) and forward (GE 11)- Stop S/C	192	6	178
02:26:10 (Point B)	3.26	4.50	Down and forward fire			
02:26:19 to 02:26:27	--	--	Fire down & forward (move toward C)	192	6	177
02:26:30	3.06	4.34	Then cease fire for one min.			
02:26:35	2.98	4.30	--	193	4	177
02:27:00	3.18	4.54				
02:27:25	3.38	4.70	Fire forward 2 sec. Interval, then fire up at 02:27:27	194	357	176
02:27:49 (near Point C)	3.42	4.74	Left & rt. & up firing to 02:28:44	199	353	177
02:28:45 to	3.46	4.74	Quiet period then up once again	196	1.9	186
02:29:09	3.46	4.74				
02:29:13	3.38	4.66	Quiet	--	--	--
02:29:21	3.46	4.74	Quiet	--	--	--
02:31:30	3.54	4.82	Past D	186	0.6	183

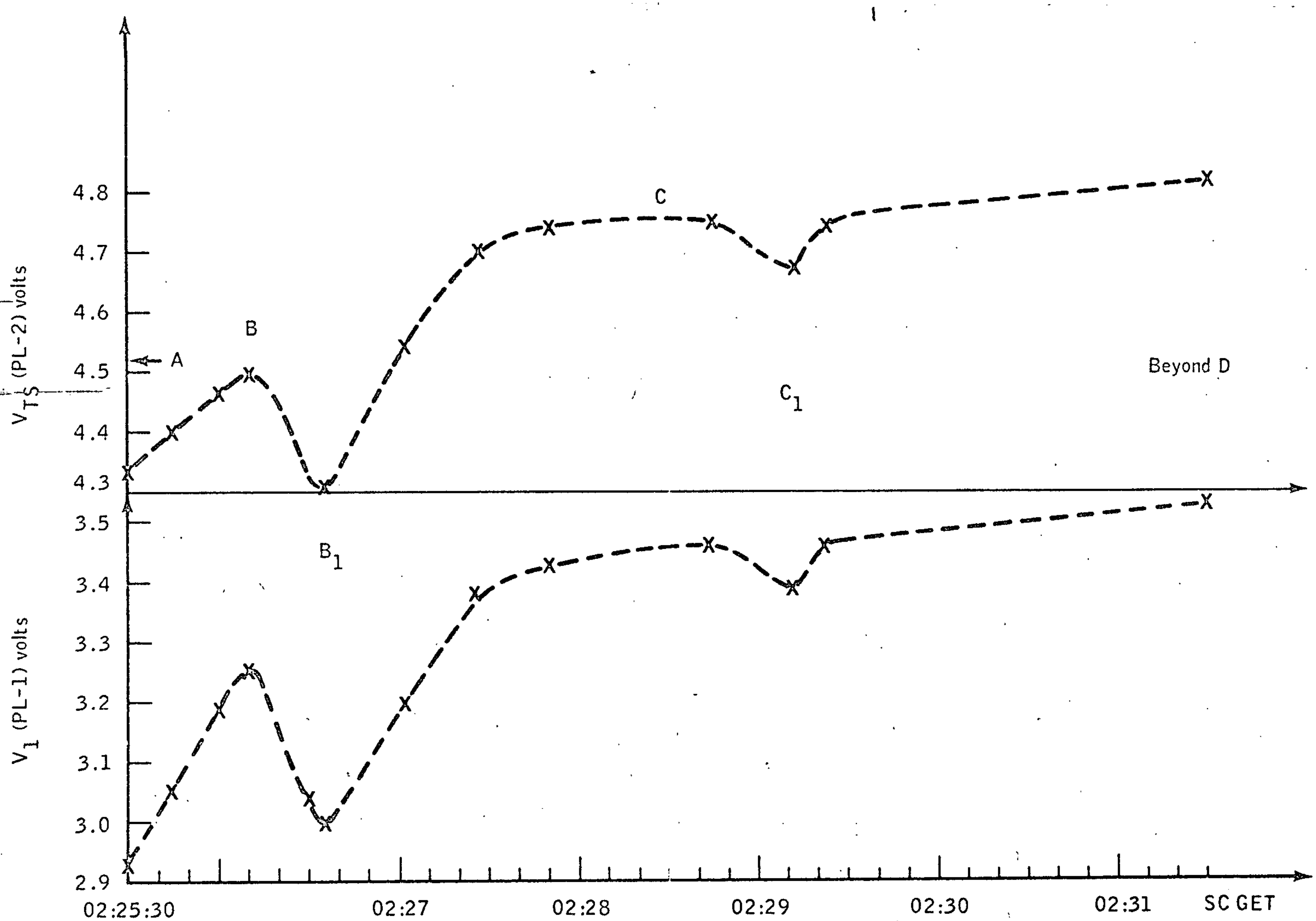


Figure 93.- Time variation of outboard ion and electron channels, mode B-02.

Figure 94 shows the variation of PL-1 up to the beginning of mode B-02. Figure 95 compares PL-2 plots for points A and D in the maneuver. PL-1 goes from 2.94 to 3.70 volts ($N_T/N_o = 10^{-0.76} = 0.174$), the value for V_B goes from 2.3 to 3.2 volts ($N_e/N_o = 10^{-0.9} = 0.126$).

MODE B-03, DAYLIGHT, INCLUDES THE NUZZLE EXERCISE

Sequence 03 of the maneuver series designated as mode B was carried out from 03:00:37 to 03:13:17 S/C g.e.t. according to pilot voice tapes. Sequence 02 was completed at 02:31 and as noted on figure 94, the S/C return to the ATV commenced at 02:36 with considerable effects on sensor readings observed. Repositioning of the S/C for B-03 apparently commenced at 02:58 S/C g.e.t. as judged from a change in the attitude angles. Figure 96 is a series of schematic sketches using S/C attitude angles as a means of tracking the evolution of the mode.

Film data for almost all of the B-03 are not available as a result of a malfunction in the camera setting. Instead of the nominal f/16 exposure setting called for in the flight plan, a setting of f/64 was used, causing underexposure in all frames. Therefore, indirect methods were required as indicated in figure 96.

Point A of B-03 (also designated as the "nuzzle" exercise by Conrad and Gordon) was added to the original mode plan at the suggestion of the Gemini XI crew. It was an attempt to provide a maximum blocking cross section of the S/C for the S026 sensors and, as a result of crew daring and skill, it provided one of the most interesting features of the S026 experiment.

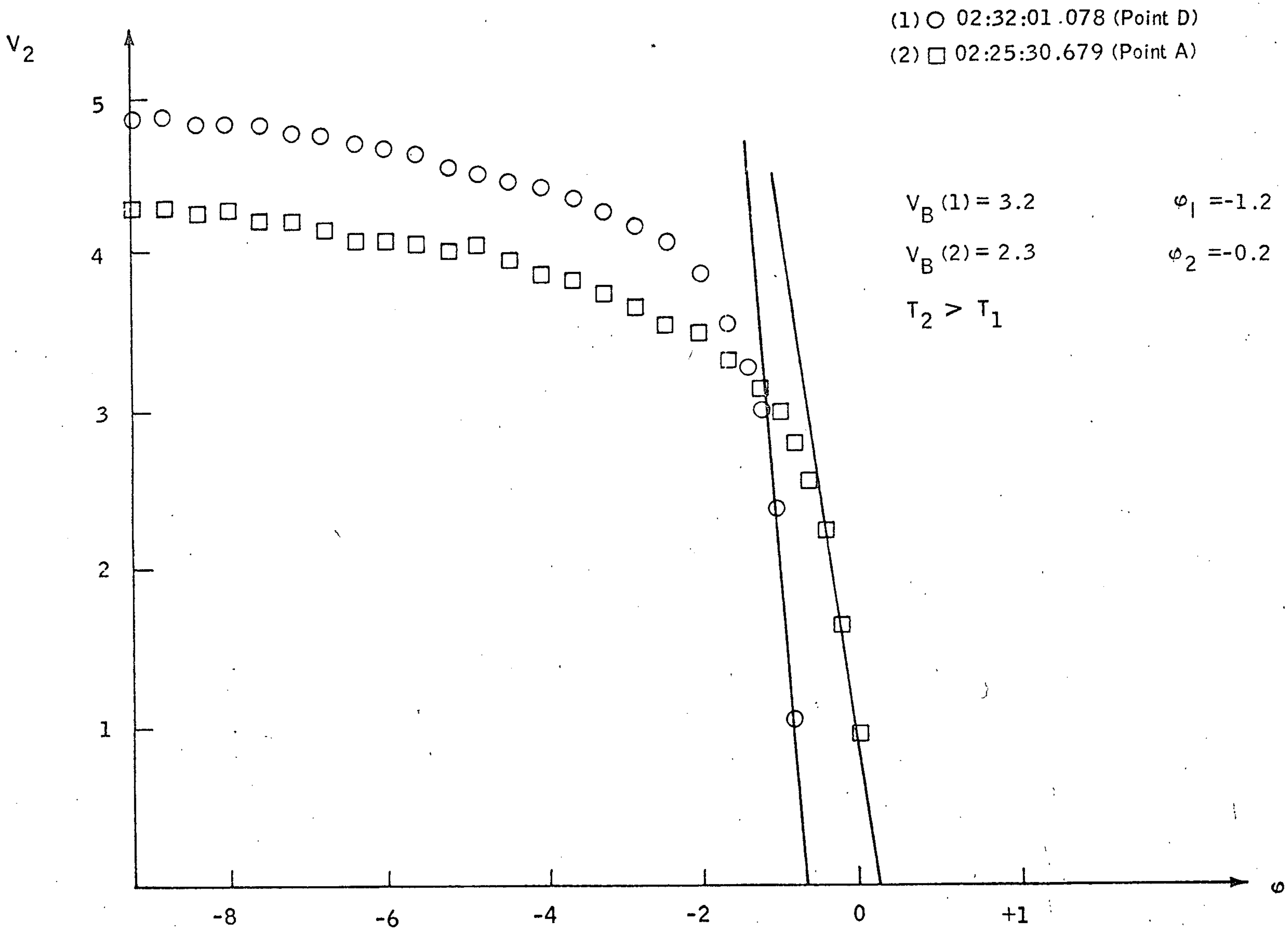


Figure 95.- Comparison of PL-2 plots at point A (near wakes) and point D (ambients).

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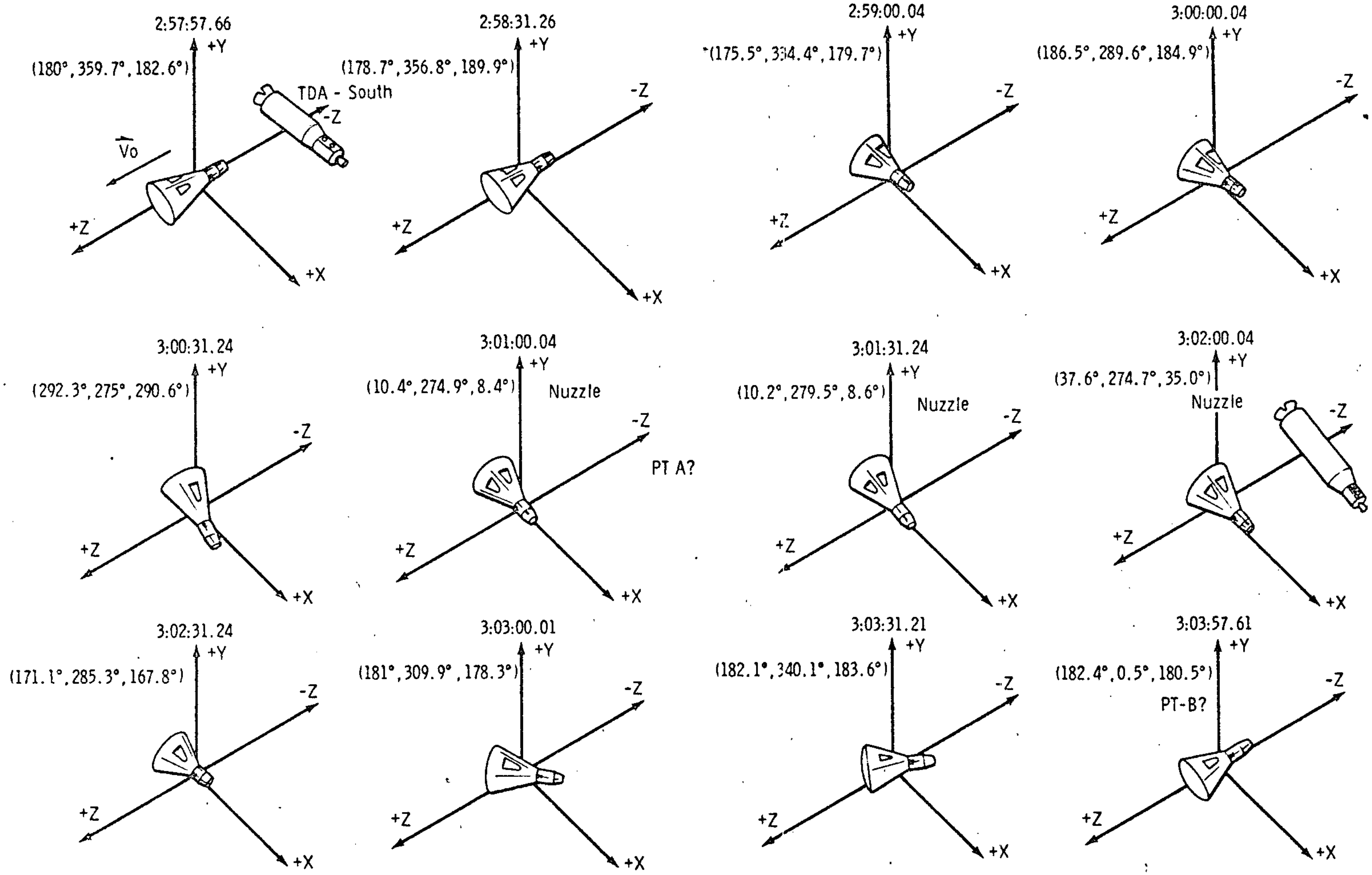


Figure 96.- Sketch of Gemini attitude (02:57:57.66 to 03:03:57.61 g.e.t.) $\vec{V}_o$ in the +Z direction.

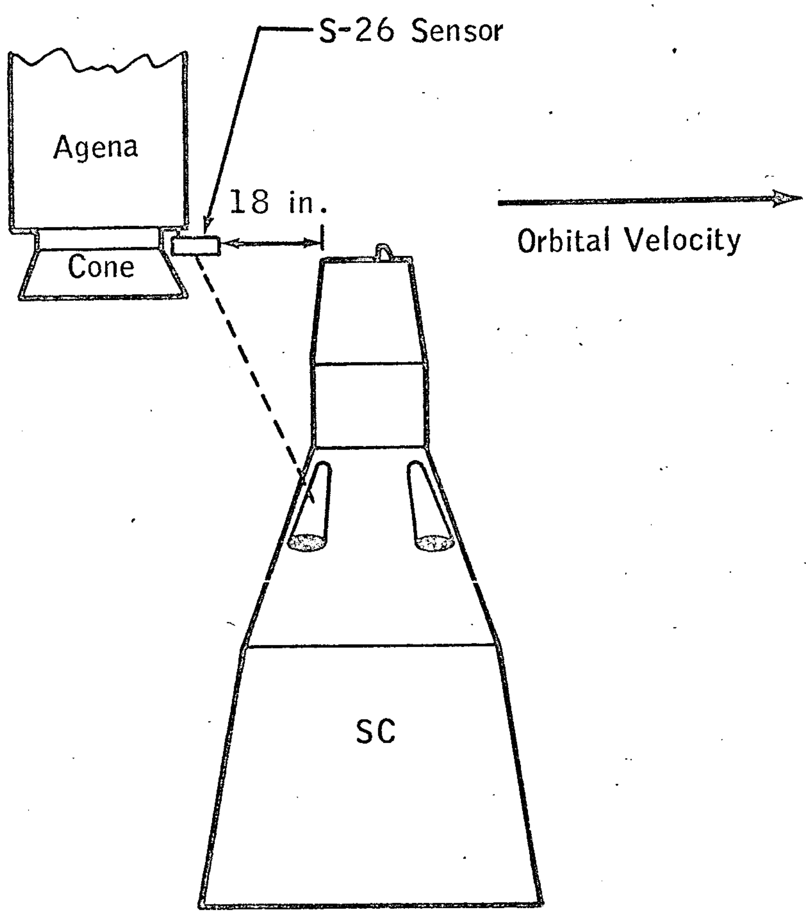
At 03:01:01 S/C g.e.t., the crew stated: "Be advised we are doing several parts of S026 and I have it 18 inches to the sensors at this time." An artist's conception of the nuzzle exercise is given in figure 43. Figures 97 (a) and 97 (b) show the concept of the exercise as it was actually carried out. The crew comments (dated 5/6/68) are as follows.

"I remember the nozzle quite well and your first sketch is correct and also, your second. Dick and I just discussed it.

We flew in so that our nose (X-axis) moved parallel to the Agena's X-axis. Therefore the tip overlapped the sensor. We continued into where the window was probably 18 inches from the sensor; however, the perpendicular distance sensor to spacecraft was probably six inches."

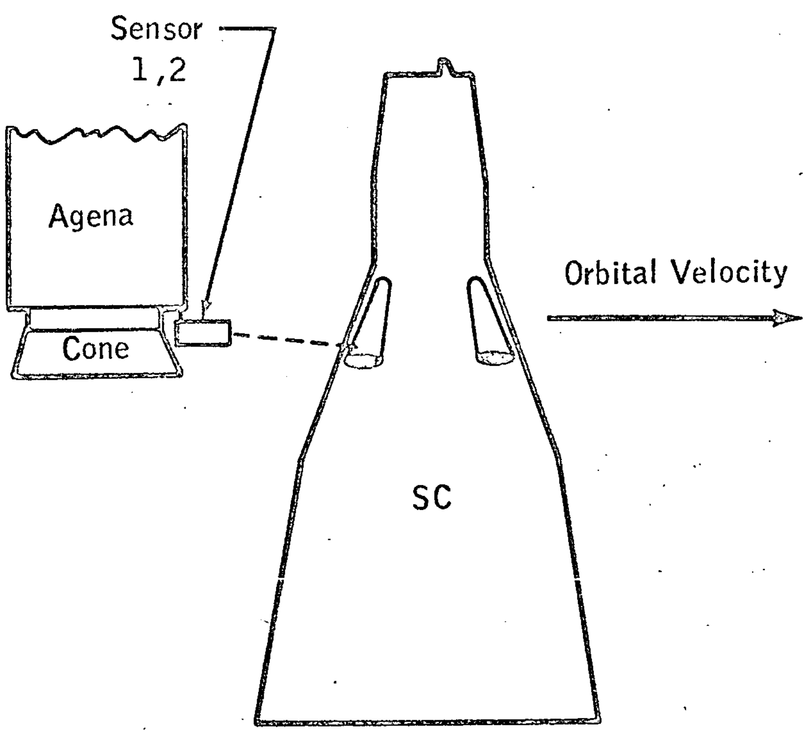
Figure 98 shows the effect of the nuzzle on PL-1 telemetry. A comparison of PL-1 and the saturation value of PL-2, designated as V_{TS}, is given in figure 99. There is at least an order of magnitude depletion in both electron and ion currents, clearly the largest effect observed on outboard sensors in all of the maneuvers. A comparison of PL-1 RPA plot for the "deep" nuzzle case and the case after withdrawal of the S/C clearly shows the correlation between breakaway valves of V_I (V_B) and V_{TS}; that is, for the case illustrated in figure 100, $\Delta V_{TS} = 0.9$ volt and $V_B = 1.0$ volt. There is little change in space potential (about 2.1 to 2.2 volts) in going from wake to ambient. The electron temperature in the wake is somewhat higher than that in the ambient.

The behavior of PL-3 is of interest here. As noted in the discussion of data anomalies (ref. GENERAL PROPERTIES OF THE S026 DATA STREAM — Data Anomalies and Special Effects) there is a residual non-zero value for the



(a) Spacecraft approaching sensor.

Figure 97.- Nuzzle exercise.



(b) Spacecraft passing sensor.

Figure 97.- Nuzzle exercise. (Concluded)

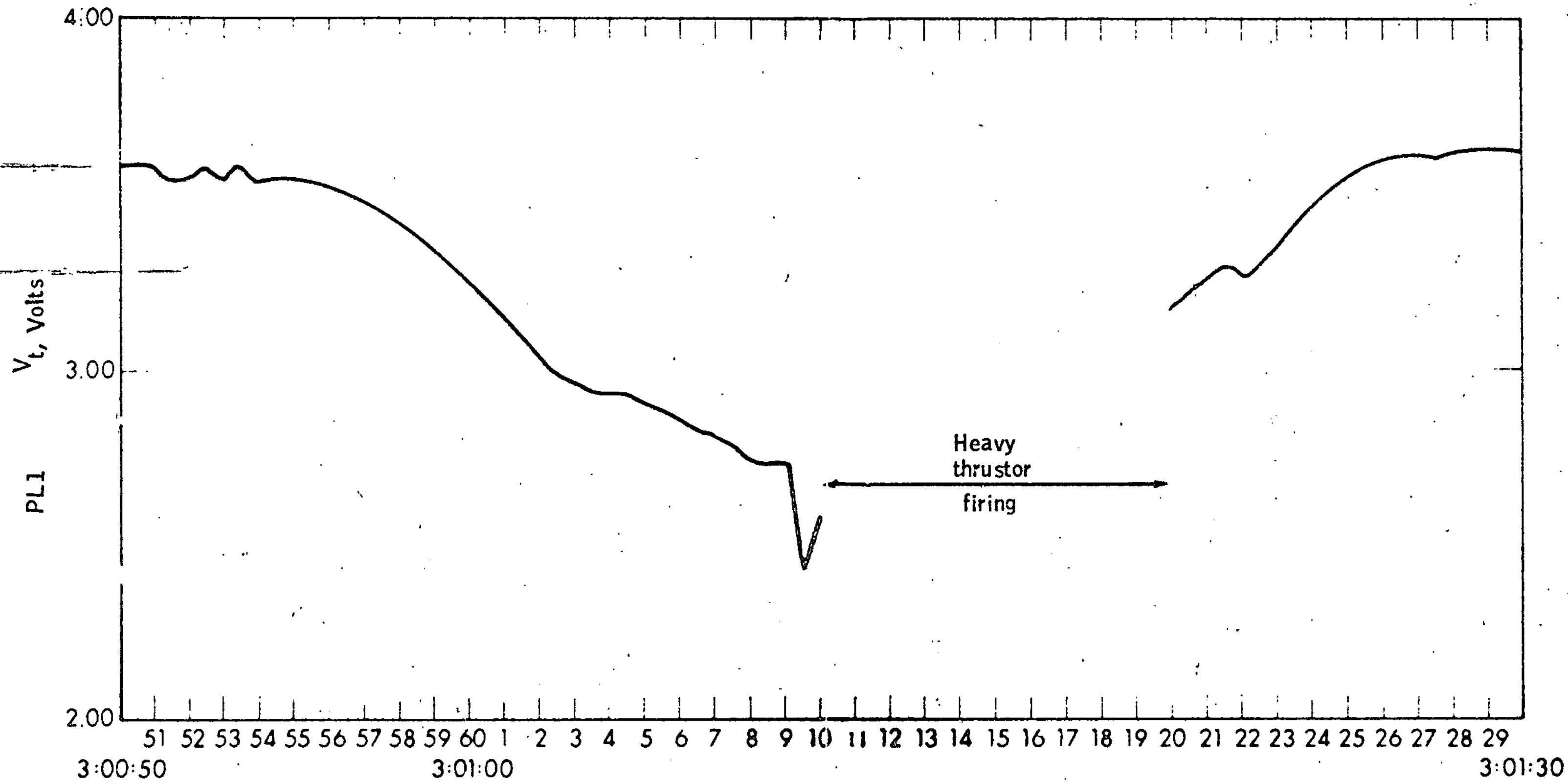


Figure 98.- Nuzzle exercise effects on PL-1.

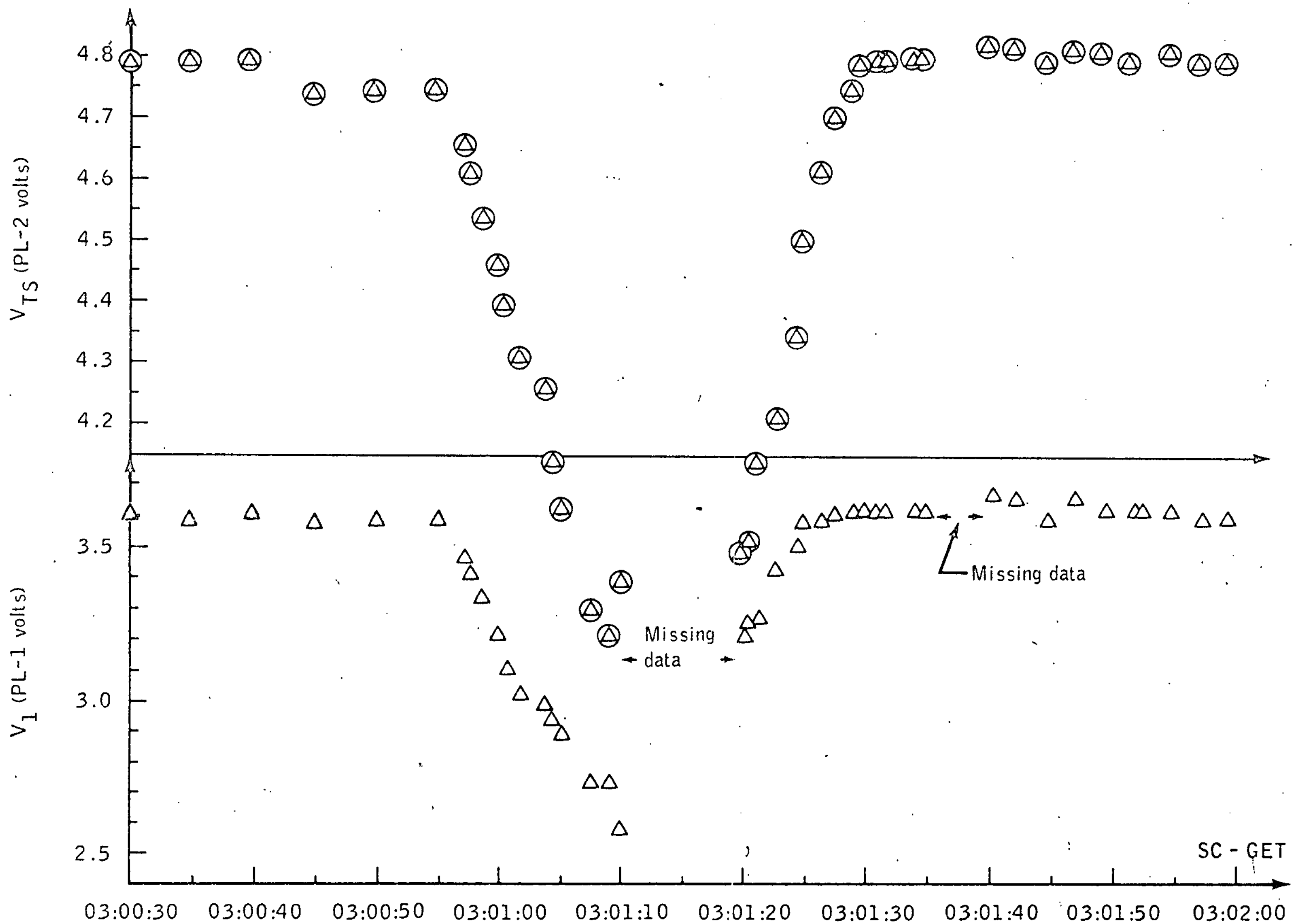


Figure 99.- Nuzzle exercise effects on outboard ion and electron sensors.

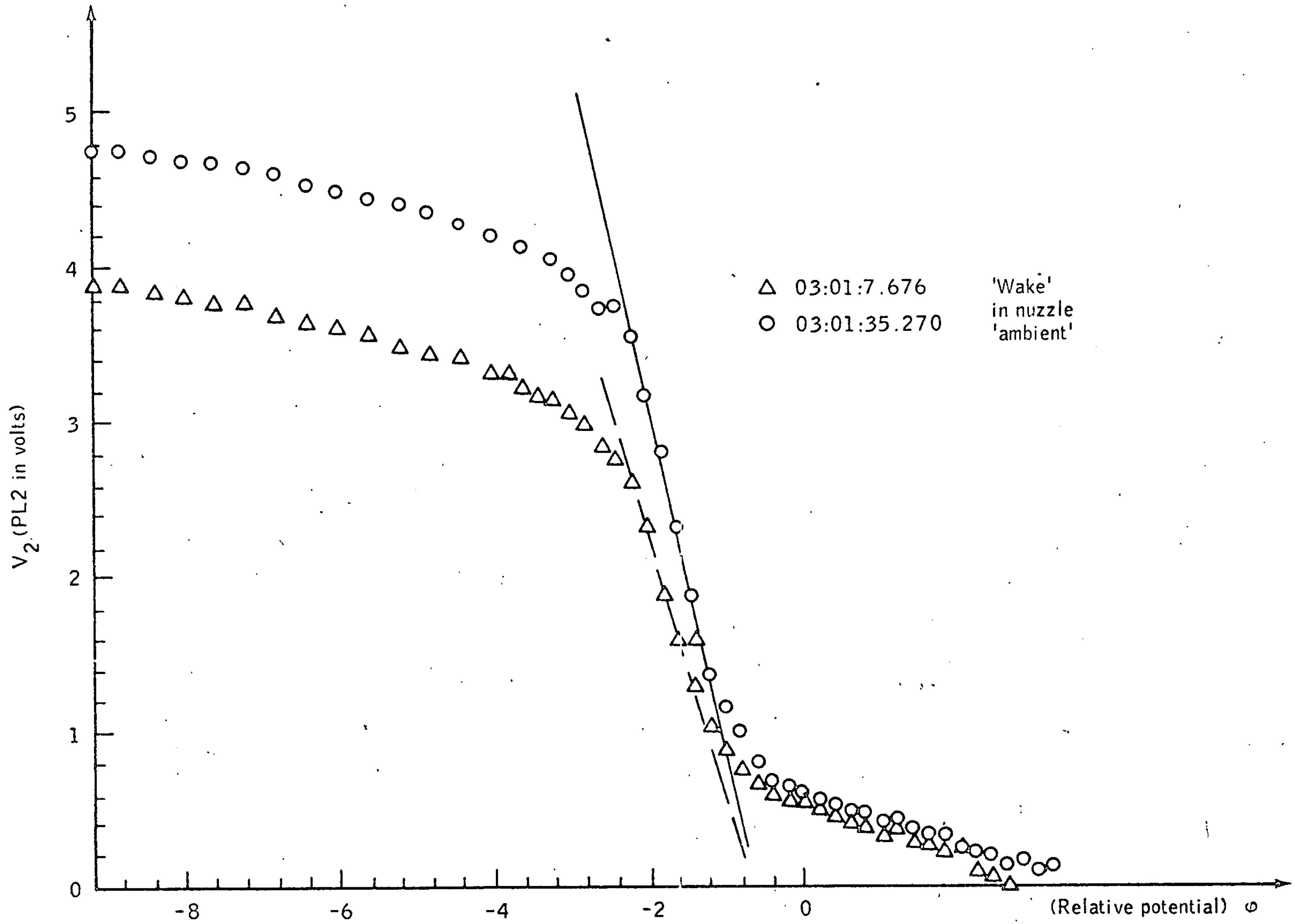


Figure 100.- Comparison of PL-2 plots for nuzzle exercise.

TDA-south orientation during sunlit conditions. However, the dip in these values is associated with the nuzzle exercise.

The remainder of the B-03 results are of secondary interest since the transverse maneuvers apparently occurred at S/C-ATV separation considerably in excess of the values nominally suggested in the flight plan. Figure 101 gives the variation of PL-1 during the entire mode with tentative identification of the nominal mode positions. Figures 102 (a) and 102 (b) give PL-2 RPA plots prior to the beginning of the S/C maneuvers for mode B-03 and following completion of these motions.

MODE C, THE HIGH ALTITUDE ROLL

According to the S/C records the maneuver designated as mode C (fig.44) was carried out; however, there is no PL data. No telemetry records from the Agena could be found for the key time identified, by plotting the roll angle variation, as 41:24 S/C g.e.t. (fig. 103 (a)). Pitch and yaw variations of the docked system are shown in figures 103 (b) and 103 (c).

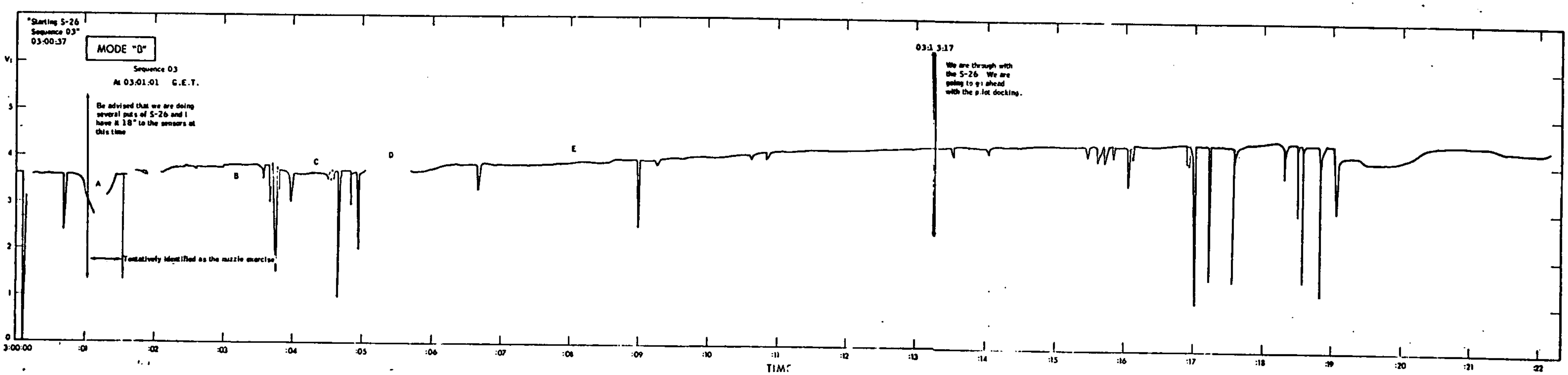
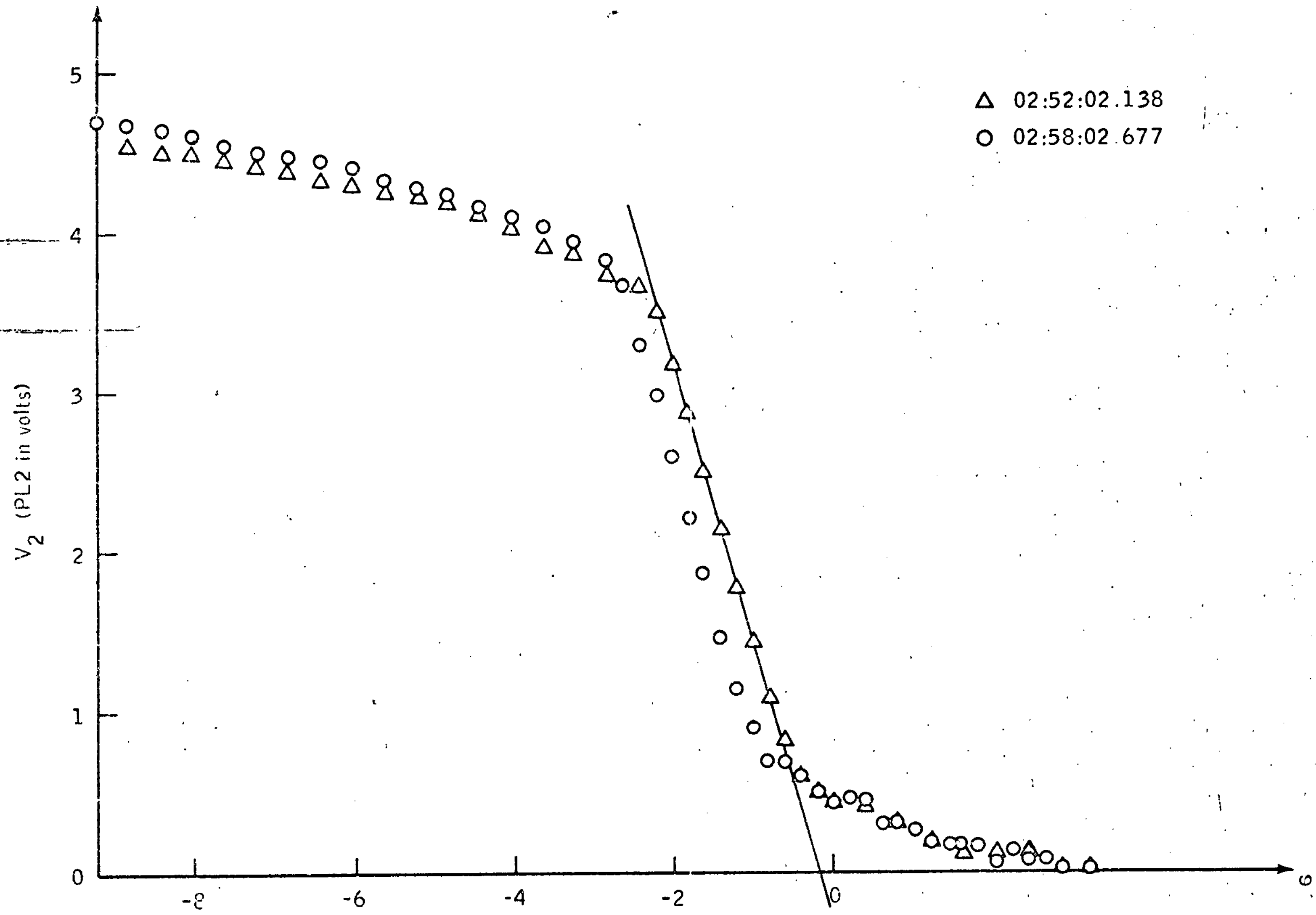
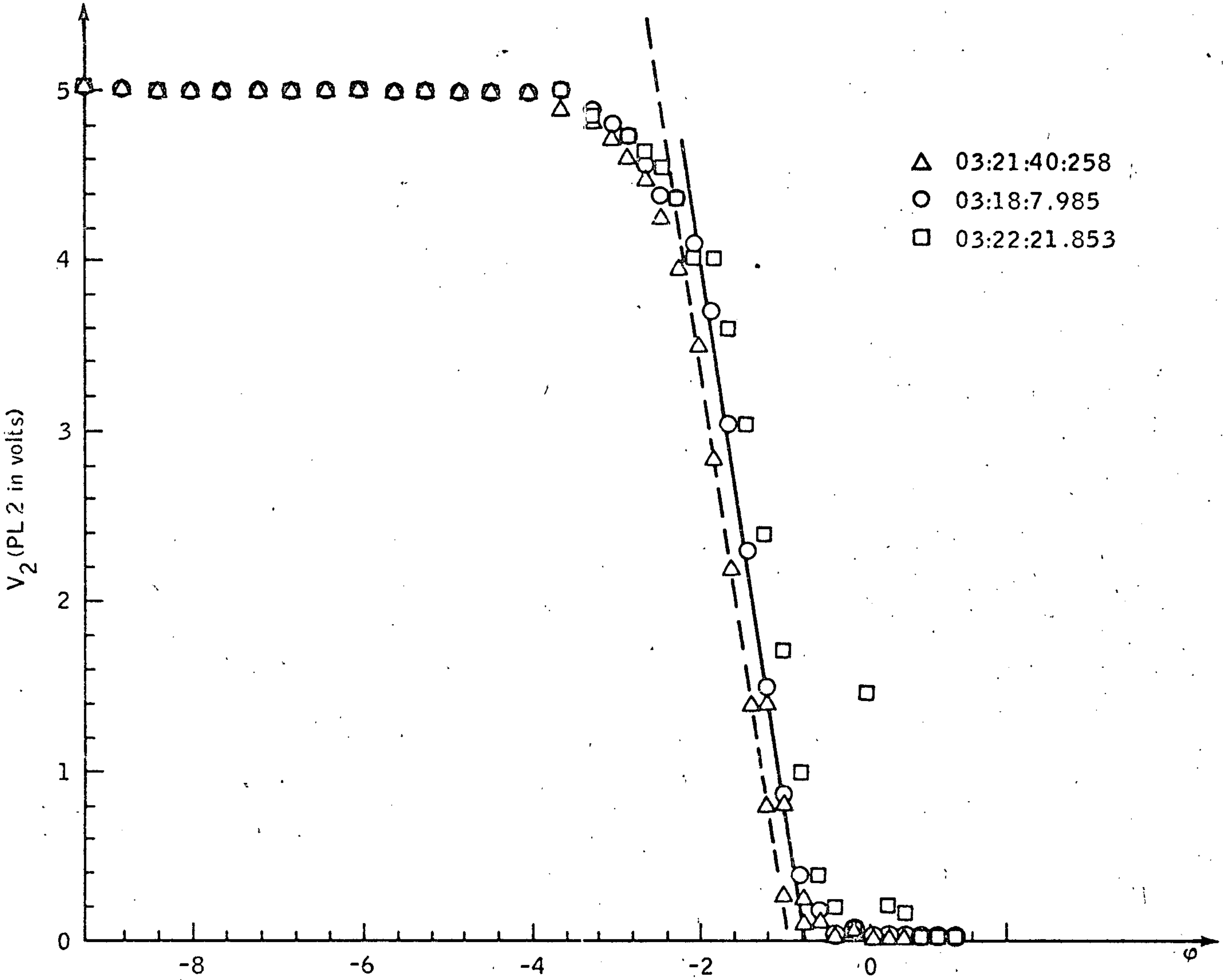


Figure 101.- Mode B, sequence 03.



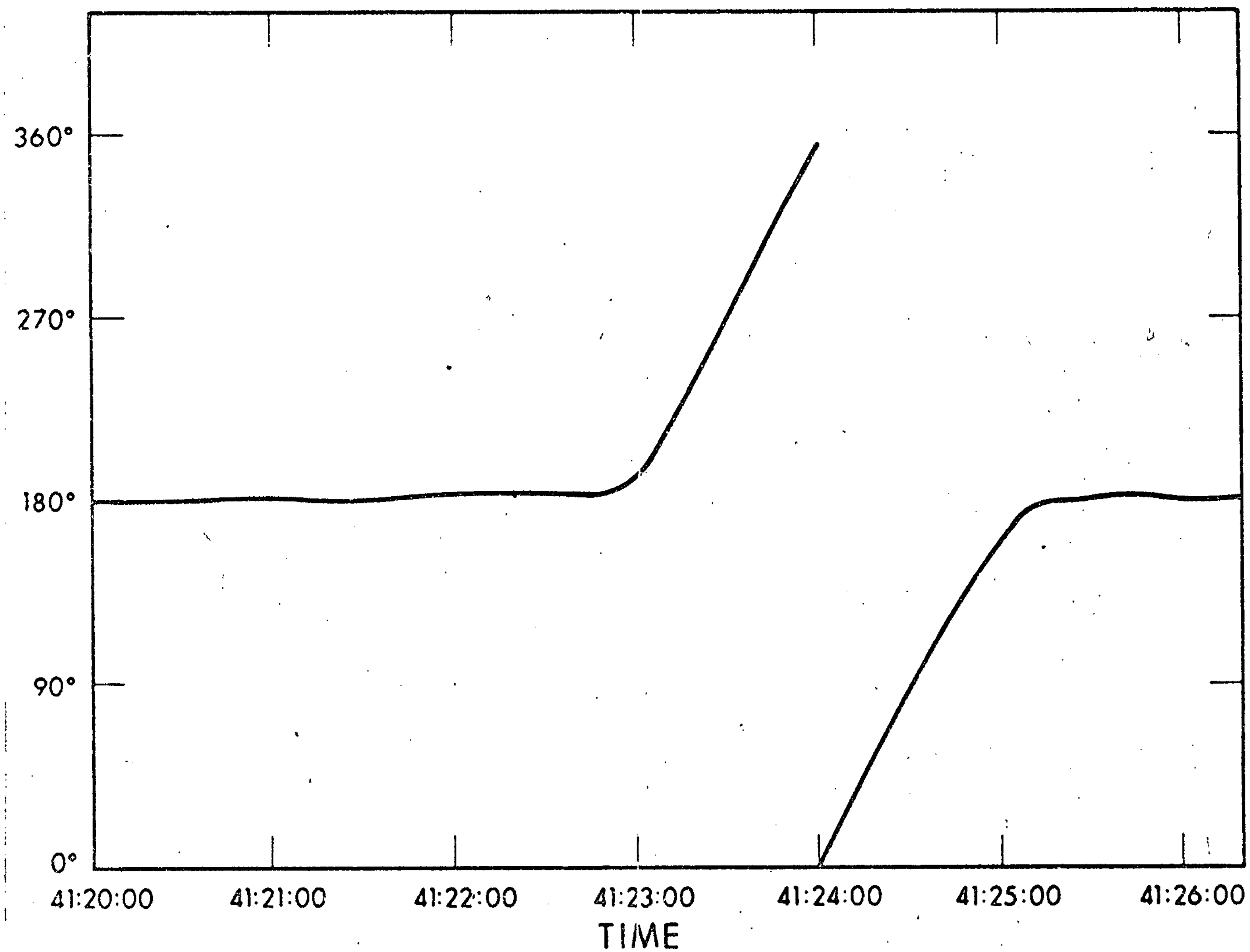
(a) Prior to mode B-03

Figure 102.- The RPA plots of PL-2.



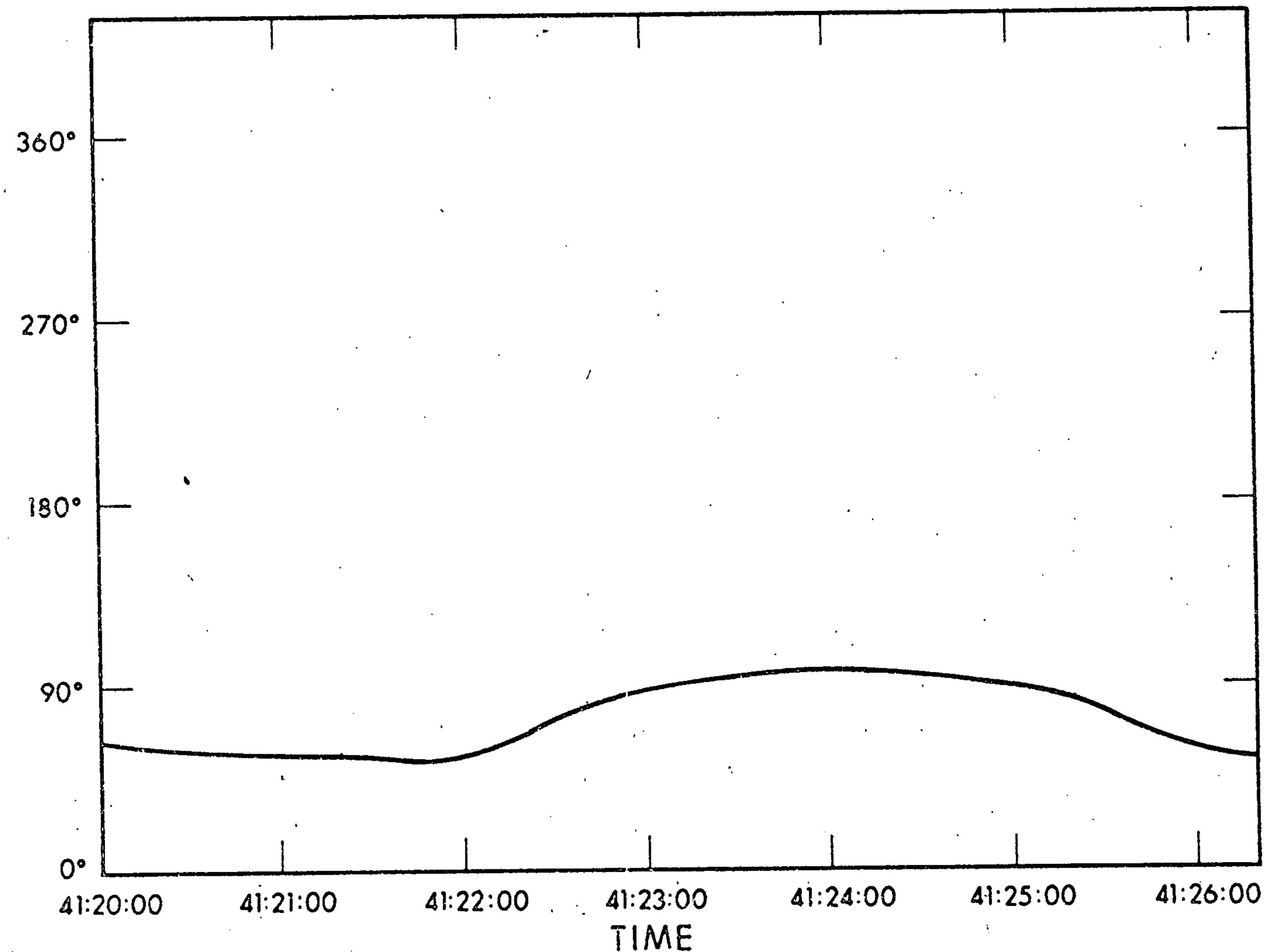
(b) Following completion of mode B-03.

Figure 102.- The RPA plots of PL-2. (Concluded)



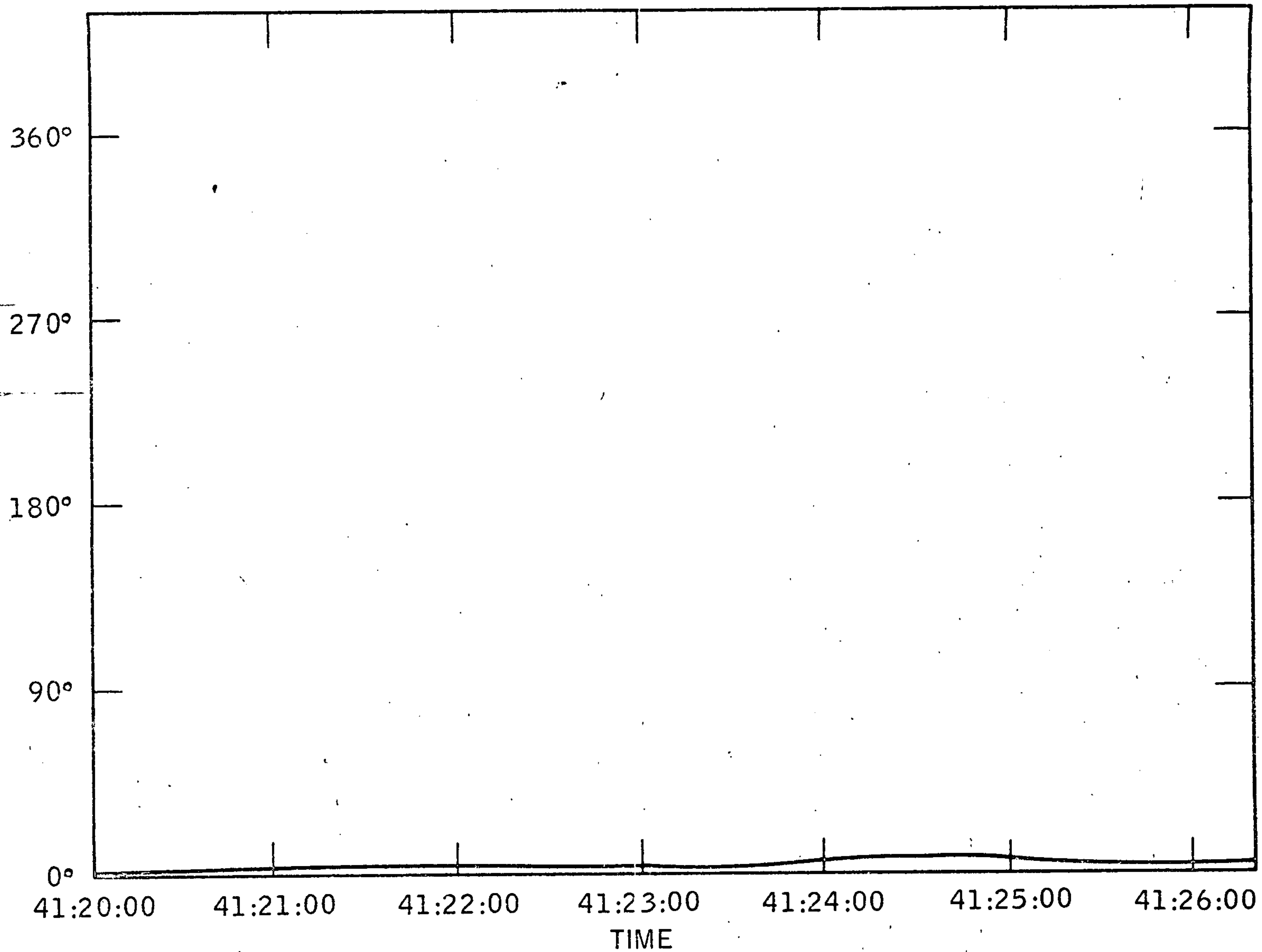
(a) Roll angle.

Figure 103.- Mode C, angles as a function of time.



(b) Pitch angle.

Figure 103.- Mode C, angles as a function of time. (Continued)



(c) Yaw angle

Figure 103.- Mode C, angles as a function of time. (Concluded)

DISCUSSION AND ANALYSIS

GT X, MODE U

Inboard Ion Sensor Analysis

The response of the inboard ion sensor PL-3 during the undocking maneuver has been analyzed in two previous publications (refs. 8 and 9). In these publications, mention is made of the partial failure of the PL-3 detector, which was apparently connected with the strong thruster firing occurring at 44:40:40.7 S/C g.e.t. The existence of a short data gap following this firing also lends credence to the assumption that something went wrong. There was some telephonic dialogue between Troy and Medved concerning the possible malfunction of PL-3 even earlier in the mission. However, no general agreement on this point has been reached. It is suggested that in future work on instrument analysis a careful study of the entire mission behavior for PL-3 be carried out. Such a study is beyond the scope of the present program on data reduction. It has been assumed in references 8 and 9, and in this discussion, that the responses of the PL-3 sensor up to the data gap of figure 67 were at least correct for a determination of relative current magnitudes. The current ratios are directly obtained by employment of the following relationships.

$$I = 5.10^{-11 + V_t} \quad \text{and} \quad I_o = 5.10^{-11 + V_{to}}$$

Thus

$$I/I_o = n/n_o = 10^{\Delta V} \tag{46}$$

Where ΔV is the difference in the telemetry voltage between the value at abmient and that measured at the point Z. The ambient value is designated by subscript "zero" and V_{to} = 3.32 volts for this mode. This is based on the observation that the telemetry output in the time period 44:40:33 to 44:40:40 is constant at this value. The corresponding distance is approximately two and one-half times the radius of the largest disk. A large number of theoretical papers has appeared in the literature concerning the structure of the depletion zone behind orbiting spacecraft in the ionosphere. No one model has been accepted as generally correct for all regions, even for considerably simpler geometrical shapes than those encountered with the Gemini. In figure 104 the Gemini geometry profile is drawn to scale and two key points are identified for analysis of the data. The neutral approximation due to Gurevich et al is viewed as a simple means of testing the experimental results against some predictable model. Severe difficulty is encountered in applying the neutral approximation to a vehicle with the shape of a Gemini spacecraft. It has been suggested that the ion wake structure produced by a geometry of the type shown in figure 104, flying in the direction indicated (V_o parallel to its longitudinal axis of symmetry), would be similar to the structure of the depletion zone produced by a sequence of equivalent disks of appropriate size and spacing. These dimensions are identified in figure 104. Transition regions (overlap zones) are identified as the neighborhoods of points where the relative particle concentrations produced by the respective disks acting alone would be equal. Therefore, the point P_{ij} is that

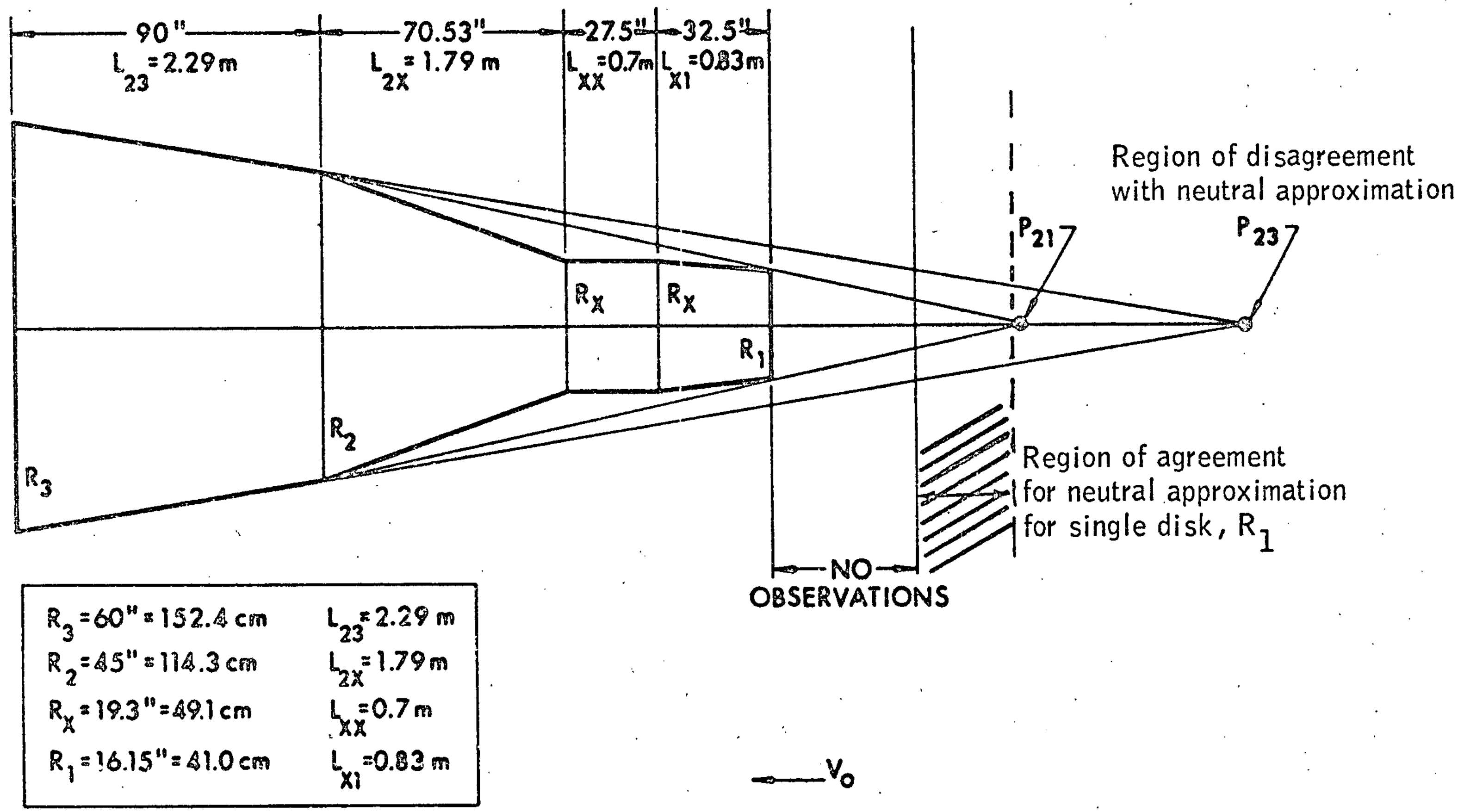


Figure 104.- Gemini geometry employed for equivalent disk analysis.

location satisfying the equation

$$R_i Z_j (P_{ij}) = R_j Z_i (P_{ij}) \tag{47}$$

Such a relation follows from geometrical analyses as that illustrated in figure 104 where points P_{12} and P_{23} lie at the intersection of the lines connecting the edges of the respective disks with the longitudinal axis.

The expression for the axial variation of ion density according to the Gurevich model is given by the following.

$$n = n_o \exp\left[- \zeta^2\right] \tag{48}$$

$$\zeta^{-1} = \frac{z}{\mu R_o} \tag{49}$$

$$\mu = \frac{V_o}{\bar{v}_+} \tag{50}$$

where

$$\frac{1}{2} mV_+{}^2 = kT_+ \tag{51}$$

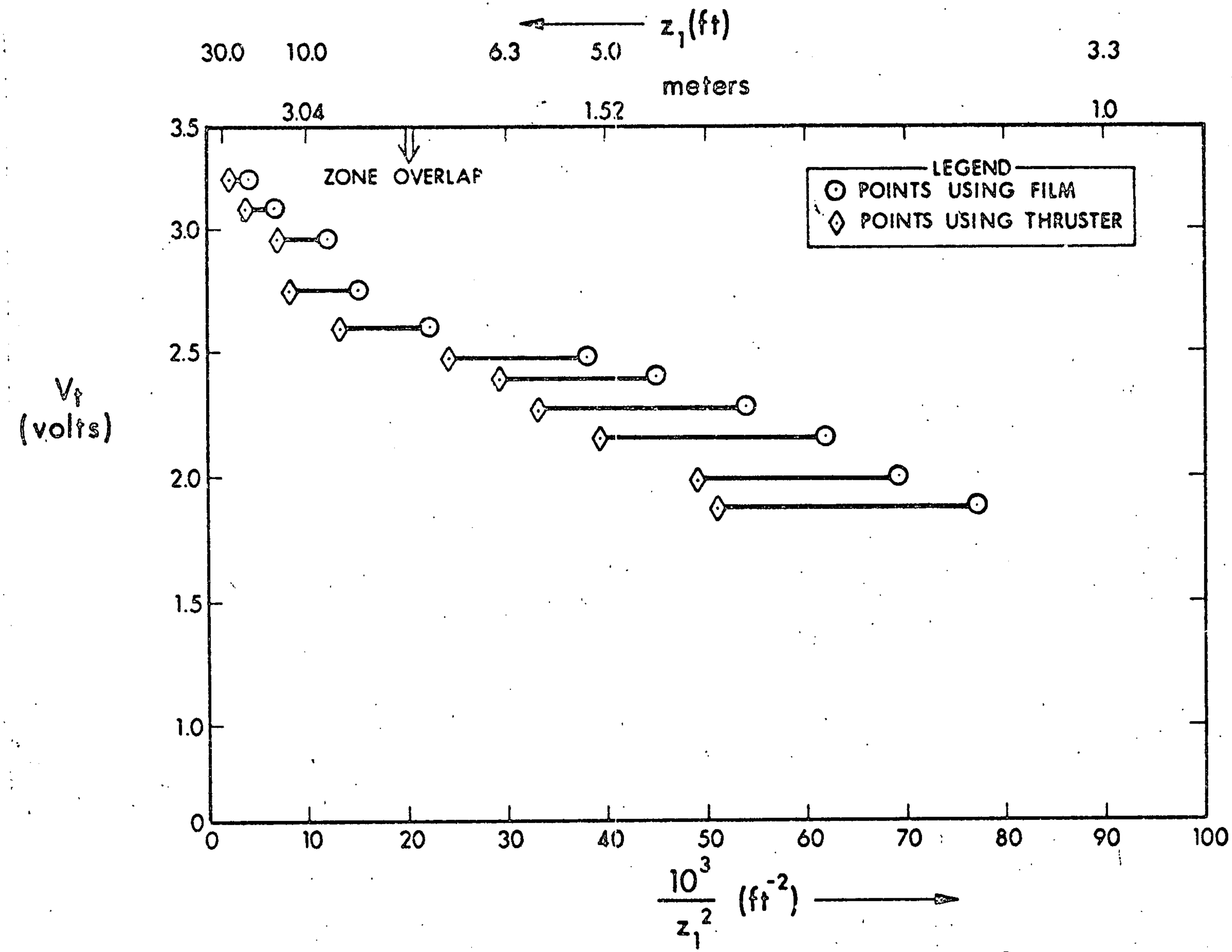
The ratio of orbital velocity (V_o) to the ion thermal velocity (V_+) is designated as a Mach number (μ). The telemetry voltage varies as the logarithm of the current (eq. 46). Assuming that current is directly proportional to the local particle concentrations, a simple expression for testing validity of the non-interacting disk theory as applied to this particular experiment results from combining equations 46 and 48.

$$V_{to} - V_t = \log \frac{I_o}{I} = \log \frac{n_o}{n} \tag{52}$$

or

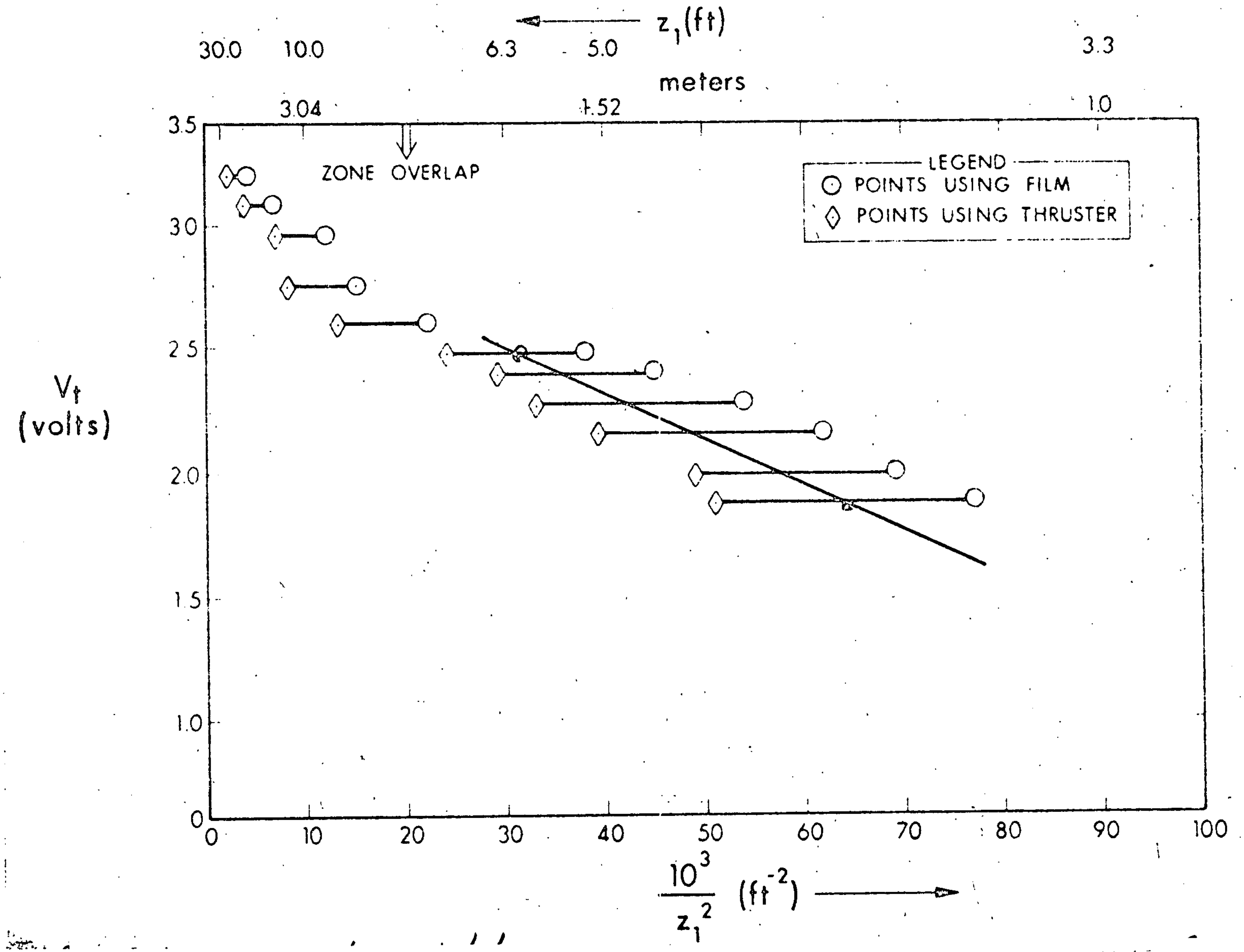
$$V_t = V_{to} - 2.3 \ (\mu R_o)^2 \frac{1}{z^2} \tag{53}$$

When the telemetry voltage is plotted as a function of the reciprocal of the square of the distance, the appropriate slope of any linear portion of the curve should provide a measure of the ion temperature. Such a test plot shown in figure 105 (a), (b), and (c) provides an estimate of the Mach number. The value for $\mathcal{M}$ was found to be 4.5 which, for a mass number of 16, implies an ion temperature in the neighborhood of 2000° K. Electron temperatures determined from PL-2 were found to be 2500° K during the same time interval (fig. 62). Theoretical curves for the variation of the density, or current ratios with distance behind appropriate disks, can be plotted as shown in figure 106. The term labeled R_1 is the theoretically predicted plot according to the Gurevich model (eq. 48) of the density or current ratios as a function of distance downstream from the disk of radius R_1. The R_2 curve is the predicted variation of the density ratios as a function of distance downstream from the disk R_2. The change in the Z axis is of interest (fig. 104). Although the third and largest disk R_3 is also of interest, its Gurevich shape is very similar to that of R_2 crossing at a value of Z_2 = 690 cm designated in the figure as P_{23}.



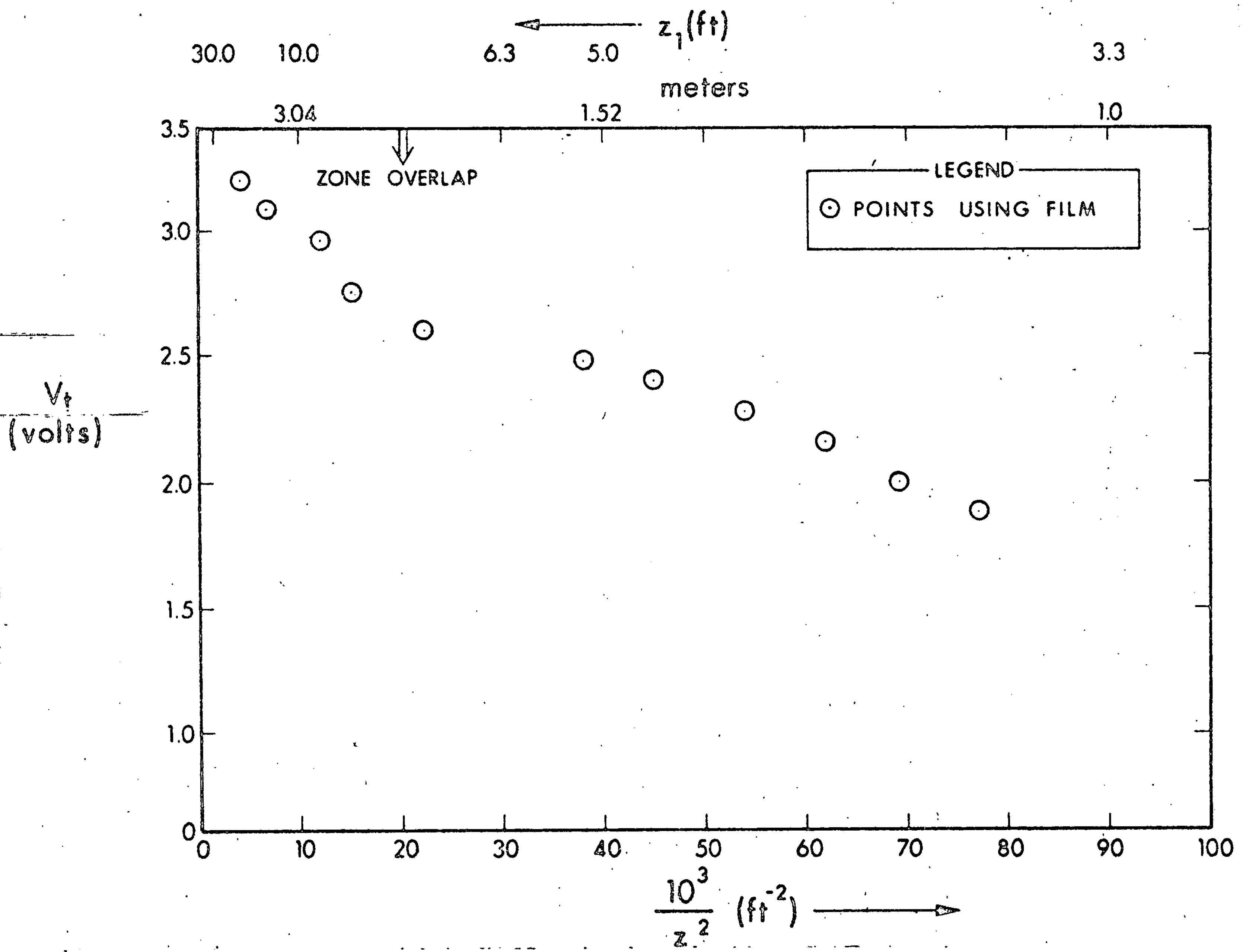
(a) Points using film and thruster.

Figure 105.- Telemetry voltage as a function of the reciprocal of the square of the distance from the short end.



(b) Using equation (53) to find μ and using film and thruster points.

Figure 105.- Telemetry voltage as a function of the reciprocal of the square of the distance from the short end. (Continued)



(c) Using equation (53) to find μ and using film points only.

Figure 105.- Telemetry voltage as a function of the reciprocal of the square of the distance from the short end. (Concluded)

The theoretical curves are plotted for the two disks, assumed to be completely independent and noninteracting, as a function of the respective distances behind each disk. The following observations on figure 106 are noted.

1. For a distance between 90 cm and 130 cm, the wake appears to follow the predictions of the Gurevich neutral approximation exactly as if only the short disk R_1 were determining its structure. This is not too surprising since an appropriate Mach number ($\mathcal{M}$ = 4.5) was chosen from the linear portion of figure 105 in the region of the short disk influence.

2. Between 150 cm and 300 cm there is an apparent overlap zone showing the combined influence of the R_1 and R_2 disks. The region of overlap exhibits relative densities considerably below the expected if only one of the disks were present.

3. Between 250 and 360 cm (P_{23} = 360), the data can be interpreted as essentially following the R_2 curve with possibly some influence from R_3 causing a slightly lower value of the relative densities in this region.

4. At P_{23}, which is the point where the line connecting the edges of R_2 and R_3 intersects the Z-axis, the data exhibit another sharp change. The wake at distances beyond this transition point is considerably faster than the Gurevich model predicts for either of the disks R_2 or R_3.

It has been suggested (ref. 15) that the abrupt change at P_{23} results from electric fields, in the vicinity of the spacecraft, which produce a deflection effect on particles that would be moving more or less parallel

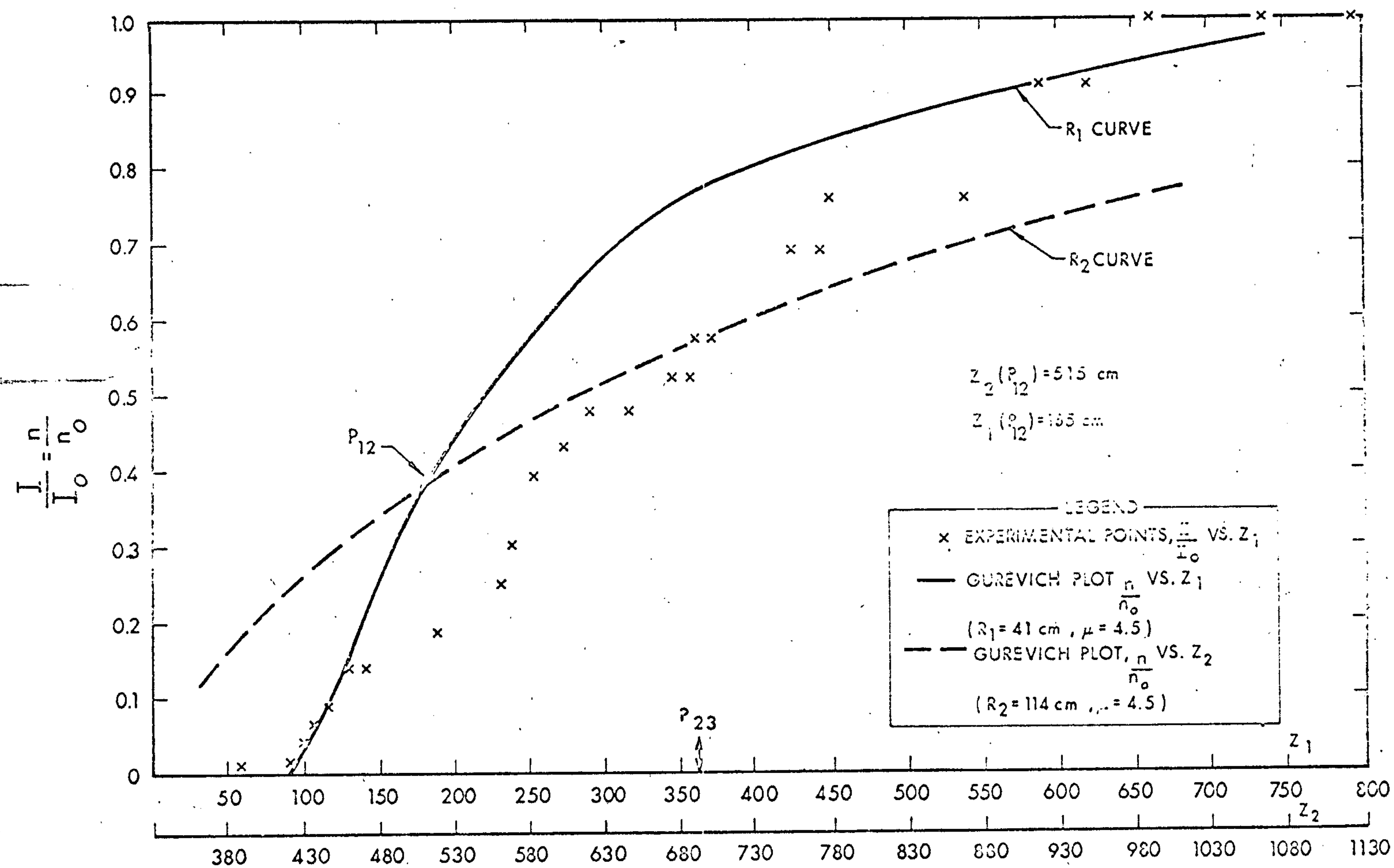
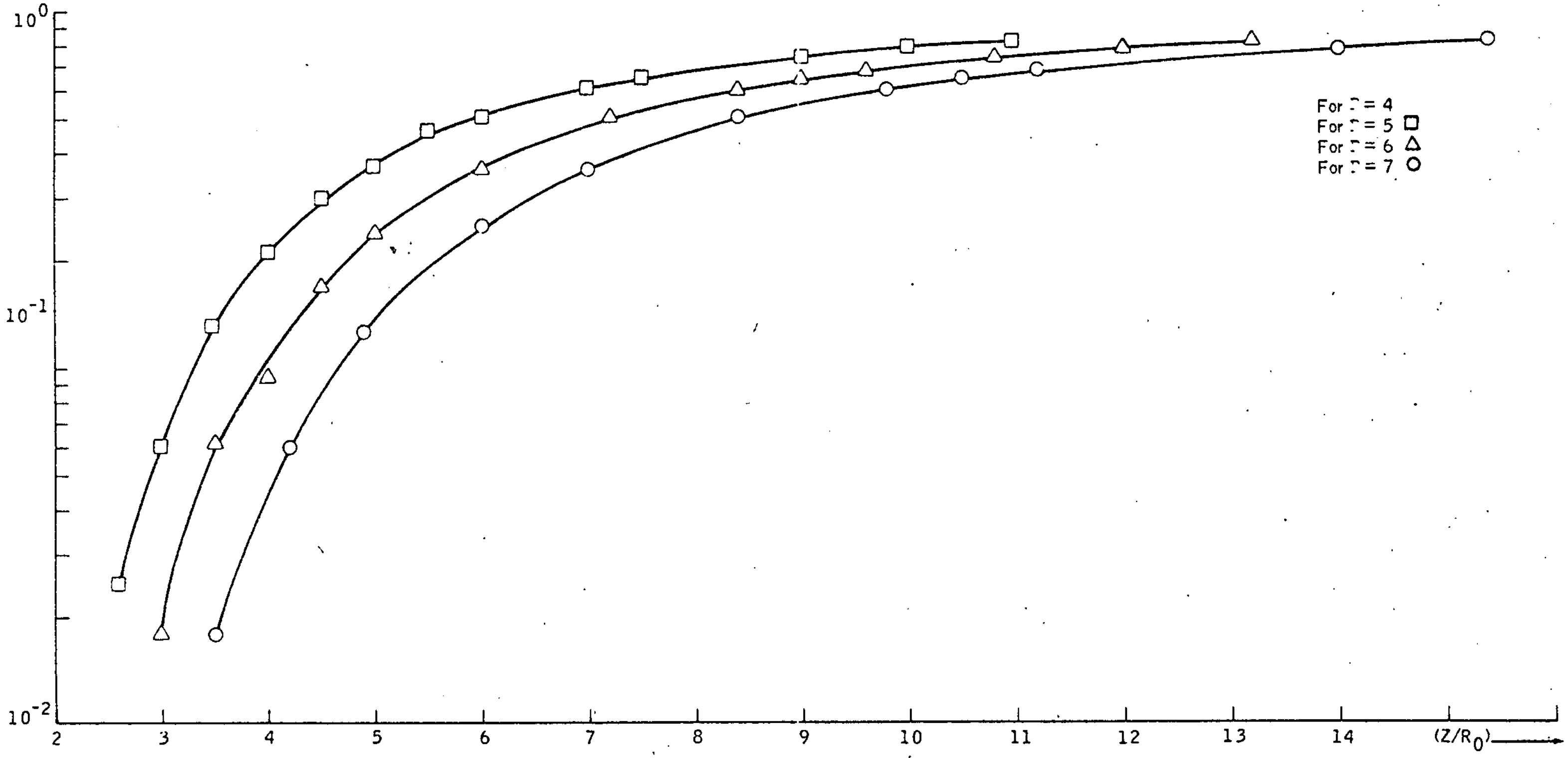


Figure 106.- Experimental results for axial variation of current ratios compared with modified neutral approximations.

to the Gemini surface along the lines connecting the edges of the two disks R_2 and R_3. This idea is pursued in detail under, "Electrostatic Effect on the Particle Density in the Wake of the Gemini". A careful analysis of the region between P_{23} and P_{12} should be carried out, utilizing the viewpoint of a neutral approximation. It appears possible to predict the axial concentration produced by two such disks. If conjectures based on this interpretation of the data are correct, such a prediction should agree quite closely with the data shown in figure 106. Uri Samir has suggested an alternative way of testing the areas of agreement between the data and neutral approximation (ref. __). The normalized ion currents are shown in figure 107 (a), (b), and (c) as a function of normalized distance for each of the three main disks labeled R_1, R_2, and R_3. These were generated from the neutral approximation previously mentioned for several values of Mach number as shown. Table XLII presents a comparison of the observations and the theoretical values. Table XLIII is a summary of data and computed values for $1/Z^2$.

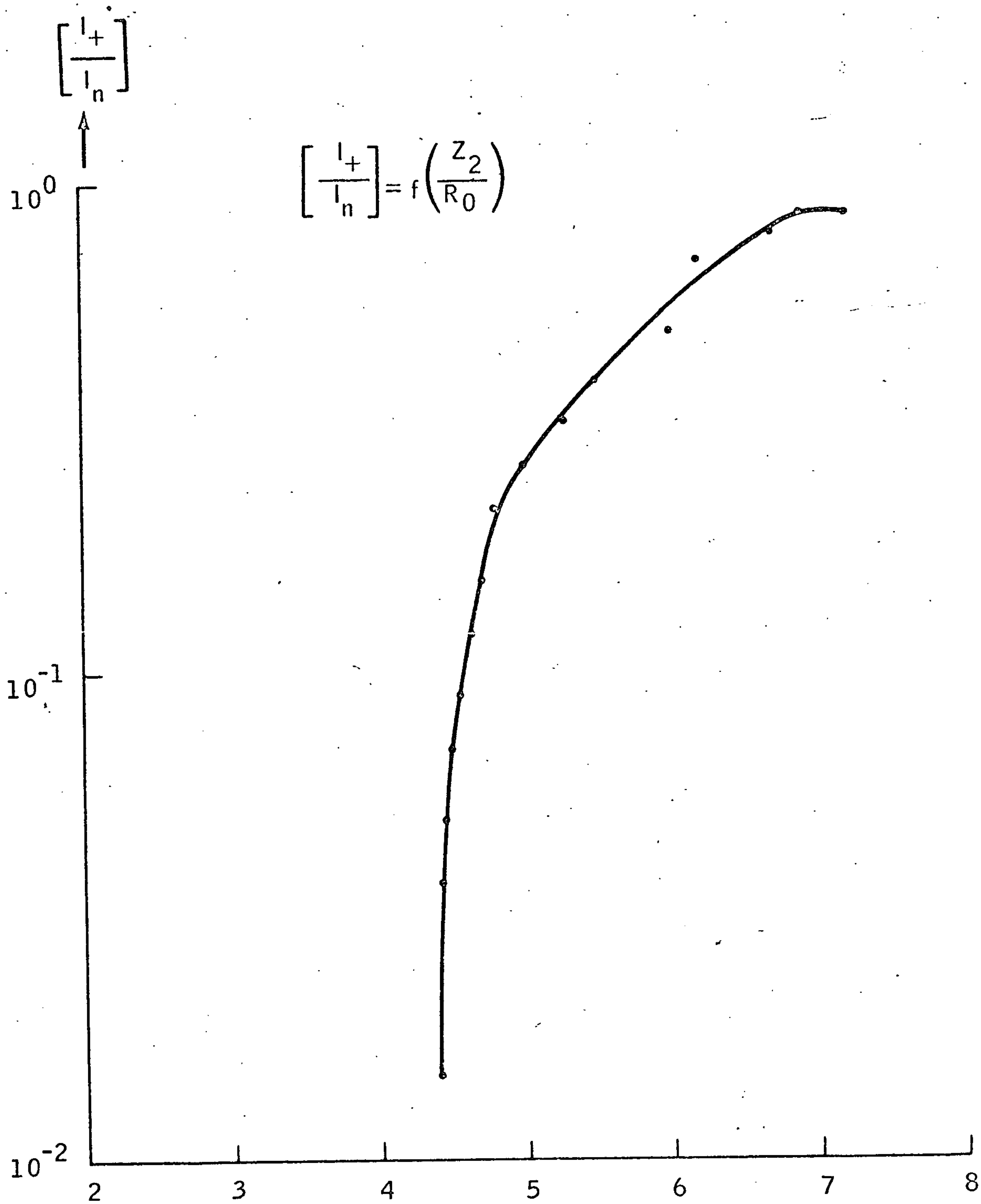
Outboard Ion Sensor (PL-1)

The behavior of the outboard ion sensor is indeed a puzzlement. The reading prior to undock is not characteristic of the static wake condition. This conclusion is borne out by inspection of the long term variation following the undocking, assuming the effects of thruster firings have been removed (figs. 30 and 31). Upon undocking there is a drop in the outboard



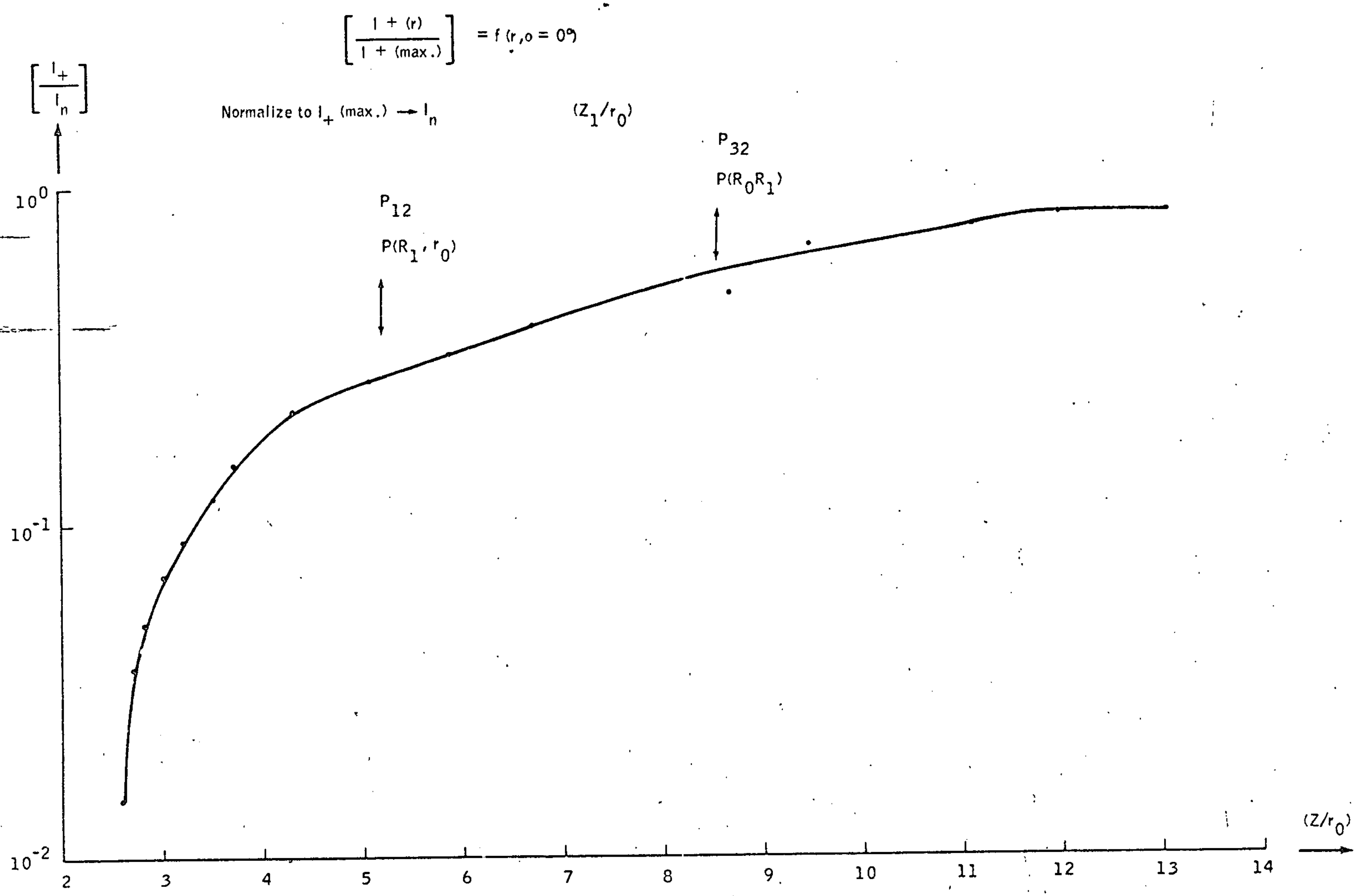
(a) Curves of $\left(\frac{N(\rho_1 z)}{N_o}\right)$ behind a rapidly moving body.

Figure 107.- Normalized ion current as a function of normalized distance.



(b) I_+/I_N as a function of Z_2/R_o.

Figure 107.- Normalized ion current as a function of normalized distance. (Continued)



(c) The (c) $\frac{I_+(r)}{I_+(\mathrm{max})}$ as a function of (r, $\Theta = 0°$).

Figure 107.- Normalized ion current as a function of normalized distance. (Concluded)

TABLE XLII.- TABLE OF COMPARISON

(z/R)	2.6	2.7	2.8	3.0	3.2	3.5	3.8	4.0
I_α	1.5×10^{-2}	3.7×10^{-2}	5×10^{-2}	7×10^{-2}	9×10^{-2}	1.2×10^{-1}	1.6×10^{-1}	1.8×10^{-1}
I_β								
I_γ							1.5×10^{-2}	7.4×10^{-2}
I_{th} $\mu=5$	2.5×10^{-2}	3.4×10^{-2}	4×10^{-2}	6×10^{-2}	8.5×10^{-2}	1.3×10^{-1}	1.8×10^{-1}	2.1×10^{-1}
I_{th} $\mu=6$	6×10^{-3}	7×10^{-3}	1×10^{-2}	1.8×10^{-2}	3.2×10^{-2}	6×10^{-2}	8.2×10^{-2}	1.0×10^{-1}

$$V_T(+)[\text{min}] = \sqrt{\frac{2KT}{M_+}} = \sqrt{\frac{2\times1.4\times10^{-16}\times2\times10^{3}}{24\times1.67\times10^{-24}}} = \sim \underline{\underline{1.2\times10^5}}\ \frac{cm}{sec}$$ (assumed

$$V_T(+)[\text{max}] = \sqrt{\frac{2KT}{M_+}} = \sqrt{\frac{2\times1.4\times10^{-16}\times2.43\times10^{3}}{16\times1.67\times10^{-24}}} \simeq \underline{\underline{1.6\times10^5}}\ \frac{cm}{sec}$$ (assum

We consider: $V_T(+) = \begin{cases} M_+ = 20 \\ T_+ = 2000^\circ \end{cases} \Rightarrow V_T(+) = \underline{\underline{1.3\times10^5}}$ cm/sec

μ for $V_T(\text{max}) = \sim \underline{\underline{4.56}}$

μ for $V_T(\text{min}) = \sim \underline{\underline{6.4}}$

TABLE XLIII.- GEMINI X DATA

Time 44:40+	Z_1		Z_2		$1/Z^2 \times 10^{-3}$		$1/Z_2^2 \times 10^{-3}$	
	Film	Thruster	Film	Thruster	Film	Thruster	Film	Thruster
15.800	1.7	1.600	20.1	20.0	344	393	2.47	2.50
18.488	3.5	4.09	21.9	29.49	82	60	2.08	1.98
19.628	3.6	4.36	22.0	22.76	77	52	2.06	1.94
19.769	3.8	4.49	22.2	22.89	69	49	2.02	1.92
20.128	4.0	5.12	22.4	23.52	62	39	1.99	1.83
20.456	4.3	5.52	22.7	23.92	54	33	1.94	1.75
20.78.	4.7	5.82	23.1	24.22	45	29	1.88	1.70
21.284	5.1	6.48	23.5	24.88	38	24	1.84	1.62
23.000	6.7	8.86	25.1	27.26	22	13	1.59	1.35
24.456	8.2	10.92	26.6	29.32	15	8	1.41	1.16
25.222	9.3	12.12	27.7	30.52	12	7	1.30	1.07
27.784	12.6	16.25	31.0	34.65	6.3	3.7	1.04	0.83
30.629	15.7	21.14	34.1	39.54	4.1	2.2	0.86	0.64
38.801	27.5	34.89	45.9	53.38	1.3	1.2	0.47	0.35
					A'		B'	

ion sensor current with an eventual return to a value close to that which was registered at the time of undocking. It is difficult to see how a small displacement from the axis of the wake could be responsible for such an effect. It is proposed that this behavior is a result of electric field deflection of particles into the outboard ion sensor. The electric field in question is produced by the presence of the Gemini spacecraft in the docking cone. When the spacecraft uncouples, the system measures more characteristically an ion current that would be seen in the wake of the S/C. Upon S/C departure the reading returns to a more or less ambient condition at approximately 44:40:40 S/C g.e.t.

Outboard Electron Sensor (PL-2)

The behavior of the electron sensor in mode U is also very interesting. There is an apparent depletion effect on electron density produced by the presence of the Gemini vehicle. Some attempt has been made to analyze this variation with the axial departure. Of even greater interest is the apparent shift in electron temperature which occurred upon the undocking maneuver. The electron temperature exhibited a steep drop in value accompanied by a discontinous change in the relative potential between the spacecraft and its environment. This electron temperature change is believed to be similar to the effects observed during the Agena yaws which were analyzed in Phase IV of this program (refs. 6 and 7). It was concluded that the electron temperature in the wake regions directly behind the Agena vehicle exhibited somewhat higher values than those obtained for the ambient condition. The change in potential is, in a sense, contrary to prior observations since it shows a shift to a more positive (less negative) value than that obtained with the docked system. It is hypothesized that this shift is caused by an effective change in the geometry of the system. The ratio of cross sectional area to the longitudinal area, representing a change in the effective collection area for ram ions compared to that for electrons approaching from all directions, changes upon undocking. The potential of the vehicle relative to its wake was found to be more positive than the potential of the vehicle relative to the ambient, the opposite was expected.

APPENDIX A

NASA - MSC Program For Spacecraft Delta V From Thruster Firings

LEC/Manager, Test Data Reduction Department
672-10

March 1, 1967

In reply refer to:
11-40

ED5/Head, Data Processing Branch

Programing Support for Gemini S-26 Experiment, Project Number 8220

It is requested that a program be written to determine the component velocity of the Gemini spacecraft from the thruster bilevels.

The computations to be performed are as follows:

(1) F_x = GE09 + GE11

F_y = GE13 + GE14

F_z = GE15 + GE16

where GE09, GE11, GE13, GE15, and GE16 are bilevel bits and a one (1) indicates that the thruster is firing. When a thruster is firing the following values will be substituted in the equations:

Thruster Bilevel	Gemini X Lbs. Thrust	Gemini XI Lbs. Thrust
GE09	-190.9	+190.4
GE11	155.2	-158.2
GE13	-95.1	-92.6
GE14	96.1	93.9
GE15	-93.6	-95.8
GE16	93.0	96.0

A format defining the location of the GE-- values is attached.

(2) $\sum V_x = \frac{gF_x}{m} \Delta t$ (x velocity, feet/second)

$\sum V_y = \frac{gF_y}{m} \Delta t$ (y velocity, feet/second)

$\sum V_z = \frac{gF_z}{m} \Delta t$ (z velocity, feet/second)

where $g = 32.174$ and m = spacecraft weight which is:

Gemini X $m = 8,292$
Gemini XI $m = 7,837$

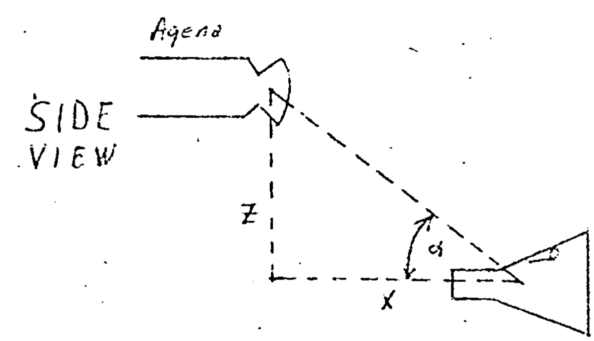
Δt will always equal .1 seconds in the equation but when $t_i - t_{i-1} \neq$ .1 a line will be tabulated stating "MISSING THRUSTER INFORMATION" and Δt = .1 will be substituted in the equation.

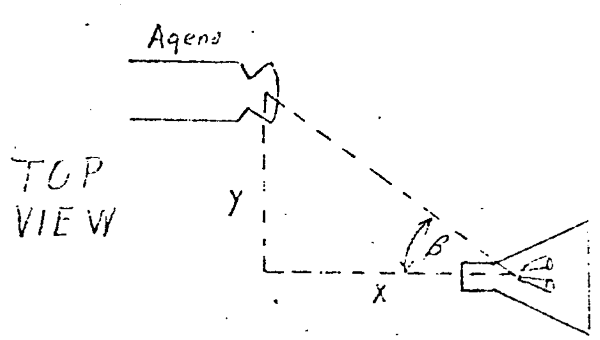
$$(3) \quad V_T = \sqrt{\sum V_x^2 + \sum V_y^2 + \sum V_z^2}$$

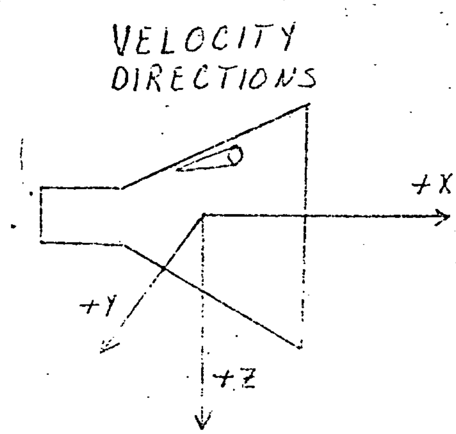
V_T equals total velocity in feet/second.

$$(4) \quad \alpha = \tan^{-1} \frac{\sum V_z}{\sum V_x} \quad \text{(degrees)}$$

$$(5) \quad \beta = \tan^{-1} \frac{\sum V_y}{\sum V_x} \quad \text{(degrees)}$$







The tabulations are to be output every 0.1 second and will consist of the following:

(a) Time (Hrs, Min, Seconds to 3 decimal places)

(b) x velocity [equation (2) $\sum V_x$]

(c) y velocity [equation (2) $\sum V_y$]

(d) z velocity [equation (2) $\sum V_z$]

(e) total velocity [equation (3) V_T]

(f) angle α [equation (4)]

(g) angle δ [equation (5)]

The attached memorandum may add additional information. Any questions concerning this project may be directed to Mr. Barney Leach, extension 5369. It is requested that this program requirement be completed by April 3, 1967. All work should be charged to project number 8220.

Original signed by

Donald E. Iloff

Attachments 2

cc:
ED52/W.D. Poatos

ED52/BHLeach;ghc 3-1-67

APPENDIX B

Film Data Reduction Procedures

TO : LEC/Manager, Test Data Reduction Department (651-10)

September 8, 1966

In reply refer to: 11-120

FROM : ED5/Head, Data Processing Branch

SUBJECT: Programming support for Gemini/Agena post-flight data reduction, Project Number 8211

It is requested that a program be written to determine the distance and closing velocity of the Agena vehicle from the Gemini spacecraft during docking maneuvers. A more detailed description of the program is enclosed.

This work should be completed by September 20, 1966. Any questions pertaining to this request should be directed to Barney Leach, extension 5369.

Original signed by

Donald E. Iloff

Enclosures

ED5:BHLeach:ghc 9-8-66

ION WAKE EXPERIMENT S-26

It is required to determine the distance and closing velocity of the Agena vehicle from the Gemini spacecraft during docking maneuvers for Gemini-10/Agena mission. The program will also be used in future missions.

A rectangular object and an antenna on the Agena of known dimensions were photographed with a 16 mm camera aboard the spacecraft. The distance can be determined from object size, image size on film, and the focal length of the camera.

Foreshortened measurements will occur whenever the camera is not looking head-on at the object. At least two estimates of the distance from the Agena to the spacecraft can be made from each frame of film using measurements from the rectangle. An option should be incorporated into the program to use either the largest or an average of the two distances as the best estimate. When measurements from the antenna are used only one estimate of the distance is possible.

A. INPUTS

1. h - actual height of rectangle (feet)
2. ℓ_R - actual length of rectangle (feet)
3. ℓ_A - actual length of antenna (feet)
4. f - focal length of camera (feet)
5. T_0 - time of first frame of film (seconds)
6. r - frame rate (frames/second)
7. C_x - conversion factor for counts to feet along x
8. C_y - conversion factor for counts to feet along y
9. One set of the following for each frame
   a. K - sequence number of frame, 1,2,3,...,n etc.
   b. X_1,Y_1, X_2,Y_2, X_3,Y_3, X_4,Y_4 — Position coordinates of either the rectangle or the antenna in counts. (See Figures 1 and 2)
   c. M - designates whether the above coordinates are for the rectangle or the antenna. X_3,Y_3 and X_4,Y_4 will not be used for the antenna.

The sequence number, position coordinates, and M will be punched on one card for each frame. See input card format.

B. COMPUTATIONS

Perform the following computations for each frame where $i = 1, 2, 3, \ldots,$ number of frames. (See glossary of terms for symbol definition)

1. $T_i = T_o + K(\frac{1}{r})$

2. $\Delta T_i = T_i - T_{i-1}$

If measurements are from the rectangle, compute d as follows

3. $X_i = \frac{X_B + X_T}{2}$ where

$$X_B = \sqrt{\left((X_1 - X_3)\, C_X\right)^2 + \left((Y_1 - Y_3)\, C_Y\right)^2}$$ and

$$X_T = \sqrt{\left((X_2 - X_4)\, C_X\right)^2 + \left((Y_2 - Y_4)\, C_Y\right)^2}$$

4. $\Delta X_i = X_i - X_{i-1}$

5. $Y_i = \frac{Y_R + Y_L}{2}$ where

$$Y_R = \sqrt{\left((X_4 - X_3)\, C_X\right)^2 + \left((Y_4 - Y_3)\, C_Y\right)^2}$$ and

$$Y_L = \sqrt{\left((X_2 - X_1)\, C_X\right)^2 + \left((Y_2 - Y_1)\, C_Y\right)^2}$$

6. $\Delta Y_i = Y_i - Y_{i-1}$

7. $d_1 = \ell f / X_i$ since from Fig. 3

$$\tan \alpha = X_i / 2f$$

$$\tan \alpha = \ell / 2d_1$$

$$X_i / f = \ell / d_1$$

$$d_1 = \ell f / X_i$$

8. $d_2 = hf/Y_i$ (See Fig. 4)

9. $\Delta d = d_1 - d_2$

10. $d_i = \dfrac{d_1 + d_2}{2}$ (option 1)

d_i = largest of d_1 and d_2 (option 2)

If measurements are from the antenna, compute d as follows

11. $X_i = \sqrt{\left((X_2 - X_1)\, C_X\right)^2 + \left((Y_2 - Y_1)\, C_Y\right)^2}$

12. $\Delta X_i = X_i - X_{i-1}$

13. $d_i = \ell f/X_i$ See Fig. 3 and equation 7

C. OUTPUT

Two sets of output are required. No. 1 is for quality control purposes and to determine the accuracy of the solution. No. 2 is the final output. (See output formats.)

1. Intermediate output for quality control

(1) T_i -- seconds or hrs:min:sec (optional)

(2) ΔT_i - seconds

(3) X_i - feet x 1000

(4) ΔX_i - feet x 1000

(5) d_1 - feet ($d_1 = d_i$ for the antenna)

(6) Y_i - feet x 1000

(7) ΔY_i - feet x 1000

(8) d_2 - feet

(9) Δd_i - feet

(10) d_i - feet

If the output is from the antenna measurements, only T, ΔT, X, ΔX and d should be printed out.

2. Final Output

(1) T_i - seconds or hrs:min:sec (optional)

(2) d_i - feet (smoothed)

(3) $\dot{d}_i$ - ft/sec (first derivative from smoothing process)

(4) $\ddot{d}_i$ - ft/sec^2 (second derivative from smoothing process)

There are routines in existance for smoothing data and computing first and second derivative. It is possible that one of these routines may be used or adapted to the smoothing required here.

D. INPUT CARD FORMAT

A deck of cards containing frame sequence no. and coordinates of the rectangular object or the antenna will be provided. All values will be punch as integers and right justified within each field as follows:

Field Contents	Columns
K, Frame Sequence No.	1 - 5
X_1	6 - 9
Y_1	11 - 14
X_2	16 - 19
Y_2	21 - 24
X_3	26 - 29
Y_3	31 - 34
X_4	36 - 39
Y_4	41 - 44
Data source flag	46

X_1, Y_1 - Coordinates of either the lower left corner of the rectangle or the base of the antenna in counts

X_2, Y_2 - Coordinates of either the upper left corner of the rectangle or the top of the antenna in counts.

X_3, Y_3 - Coordinates of the lower right corner of the rectangle in counts.

X_4, Y_4 - Coordinates of the upper right corner of the rectangle in counts.

Data source flag -

(1) If column 46 is blank, all coordinates are for the rectangle

(2) If column 46 contains a one (1), X_1, Y_1 and X_2, Y_2 are the coordinates for the antenna. X_3, Y_3 and X_4, Y_4 will not appear on the card.

Note: Columns 10, 15, 20, 25, 30, 35, 40, and 45 are not used on the cards.

E. OUTPUT FORMAT

1. Intermediate Output

(1) T_i, Elapsed Time Seconds xxxxxx.xx or Elapsed Time Hrs:min:sec xxx:xx:xx.xx

(2) ΔT_i, Delta Time (sec) xxxxxx.xx	(3) X_i, Image Length (K feet) x.xxx	(4) ΔX_i, Delta Length (K feet) x.xxx
(5) d_1, d from Length (x) (feet) xxx.x	(6) Y_i, Image Width (K feet) x.xxx	(7) ΔY_i, Delta Width (K feet) x.xxx
(8) d_2, d from Width (Y) (feet) xxx.x	(9) Δd_i, Delta Distance (feet) xx.x	(10) d_i, Best est. of d (feet) xxx.x

2. Final Output

(1) Elapsed Time Seconds xxxxxx.xx or Elapsed Time Hrs:min:sec xxx:xx:xx.xx

(2) d_i, Distance from Agena to S/C (feet) xxx.x

(3) Closing velocity (ft/sec) xxx.x

(4) Acceleration ft/sec^2 xxx.x

F. GLOSSARY OF TERMS

1. h - Actual height of rectangle (feet)
2. ℓ_R - Actual length of rectangle (feet)
3. ℓ_A - Actual length of antenna (feet)
4. f - focal length of camera (feet)
5. T_o - Time of first frame (seconds)
6. T_i - Time of ith frame (seconds)
7. ΔT_i - Time between two consecutive frames (seconds)
8. r - Frame rate of camera (frames/sec)
9. C_X - Conversion factor for X-counts to feet
10. C_Y - Conversion factor for Y-counts to feet
11. K - Frame sequence no.
12. X_i - Image length of rectangle or antenna (feet)
13. Y_i - Image height of rectangle (feet)
14. ΔX_i - Difference between image lengths from two consecutive frames (feet)
15. ΔY_i - Difference between image heights from two consecutive frames (feet)
16. d_1 - Distance computed by using image length of rectangle or antenna (feet)

17. d_2 - Distance computed by using image width of rectangle (feet)

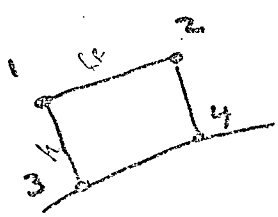
18. d_i - Computed distance from the Agena to the spacecraft

19. $\dot{d}_i$ - Rate at which the distance between the Agena and the spacecraft is changing (feet/sec)

20. $\ddot{d}_i$ - Rate at which $\dot{d}_i$ is changing (feet/sec^2)

G. INPUT CONSTANTS

1. $h = 0.1458333$ ft. (1.75 in.)
2. $\ell_R = .475$ ft.
3. $\ell_A = 7.083333$ ft. (85 in.)
4. $C_X = 0.00003556$
5. $C_Y = 0.00002693$
6. $f = 0.0622703412$ ft.
7. frame rate = 5.96666 frames/sec
8. T_0 = 44 hrs. 39 min. 59.6167 sec.



ED52/Head, Applications Programing Section

ED53/Head, Requirements and Analysis Section

Programing Support for Gemini/Agena Experiment Data, Project Number 8220

The present computer program GDock computes the distance from the Agena to the spacecraft during docking maneuvers.

It is requested that the program be modified to compute X, Y, Z position coordinates from this distance, the S/C attitude and the camera field of view. (See enclosure for computational method.)

Any questions pertaining to this request should be directed to J. R. Skipworth, extension 3395.

Original signed by

Fred Fulton

ED5:JESkipworth:bc 2-20-68

Computation of X, Y, Z

The azimuth (Faz) and elevation (Fel) of a single point on the Agena with respect to the optical axis of the camera aboard the S/C can be determined as follows:

Let X1 and Y1 be given in angular measure

Remove effects of S/C roll

RX1 = X1c Cos(-R) + Y1c Sin(-R)

RY1 = -X1c Sin(-R) + Y1c Cos(-R)

R = S/C roll angle from cards or Gemini tape (DQ08)

Compute AZ and EL

For R = 0

$$Faz = \frac{X1}{1000} \times 33.2$$

Faz = (RX1/1000) * 33.2

Fel = (RY1/1000) * 23.4

Combining the above

Faz =(Cx * X1 Cos(R) + CY * Y1 Sin(R)/1000 * 33.2

Fel = (Cx * X1 Sin(R) - Cy * Y1 Cos(R)/1000) * 23.4

These angles are corrections to apply to the S/C pitch and yaw to yield the true azimuth (Taz) and elevation (Tel) of this point on the Agena with respect to the camera and the optical axis.

Corrections are as follows:

Taz = Yaw + Faz

Tel = Pitch + Fel

Yaw = S/C Yaw (DQ09)
Pitch = S/C Pitch (DQ07)

The distance from the S/C to the Agena is computed and tabbed vs GET by the computer program GDOCK. This distance, the Taz and Tel can be time correlated and the X, Y, Z coordinate of the Agena from the camera can be computed as follows:

$$X = \frac{D}{1+\tan^2(Taz) + \tan^2(Tel)}$$

$$Y = (D)^2 - X^2 \left[1 + \tan^2(Tel)\right]$$

$$Z = (D)^2 - X^2 - Y^2$$

Translate X, Y, Z from camera to S/C origin.

$$X_s = X + \Delta X$$

$$Y_s = Y + \Delta Y$$

$$Z_s = Z + \Delta Z$$

ΔX, ΔY, ΔZ from load cards.

This equation assumes that RPY can be ignored in getting the slant range.

Computation of X, Y, Z

The azimuth (Faz) and elevation (Fel) of a single point on the Agena with respect to the optical axis of the camera aboard the S/C can be determined as follows:

1) Remove effects of S/C roll

$$RX1 = X1\ Cos(-R) + Y1\ Sin(-R)$$

$$RY1 = -X1\ Sin(-R) + Y1\ Cos\ (-R)$$

R = S/C roll angle from cards or Gemini tape (DQ08)

2) Compute AZ and EL

$$Faz = (RX1/1000)*33.2$$

$$Fel = (RY1/1000)*23.4$$

Combining 1 & 2

$$Faz = \left((+X1\ Cos(R)\ -Y1\ Sin(R))/1000\right)*33.2$$

$$Fel = \left((X1\ Sin(R)\ +Y1\ Cos(R))/1000\right)*23.4$$

These angles are corrections to apply to the S/C pitch and yaw to yield the true azimuth (Taz) and elevation (Tel) of this point on the Agena with respect to the camera and the optical axis.

Corrections are as follows:

$$Taz = Yaw + Faz$$

$$Tel = Pitch + Fel$$

Yaw = S/C Yaw (DQ09)
Pitch = S/C Pitch (DQ07)

The distance from the S/C to the Agena is computed and tabbed vs GET by the computer program GDOCK. This distance, the Taz and Tel can be time correlated and the X, Y, Z coordinate of the Agena from the camera can be computed as follows:

$$X = D \cos EL \cos AZ$$

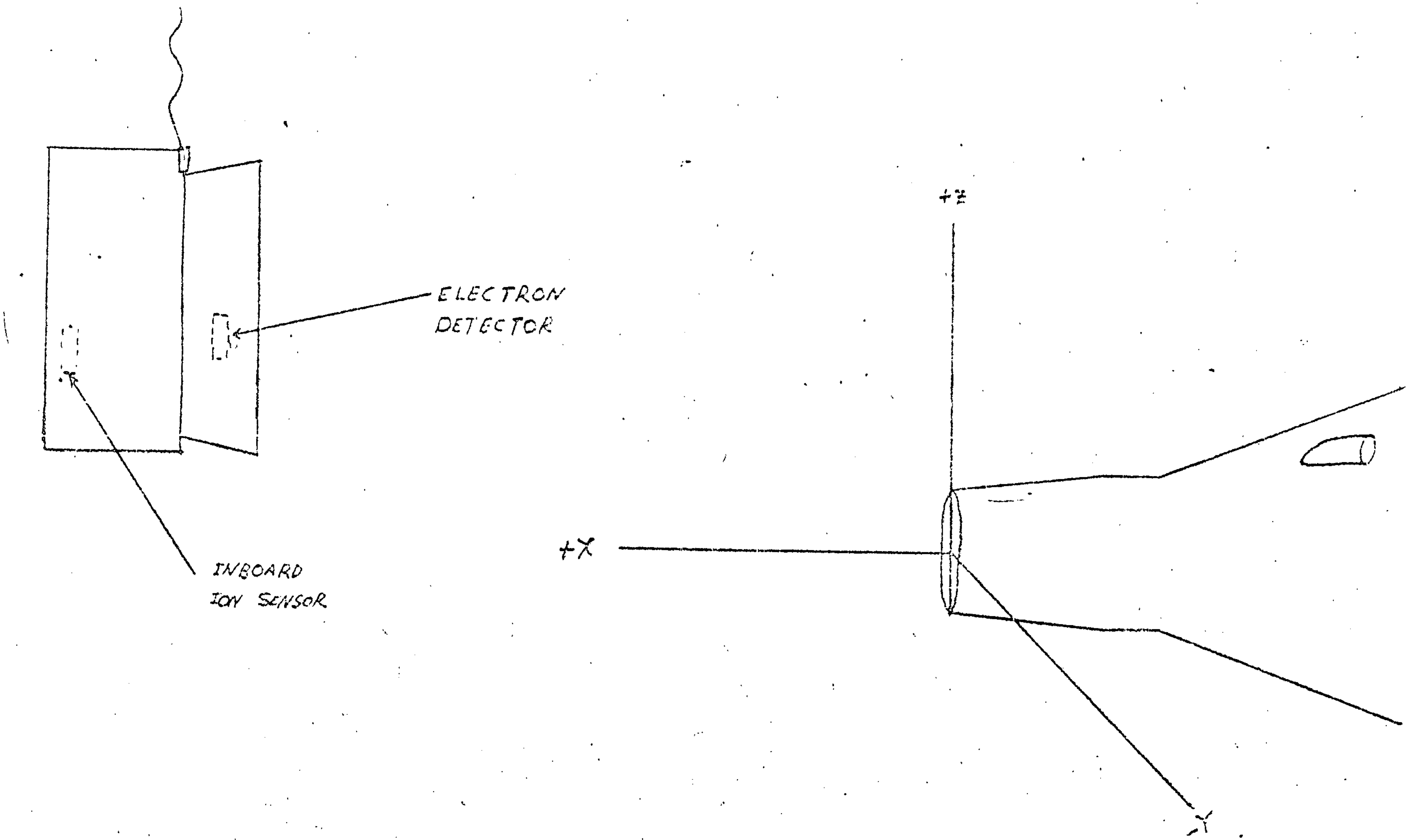
$$Y = D \cos EL \sin AZ$$

$$Z = D \sin EL$$

Translate X, Y, Z from camera to S/C origin.

$$X_s = X + \Delta X$$
$$Y_s = Y + \Delta Y$$
$$Z_s = Z + \Delta Z$$

ΔX, ΔY, ΔZ from lead cards.



COORDINATE SYSTEM FOR S026 FILM DATA

S-26 Data sent to Dave 3/14/68

GT X

		G.E.T.	
1.	Acquisition light (BOSCAR reader)	44:39:59.62	44:40:39.62
2.	Acquisition light (TELECORDEX reader)	44:40:16.28	44:40:23.62
3.	Spiral Antenna (BOSCAR reader)	44:40:39.78	44:41:11.45

GT XI

1.	Top Running lights (BOSCAR reader)	2:29:2.0	2:31:36
2.	Bottom Running lights (BOSCAR reader)	2:27:46	2:29:01
3.	Status lights (TELECORDEX reader)	3:41:36	3:43:29
4.	Acquisition light (reflection from side) and upper running light (TELECORDEX reader)	3:45:22	3:50:12
5.	Top running lights (TELECORDEX reader)	3:51:59	3:55:12

Date: February 13, 1968

To: D. B. Medved

From: R. Bishop and N. Samie (Electro Optical Systems)

Subject: Calculation of Slant Range from Film Coordinators

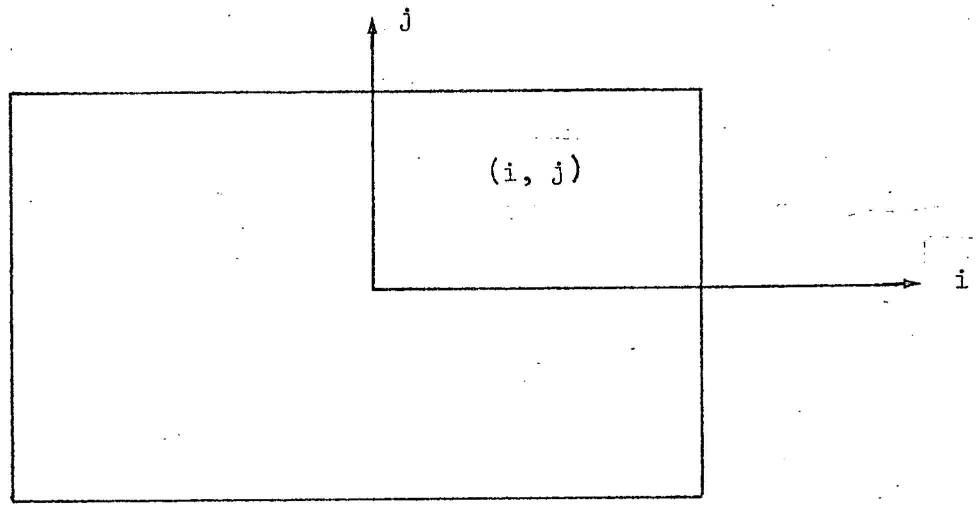
R. Bishop

@-13-68

U. Samir

Let δ = angle per unit distance on film

First we "un-rotate" the Gemini camera



"Un-yawing" gives coordinates:

(a)
$$i' = i + (\theta_y - \pi)\delta$$
$$j' = j$$

"Un-rolling" gives:

(b)
$$i'' = i'\cos\theta_i - j'\sin\theta_i$$
$$i'' = [i + (\theta_y - \pi)\delta]\cos\theta_r - j\sin\theta_r$$
$$j'' = j'\cos\theta_r + i'\sin\theta_r$$
$$j'' = j\cos\theta_r + [i + (\theta_y - \pi)\delta]\sin\theta_r$$

"Un-Pitching" gives:

$$x = i''' = i''$$

(c) $$y = j''' = j'' + \theta_p \delta$$

$$y = j''' = j \cos \theta_r + [i + (\theta_y - \pi)\delta] \sin \theta_r + \theta$$

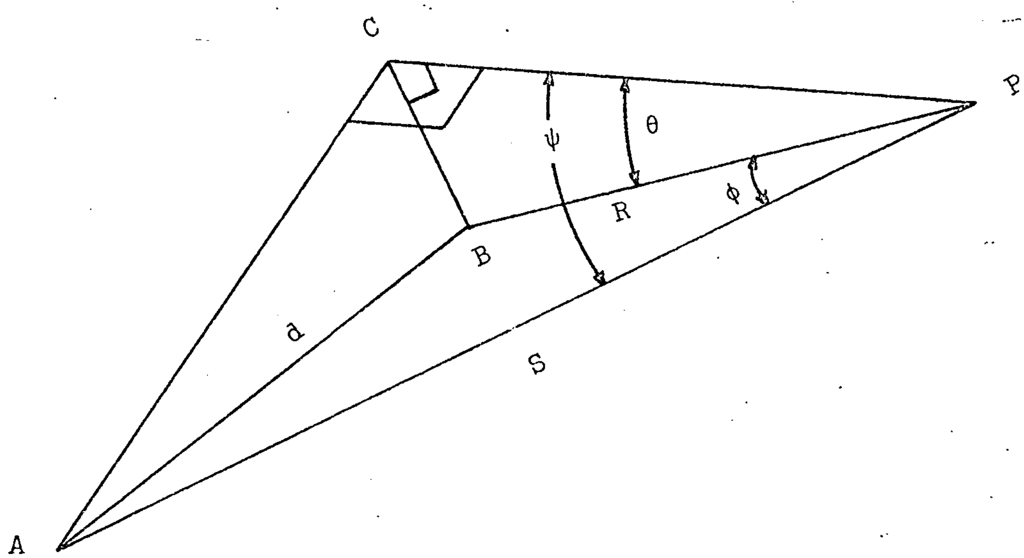
Let the "unrotated" coordinates of two points be (x_a, y_a) and (x_b, y_b).

Let

$$\phi = \delta \sqrt{(x_b - x_a)^2 + (y_b - y_a)^2}$$

Let the slant range, 5, be the distance from the camera to the space point whose film image has the above coordinates (x_a, y_a).

Let the actual space separation of the two points be d.



By the law of cosines:

$$d^2 = R^2 + S^2 - 2RS \cos \phi$$

But:

$$R = \frac{V}{\cos \theta}$$

$$S = \frac{V}{\cos \psi}$$

$$\therefore \qquad \frac{R}{S} = \frac{\cos \psi}{\cos \theta}$$

or $$R = S \frac{\cos \theta}{\cos \psi}$$

Substitution into the cosine formula gives:

$$d^2 = S^2 \left(\frac{\cos\ \theta}{\cos\ \psi}\right)^2 + S^2 - 2S^2 \cos\ \phi \left(\frac{\cos\ \theta}{\cos\ \psi}\right)$$

$$= S^2 \left[\left(\frac{\cos\ \theta}{\cos\ \psi}\right)^2 - 2\ \cos\ \psi \left(\frac{\cos\ \theta}{\cos\ \psi}\right) + 1\right]$$

$$S = \frac{d}{\sqrt{\left(\frac{\cos\ \theta}{\cos\ \psi}\right)^2 - 2\ \cos\ \phi \left(\frac{\cos\ \theta}{\cos\ \psi}\right) + 1}}$$

where,

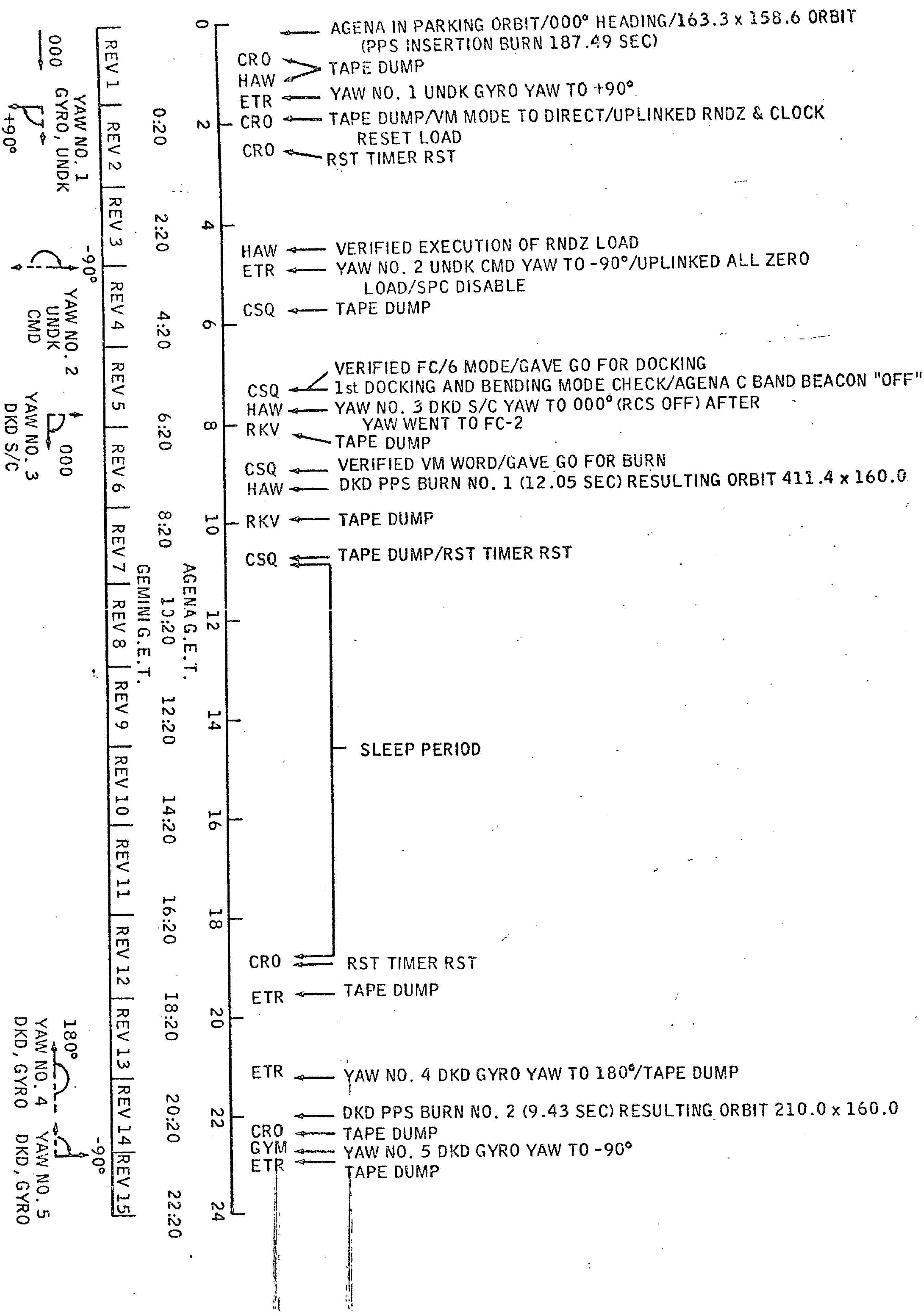
$$\psi = \delta\sqrt{x_a^2 + y_a^2}$$

$$\theta = \delta\sqrt{x_b^2 + y_b^2}$$

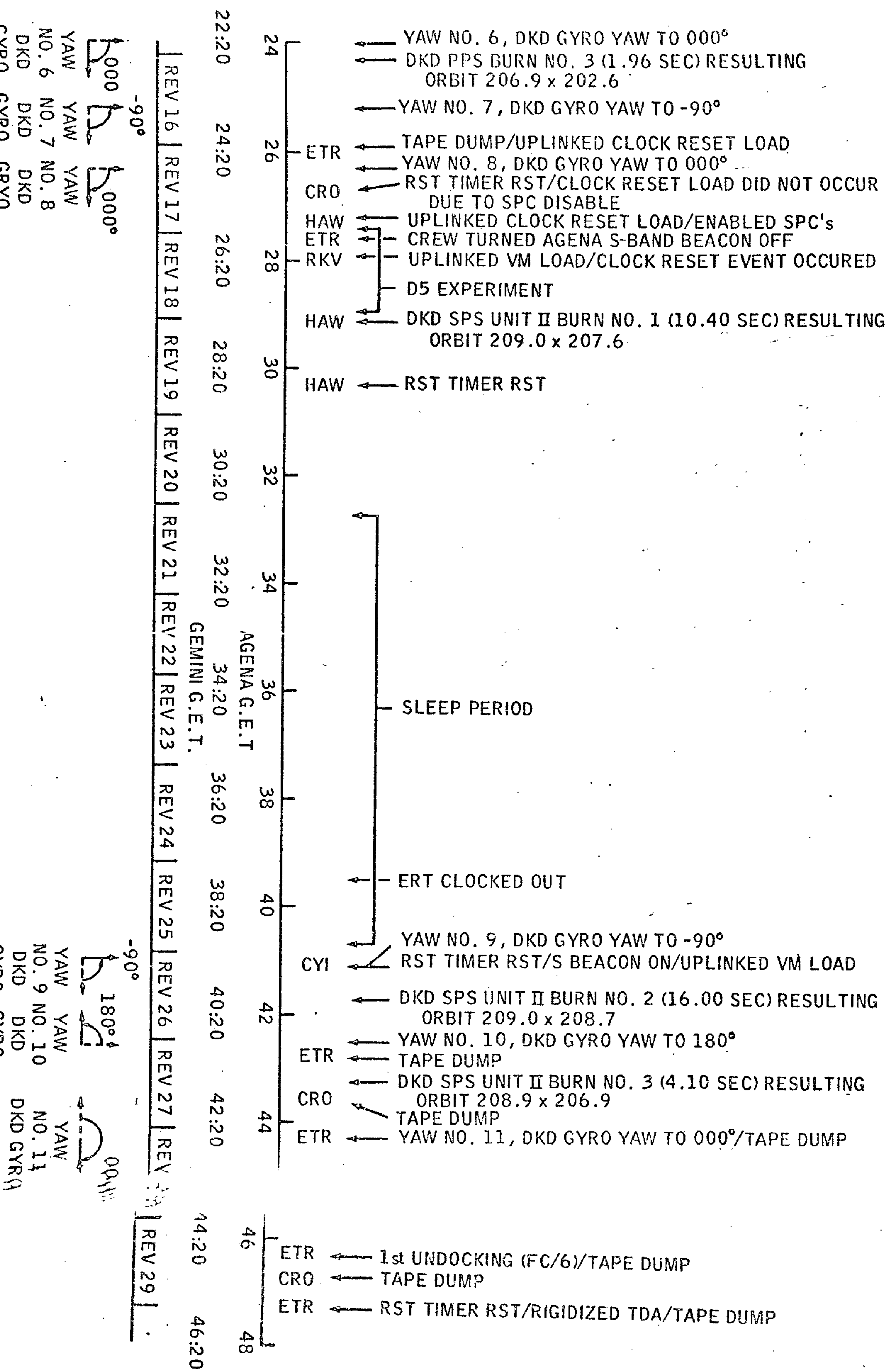
$$\phi = \delta\sqrt{(x_b - x_a)^2 + (y_b - y_a)^2}$$

APPENDIX C

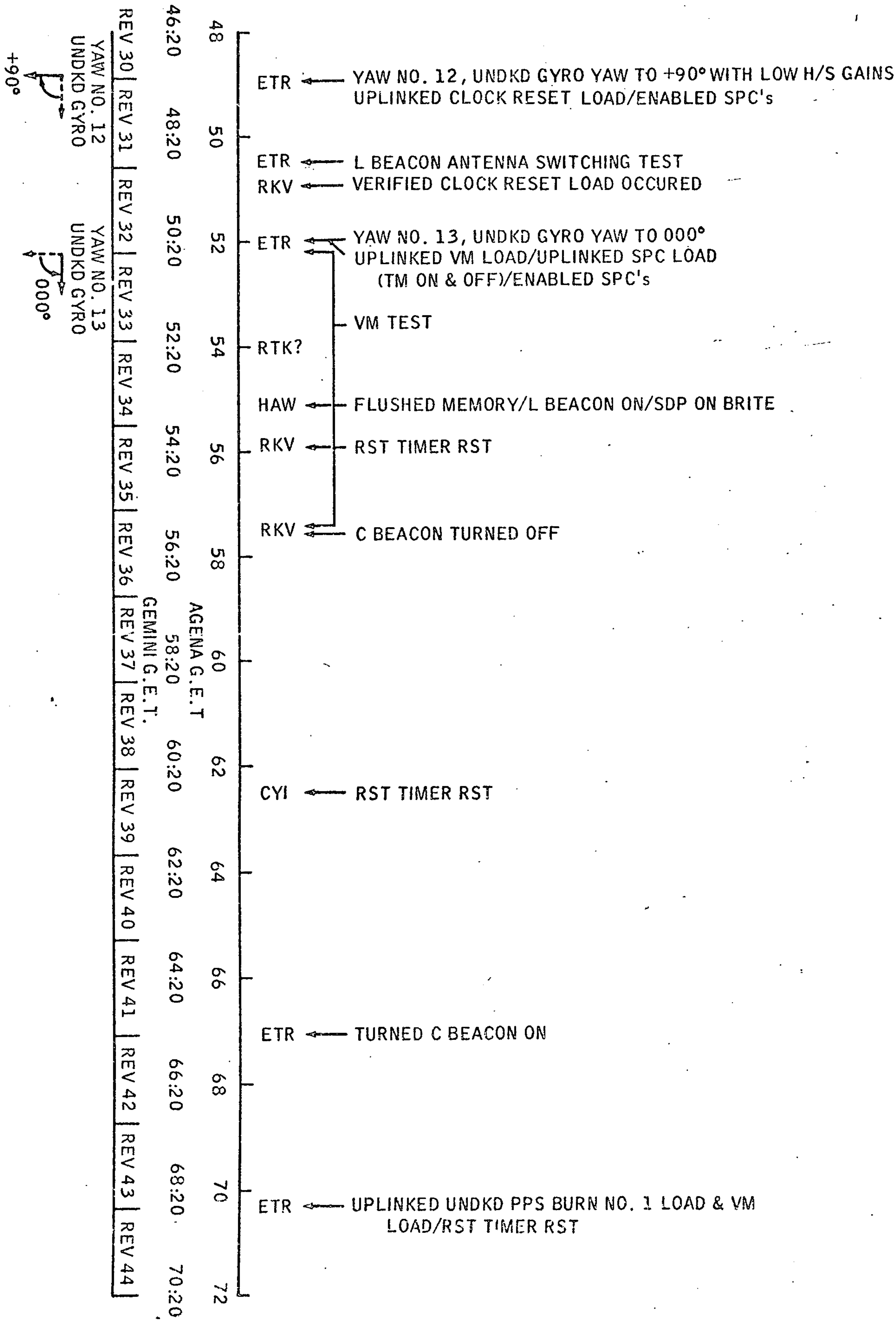
Agena X Flight Profile



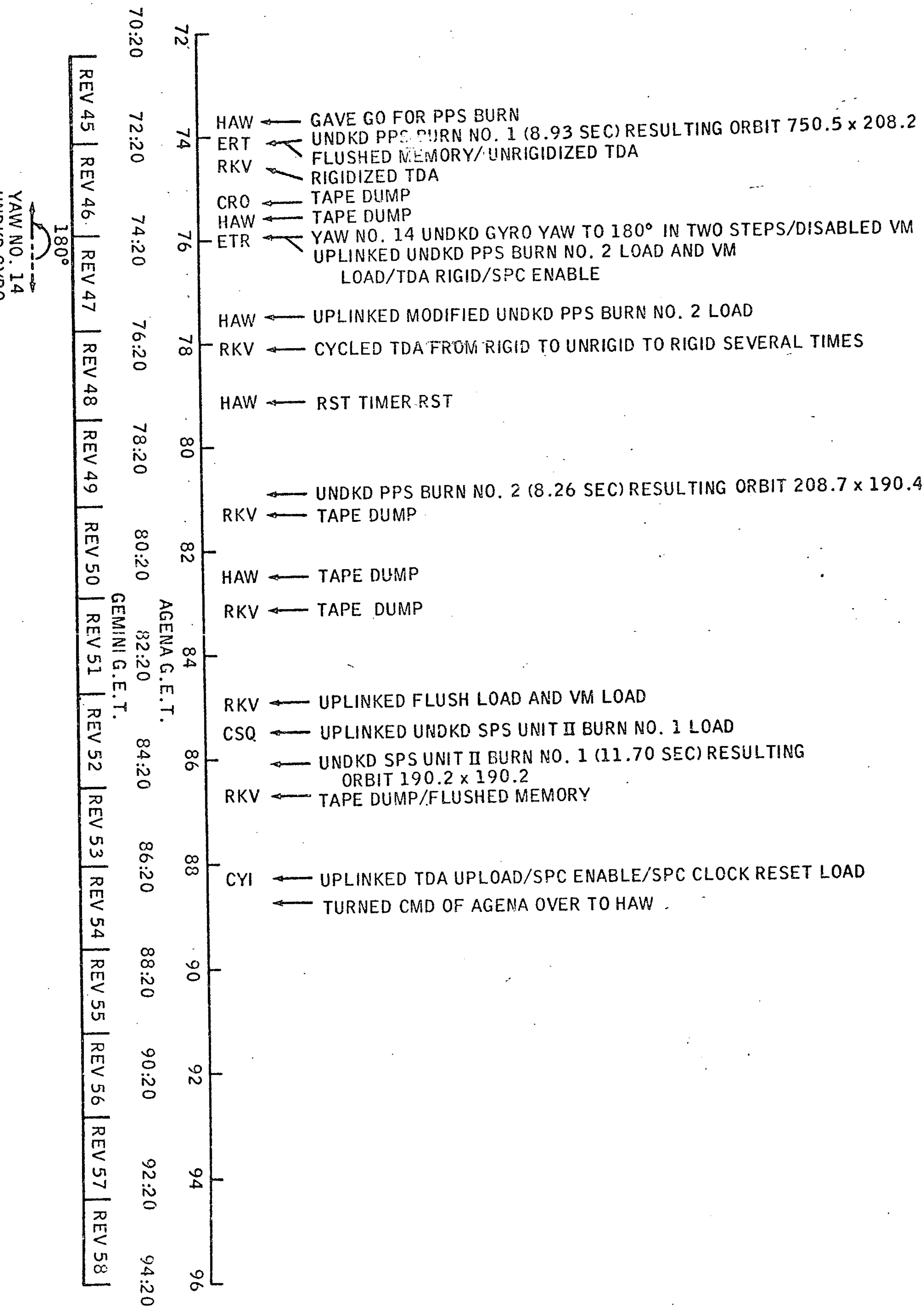
ACTUAL AGENA GTA-10 MISSION PROFILE



ACTUAL AGENA GTA-10 MISSION PROFILE.



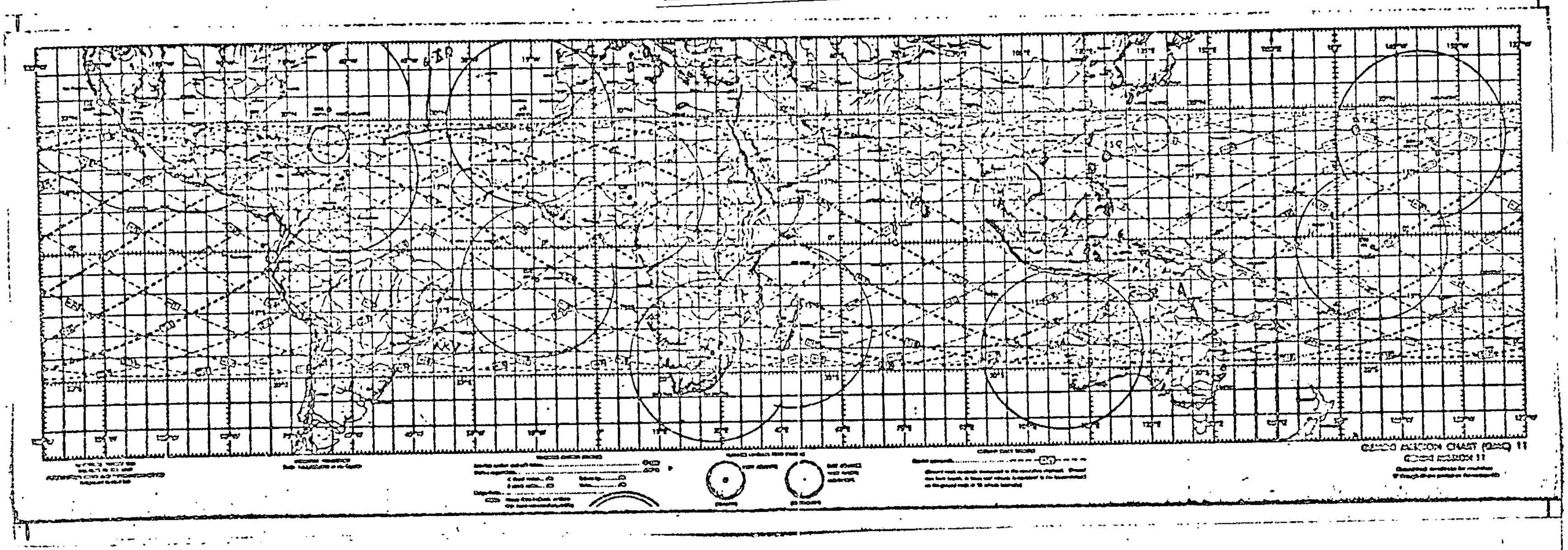
ACTUAL AGENA GTA-10 MISSION PROFILE



ACTUAL AGENA GTA-10 MISSION PROFILE

APPENDIX D

Gemini XI Mission Chart



APPENDIX E

Master Chart of Event Summaries and the Data Made Available

EVENT	TIME	REVOLUTION GEMINI	REVOLUTION AGENA	TRACKING STATION	ALTITUDE MAX	ALTITUDE MIN.	GROUP 31	O-GRAM	MSC ETR REM	KSC
TDA SOUTH UNDKD	01:28-01:48	1/2	2/3	CRO	163.3	158.6	X		X	X
TDA SOUTH YAW TO NORTH ~ 03:16 UNDKD	03:01 03:25	2/3	3/4	ETR	163.3	158.6	X	X	X	X
TDA NORTH UNDKD	04:38 04:58	3/4	4/5		163.3	158.6	X	X		
1st DOCKING γ BENDING MODE CHECK	05:40 05:45	4	5	CSQ	163.3	158.6	X			
TDA NORTH 1st DOCKING γ BENDING MODE CHECK	05:45 05:54	4	5	HAW	163.3	158.6	X			
YAW TO TDA FWD ~ 06:05 DKD	05:58 06:08	4	5	HAW	163.3	158.6	X			
TDA FWD DKD	06:32 06:41	5	6	RKV	163.3	158.6		X		
TDA FWD PPS BURN 12:05 SEC DKD	07:40	6	7	HAW	411.4	160.0	X			
TDA FWD DKD	08:07 08:22	6	7	RKV	411.4	160.0	X	X		
TDA FWD DKD	09:48 10:04	7	8		411.4	160.0		X		
TDA FWD DKD	11:29 11:45	8	9		411.4	160.0		X		
TDA FWD DKD	13:11 13:26	9	10		411.4	160.0		X		
TDA FWD DKD	14:55 15:04	10	11		411.4	160.0		X		
DKD GYRO YAW TO BEF	19:30	12	13	ETR	411.4	160.0				
DKD PPS BURN 9:43 SEC BEF	20:20	13	14	CRO	210.0	160.0	X			
DKD GYRO YAW TO TDA NORTH	21:05	1	1	GYM	210.0	160.0				
TDA NORTH DKD	21:31 21:42	13/14	14/15	GYM	210.0	160.0				
YAW TO TDA FWD DKD	22:20	14	15	HAW	210.0	160.0				
DKD PPS BURN 1.96 SEC	22:40	14	15	TEX	206.9	202.6	X			
TDA FWD DKD	23:02 23:22	14/15	15/16		206.9	202.6			X	X
DKD GYRO YAW TO TDA NORTH	23:30	15	16		206.9	202.6	X			

EVENT	TIME	REVOLUTION GEMINI	REVOLUTION AGENA	TRACKING STATION	ALTITUDE MAX	ALTITUDE MIN.	GROUP 31	O-GRAM	MSC ETR REM	KSC
DKD GYRO YAW TO TDA FWD ~24:40	24:40 25:00	15/16	16/17	ASC	206.9	202.6				X
TDA FWD DKD	26:17 26:37	16/17	17/18	RKV	206.9	202.6			X	X
DKD TDA FWD D-5 EXPER.	26:37 26:48	17	18		206.9	202.6		X		
DKD SPS BURN 10.40 SEC	27:25	17	18	HAW	209.0	207.6	X			
TDA FWD DKD	28:14 28:26	18	19	HAW	209.0	207.6		X		
TDA FWD DKD	29:52 30:04	19	20		209.0	207.6		X		
TDA FWD DKD	33:08 33:20	21	22		209.0	207.6		X		
TDA FWD DKD	34:46 34:58	22	23		209.0	207.6		X		
TDA FWD DKD	36:24 36:34	23	24		209.0	207.6		X		
DKD GYRO YAW TO TDA NORTH	39:30	24	25	CYI	209.0	207.6				
DKD SPS BURN 16:00 SEC	40:07	25	26	CRO	209.0	208.7				
DKD GYRO YAW TO BEF	40:55	25	26	ETR	209.0	208.7				
BEF DKD	41:02 41:06	25	26		209.0	208.7	X			
DKD SPS BURN 04:10 SEC	41:30	26	27		208.9	206.9				
DKD GYRO YAW TO TDA FWD	42:30	26	27	ETR						
TDA FWD DKD	44:28-44:33	27	28	ETR	208.9	206.9	X			
TDA FWD UDOCK-ING ~ 44:35	44:33-44:40	28	29	ETR	208.9	206.9	X		X	
TDA FWD UNDKD	44:40-44:42	28	29	ETR	208.9	206.9	X			
TDA FWD UNDKD	44:43-44:59	28	29	CRD	208.9	206.9	X	X		
TDA FWD UNDKD	46:05-46:17	28	29		208.9	206.9	X			
TDA FWD UNDKD UNDKD	46:21-46:28	28	29		208.9	206.9	X			
UNDKD YAW TO TDA SOUTH	47:15	29	30	ETR	208.9	206.9				
TDA SOUTH UNDKD	49:37-49:47	31	32		208.9	206.9	X	X		
UNDKD YAW TO TDA FWD	50:20	31	32	ETR	208.9	206.9	X			

EVENT	TIME	REVOLUTION GEMINI	AGENA	TRACKING STATION	ALTITUDE MAX	MIN	GROUP 31	O-GRAM	MSC ETR REM	KSC
TDA FWD UNDKD	51:13-51:16	32	33		208.9	206.9		X		
TDA FWD UNDKD	52:51-53:02	33	34		208.9	206.9		X		
TDA FWD UNDKD	54:28-54:40	34	35	RKV	208.9	206.9		X		
TDA FWD UNDKD	56:05-56:19	35	36	RKV	208.9	206.0		X		
TDA FWD UNDKD	57:42-57:57	36	37		208.9	206.9		X		
TDA FWD UNDKD	59:23-59:34	37	38		208.9	206.9		X		
TDA FWD UNKDK	61:03-61:09	38	39		208.9	206.9		X		
UNDKD PPS BURN TDA FWD	68:35	42	43	ETR	208.9	206.9				
TDA FWD UNDKD	69:09-69:17	43	44	ETR	208.9	206.9			X	
TDA FWD GAVE GO FOR BURN	72:05	44	45	HAW	208.9	206.9				
TDA FWD UNDKD PPS BURN ~ 08.93 SEC.	72:27	45	46	ETR	750.5	208.2	X		X	
RIGIDIZED TDA	72:35-72:49	45	46	RKV	750.5	208.2		X	X	
UNDKD GYRO TO BEF IN TWO STEPS	74:15	46	47	ETR	750.5	208.2	X			
UNDKD PPS BURN TDA RIGID	74:15	46	47	ETR	750.5	208.2	X			
TDA BEF	74:22-74:41	46	47	ETR	750.5	208.2	X	X		
UNDKD PPS BURN TDA RIGID	75:50	47	48	HAW	750.5	208.2				
~ 76:20 TDA FROM RIGID TO UNRIGID SEVERAL TIMES	76:09-76:31	47	48	RKV	750.5	208.2		X		
TDA BEF UNDKD	77:59-78:22	48	49		750.5	208.2		X		
UNDKD PPS BURN ~ 08.26 SEC. TDA BEF	79:15	49	50		208.7	190.4	X			
TDA BEF UNDKD	79:50-80:01	49	50	RKV	208.7	190.4		X		
TDA BEF UNDKD	81:27-81:39	50	51	RKV	208.7	190.4		X		
TDA BEF UNDKD	83:05-83:17	51	52	RKV	208.7	190.4		X		
UNDKD SPS BURN 11.70 SEC TDA BEF	84:25	52	53		190.2	190.2				
UPLINKED TDA UPLOAD UNDKD	86:35	54	55	CYI	190.2	190.2				
S/C LAUNCH	GMT 22:20:26.6	0	1				X	X		X

APPENDIX F

Film Data Reduction Results

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 39 59.62	160799.62	4.082	4.082	7.2	2.111	2.111	4.3	2.9	7.2
44 39 59.78	0.17	3.974	-0.107	7.4	2.111	-0.000	4.3	3.1	7.4
44 39 59.95	0.17	4.040	0.066	7.3	2.062	-0.049	4.4	2.9	7.3
44 40 0.12	0.17	3.941	-0.099	7.5	2.062	-0.000	4.4	3.1	7.5
44 40 0.28	0.17	3.887	-0.054	7.6	2.099	0.038	4.3	3.3	7.6
44 40 0.45	0.17	3.978	0.091	7.4	2.042	-0.057	4.4	3.0	7.4
44 40 0.62	0.17	3.866	-0.112	7.7	1.938	-0.105	4.7	3.0	7.7
44 40 0.78	0.17	3.893	0.027	7.6	2.043	0.105	4.4	3.2	7.6
44 40 0.95	0.17	3.948	0.055	7.5	2.070	0.027	4.4	3.1	7.5
44 40 1.12	0.17	4.033	0.085	7.3	2.098	0.028	4.3	3.0	7.3
44 40 1.28	0.17	3.968	-0.065	7.5	2.095	-0.003	4.3	3.1	7.5
44 40 1.45	0.17	3.941	-0.027	7.5	2.033	-0.062	4.5	3.0	7.5
44 40 1.62	0.17	4.036	0.095	7.3	1.938	-0.095	4.7	2.6	7.3
44 40 1.78	0.17	3.866	-0.170	7.7	1.947	0.009	4.7	3.0	7.7
44 40 1.95	0.17	3.844	-0.022	7.7	2.082	0.135	4.4	3.3	7.7
44 40 2.12	0.17	4.037	0.193	7.3	1.932	-0.149	4.7	2.6	7.3
44 40 2.28	0.17	4.024	-0.012	7.3	2.003	0.070	4.5	2.6	7.3
44 40 2.45	0.17	3.872	-0.152	7.6	2.000	-0.002	4.5	3.1	7.6
44 40 2.62	0.17	4.035	0.163	7.3	2.026	0.025	4.5	2.8	7.3
44 40 2.78	0.17	3.947	-0.088	7.5	2.039	0.013	4.5	3.0	7.5
44 40 2.95	0.17	3.920	-0.026	7.5	2.092	0.053	4.3	3.2	7.5
44 40 3.12	0.17	4.090	0.169	7.2	2.001	-0.091	4.5	2.7	7.2
44 40 3.28	0.17	3.941	-0.149	7.5	2.082	0.081	4.4	3.1	7.5
44 40 3.45	0.17	3.985	0.044	7.4	2.053	-0.030	4.4	3.0	7.4
44 40 3.62	0.17	4.017	0.032	7.4	2.137	0.084	4.2	3.1	7.4
44 40 3.78	0.17	4.053	0.036	7.3	2.003	-0.134	4.5	2.8	7.3
44 40 3.95	0.17	3.900	-0.153	7.6	2.087	0.084	4.4	3.2	7.6
44 40 4.12	0.17	3.886	-0.014	7.6	2.054	-0.033	4.4	3.2	7.6
44 40 4.28	0.17	3.918	0.032	7.5	2.012	-0.042	4.5	3.0	7.5
44 40 4.45	0.17	3.914	-0.004	7.6	2.053	0.041	4.4	3.1	7.6
44 40 4.62	0.17	3.904	-0.011	7.6	2.052	-0.001	4.4	3.2	7.6
44 40 4.78	0.17	3.934	0.030	7.5	2.051	-0.001	4.4	3.1	7.5
44 40 4.95	0.17	3.990	0.056	7.4	2.087	0.036	4.4	3.1	7.4
44 40 5.12	0.17	4.025	0.034	7.3	2.080	-0.006	4.4	3.0	7.3
44 40 5.28	0.17	3.947	-0.078	7.5	2.062	-0.019	4.4	3.1	7.5
44 40 5.45	0.17	4.013	0.066	7.4	2.116	0.054	4.3	3.1	7.4
44 40 5.62	0.17	3.763	-0.250	7.9	2.102	-0.014	4.3	3.5	7.9
44 40 5.78	0.17	3.754	-0.009	7.9	2.088	-0.014	4.3	3.5	7.9
44 40 5.95	0.17	3.954	0.200	7.5	1.988	-0.100	4.6	2.9	7.5
44 40 6.12	0.17	3.910	-0.044	7.6	2.019	0.031	4.5	3.1	7.6
44 40 6.28	0.17	3.858	-0.052	7.7	2.075	0.056	4.4	3.3	7.7
44 40 6.45	0.17	3.866	0.008	7.7	2.088	0.013	4.3	3.3	7.7
44 40 6.62	0.17	3.874	0.008	7.6	2.051	-0.037	4.4	3.2	7.6
44 40 6.78	0.17	3.859	-0.015	7.7	2.108	0.057	4.3	3.4	7.7

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 6.95	0.17	4.052	0.193	7.3	2.094	-0.014	4.5	3.0	7.3
44 40 7.12	0.17	3.875	-0.178	7.6	2.075	-0.019	4.4	3.3	7.0
44 40 7.28	0.17	3.817	-0.058	7.7	2.005	-0.070	4.5	3.2	7.7
44 40 7.45	0.17	3.809	-0.007	7.8	2.091	0.086	4.3	3.4	7.8
44 40 7.62	0.17	3.874	0.065	7.6	2.027	-0.065	4.5	3.2	7.0
44 40 7.78	0.17	4.031	0.157	7.3	2.037	0.010	4.5	2.9	7.3
44 40 7.95	0.17	4.011	-0.020	7.4	2.001	-0.036	4.5	2.8	7.4
44 40 8.12	0.17	4.091	0.080	7.2	2.109	0.108	4.3	2.9	7.2
44 40 8.28	0.17	4.028	-0.063	7.3	2.025	-0.084	4.5	2.9	7.3
44 40 8.45	0.17	3.862	-0.166	7.7	2.028	0.002	4.5	3.2	7.7
44 40 8.62	0.17	3.783	-0.078	7.8	2.015	-0.012	4.5	3.3	7.8
44 40 8.78	0.17	3.921	0.137	7.5	2.014	-0.002	4.5	3.0	7.5
44 40 8.95	0.17	3.961	0.040	7.5	2.088	0.074	4.3	3.1	7.5
44 40 9.12	0.17	3.874	-0.087	7.6	2.074	-0.014	4.4	3.3	7.8
44 40 9.28	0.17	3.961	0.087	7.5	2.037	-0.038	4.5	3.0	7.5
44 40 9.45	0.17	3.806	-0.155	7.8	1.976	-0.061	4.6	3.2	7.8
44 40 9.62	0.17	3.915	0.109	7.6	2.050	0.074	4.4	3.1	7.6
44 40 9.78	0.17	3.867	-0.047	7.6	2.038	-0.012	4.5	3.2	7.6
44 40 9.95	0.17	3.994	0.127	7.4	1.989	-0.049	4.6	2.8	7.4
44 40 10.12	0.17	3.984	-0.010	7.4	1.977	-0.012	4.6	2.8	7.4
44 40 10.28	0.17	3.966	-0.018	7.5	2.040	0.064	4.5	3.0	7.5
44 40 10.45	0.17	4.174	0.208	7.1	2.037	-0.004	4.5	2.6	7.1
44 40 10.62	0.17	4.038	-0.135	7.3	2.008	-0.028	4.5	2.8	7.3
44 40 10.78	0.17	3.855	-0.183	7.7	2.013	0.005	4.5	3.2	7.7
44 40 10.95	0.17	3.924	0.069	7.5	2.062	0.049	4.4	3.1	7.5
44 40 11.12	0.17	3.673	-0.251	8.1	2.039	-0.023	4.5	3.6	8.1
44 40 11.28	0.17	3.906	0.233	7.6	2.016	-0.024	4.5	3.1	7.6
44 40 11.45	0.17	4.009	0.103	7.4	2.075	0.059	4.4	3.0	7.4
44 40 11.62	0.17	3.760	-0.243	7.9	2.024	-0.051	4.5	3.4	7.9
44 40 11.78	0.17	3.882	0.116	7.6	1.996	-0.028	4.5	3.1	7.6
44 40 11.95	0.17	3.829	-0.053	7.7	2.013	0.017	4.5	3.2	7.7
44 40 12.12	0.17	3.909	0.080	7.6	1.943	-0.070	4.7	2.9	7.6
44 40 12.28	0.17	3.765	-0.145	7.9	2.030	0.088	4.5	3.4	7.9
44 40 12.45	0.17	3.881	0.116	7.6	1.987	-0.043	4.6	3.1	7.6
44 40 12.62	0.17	3.854	-0.027	7.7	2.087	0.100	4.4	3.3	7.7
44 40 12.78	0.17	4.078	0.224	7.3	2.078	-0.005	4.4	2.9	7.3
44 40 12.95	0.17	3.880	-0.198	7.6	1.991	-0.086	4.6	3.1	7.6
44 40 13.12	0.17	3.950	0.070	7.5	2.110	0.127	4.3	3.2	7.5
44 40 13.28	0.17	3.977	0.027	7.4	[illegible]	-0.050	4.4	3.0	7.4
44 40 13.45	0.17	3.977	-0.001	7.4	[illegible]	-0.023	4.5	3.0	7.4
44 40 13.62	0.17	3.933	-0.043	7.5	2.113	0.077	4.3	3.2	7.5
44 40 13.78	0.17	3.939	0.006	7.5	2.023	-0.090	4.5	3.0	7.5
44 40 13.95	0.17	3.865	-0.074	7.7	2.138	0.115	4.2	3.4	7.7
44 40 14.12	0.17	3.853	-0.012	7.7	2.068	-0.070	4.4	3.3	7.7

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 14.28	0.17	3.913	0.060	7.6	1.925	-0.143	4.7	2.8	7.6
44 40 14.45	0.17	3.940	0.027	7.5	2.053	0.129	4.4	3.1	7.5
44 40 14.62	0.17	3.961	0.021	7.5	1.989	-0.064	4.6	2.9	7.5
44 40 14.78	0.17	4.008	0.047	7.4	2.057	0.066	4.4	3.0	7.4
44 40 14.95	0.17	3.913	-0.094	7.6	1.975	-0.082	4.6	3.0	7.6
44 40 15.12	0.17	4.054	0.140	7.5	2.013	0.038	4.5	2.8	7.5
44 40 15.28	0.17	3.923	-0.131	7.5	2.042	0.030	4.4	3.1	7.5
44 40 15.45	0.17	3.887	-0.035	7.6	2.011	-0.031	4.5	3.1	7.6
44 40 15.62	0.17	4.032	0.145	7.3	2.064	0.053	4.4	2.9	7.3
44 40 15.78	0.17	3.957	-0.075	7.5	1.961	-0.103	4.6	2.8	7.5
44 40 15.95	0.17	3.882	-0.076	7.6	2.015	0.054	4.5	3.1	7.6
44 40 16.12	0.17	3.989	0.108	7.4	1.968	-0.048	4.6	2.8	7.4
44 40 16.28	0.17	3.873	-0.116	7.6	1.886	-0.082	4.8	2.8	7.6
44 40 16.45	0.17	3.974	0.101	7.4	1.943	0.056	4.7	2.8	7.4
44 40 16.62	0.17	3.915	-0.058	7.6	1.926	-0.016	4.7	2.8	7.6
44 40 16.78	0.17	3.980	0.065	7.4	1.977	0.051	4.6	2.8	7.4
44 40 16.95	0.17	3.742	-0.238	7.9	1.919	-0.058	4.7	3.2	7.9
44 40 17.12	0.17	3.813	0.070	7.8	1.894	-0.024	4.8	3.0	7.8
44 40 17.28	0.17	3.635	-0.178	8.1	1.790	-0.105	5.1	3.1	8.1
44 40 17.45	0.17	3.673	0.038	8.1	1.750	-0.040	5.2	2.9	8.1
44 40 17.62	0.17	3.488	-0.185	8.5	1.679	-0.071	5.4	3.1	8.5
44 40 17.78	0.17	3.577	0.089	8.3	1.678	-0.001	5.4	2.9	8.3
44 40 17.95	0.17	3.674	0.097	8.1	1.695	0.017	5.4	2.7	8.1
44 40 18.12	0.17	3.563	-0.111	8.3	1.615	-0.080	5.6	2.7	8.3
44 40 18.28	0.17	3.431	-0.132	8.6	1.560	-0.055	5.8	2.8	8.6
44 40 18.45	0.17	3.453	0.022	8.6	1.475	-0.085	6.2	2.4	8.6
44 40 18.62	0.17	3.626	0.174	8.2	1.459	-0.015	6.2	1.9	8.2
44 40 18.78	0.17	3.349	-0.277	8.8	1.365	-0.094	6.7	2.2	8.8
44 40 18.95	0.17	3.274	-0.075	9.0	1.373	0.008	6.6	2.4	9.0
44 40 19.12	0.17	3.130	-0.145	9.5	1.440	0.067	6.3	3.1	9.5
44 40 19.28	0.17	3.019	-0.111	9.8	1.415	-0.027	6.4	3.4	9.8
44 40 19.45	0.17	3.135	0.116	9.4	1.428	0.016	6.4	3.1	9.4
44 40 19.62	0.17	3.135	0.001	9.4	1.430	0.002	6.4	3.1	9.4
44 40 19.78	0.17	3.020	-0.116	9.8	1.394	-0.037	6.5	3.3	9.8
44 40 19.95	0.17	3.191	0.171	9.3	1.463	0.069	6.2	3.1	9.3
44 40 20.12	0.17	2.911	-0.280	10.2	1.386	-0.077	6.6	3.6	10.2
44 40 20.28	0.17	3.124	0.213	9.5	1.417	0.030	6.4	3.1	9.5
44 40 20.45	0.17	2.775	-0.349	10.7	1.358	-0.060	6.7	4.0	10.7
44 40 20.62	0.17	2.881	0.106	10.5	1.357	0.001	6.7	3.6	10.5
44 40 20.78	0.17	2.925	0.044	10.1	1.286	-0.072	7.1	3.0	10.1
44 40 20.95	0.17	2.743	-0.182	10.6	1.150	-0.135	7.9	2.9	10.6
44 40 21.12	0.17	2.926	0.183	10.1	1.337	0.187	6.8	3.3	10.1
44 40 21.28	0.17	2.705	-0.222	10.9	1.255	-0.082	7.2	3.7	10.9
44 40 21.45	0.17	2.494	-0.210	11.0	1.146	-0.109	7.9	3.0	11.0

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 21.62	0.17	2.615	0.121	11.3	1.133	-0.013	8.0	3.3	11.3
44 40 21.78	0.17	2.718	0.103	10.9	1.141	0.008	8.0	2.9	10.9
44 40 21.95	0.17	2.616	-0.102	11.3	1.089	-0.051	8.3	3.0	11.3
44 40 22.12	0.17	2.438	-0.178	12.1	1.019	-0.070	8.9	3.2	12.1
44 40 22.28	0.17	2.360	-0.078	12.5	1.080	0.062	8.4	4.1	12.5
44 40 22.45	0.17	2.441	0.080	12.1	1.048	-0.032	8.7	3.5	12.1
44 40 22.62	0.17	2.338	-0.103	12.7	0.957	-0.092	9.5	3.2	12.7
44 40 22.78	0.17	2.340	0.002	12.6	0.994	0.038	9.1	3.5	12.6
44 40 22.95	0.17	2.229	-0.111	13.3	0.973	-0.021	9.3	3.9	13.3
44 40 23.12	0.17	2.401	0.172	12.3	1.008	0.035	9.0	3.3	12.3
44 40 23.28	0.17	2.516	0.115	11.8	1.128	0.120	8.0	3.7	11.8
44 40 23.45	0.17	2.343	-0.173	12.6	1.148	0.019	7.9	4.7	12.6
44 40 23.62	0.17	2.275	-0.068	13.0	1.125	-0.023	8.1	4.9	13.0
44 40 23.78	0.17	2.258	-0.017	13.1	1.176	0.052	7.7	5.4	13.1
44 40 23.95	0.17	1.997	-0.261	14.8	1.110	-0.066	8.2	6.6	14.8
44 40 24.12	0.17	2.124	0.127	13.9	1.084	-0.027	8.4	5.5	13.9
44 40 24.28	0.17	2.112	-0.012	14.0	1.004	-0.080	9.0	5.6	14.0
44 40 24.45	0.17	2.336	0.224	12.7	1.136	0.132	8.0	4.7	12.7
44 40 24.62	0.17	1.995	-0.343	14.8	0.971	-0.165	9.4	5.5	14.8
44 40 24.78	0.17	2.072	0.078	14.3	0.983	0.012	9.2	5.0	14.3
44 40 24.95	0.17	2.050	-0.021	14.4	1.062	0.079	8.5	5.9	14.4
44 40 25.12	0.17	2.142	0.092	13.8	1.009	-0.053	9.0	4.8	13.8
44 40 25.28	0.17	1.932	-0.209	15.3	0.970	-0.039	9.4	5.9	15.3
44 40 25.45	0.17	2.022	0.089	14.6	0.999	0.028	9.1	5.5	14.6
44 40 25.62	0.17	1.907	-0.115	15.5	0.948	-0.050	9.6	5.9	15.5
44 40 25.78	0.17	1.713	-0.194	17.3	0.885	-0.063	10.3	7.0	17.3
44 40 25.95	0.17	1.742	0.029	17.0	0.926	0.041	9.8	7.2	17.0
44 40 26.12	0.17	1.898	0.156	15.6	0.904	-0.022	10.0	5.5	15.6
44 40 26.28	0.17	1.729	-0.169	17.1	0.931	0.027	9.8	7.4	17.1
44 40 26.45	0.17	1.840	0.110	16.1	0.914	-0.017	9.9	6.1	16.1
44 40 26.62	0.17	1.838	-0.002	16.1	0.861	-0.054	10.5	5.5	16.1
44 40 26.78	0.17	1.703	-0.135	17.4	0.882	0.021	10.3	7.1	17.4
44 40 26.95	0.17	1.697	-0.006	17.4	0.884	0.002	10.3	7.2	17.4
44 40 27.12	0.17	1.590	-0.107	18.6	0.723	-0.160	12.6	6.0	18.6
44 40 27.28	0.17	1.660	0.070	17.8	0.788	0.065	11.5	6.3	17.8
44 40 27.45	0.17	1.825	0.165	16.2	0.800	0.012	11.4	4.9	16.2
44 40 27.62	0.17	1.584	-0.241	18.7	0.771	-0.029	11.8	6.9	18.7
44 40 27.78	0.17	1.596	0.012	18.5	0.754	-0.017	12.0	6.5	18.5
44 40 27.95	0.17	1.586	-0.010	18.6	0.725	-0.029	12.5	6.1	18.6
44 40 28.12	0.17	1.550	-0.037	19.1	0.771	0.046	11.8	7.3	19.1
44 40 28.28	0.17	1.425	-0.124	20.8	0.710	-0.061	12.8	8.0	20.8
44 40 28.45	0.17	1.530	0.105	19.3	0.677	-0.033	13.4	5.9	19.3
44 40 28.62	0.17	1.530	-0.000	19.3	0.720	0.043	12.8	6.7	19.3
44 40 28.78	0.17	1.457	-0.073	20.3	0.750	0.039	12.0	8.3	20.3

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 28.95	0.17	1.591	0.134	18.6	0.722	-0.037	12.8	0.0	18.6
44 40 29.12	0.17	1.466	-0.125	20.2	0.715	-0.007	12.7	7.5	20.2
44 40 29.28	0.17	1.321	-0.145	22.4	0.704	-0.011	12.9	9.5	22.4
44 40 29.45	0.17	1.410	0.089	21.0	0.695	-0.009	13.1	7.9	21.0
44 40 29.62	0.17	1.392	-0.018	21.2	0.771	0.076	11.8	9.5	21.2
44 40 29.78	0.17	1.355	-0.037	21.8	0.715	-0.056	12.7	9.1	21.8
44 40 29.95	0.17	1.529	0.173	19.4	0.736	0.020	12.3	7.0	19.4
44 40 30.12	0.17	1.540	0.012	19.2	0.695	-0.041	13.1	6.1	19.2
44 40 30.28	0.17	1.664	0.123	17.8	0.823	0.129	11.0	6.7	17.8
44 40 30.45	0.17	1.494	-0.170	19.8	0.688	-0.135	13.2	6.6	19.8
44 40 30.62	0.17	1.345	-0.150	22.0	0.627	-0.061	14.5	7.5	22.0
44 40 30.78	0.17	1.424	0.080	20.8	0.775	0.148	11.7	9.1	20.8
44 40 30.95	0.17	1.276	-0.148	23.2	0.634	-0.141	14.3	8.8	23.2
44 40 31.12	0.17	1.368	0.092	21.6	0.664	0.031	13.7	0.0	21.6
44 40 31.28	0.17	1.308	-0.060	22.6	0.600	-0.065	15.1	7.5	22.6
44 40 31.45	0.17	1.453	0.145	20.4	0.567	-0.013	15.5	4.9	20.4
44 40 31.62	0.17	1.396	-0.057	21.2	0.694	0.107	13.1	8.1	21.2
44 40 31.78	0.17	1.225	-0.171	24.2	0.642	-0.052	14.1	10.0	24.2
44 40 31.95	0.17	1.354	0.129	21.8	0.650	0.007	14.0	7.9	21.8
44 40 32.12	0.17	1.034	-0.319	28.6	0.551	-0.099	16.5	12.1	28.6
44 40 32.28	0.17	1.176	0.142	25.2	0.684	0.134	13.5	11.9	25.2
44 40 32.45	0.17	1.301	0.125	22.7	0.595	-0.089	15.3	7.5	22.7
44 40 32.62	0.17	1.155	-0.146	25.6	0.554	-0.041	16.4	9.2	25.6
44 40 32.78	0.17	1.165	0.031	25.0	0.608	0.054	14.9	10.0	25.0
44 40 32.95	0.17	[illegible]	-0.200	30.0	0.659	0.051	13.8	16.2	30.0
44 40 33.12	0.17	1.165	0.200	25.0	0.586	-0.073	15.5	9.5	25.0
44 40 33.28	0.17	1.067	-0.118	27.7	0.589	0.003	15.4	12.5	27.7
44 40 33.45	0.17	1.353	0.286	21.9	0.573	-0.015	15.8	6.0	21.9
44 40 33.62	0.17	1.159	-0.195	25.5	0.603	0.030	15.1	10.5	25.5
44 40 33.78	0.17	1.178	0.019	25.1	0.685	0.082	13.2	11.9	25.1
44 40 33.95	0.17	1.263	0.085	23.4	0.599	-0.086	15.2	8.3	23.4
44 40 34.12	0.17	1.187	-0.076	24.9	0.526	-0.073	17.3	7.7	24.9
44 40 34.28	0.17	1.261	0.075	23.5	0.609	0.083	14.9	8.6	23.5
44 40 34.45	0.17	1.091	-0.169	27.1	0.582	-0.027	15.6	11.5	27.1
44 40 34.62	0.17	1.126	0.034	26.3	0.719	0.128	12.8	13.5	26.3
44 40 34.78	0.17	1.189	0.063	24.9	0.501	-0.209	18.1	6.8	24.9
44 40 34.95	0.17	0.953	-0.239	31.0	0.641	0.140	14.2	10.9	31.0
44 40 35.12	0.17	1.189	0.236	24.9	0.574	-0.067	15.8	9.1	24.9
44 40 35.28	0.17	1.062	-0.127	27.9	0.522	-0.053	17.4	10.4	27.9
44 40 35.45	0.17	0.942	-0.120	31.4	0.516	-0.006	17.8	13.0	31.4
44 40 35.62	0.17	1.107	0.165	26.7	0.609	0.093	14.9	11.0	26.7
44 40 35.78	0.17	0.998	-0.109	29.7	0.554	-0.055	10.4	13.3	29.7
44 40 35.95	0.17	0.896	-0.102	33.0	0.597	0.043	15.2	17.8	33.0
44 40 36.12	0.17	1.089	0.193	27.2	0.540	-0.049	16.6	10.0	27.2

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 36.28	0.17	1.109	0.021	26.7	0.673	0.125	13.5	15.2	26.7
44 40 36.45	0.17	1.025	-0.084	28.9	0.514	-0.159	17.7	11.2	28.9
44 40 36.62	0.17	1.005	-0.020	29.4	0.573	0.059	15.8	13.6	29.4
44 40 36.78	0.17	0.920	-0.085	32.2	0.519	-0.054	17.5	14.7	32.2
44 40 36.95	0.17	0.824	-0.096	35.9	0.523	0.003	17.4	18.5	35.9
44 40 37.12	0.17	0.979	0.155	30.2	0.514	-0.008	17.7	12.6	30.2
44 40 37.28	0.17	1.018	0.038	29.1	0.537	0.023	16.9	12.2	29.1
44 40 37.45	0.17	0.860	-0.156	34.4	0.444	-0.093	20.5	13.9	34.4
44 40 37.62	0.17	0.856	-0.004	34.6	0.436	-0.008	20.8	13.7	34.6
44 40 37.78	0.17	1.001	0.145	29.6	0.472	0.035	19.3	10.3	29.6
44 40 37.95	0.17	0.902	-0.099	32.8	0.508	0.037	17.9	14.9	32.8
44 40 38.12	0.17	1.175	0.274	25.2	0.424	-0.084	21.4	3.7	25.2
44 40 38.28	0.17	0.831	-0.345	35.6	0.382	-0.042	23.7	11.9	35.6
44 40 38.45	0.17	0.990	0.159	29.9	0.519	0.156	17.5	12.4	29.9
44 40 38.62	0.17	0.855	-0.135	34.6	0.547	0.026	16.6	18.0	34.6
44 40 38.78	0.17	1.120	0.265	26.4	0.496	-0.051	18.3	8.1	26.4
44 40 38.95	0.17	1.003	-0.117	29.5	0.529	0.033	17.2	12.3	29.5
44 40 39.12	0.17	0.927	-0.076	31.9	0.529	-0.000	17.2	14.7	31.9
44 40 39.28	0.17	0.689	-0.230	42.9	0.384	-0.145	23.7	19.3	42.9
44 40 39.45	0.17	0.965	0.276	30.6	0.325	-0.060	28.1	2.6	30.6
44 40 39.62	0.17	0.912	-0.053	32.4	0.382	0.059	23.7	8.7	32.4

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 39 59.62	0.75	-0.84	-1.18	7.2	0.000	0.000
44 39 59.78	0.95	-0.85	-1.18	7.4	0.000	0.000
44 39 59.95	0.85	-0.85	-1.19	7.3	0.000	0.000
44 40 0.12	1.01	-0.87	-1.17	7.5	0.000	0.000
44 40 0.28	1.11	-0.88	-1.16	7.6	0.000	0.000
44 40 0.45	0.94	-0.84	-1.17	7.4	0.000	0.000
44 40 0.62	1.16	-0.87	-1.16	7.7	0.000	0.000
44 40 0.78	1.10	-0.87	-1.18	7.6	0.000	0.000
44 40 0.95	1.00	-0.87	-1.16	7.5	0.000	0.000
44 40 1.12	0.84	-0.86	-1.17	7.3	0.000	0.000
44 40 1.28	0.96	-0.88	-1.16	7.5	0.000	0.000
44 40 1.45	1.01	-0.87	-1.17	7.5	0.000	0.000
44 40 1.62	0.83	-0.87	-1.17	7.3	0.000	0.000
44 40 1.78	1.15	-0.89	-1.18	7.7	0.000	0.000
44 40 1.95	1.20	-0.88	-1.17	7.7	0.000	0.000
44 40 2.12	0.85	-0.85	-1.18	7.3	0.000	0.000
44 40 2.28	0.86	-0.84	-1.18	7.3	0.000	0.000
44 40 2.45	1.14	-0.87	-1.17	7.6	0.000	0.000
44 40 2.62	0.84	-0.85	-1.19	7.3	0.000	0.000
44 40 2.78	1.00	-0.88	-1.18	7.5	0.000	0.000
44 40 2.95	1.05	-0.87	-1.18	7.5	0.000	0.000
44 40 3.12	0.74	-0.84	-1.18	7.2	0.000	0.000
44 40 3.28	1.01	-0.87	-1.17	7.5	0.000	0.000
44 40 3.45	0.93	-0.85	-1.18	7.4	0.000	0.000
44 40 3.62	0.87	-0.84	-1.19	7.4	0.000	0.000
44 40 3.78	0.81	-0.84	-1.19	7.3	0.000	0.000
44 40 3.95	1.09	-0.87	-1.18	7.6	0.000	0.000
44 40 4.12	1.12	-0.86	-1.17	7.6	0.000	0.000
44 40 4.28	1.06	-0.85	-1.18	7.5	0.000	0.000
44 40 4.45	1.06	-0.87	-1.17	7.6	0.000	0.000
44 40 4.62	1.00	-0.86	-1.16	7.6	0.000	0.000
44 40 4.78	1.02	-0.87	-1.17	7.5	0.000	0.000
44 40 4.95	0.92	-0.85	-1.17	7.4	0.000	0.000
44 40 5.12	0.85	-0.85	-1.17	7.3	0.000	0.000
44 40 5.28	1.00	-0.86	-1.18	7.5	0.000	0.000
44 40 5.45	0.88	-0.86	-1.17	7.4	0.000	0.000
44 40 5.62	1.30	-0.90	-1.15	7.9	0.000	0.000
44 40 5.78	1.38	-0.90	-1.15	7.9	0.000	0.000
44 40 5.95	0.88	-0.87	-1.16	7.5	0.000	0.000
44 40 6.12	1.07	-0.88	-1.16	7.6	0.000	0.000
44 40 6.28	1.17	-0.89	-1.18	7.7	0.000	0.000
44 40 6.45	1.10	-0.88	-1.18	7.7	0.000	0.000
44 40 6.62	1.14	-0.88	-1.17	7.6	0.000	0.000
44 40 6.78	1.17	-0.90	-1.18	7.7	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 6.95	0.00	-0.67	-1.17	7.3	0.000	0.000
44 40 7.12	1.14	-0.88	-1.17	7.6	0.000	0.000
44 40 7.28	1.25	-0.90	-1.16	7.7	0.000	0.000
44 40 7.45	1.27	-0.91	-1.16	7.8	0.000	0.000
44 40 7.62	1.14	-0.89	-1.17	7.6	0.000	0.000
44 40 7.78	0.84	-0.85	-1.19	7.3	0.000	0.000
44 40 7.95	0.86	-0.86	-1.19	7.4	0.000	0.000
44 40 8.12	0.74	-0.85	-1.19	7.2	0.000	0.000
44 40 8.28	0.85	-0.85	-1.19	7.3	0.000	0.000
44 40 8.45	1.16	-0.88	-1.17	7.7	0.000	0.000
44 40 8.62	1.32	-0.90	-1.16	7.8	0.000	0.000
44 40 8.78	1.05	-0.87	-1.18	7.5	0.000	0.000
44 40 8.95	0.97	-0.87	-1.18	7.5	0.000	0.000
44 40 9.12	1.16	-0.88	-1.17	7.6	0.000	0.000
44 40 9.28	0.97	-0.86	-1.18	7.5	0.000	0.000
44 40 9.45	1.28	-0.89	-1.16	7.8	0.000	0.000
44 40 9.62	1.06	-0.87	-1.17	7.6	0.000	0.000
44 40 9.78	1.19	-0.87	-1.17	7.6	0.000	0.000
44 40 9.95	0.91	-0.85	-1.17	7.4	0.000	0.000
44 40 10.12	0.93	-0.85	-1.18	7.4	0.000	0.000
44 40 10.28	0.97	-0.85	-1.17	7.5	0.000	0.000
44 40 10.45	0.59	-0.84	-1.19	7.1	0.000	0.000
44 40 10.62	0.83	-0.86	-1.18	7.3	0.000	0.000
44 40 10.78	1.18	-0.88	-1.15	7.7	0.000	0.000
44 40 10.95	1.04	-0.86	-1.17	7.5	0.000	0.000
44 40 11.12	1.56	-0.91	-1.15	8.1	0.000	0.000
44 40 11.28	1.08	-0.88	-1.16	7.6	0.000	0.000
44 40 11.45	0.88	-0.85	-1.18	7.4	0.000	0.000
44 40 11.62	1.56	-0.88	-1.18	7.9	0.000	0.000
44 40 11.78	1.12	-0.87	-1.16	7.6	0.000	0.000
44 40 11.95	1.23	-0.88	-1.15	7.7	0.000	0.000
44 40 12.12	1.07	-0.86	-1.17	7.6	0.000	0.000
44 40 12.28	1.36	-0.88	-1.18	7.9	0.000	0.000
44 40 12.45	1.13	-0.87	-1.17	7.6	0.000	0.000
44 40 12.62	1.18	-0.88	-1.18	7.7	0.000	0.000
44 40 12.78	0.76	-0.84	-1.19	7.3	0.000	0.000
44 40 12.95	1.13	-0.88	-1.16	7.6	0.000	0.000
44 40 13.12	0.99	-0.88	-1.17	7.5	0.000	0.000
44 40 13.28	0.94	-0.87	-1.17	7.4	0.000	0.000
44 40 13.45	0.94	-0.87	-1.18	7.4	0.000	0.000
44 40 13.62	1.02	-0.88	-1.17	7.5	0.000	0.000
44 40 13.78	1.01	-0.87	-1.18	7.5	0.000	0.000
44 40 13.95	1.16	-0.89	-1.17	7.7	0.000	0.000
44 40 14.12	1.18	-0.89	-1.18	7.7	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 14.28	1.06	-0.88	-1.17	7.6	0.000	0.000
44 40 14.45	1.01	-0.80	-1.17	7.5	0.000	0.000
44 40 14.62	0.97	-0.86	-1.18	7.5	0.000	0.000
44 40 14.78	0.89	-0.87	-1.19	7.4	0.000	0.000
44 40 14.95	1.06	-0.87	-1.17	7.6	0.000	0.000
44 40 15.12	0.80	-0.85	-1.10	7.3	0.000	0.000
44 40 15.28	1.05	-0.86	-1.18	7.5	0.000	0.000
44 40 15.45	1.11	-0.88	-1.17	7.6	0.000	0.000
44 40 15.62	0.84	-0.85	-1.19	7.3	0.000	0.000
44 40 15.78	0.98	-0.86	-1.16	7.5	0.000	0.000
44 40 15.95	1.13	-0.87	-1.16	7.8	0.000	0.000
44 40 16.12	0.92	-0.86	-1.17	7.4	0.000	0.000
44 40 16.28	1.14	-0.88	-1.15	7.6	0.000	0.000
44 40 16.45	0.95	-0.86	-1.15	7.6	0.000	0.000
44 40 16.62	1.06	-0.86	-1.16	7.6	0.000	0.000
44 40 16.78	0.94	-0.84	-1.17	7.4	0.000	0.000
44 40 16.95	1.41	-0.80	-1.13	7.9	0.000	0.000
44 40 17.12	1.26	-0.87	-1.13	7.8	0.000	0.000
44 40 17.28	1.64	-0.88	-1.12	8.1	0.000	0.000
44 40 17.45	1.50	-0.88	-1.10	8.1	0.000	0.000
44 40 17.62	1.99	-0.89	-1.08	8.5	0.000	0.000
44 40 17.78	1.76	-0.87	-0.89	8.3	0.000	0.000
44 40 17.95	1.54	-0.84	-0.89	8.1	0.000	0.000
44 40 18.12	1.79	-0.85	-0.80	8.3	0.000	0.000
44 40 18.28	2.13	-0.87	-1.04	8.6	0.000	0.000
44 40 18.45	2.07	-0.85	-1.02	8.6	0.000	0.000
44 40 18.62	1.65	-0.79	-0.84	8.2	0.000	0.000
44 40 18.78	2.32	-0.82	-0.70	8.8	0.000	0.000
44 40 18.95	2.52	-0.83	-0.75	9.0	0.000	0.000
44 40 19.12	2.94	-0.82	-0.73	9.3	0.000	0.000
44 40 19.28	3.28	-0.80	-0.69	9.8	0.000	0.000
44 40 19.45	2.92	-0.82	-0.72	9.4	0.000	0.000
44 40 19.62	2.92	-0.81	-0.74	9.4	0.000	0.000
44 40 19.78	3.29	-0.79	-0.72	9.8	0.000	0.000
44 40 19.95	2.77	-0.74	-0.76	9.3	0.000	0.000
44 40 20.12	3.60	-0.78	-0.69	10.2	0.000	0.000
44 40 20.28	2.97	-0.71	-0.77	9.5	0.000	0.000
44 40 20.45	4.10	-0.75	-0.66	10.7	0.000	0.000
44 40 20.62	3.77	-0.71	-0.70	10.5	0.000	0.000
44 40 20.78	3.62	-0.68	-0.72	10.1	0.000	0.000
44 40 20.95	4.29	-0.67	-0.60	10.8	0.000	0.000
44 40 21.12	3.62	-0.68	-0.73	10.1	0.000	0.000
44 40 21.28	4.44	-0.67	-0.67	10.0	0.000	0.000
44 40 21.45	5.36	-0.60	-0.50	11.0	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 21.62	4.82	-0.62	-0.64	11.3	0.000	0.000
44 40 21.78	4.42	-0.34	-0.95	10.9	0.000	0.000
44 40 21.95	4.85	-0.31	-0.93	11.3	0.000	0.000
44 40 22.12	5.67	-0.32	-0.87	12.1	0.000	0.000
44 40 22.28	6.04	-0.61	-0.55	12.5	0.000	0.000
44 40 22.45	5.63	-0.57	-0.59	12.1	0.000	0.000
44 40 22.62	6.19	-0.57	-0.86	12.7	0.000	0.000
44 40 22.78	6.18	-0.55	-0.89	12.6	0.000	0.000
44 40 22.95	6.82	-0.23	-0.84	13.3	0.000	0.000
44 40 23.12	5.87	-0.22	-0.91	12.3	0.000	0.000
44 40 23.28	5.31	-0.17	-0.95	11.8	0.000	0.000
44 40 23.45	6.17	-0.15	-0.91	12.6	0.000	0.000
44 40 23.62	6.55	-0.14	-0.90	13.0	0.000	0.000
44 40 23.78	6.64	-0.46	-0.89	13.1	0.000	0.000
44 40 23.95	8.35	-0.44	-0.81	14.8	0.000	0.000
44 40 24.12	7.47	-0.46	-0.85	13.9	0.000	0.000
44 40 24.28	7.53	-0.08	-0.49	14.0	0.000	0.000
44 40 24.45	6.19	-0.05	-0.62	12.7	0.000	0.000
44 40 24.62	8.39	-0.03	-0.83	14.8	0.000	0.000
44 40 24.78	7.85	-0.01	-0.87	14.3	0.000	0.000
44 40 24.95	7.98	0.02	-0.89	14.4	0.000	0.000
44 40 25.12	7.38	0.02	-0.91	13.8	0.000	0.000
44 40 25.28	8.86	0.05	-0.86	15.3	0.000	0.000
44 40 25.45	8.16	0.07	-0.53	14.6	0.000	0.000
44 40 25.62	9.03	0.12	-0.47	15.5	0.000	0.000
44 40 25.78	10.81	0.14	-0.78	17.3	0.000	0.000
44 40 25.95	10.53	0.17	-0.84	17.0	0.000	0.000
44 40 26.12	9.14	0.18	-0.91	15.6	0.000	0.000
44 40 26.28	10.65	0.21	-0.81	17.1	0.000	0.000
44 40 26.45	9.63	0.16	-0.87	16.1	0.000	0.000
44 40 26.62	9.64	0.20	-0.90	16.1	0.000	0.000
44 40 26.78	10.91	0.29	-0.88	17.4	0.000	0.000
44 40 26.95	10.98	0.33	-0.87	17.4	0.000	0.000
44 40 27.12	12.15	0.30	-0.79	18.0	0.000	0.000
44 40 27.28	11.37	0.35	-0.84	17.8	0.000	0.000
44 40 27.45	9.78	0.29	-0.91	18.2	0.000	0.000
44 40 27.62	12.22	0.34	-0.81	18.7	0.000	0.000
44 40 27.78	12.09	0.40	-0.86	18.5	0.000	0.000
44 40 27.95	12.20	0.39	-0.85	18.6	0.000	0.000
44 40 28.12	12.64	0.44	-0.85	19.1	0.000	0.000
44 40 28.28	14.27	0.50	-0.29	20.8	0.000	0.000
44 40 28.45	12.86	0.48	-0.40	19.3	0.000	0.000
44 40 28.62	12.89	0.50	-0.95	19.5	0.000	0.000
44 40 28.78	13.09	0.55	-0.98	20.3	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 28.95	12.12	0.97	-1.00	18.6	0.000	0.000
44 40 29.12	13.71	1.07	-0.96	20.2	0.000	0.000
44 40 29.28	15.92	1.22	-0.93	22.4	0.000	0.000
44 40 29.45	14.50	0.63	-0.46	21.0	0.000	0.000
44 40 29.62	14.77	0.65	-0.45	21.2	0.000	0.000
44 40 29.78	15.38	0.72	-1.02	21.6	0.000	0.000
44 40 29.95	12.90	0.62	-1.08	19.4	0.000	0.000
44 40 30.12	12.76	0.66	-1.12	19.2	0.000	0.000
44 40 30.28	11.32	1.05	-1.21	17.8	0.000	0.000
44 40 30.45	13.33	1.19	-1.15	19.0	0.000	0.000
44 40 30.62	15.42	1.37	0.54	22.0	0.000	0.000
44 40 30.78	14.20	1.29	0.39	20.8	0.000	0.000
44 40 30.95	16.73	0.91	-1.12	23.2	0.000	0.000
44 40 31.12	15.17	0.86	-1.21	21.6	0.000	0.000
44 40 31.28	16.16	0.69	-1.17	22.6	0.000	0.000
44 40 31.45	13.91	0.77	-1.23	20.4	0.000	0.000
44 40 31.62	14.75	0.76	-1.25	21.2	0.000	0.000
44 40 31.78	17.57	1.52	0.57	24.2	0.000	0.000
44 40 31.95	15.29	1.30	0.34	21.8	0.000	0.000
44 40 32.12	21.99	1.82	0.90	28.6	0.000	0.000
44 40 32.28	18.70	0.90	-1.32	25.2	0.000	0.000
44 40 32.45	16.30	0.75	-1.33	22.7	0.000	0.000
44 40 32.62	[illegible]	[illegible]	-1.34	25.6	0.000	0.000
44 40 32.78	18.51	0.74	-1.36	25.0	0.000	0.000
44 40 32.95	23.13	5.23	-1.38	30.0	0.000	0.000
44 40 33.12	18.15	6.29	-1.40	25.0	0.000	0.000
44 40 33.28	20.88	4.70	-1.40	27.7	0.000	0.000
44 40 33.45	15.42	0.53	-1.45	21.9	0.000	0.000
44 40 33.62	19.09	0.62	-1.46	25.5	0.000	0.000
44 40 33.78	18.68	0.61	-1.48	25.1	0.000	0.000
44 40 33.95	16.99	0.52	-1.51	23.4	0.000	0.000
44 40 34.12	18.48	0.53	-1.51	24.9	0.000	0.000
44 40 34.28	16.73	3.81	-1.56	25.9	0.000	0.000
44 40 34.45	20.31	4.41	-1.57	27.1	0.000	0.000
44 40 34.62	19.85	-0.21	-1.60	26.5	0.000	0.000
44 40 34.78	18.46	-0.21	-1.60	24.9	0.000	0.000
44 40 34.95	24.60	0.49	-1.68	31.0	0.000	0.000
44 40 35.12	18.44	0.27	-1.61	24.9	0.000	0.000
44 40 35.28	21.42	0.32	-1.60	27.9	0.000	0.000
44 40 35.45	24.92	1.08	-1.70	31.4	0.000	0.000
44 40 35.62	20.25	1.50	-1.76	26.7	0.000	0.000
44 40 35.78	23.22	-0.40	-1.70	29.7	0.000	0.000
44 40 35.95	20.59	-0.01	-1.74	33.0	0.000	0.000
44 40 36.12	20.73	-0.53	-1.76	27.2	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 36.28	20.23	-0.55	-1.82	26.7	0.000	0.000
44 40 36.45	22.42	-0.63	-1.84	28.9	0.000	0.000
44 40 36.62	22.90	1.42	-1.83	29.4	0.000	0.000
44 40 36.78	25.70	1.55	-1.89	32.2	0.000	0.000
44 40 36.95	29.48	1.77	-2.02	35.9	0.000	0.000
44 40 37.12	23.73	1.42	-1.91	30.2	0.000	0.000
44 40 37.28	22.64	1.30	-1.93	29.1	0.000	0.000
44 40 37.45	27.94	-1.01	-2.01	34.4	0.000	0.000
44 40 37.62	28.12	-1.04	-2.01	34.6	0.000	0.000
44 40 37.78	23.11	-0.97	-1.97	29.5	0.000	0.000
44 40 37.95	26.36	-1.06	-2.06	32.8	0.000	0.000
44 40 38.12	18.72	-0.90	-1.97	25.2	0.000	0.000
44 40 38.28	29.14	1.40	-2.12	35.6	0.000	0.000
44 40 38.45	23.42	1.07	-2.13	29.9	0.000	0.000
44 40 38.62	28.12	-1.36	-2.16	34.6	0.000	0.000
44 40 38.78	19.95	-1.14	-2.05	26.4	0.000	0.000
44 40 38.95	23.02	-1.21	-2.15	29.5	0.000	0.000
44 40 39.12	25.43	-1.33	-2.19	31.9	0.000	0.000
44 40 39.28	36.45	-1.94	-2.40	42.9	0.000	0.000
44 40 39.45	24.14	-2.13	-2.20	30.6	0.000	0.000
44 40 39.62	25.91	-2.31	-2.29	32.4	0.000	0.000

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 16.28	160816.28	3.621	3.621	8.2					
44 40 16.45	0.17	3.628	0.008	8.2					
44 40 16.62	0.17	3.659	0.231	7.7					
44 40 16.78	0.17	3.600	-0.259	8.2					
44 40 16.95	0.17	3.731	0.131	7.9					
44 40 17.12	0.17	3.476	-0.255	8.5					
44 40 17.28	0.17	3.661	0.185	8.1					
44 40 17.45	0.17	3.765	0.104	7.9					
44 40 17.62	0.17	3.823	0.058	7.7					
44 40 17.78	0.17	3.639	-0.184	8.1					
44 40 17.95	0.17	3.608	-0.031	8.2					
44 40 18.12	0.17	3.415	-0.193	8.7					
44 40 18.28	0.17	3.653	0.239	8.1					
44 40 18.45	0.17	3.514	-0.140	8.4					
44 40 18.62	0.17	3.633	0.119	8.1					
44 40 18.78	0.17	3.534	-0.099	8.4					
44 40 18.95	0.17	3.426	-0.108	8.6					
44 40 19.12	0.17	3.499	0.073	8.5					
44 40 19.28	0.17	3.367	-0.132	8.8					
44 40 19.45	0.17	3.349	-0.018	8.8					
44 40 19.62	0.17	3.187	-0.162	9.3					
44 40 19.78	0.17	3.238	0.051	9.1					
44 40 19.95	0.17	3.324	0.086	8.9					
44 40 20.12	0.17	2.931	-0.393	10.1					
44 40 20.28	0.17	2.976	0.044	9.9					
44 40 20.45	0.17	2.809	-0.167	10.5					
44 40 20.62	0.17	2.823	0.014	10.5					
44 40 20.78	0.17	2.750	-0.074	10.8					
44 40 20.95	0.17	2.884	0.135	10.3					
44 40 21.12	0.17	2.839	-0.045	10.4					
44 40 21.28	0.17	2.618	-0.222	11.3					
44 40 21.45	0.17	2.669	0.052	11.1					
44 40 21.62	0.17	2.658	-0.011	11.1					
44 40 21.78	0.17	2.537	-0.122	11.7					
44 40 21.95	0.17	2.590	0.053	11.4					
44 40 22.12	0.17	2.298	-0.292	12.9					
44 40 22.28	0.17	2.404	0.107	12.5					
44 40 22.45	0.17	2.390	-0.014	12.6					
44 40 22.62	0.17	2.479	0.089	11.9					
44 40 22.78	0.17	2.264	-0.215	13.1					
44 40 22.95	0.17	2.198	-0.067	13.5					
44 40 23.12	0.17	2.410	0.212	12.3					
44 40 23.28	0.17	2.204	-0.206	13.4					
44 40 23.45	0.17	2.191	-0.014	13.9					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 23.62	0.17	2.186	-0.005	13.5					

GEMINI X EXPERIMENT S-26 (TELECORDEX)

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 16.28	1.62	1.18	-0.90	8.2	0.000	0.00[illegible]
44 40 16.45	1.60	.16	-0.90	8.2	0.000	0.00[illegible]
44 40 16.62	1.13	1.06	-0.97	7.7	0.000	0.00[illegible]
44 40 16.78	1.67	1.19	-0.91	8.2	0.000	0.00[illegible]
44 40 16.95	1.39	1.09	-0.93	7.9	0.000	0.00[illegible]
44 40 17.12	1.96	1.19	-0.86	8.5	0.000	0.00[illegible]
44 40 17.28	1.54	1.11	-0.93	8.1	0.000	0.00[illegible]
44 40 17.45	1.52	1.05	-0.96	7.9	0.000	0.00[illegible]
44 40 17.62	1.20	1.07	-0.95	7.7	0.000	0.00[illegible]
44 40 17.78	1.57	1.12	-0.72	8.1	0.000	0.01[illegible]
44 40 17.95	1.63	1.13	-0.68	8.2	0.000	0.005
44 40 18.12	2.08	1.21	-0.61	8.7	0.000	0.00[illegible]
44 40 18.28	1.56	1.09	-0.91	8.1	0.000	0.00[illegible]
44 40 18.45	1.88	1.13	-0.89	8.4	0.000	0.00[illegible]
44 40 18.62	1.58	1.07	-0.66	8.1	0.000	0.00[illegible]
44 40 18.78	1.81	1.09	-0.65	8.4	0.000	0.00[illegible]
44 40 18.95	2.07	1.12	-0.62	8.6	0.000	0.00[illegible]
44 40 19.12	1.89	1.09	-0.64	8.5	0.000	0.00[illegible]
44 40 19.28	2.22	1.13	-0.56	8.8	0.000	0.00[illegible]
44 40 19.45	2.27	1.13	-0.60	8.0	0.000	0.00[illegible]
44 40 19.62	2.70	1.19	-0.49	9.3	0.000	0.00[illegible]
44 40 19.78	2.57	1.09	-0.52	9.1	0.000	0.00[illegible]
44 40 19.95	2.34	1.04	-0.57	8.9	0.000	0.00[illegible]
44 40 20.12	3.50	1.21	-0.33	10.1	0.000	0.00[illegible]
44 40 20.28	3.37	1.13	-0.40	9.9	0.000	0.00[illegible]
44 40 20.45	3.95	1.20	-0.33	10.5	0.000	0.00[illegible]
44 40 20.[illegible]2	3.89	1.18	-0.33	10.5	0.000	0.00[illegible]
44 40 20.[illegible]8	4.18	1.16	-0.32	10.8	0.000	0.00[illegible]
44 40 [illegible] 95	3.69	1.04	-0.36	10.3	0.000	0.00[illegible]
44 40 [illegible].12	3.85	1.09	-0.37	10.4	0.000	0.00[illegible]
44 40 21.28	4.73	1.15	-0.27	11.3	0.000	0.00[illegible]
44 40 21.45	4.52	1.08	-0.33	11.1	0.000	0.00[illegible]
44 40 21.62	4.50	1.04	-0.30	11.1	0.000	0.00[illegible]
44 40 21.78	5.10	1.35	-0.50	11.7	0.000	0.00[illegible]
44 40 21.95	4.87	1.26	-0.60	11.4	0.000	0.00[illegible]
44 40 22.12	6.30	1.45	-0.45	12.9	0.000	0.00[illegible]
44 40 22.28	5.74	1.03	-0.21	12.3	0.000	0.00[illegible]
44 40 22.45	5.83	0.94	-0.23	12.4	0.000	0.00[illegible]
44 40 22.62	5.42	0.93	-0.63	11.9	0.000	0.00[illegible]
44 40 22.78	6.54	1.00	-0.40	13.1	0.000	0.00[illegible]
44 40 22.95	6.91	1.20	-0.45	13.5	0.000	0.00[illegible]
44 40 23.1[illegible]	5.74	1.14	-0.97	12.3	0.000	0.00[illegible]
44 40 23.2[illegible]	6.80	1.21	-0.40	13.4	0.000	0.00[illegible]
44 40 23.4[illegible]	0.90	1.20	-0.40	13.9	0.000	0.0[illegible]

GEMINI X EXPERIMENT S-26 (TELECORDEX)

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
40 40 23.62	0.99	1.21	-0.45	19.9	0.000	0.000

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INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 39.78	160839.76	11.627	11.627	37.9					
44 40 39.95	0.17	11.681	0.053	37.8					
44 40 40.12	0.17	11.567	-0.114	38.1					
44 40 40.28	0.17	11.391	-0.176	38.7					
44 40 40.45	0.17	11.448	0.057	38.5					
44 40 40.62	0.17	11.387	-0.060	38.7					
44 40 40.78	0.17	11.299	-0.088	39.0					
46 40 40.95	0.17	11.244	-0.055	39.2					
44 40 41.12	0.17	11.156	-0.088	39.5					
44 40 41.28	0.17	11.155	-0.002	39.5					
44 40 41.45	0.17	11.041	-0.113	39.9					
44 40 41.62	0.17	11.067	0.025	39.9					
44 40 41.78	0.17	10.979	-0.088	40.2					
44 40 41.95	0.17	10.861	-0.117	40.6					
44 40 42.12	0.17	10.803	-0.059	40.8					
44 40 42.28	0.17	10.772	-0.031	40.9					
44 40 42.45	0.17	10.744	-0.028	41.1					
44 40 42.62	0.17	10.625	-0.119	41.5					
44 40 42.78	0.17	10.567	-0.059	41.7					
44 40 42.95	0.17	10.567	0.000	41.7					
44 40 43.12	0.17	10.482	-0.084	42.1					
44 40 43.28	0.17	10.449	-0.033	42.2					
44 40 43.45	0.17	10.360	-0.090	42.6					
44 40 43.62	0.17	10.334	-0.026	42.7					
44 40 43.78	0.17	10.248	-0.086	43.0					
44 40 43.95	0.17	10.275	0.027	42.9					
44 40 44.12	0.17	10.156	-0.119	43.4					
44 40 44.28	0.17	10.127	-0.029	43.6					
44 40 44.45	0.17	10.099	-0.027	43.7					
44 40 44.62	0.17	10.070	-0.029	43.8					
44 40 44.78	0.17	9.955	-0.115	44.3					
44 40 44.95	0.17	10.039	0.084	43.9					
48 40 45.12	0.17	9.894	-0.145	44.6					
44 40 45.28	0.17	9.955	0.061	44.3					
44 40 43.45	0.17	9.806	-0.149	45.0					
44 40 43.62	0.17	9.808	0.002	45.0					
44 40 45.78	0.17	9.691	-0.117	45.5					
44 40 45.95	0.17	9.662	-0.029	45.7					
44 40 46.12	0.17	9.601	-0.061	45.9					
44 40 46.28	0.17	9.513	-0.088	46.4					
44 40 46.45	0.17	9.430	-0.083	46.8					
44 40 46.62	0.17	9.541	0.111	46.2					
60 40 46.78	0.17	9.600	-0.134	46.9					
44 60 40.99	0.17	9.394	-0.012	47.0					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 47.12	0.17	9.335	-0.059	47.2					
44 40 47.28	0.17	9.196	-0.140	48.0					
44 40 47.45	0.17	9.306	0.110	47.4					
44 40 47.62	0.17	9.162	-0.145	48.1					
44 40 47.78	0.17	9.193	0.032	48.0					
44 40 47.95	0.17	9.137	-0.056	48.3					
44 40 48.12	0.17	9.123	-0.014	48.3					
44 40 48.28	0.17	9.079	-0.045	48.6					
44 40 48.45	0.17	8.988	-0.090	49.1					
44 40 48.62	0.17	8.974	-0.014	49.2					
44 40 48.78	0.17	8.959	-0.015	49.2					
44 40 48.95	0.17	8.869	-0.090	49.7					
44 40 49.12	0.17	8.959	0.090	49.2					
44 40 49.28	0.17	8.871	-0.088	49.7					
44 40 49.45	0.17	8.900	0.029	49.6					
44 40 49.62	0.17	8.754	-0.146	50.4					
44 40 49.78	0.17	8.751	-0.002	50.4					
44 40 49.95	0.17	8.698	-0.054	50.7					
44 40 50.12	0.17	8.632	-0.066	51.1					
44 40 50.28	0.17	8.675	0.042	50.8					
44 40 50.45	0.17	8.575	-0.101	51.4					
44 40 50.62	0.17	8.629	0.055	51.1					
44 40 50.78	0.17	8.484	-0.145	52.0					
44 40 50.95	0.17	8.451	-0.032	52.2					
44 40 51.12	0.17	8.458	0.007	52.1					
44 40 51.28	0.17	8.398	-0.061	52.5					
44 40 51.45	0.17	8.398	0.000	52.5					
44 40 51.62	0.17	8.419	0.021	52.4					
44 40 51.78	0.17	8.398	-0.021	52.5					
44 40 51.95	0.17	8.371	-0.027	52.7					
44 40 52.12	0.17	8.396	0.025	52.5					
44 40 52.28	0.17	8.400	0.004	52.5					
44 40 52.45	0.17	8.253	-0.146	53.4					
44 40 52.62	0.17	8.224	-0.029	53.6					
44 40 52.78	0.17	8.224	0.000	53.6					
44 40 52.95	0.17	8.152	-0.073	54.1					
44 40 53.12	0.17	8.171	0.019	54.0					
44 40 53.28	0.17	8.126	-0.045	54.3					
44 40 53.45	0.17	7.953	-0.173	55.5					
44 40 53.62	0.17	8.054	0.101	54.8					
44 40 53.78	0.17	7.925	-0.130	55.7					
44 40 53.95	0.17	8.031	0.108	54.9					
44 40 54.12	0.17	7.925	-0.108	55.7					
44 40 54.28	0.17	7.860	-0.057	56.1					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (X FEET)	DELTA LENGTH (X FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (X FEET)	DELTA WIDTH (X FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 [illegible] 54.45	0.17	7.834	-0.032	56.3					
44 [illegible] 54.62	0.17	7.777	-0.057	56.7					
44 [illegible] 54.78	0.17	7.834	0.057	56.3					
44 [illegible] 54.95	0.17	7.804	-0.030	56.5					
44 [illegible] 55.12	0.17	7.718	-0.086	57.1					
44 [illegible] 55.28	0.17	7.685	-0.033	57.4					
44 [illegible] 55.45	0.17	7.688	0.002	57.4					
44 [illegible] 55.62	0.17	7.629	-0.059	57.8					
44 [illegible] 55.78	0.17	7.717	0.088	57.2					
44 [illegible] 55.95	0.17	7.628	-0.089	57.8					
44 [illegible] 56.12	0.17	7.572	-0.056	58.3					
44 [illegible] 56.28	0.17	7.570	-0.001	58.3					
44 [illegible] 56.45	0.17	7.511	-0.060	58.7					
44 [illegible] 56.62	0.17	7.539	0.029	58.5					
44 [illegible] 56.78	0.17	7.539	0.000	58.5					
44 [illegible] 56.95	0.17	7.393	-0.146	59.7					
44 [illegible] 57.12	0.17	7.394	0.001	59.7					
44 [illegible] 57.28	0.17	7.305	-0.090	60.4					
44 [illegible] 57.45	0.17	7.335	0.030	60.1					
44 [illegible] 57.62	0.17	7.393	0.058	59.7					
44 [illegible] 57.78	0.17	7.276	-0.117	60.6					
44 [illegible] 57.95	0.17	7.275	-0.001	60.6					
44 [illegible] 58.12	0.17	7.217	-0.058	61.1					
44 [illegible] 58.28	0.17	7.240	0.029	60.9					
44 [illegible] 58.45	0.17	7.187	-0.059	61.4					
44 [illegible] 58.62	0.17	7.246	0.059	60.9					
44 [illegible] 58.78	0.17	7.221	-0.025	61.1					
44 [illegible] 58.95	0.17	7.100	-0.121	62.1					
44 [illegible] 59.12	0.17	7.070	-0.030	62.4					
44 [illegible] 59.28	0.17	7.040	-0.030	62.7					
44 [illegible] 59.45	0.17	7.011	-0.029	62.9					
44 [illegible] 59.62	0.17	7.069	0.059	62.4					
44 [illegible] 59.78	0.17	7.011	-0.058	62.9					
44 [illegible] 59.95	0.17	7.040	0.029	62.7					
44 [illegible] 0.12	0.17	6.981	-0.059	63.2					
44 [illegible] 0.28	0.17	6.952	-0.029	63.4					
44 [illegible] 0.45	0.17	6.923	-0.029	63.7					
44 [illegible] 0.62	0.17	6.806	-0.117	64.6					
44 [illegible] 0.78	0.17	6.864	0.058	64.3					
44 [illegible] 0.95	0.17	6.835	-0.029	64.5					
44 [illegible] 1.12	0.17	6.864	0.029	64.3					
44 [illegible] 1.28	0.17	6.805	-0.059	64.8					
44 [illegible] 1.45	0.17	6.747	-0.059	65.4					
44 [illegible] 1.62	0.17	6.571	-0.170	67.1					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 41 1.78	0.17	6.629	0.059	66.5					
44 41 1.95	0.17	6.571	-0.059	67.1					
44 41 2.12	0.17	6.571	0.000	67.1					
44 41 2.28	0.17	6.571	-0.000	67.1					
44 41 2.45	0.17	6.864	0.293	64.3					
44 41 2.62	0.17	6.780	-0.084	65.1					
44 41 2.78	0.17	6.717	-0.063	65.7					
44 41 2.95	0.17	6.688	-0.029	65.9					
44 41 3.12	0.17	6.541	-0.147	67.4					
44 41 3.28	0.17	6.600	0.059	66.8					
44 41 3.45	0.17	6.483	-0.117	68.0					
44 41 3.62	0.17	6.542	0.059	67.4					
44 41 3.78	0.17	6.454	-0.088	68.3					
44 41 3.95	0.17	6.512	0.058	67.7					
44 41 4.12	0.17	6.512	-0.000	67.7					
44 41 4.28	0.17	6.395	-0.117	69.0					
44 41 4.45	0.17	6.189	-0.205	71.3					
44 41 4.62	0.17	6.160	-0.029	71.6					
44 41 4.78	0.17	6.248	0.088	70.6					
44 41 4.95	0.17	6.230	-0.018	70.8					
44 41 5.12	0.17	6.307	0.077	69.9					
44 41 5.28	0.17	6.250	-0.057	70.6					
44 41 5.45	0.17	6.190	-0.060	71.3					
44 41 5.62	0.17	6.162	-0.028	71.6					
44 41 5.78	0.17	6.190	0.028	71.5					
44 41 5.95	0.17	6.308	0.118	69.9					
44 41 6.12	0.17	6.191	-0.117	71.2					
44 41 6.28	0.17	6.102	-0.089	72.3					
44 41 6.45	0.17	6.161	0.059	71.6					
44 41 6.62	0.17	6.131	-0.029	71.9					
44 41 6.78	0.17	6.116	-0.016	72.1					
44 41 6.95	0.17	5.956	-0.159	74.1					
44 41 7.12	0.17	5.985	0.028	73.7					
44 41 7.28	0.17	5.986	0.001	73.7					
44 41 7.45	0.17	6.014	0.028	73.3					
44 41 7.62	0.17	5.964	-0.050	74.0					
44 41 7.78	0.17	5.973	0.009	73.8					
44 41 7.95	0.17	6.014	0.041	73.3					
44 41 8.12	0.17	5.885	-0.128	74.9					
44 41 8.28	0.17	5.901	0.015	74.8					
44 41 8.45	0.17	5.901	0.001	74.0					
44 41 8.62	0.17	5.958	-0.004	74.0					
44 41 8.78	0.17	5.840	-0.111	75.4					
44 41 8.95	0.17	5.871	0.025	75.1					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(T) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 41 9.12	0.17	5.842	-0.029	75.5					
44 41 9.28	0.17	5.813	-0.029	75.9					
44 41 9.45	0.17	5.810	-0.003	75.9					
44 41 9.62	0.17	5.720	-0.090	77.1					
44 41 9.78	0.17	5.710	-0.010	77.3					
44 41 9.95	0.17	5.783	0.074	76.3					
44 41 10.12	0.17	5.725	-0.059	77.0					
44 41 10.28	0.17	5.694	-0.031	77.5					
44 41 10.45	0.17	5.664	-0.029	77.9					
44 41 10.62	0.17	5.722	0.057	77.1					
44 41 10.78	0.17	5.635	-0.087	78.3					
44 41 10.95	0.17	5.663	0.028	77.9					
44 41 11.12	0.17	5.637	-0.026	78.3					
44 41 11.28	0.17	5.606	-0.031	78.7					
44 41 11.45	0.17	5.698	0.092	77.4					

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 39.78	29.32	-4.52	-2.12	37.9	0.000	0.000
44 40 39.95	29.15	-4.48	-2.18	37.8	0.000	0.000
44 40 40.12	29.51	-4.60	-2.20	38.1	0.000	0.000
44 40 40.28	30.00	-5.66	-2.22	38.7	0.000	0.000
44 40 40.45	29.81	-5.66	-2.28	38.5	0.000	0.000
44 40 40.62	30.00	-5.73	-2.33	38.7	0.000	0.000
44 40 40.78	30.30	-5.81	-2.30	39.0	0.000	0.000
44 40 40.95	30.49	-5.65	-2.37	39.2	0.000	0.000
44 40 41.12	30.60	-5.84	-2.39	39.5	0.000	0.000
44 40 41.28	30.81	-5.82	-2.41	39.5	0.000	0.000
44 40 41.45	31.21	-5.88	-2.43	39.9	0.000	0.000
44 40 41.62	31.12	-5.83	-2.51	39.9	0.000	0.000
44 40 41.78	31.44	-5.84	-2.51	40.2	0.000	0.000
44 40 41.95	31.87	-5.86	-2.55	40.6	0.000	0.000
44 40 42.12	32.09	-5.89	-2.57	40.8	0.000	0.000
44 40 42.28	32.21	-5.85	-2.63	40.9	0.000	0.000
44 40 42.45	32.32	-5.79	-2.64	41.1	0.000	0.000
44 40 42.62	32.78	-5.87	-2.69	41.5	0.000	0.000
44 40 42.78	33.01	-5.87	-2.68	41.7	0.000	0.000
44 40 42.95	33.01	-5.87	-2.76	41.7	0.000	0.000
44 40 43.12	33.34	-5.68	-2.82	42.1	0.000	0.000
44 40 43.28	33.48	-5.82	-2.84	42.2	0.000	0.000
44 40 43.45	33.84	-5.86	-2.90	42.6	0.000	0.000
44 40 43.62	33.95	-5.89	-2.96	42.7	0.000	0.000
44 40 43.78	34.31	-5.90	-2.96	43.0	0.000	0.000
44 40 43.95	34.19	-5.87	-3.00	42.9	0.000	0.000
44 40 44.12	34.70	-5.82	-3.01	43.4	0.000	0.000
44 40 44.28	34.65	-5.81	-3.07	43.6	0.000	0.000
44 40 44.45	34.95	-5.82	-3.12	43.7	0.000	0.000
44 40 44.62	35.07	-5.83	-3.13	43.8	0.000	0.000
44 40 44.78	35.58	-5.86	-3.20	44.3	0.000	0.000
44 40 44.95	35.21	-5.77	-3.24	43.9	0.000	0.000
44 40 45.12	35.85	-5.83	-3.22	44.6	0.000	0.000
44 40 45.28	35.58	-5.86	-3.25	44.3	0.000	0.000
44 40 45.45	36.24	-5.90	-3.33	45.0	0.000	0.000
44 40 45.62	36.24	-5.87	-3.35	45.0	0.000	0.000
44 40 45.78	36.78	-5.92	-3.40	45.5	0.000	0.000
44 40 45.95	36.91	-5.94	-3.42	45.7	0.000	0.000
44 40 46.12	37.20	-5.91	-3.45	45.9	0.000	0.000
44 40 46.28	37.63	-5.95	-3.51	46.4	0.000	0.000
44 40 46.45	38.04	-5.94	-3.52	46.8	0.000	0.000
44 40 46.62	37.90	-5.70	-3.61	46.8	0.000	0.000
44 40 46.78	38.18	-5.87	-3.64	46.9	0.000	0.000
44 40 46.95	38.22	-5.85	-3.64	47.0	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 47.12	38.51	-5.63	-3.73	47.2	0.000	0.000
44 40 47.28	39.22	-5.97	-3.78	48.0	0.000	0.000
44 40 47.45	38.66	-5.86	-3.81	47.4	0.000	0.000
44 40 47.62	39.41	-5.88	-3.84	48.1	0.000	0.000
44 40 47.78	39.24	-5.88	-3.90	48.0	0.000	0.000
44 40 47.95	39.53	-5.89	-3.95	48.3	0.000	0.000
44 40 48.12	39.63	-5.64	-3.91	48.3	0.000	0.000
44 40 48.28	39.95	-4.59	-4.00	48.C	0.000	0.000
44 40 48.45	40.43	-4.62	-4.04	49.1	0.000	0.000
44 40 48.62	40.41	-5.65	-4.07	49.2	0.000	0.000
44 40 48.78	40.50	-5.83	-4.11	49.2	0.000	0.000
44 40 48.95	41.00	-4.70	-4.18	49.7	0.000	0.000
44 40 49.12	40.58	-4.63	-4.21	49.2	0.000	0.000
44 40 49.28	41.07	-4.67	-4.21	49.7	0.000	0.000
44 40 49.45	40.91	-4.63	-4.27	49.6	0.000	0.000
44 40 49.62	41.74	-4.62	-4.35	50.4	0.000	0.000
44 40 49.78	41.75	-4.59	-4.33	50.4	0.000	0.000
44 40 49.95	42.06	-4.64	-4.39	50.7	0.000	0.000
44 40 50.12	42.44	-4.61	-4.47	51.1	0.000	0.000
44 40 50.28	42.18	-4.71	-4.48	50.8	0.000	0.000
44 40 50.45	42.80	-4.54	-4.51	51.4	0.000	0.000
44 40 50.62	42.46	-4.52	-4.59	51.1	0.000	0.000
44 40 50.78	43.34	-4.54	-4.62	52.0	0.000	0.000
44 40 50.95	43.53	-4.55	-4.67	52.2	0.000	0.000
44 40 51.12	43.49	-4.55	-4.69	52.1	0.000	0.000
44 40 51.28	43.86	-4.57	-4.78	52.5	0.000	0.000
44 40 51.45	43.66	-4.51	-4.76	52.5	0.000	0.000
44 40 51.62	43.74	-4.47	-4.73	52.4	0.000	0.000
44 40 51.78	43.80	-4.45	-4.88	52.5	0.000	0.000
44 40 51.95	44.03	-4.52	-4.85	52.7	0.000	0.000
44 40 52.12	43.87	-4.45	-4.97	52.5	0.000	0.000
44 40 52.28	43.83	-4.48	-5.05	52.5	0.000	0.000
44 40 52.45	44.76	-4.55	-5.11	53.4	0.000	0.000
44 40 52.62	44.95	-4.54	-5.12	53.0	0.000	0.000
44 40 52.78	44.90	-4.48	-5.12	53.0	0.000	0.000
44 40 52.95	45.42	-4.70	-5.15	54.1	0.000	0.000
44 40 53.12	45.29	-4.56	-5.25	54.0	0.000	0.000
44 40 53.28	45.60	-4.55	-5.19	54.3	0.000	0.000
44 40 53.45	46.78	-4.43	-5.30	55.5	0.000	0.000
44 40 53.62	46.08	-4.55	-5.37	54.8	0.000	0.000
44 40 53.78	46.98	-4.44	-5.38	55.7	0.000	0.000
44 40 53.95	46.22	-4.68	-5.49	54.9	0.000	0.000
44 40 54.12	46.90	-4.40	-5.48	55.7	0.000	0.000
44 40 54.28	47.30	-4.46	-5.59	56.1	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 54.45	47.61	-4.37	-5.65	56.5	0.000	0.000
44 40 54.62	48.02	-4.36	-5.66	56.7	0.000	0.000
44 40 54.78	47.60	-4.37	-5.70	56.3	0.000	0.000
44 40 54.95	47.82	-4.32	-5.74	56.5	0.000	0.000
44 40 55.12	48.46	-4.02	-5.78	57.1	0.000	0.000
44 40 55.28	48.70	-4.05	-5.87	57.4	0.000	0.000
44 40 55.45	48.67	-4.33	-5.91	57.4	0.000	0.000
44 40 55.62	49.11	-4.32	-5.97	57.0	0.000	0.000
44 40 55.78	48.46	-4.02	-6.01	57.2	0.000	0.000
44 40 55.95	49.11	-4.25	-6.06	57.8	0.000	0.000
44 40 56.12	49.54	-4.30	-6.12	58.3	0.000	0.000
44 40 56.28	49.55	-4.31	-6.12	58.3	0.000	0.000
44 40 56.45	50.01	-4.29	-6.15	58.7	0.000	0.000
44 40 56.62	49.78	-4.28	-6.18	58.5	0.000	0.000
44 40 56.78	49.78	-4.22	-6.28	58.5	0.000	0.000
44 40 56.93	50.93	-4.27	-6.34	59.7	0.000	0.000
44 40 57.12	50.92	-4.30	-6.39	59.7	0.000	0.000
44 40 57.28	51.65	-4.23	-6.45	60.4	0.000	0.000
44 40 57.45	51.40	-4.22	-6.50	60.1	0.000	0.000
44 40 57.62	50.93	-4.17	-6.47	59.7	0.000	0.000
44 40 57.78	51.88	-4.21	-6.59	60.6	0.000	0.000
44 40 57.95	51.89	-4.17	-6.64	60.6	0.000	0.000
44 40 58.12	52.38	-4.20	-6.65	61.1	0.000	0.000
44 40 58.28	52.13	-4.15	-6.73	60.9	0.000	0.000
44 40 58.45	52.62	-4.21	-6.82	61.4	0.000	0.000
44 40 58.62	52.12	-4.19	-6.83	60.9	0.000	0.000
44 40 58.78	52.39	-3.84	-6.87	61.1	0.000	0.000
44 40 58.95	53.37	-4.17	-6.91	62.1	0.000	0.000
44 40 59.12	53.63	-4.07	-7.01	62.4	0.000	0.000
44 40 59.28	53.89	-4.08	-7.06	62.7	0.000	0.000
44 40 59.45	54.14	-4.09	-7.15	62.9	0.000	0.000
44 40 59.62	53.62	-4.04	-7.18	62.4	0.000	0.000
44 40 59.78	54.13	-4.06	-7.25	62.9	0.000	0.000
44 40 59.95	53.87	-4.05	-7.26	62.7	0.000	0.000
44 41 0.12	54.40	-4.03	-7.33	63.2	0.000	0.000
44 41 0.28	54.67	-4.01	-7.35	63.4	0.000	0.000
44 41 0.45	54.92	-4.02	-7.45	63.7	0.000	0.000
44 41 0.62	55.02	-4.06	-7.52	64.0	0.000	0.000
44 41 0.78	55.46	-4.00	-7.55	64.3	0.000	0.000
44 41 0.95	55.73	-4.01	-7.66	64.5	0.000	0.000
44 41 1.12	55.65	-4.00	-7.60	64.3	0.000	0.000
44 41 1.28	56.00	-4.02	-7.70	64.8	0.000	0.000
44 41 1.45	56.56	-4.01	-7.84	65.4	0.000	0.000
44 41 1.62	58.31	-3.98	-8.00	67.1	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 41 1.78	57.32	-3.96	-11.33	66.5	0.000	0.000
44 41 1.95	57.91	-3.68	-11.44	67.1	0.000	0.000
44 41 2.12	57.90	-3.91	-11.47	67.1	0.000	0.000
44 41 2.28	58.30	-3.80	-8.11	67.1	0.000	0.000
44 41 2.45	55.41	-3.78	-8.18	64.3	0.000	0.000
44 41 2.62	55.81	-3.61	-11.49	65.1	0.000	0.000
44 41 2.78	56.40	-3.81	-11.61	65.7	0.000	0.000
44 41 2.95	56.68	-3.82	-11.70	65.9	0.000	0.000
44 41 3.12	58.15	-3.84	-11.87	67.4	0.000	0.000
44 41 3.28	57.54	-3.78	-11.86	66.8	0.000	0.000
44 41 3.45	58.74	-3.78	-12.04	68.0	0.000	0.000
44 41 3.62	58.12	-3.72	-12.00	67.4	0.000	0.000
44 41 3.78	59.03	-3.75	-12.14	68.3	0.000	0.000
44 41 3.95	58.42	-3.69	-12.13	67.7	0.000	0.000
44 41 4.12	58.41	-3.65	-12.19	67.7	0.000	0.000
44 41 4.28	59.65	-3.66	-12.35	69.0	0.000	0.000
44 41 4.45	61.89	-3.77	-12.76	71.3	0.000	0.000
44 41 4.62	62.22	-3.70	-12.66	71.6	0.000	0.000
44 41 4.78	61.24	-3.47	-12.65	70.8	0.000	0.000
44 41 4.95	61.44	-3.39	-12.77	70.8	0.000	0.000
44 41 5.12	60.57	-3.64	-12.66	69.9	0.000	0.000
44 41 5.28	61.20	-3.58	-12.79	70.6	0.000	0.000
44 41 5.45	61.87	-3.56	-12.93	71.3	0.000	0.000
44 41 5.62	62.19	-3.53	-12.98	71.6	0.000	0.000
44 41 5.78	61.85	-3.56	-13.04	71.5	0.000	0.000
44 41 5.95	60.52	-3.40	-12.92	69.9	0.000	0.000
44 41 6.12	61.83	-3.44	-13.10	71.2	0.000	0.000
44 41 6.28	62.85	-3.47	-13.29	72.3	0.000	0.000
44 41 6.45	62.15	-3.41	-13.35	71.6	0.000	0.000
44 41 6.62	62.50	-3.46	-13.29	71.9	0.000	0.000
44 41 6.78	62.69	-3.38	-13.29	72.1	0.000	0.000
44 41 6.95	64.59	-3.39	-13.65	74.1	0.000	0.000
44 41 7.12	64.23	-3.34	-13.60	73.7	0.000	0.000
44 41 7.28	64.21	-3.34	-13.72	73.7	0.000	0.000
44 41 7.45	63.54	-3.07	-15.61	73.3	0.000	0.000
44 41 7.62	64.16	-3.34	-15.57	74.0	0.000	0.000
44 41 7.78	64.36	-3.09	-13.84	73.8	0.000	0.000
44 41 7.95	63.85	-3.33	-13.81	73.3	0.000	0.000
44 41 8.12	65.42	-3.07	-14.14	74.9	0.000	0.000
44 41 8.28	65.22	-3.28	-14.16	74.8	0.000	0.000
44 41 8.45	64.49	-3.30	-14.13	74.0	0.000	0.000
44 41 8.62	64.17	-3.25	-15.94	74.0	0.000	0.000
44 41 8.78	65.57	-3.07	-16.12	75.4	0.000	0.000
44 41 8.95	65.56	-3.20	-14.41	75.1	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 41 9.12	65.94	-3.08	-14.44	75.5	0.000	0.000
44 41 9.28	66.31	-3.09	-14.53	75.9	0.000	0.000
44 41 9.45	66.33	-3.16	-14.63	75.9	0.000	0.000
44 41 9.62	67.51	-3.12	-14.77	77.1	0.000	0.000
44 41 9.78	67.65	-2.68	-14.82	77.3	0.000	0.000
44 41 9.95	66.65	-3.14	-14.81	76.3	0.000	0.000
44 41 10.12	67.41	-3.11	-14.98	77.0	0.000	0.000
44 41 10.28	67.82	-3.12	-15.08	77.5	0.000	0.000
44 41 10.45	[illegible]	-3.09	-15.19	77.9	0.000	0.000
44 41 10.62	67.43	-3.07	-15.11	77.1	0.000	0.000
44 41 10.78	68.61	-3.01	-15.28	78.3	0.000	0.000
44 41 10.95	68.21	-3.00	-15.31	77.9	0.000	0.000
44 41 11.12	68.50	-3.01	-15.40	78.3	0.000	0.000
44 41 11.28	68.99	-2.97	-15.48	78.7	0.000	0.000
44 41 11.45	67.72	-2.99	-15.38	77.4	0.000	0.000

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
2 27 46.00	8866.00	19.182	19.182	37.0					
2 27 47.00	1.00	19.604	0.422	36.2					
2 27 48.00	1.00	19.693	0.089	36.0					
2 27 49.00	1.00	19.040	-0.653	37.3					
2 27 50.00	1.00	19.276	0.236	36.8					
2 28 20.00	30.00	17.353	-1.923	40.9					
2 28 21.00	1.00	17.258	-0.095	41.1					
2 28 22.00	1.00	17.772	0.514	39.9					
2 28 23.00	1.00	17.785	0.013	39.9					
2 28 24.00	1.00	17.772	-0.013	39.9					
2 28 25.00	1.00	17.532	-0.240	40.5					
2 28 26.00	1.00	17.439	-0.093	40.7					
2 28 27.00	1.00	17.167	-0.272	41.4					
2 28 28.00	1.00	17.025	-0.142	41.7					
2 28 29.00	1.00	16.943	-0.083	41.9					
2 28 30.00	1.00	15.926	-1.016	44.6					
2 28 31.00	1.00	15.934	0.008	44.6					
2 28 32.00	1.00	16.126	0.191	44.0					
2 28 33.00	1.00	16.428	0.302	43.2					
2 28 34.00	1.00	16.242	-0.186	43.7					
2 28 35.00	1.00	16.381	0.139	43.3					
2 28 36.00	1.00	16.420	0.038	43.2					
2 28 37.00	1.00	16.459	0.039	43.1					
2 28 38.00	1.00	16.462	0.003	43.1					
2 28 39.00	1.00	16.372	-0.090	43.4					
2 28 40.00	1.00	16.332	-0.040	43.5					
2 28 41.00	1.00	16.289	-0.043	43.6					
2 28 42.00	1.00	16.199	-0.090	43.8					
2 28 43.00	1.00	16.246	0.046	43.7					
2 28 44.00	1.00	16.110	-0.136	44.1					
2 28 45.00	1.00	15.924	-0.185	44.6					
2 28 46.00	1.00	15.955	0.030	44.5					
2 28 47.00	1.00	15.958	0.003	44.5					
2 28 48.00	1.00	15.943	-0.015	44.5					
2 28 49.00	1.00	15.940	-0.003	44.5					
2 28 50.00	1.00	15.929	-0.011	44.6					
2 28 51.00	1.00	15.974	0.045	44.4					
2 28 52.00	1.00	15.974	0.000	44.4					
2 28 53.00	1.00	15.914	-0.059	44.6					
2 28 54.00	1.00	15.974	0.059	44.4					
2 28 55.00	1.00	15.988	0.014	44.4					
2 28 56.00	1.00	15.999	0.011	44.4					
2 28 57.00	1.00	15.024	-0.975	47.3					
2 28 58.00	1.00	14.998	-0.008	47.5					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
8 28 59.00	1.00	16.011	1.094	66.3					
8 29 0.00	1.00	16.011	0.000	66.3					
8 29 1.00	1.00	16.035	0.024	66.3					

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
2 27 46.00	19.66	0.80	8.70	37.0	0.000	0.000
2 27 47.00	24.66	0.60	8.64	36.2	0.000	0.000
2 27 48.00	24.62	0.45	9.13	36.0	0.000	0.000
2 27 49.00	25.84	0.61	9.35	37.3	0.000	0.000
2 27 50.00	25.37	1.54	9.31	36.8	0.000	0.000
2 28 20.00	28.97	1.33	12.22	40.9	0.000	0.000
2 28 21.00	29.20	1.27	12.26	41.1	0.000	0.000
2 28 22.00	28.05	0.77	11.98	39.9	0.000	0.000
2 28 23.00	27.93	0.73	12.37	39.9	0.000	0.000
2 28 24.00	28.05	0.77	11.98	39.9	0.000	0.000
2 28 25.00	28.49	0.73	12.30	40.5	0.000	0.000
2 28 26.00	28.69	0.73	12.62	40.7	0.000	0.000
2 28 27.00	29.30	0.73	12.81	41.4	0.000	0.000
2 28 28.00	29.61	0.72	12.99	41.7	0.000	0.000
2 28 29.00	29.80	0.72	13.07	41.9	0.000	0.000
2 28 30.00	32.41	0.73	13.69	44.6	0.000	0.000
2 28 31.00	32.38	0.73	13.68	44.6	0.000	0.000
2 28 32.00	31.87	0.62	13.55	44.0	0.000	0.000
2 28 33.00	31.08	0.46	13.36	43.2	0.000	0.000
2 28 34.00	31.56	0.58	13.48	43.7	0.000	0.000
2 28 35.00	31.20	0.50	13.39	43.3	0.000	0.000
2 28 36.00	31.02	0.42	13.72	43.2	0.000	0.000
2 28 37.00	30.86	0.25	13.91	43.1	0.000	0.000
2 28 38.00	30.89	0.24	13.79	43.1	0.000	0.000
2 28 39.00	31.10	0.35	13.92	43.6	0.000	0.000
2 28 40.00	31.19	0.37	13.98	43.5	0.000	0.000
2 28 41.00	31.31	0.42	14.01	43.6	0.000	0.000
2 28 42.00	31.54	0.47	14.07	43.8	0.000	0.000
2 28 43.00	31.41	0.44	14.08	43.7	0.000	0.000
2 28 44.00	31.76	0.53	14.19	44.1	0.000	0.000
2 28 45.00	32.25	0.53	14.39	44.6	0.000	0.000
2 28 46.00	32.14	0.65	14.42	44.5	0.000	0.000
2 28 47.00	32.14	0.60	14.40	44.5	0.000	0.000
2 28 48.00	32.16	0.64	14.50	44.5	0.000	0.000
2 28 49.00	32.16	0.64	14.52	44.5	0.000	0.000
2 28 50.00	32.17	0.63	14.60	44.6	0.000	0.000
2 28 51.00	32.01	0.62	14.71	44.6	0.000	0.000
2 28 52.00	32.02	0.62	14.69	44.4	0.000	0.000
2 28 53.00	32.10	0.62	14.72	44.6	0.000	0.000
2 28 54.00	32.02	0.62	14.69	44.4	0.000	0.000
2 28 55.00	31.98	0.62	14.70	44.4	0.000	0.000
2 28 56.00	31.95	0.62	14.69	44.4	0.000	0.000
2 28 57.00	34.72	1.27	15.49	47.3	0.000	0.000
2 28 58.00	34.95	1.29	15.51	47.5	0.000	0.000

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
2 28 59.00	31.12	0.62	14.66	44.5	0.000	0.000
2 29 0.00	31.07	0.62	14.68	44.5	0.000	0.000
2 29 1.00	31.09	0.62	14.67	44.5	0.000	0.000

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
2 29 2.00	8942.00	15.910	15.910	47.8					
2 29 3.00	1.00	15.813	-0.097	48.1					
2 29 4.00	1.00	15.571	-0.242	48.9					
2 29 5.00	1.00	15.579	0.008	48.8					
2 29 6.00	1.00	15.454	-0.125	49.2					
2 29 7.00	1.00	15.408	-0.046	49.4					
2 29 8.00	1.00	15.268	-0.139	49.8					
2 29 9.00	1.00	14.225	-1.043	53.5					
2 29 10.00	1.00	15.206	0.980	50.0					
2 29 11.00	1.00	14.154	-1.052	53.7					
2 29 12.00	1.00	14.183	0.029	53.6					
2 29 13.00	1.00	14.107	-0.077	53.9					
2 29 14.00	1.00	14.139	0.032	53.8					
2 29 15.00	1.00	14.154	0.015	53.7					
2 29 16.00	1.00	14.154	0.000	53.7					
2 29 17.00	1.00	14.150	-0.004	53.8					
2 29 18.00	1.00	14.227	0.077	53.5					
2 29 19.00	1.00	14.241	0.014	53.4					
2 29 20.00	1.00	14.256	0.015	53.4					
2 29 21.00	1.00	14.154	-0.102	53.7					
2 29 22.00	1.00	14.288	0.134	53.2					
2 29 23.00	1.00	14.137	-0.151	53.8					
2 29 24.00	1.00	14.210	0.073	53.5					
2 29 25.00	1.00	14.203	-0.007	53.6					
2 29 26.00	1.00	14.298	0.095	53.2					
2 29 27.00	1.00	14.338	0.040	53.1					
2 29 28.00	1.00	14.210	-0.128	53.5					
2 29 29.00	1.00	14.333	0.123	53.1					
2 29 30.00	1.00	14.242	-0.091	53.4					
2 29 31.00	1.00	14.183	-0.059	53.6					
2 29 32.00	1.00	14.079	-0.104	54.0					
2 29 33.00	1.00	14.018	-0.061	54.3					
2 29 34.00	1.00	14.018	0.000	54.3					
2 29 35.00	1.00	13.971	-0.046	54.4					
2 29 36.00	1.00	13.848	-0.124	54.9					
2 29 37.00	1.00	13.957	0.109	54.5					
2 29 38.00	1.00	13.778	-0.179	55.2					
2 29 39.00	1.00	13.932	0.154	54.6					
2 29 40.00	1.00	13.859	-0.074	54.9					
2 29 41.00	1.00	13.848	-0.011	54.9					
2 29 42.00	1.00	13.825	-0.024	55.0					
2 29 43.00	1.00	13.730	-0.093	55.4					
2 29 44.00	1.00	13.684	-0.046	55.6					
2 29 45.00	1.00	13.638	-0.046	55.8					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
2 29 46.00	1.00	13.579	-0.058	56.0					
2 29 47.00	1.00	13.601	0.022	55.9					
2 29 48.00	1.00	13.555	-0.046	56.1					
2 29 49.00	1.00	13.555	0.000	56.1					
2 29 50.00	1.00	13.508	-0.046	56.3					
2 29 51.00	1.00	13.453	-0.055	56.5					
2 29 52.00	1.00	13.475	0.022	56.5					
2 29 53.00	1.00	13.429	-0.046	56.6					
2 29 54.00	1.00	13.462	0.033	56.5					
2 29 55.00	1.00	13.264	-0.198	57.4					
2 29 56.00	1.00	13.310	0.046	57.2					
2 29 57.00	1.00	13.209	-0.101	57.6					
2 29 58.00	1.00	13.163	-0.046	57.8					
2 21 39.00	-499.00	13.117	-0.046	58.0					
2 30 0.00	501.00	13.093	-0.024	58.1					
2 30 35.00	35.00	11.812	-1.281	64.4					
2 30 36.00	1.00	11.660	-0.152	65.2					
2 30 37.00	1.00	11.522	-0.138	66.0					
2 30 38.00	1.00	11.434	-0.088	66.5					
2 30 39.00	1.00	11.603	0.169	65.6					
2 30 40.00	1.00	11.347	-0.256	67.0					
2 30 41.00	1.00	11.527	0.180	66.0					
2 30 42.00	1.00	11.328	-0.199	67.2					
2 30 43.00	1.00	11.320	-0.009	67.2					
2 30 44.00	1.00	11.337	0.018	67.1					
2 30 45.00	1.00	11.320	-0.018	67.2					
2 30 46.00	1.00	11.320	0.000	67.2					
2 30 47.00	1.00	11.366	0.046	66.9					
2 30 48.00	1.00	11.261	-0.105	67.6					
2 30 49.00	1.00	11.307	0.046	67.5					
2 30 50.00	1.00	11.296	-0.012	67.3					
2 30 51.00	1.00	11.337	0.042	67.1					
2 30 52.00	1.00	11.324	-0.013	67.2					
2 30 53.00	1.00	11.288	-0.036	67.4					
2 30 54.00	1.00	11.278	-0.011	67.5					
2 30 55.00	1.00	11.261	-0.016	67.6					
2 30 56.00	1.00	11.261	0.000	67.6					
2 30 57.00	1.00	11.264	0.003	67.5					
2 30 58.00	1.00	11.214	-0.051	67.8					
2 30 59.00	1.00	10.260	-0.953	74.1					
2 31 0.00	1.00	11.320	1.059	67.2					
2 31 1.00	1.00	11.271	-0.049	67.5					
2 31 2.00	1.00	11.250	-0.021	67.6					
2 31 3.00	1.00	10.287	-0.963	73.9					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (R FEET)	DELTA LENGTH (R FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (R FEET)	DELTA WIDTH (R FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
2 31 4.00	1.00	11.261	0.974	67.6					
2 31 5.00	1.00	10.228	-1.033	74.4					
2 31 6.00	1.00	10.088	-0.140	75.4					
2 31 7.00	1.00	10.113	0.025	75.2					
2 31 8.00	1.00	10.195	0.081	74.6					
2 31 9.00	1.00	10.095	-0.100	75.4					
2 31 10.00	1.00	10.165	0.070	74.8					
2 31 11.00	1.00	10.148	-0.017	75.0					
2 31 12.00	1.00	9.996	-0.152	76.1					
2 31 13.00	1.00	10.018	0.022	75.9					
2 31 14.00	1.00	9.994	-0.024	76.1					
2 31 15.00	1.00	9.967	-0.027	76.5					
2 31 16.00	1.00	9.972	0.004	76.3					
2 31 17.00	1.00	9.947	-0.024	76.5					
2 31 18.00	1.00	9.916	-0.031	76.7					
2 31 19.00	1.00	9.854	-0.063	77.2					
2 31 20.00	1.00	9.810	-0.043	77.5					
2 31 21.00	1.00	9.800	-0.010	77.6					
2 31 22.00	1.00	9.690	-0.110	78.5					
2 31 23.00	1.00	9.673	-0.017	78.6					
2 31 24.00	1.00	9.674	0.002	78.6					
2 31 25.00	1.00	9.575	-0.099	79.4					
2 31 26.00	1.00	9.613	0.038	79.1					
2 31 27.00	1.00	9.604	-0.009	79.2					
2 31 28.00	1.00	9.522	-0.082	79.9					
2 31 29.00	1.00	9.567	0.045	79.5					
2 31 30.00	1.00	9.548	-0.019	79.7					
2 31 31.00	1.00	9.431	-0.117	80.7					
2 31 32.00	1.00	9.342	-0.089	81.4					
2 31 33.00	1.00	9.247	-0.095	82.5					
2 31 34.00	1.00	9.287	0.040	81.9					
2 31 35.00	1.00	9.311	0.024	81.7					
2 31 36.00	1.00	9.194	-0.117	82.7					

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
2 29 2.00	34.51	5.65	12.12	47.8	0.000	0.000
2 29 3.00	34.78	5.69	12.20	48.1	0.000	0.000
2 29 4.00	35.38	5.72	12.85	48.9	0.000	0.000
2 29 5.00	35.31	5.69	12.99	48.8	0.000	0.000
2 29 6.00	35.64	5.71	13.28	49.2	0.000	0.000
2 29 7.00	35.76	5.75	13.32	49.4	0.000	0.000
2 29 8.00	36.20	5.79	13.45	49.8	0.000	0.000
2 29 9.00	39.66	6.28	14.52	53.5	0.000	0.000
2 29 10.00	36.40	5.82	13.51	50.0	0.000	0.000
2 29 11.00	39.78	6.23	15.08	53.7	0.000	0.000
2 29 12.00	39.62	6.15	15.25	53.6	0.000	0.000
2 29 13.00	39.84	6.18	15.51	53.9	0.000	0.000
2 29 14.00	39.70	6.12	15.55	53.8	0.000	0.000
2 29 15.00	39.61	6.15	15.64	53.7	0.000	0.000
2 29 16.00	39.58	6.11	15.75	53.7	0.000	0.000
2 29 17.00	39.57	6.09	15.83	53.8	0.000	0.000
2 29 18.00	39.29	6.02	15.76	53.5	0.000	0.000
2 29 19.00	39.24	6.02	15.74	53.4	0.000	0.000
2 29 20.00	39.19	6.01	15.75	53.4	0.000	0.000
2 29 21.00	39.41	6.01	16.28	53.7	0.000	0.000
2 29 22.00	38.91	5.84	16.22	53.2	0.000	0.000
2 29 23.00	39.39	5.97	16.55	53.6	0.000	0.000
2 29 24.00	39.10	5.88	16.50	53.5	0.000	0.000
2 29 25.00	39.12	5.85	16.61	53.6	0.000	0.000
2 29 26.00	38.78	5.84	16.50	53.2	0.000	0.000
2 29 27.00	38.65	5.70	16.44	53.1	0.000	0.000
2 29 28.00	39.08	5.91	16.61	53.5	0.000	0.000
2 29 29.00	38.66	5.79	16.45	53.1	0.000	0.000
2 29 30.00	38.62	5.75	17.03	53.4	0.000	0.000
2 29 31.00	38.95	5.77	17.31	53.6	0.000	0.000
2 29 32.00	39.31	5.78	17.51	54.0	0.000	0.000
2 29 33.00	39.50	5.79	17.68	54.3	0.000	0.000
2 29 34.00	39.51	5.73	17.67	54.3	0.000	0.000
2 29 35.00	39.67	5.75	17.73	54.4	0.000	0.000
2 29 36.00	40.08	5.75	18.09	54.9	0.000	0.000
2 29 37.00	39.59	5.72	18.13	54.5	0.000	0.000
2 29 38.00	40.23	5.83	18.42	55.2	0.000	0.000
2 29 39.00	39.67	5.70	18.20	54.8	0.000	0.000
2 29 40.00	39.93	5.79	18.31	54.9	0.000	0.000
2 29 41.00	39.97	5.79	18.33	54.9	0.000	0.000
2 29 42.00	40.08	5.81	18.50	55.0	0.000	0.000
2 29 43.00	40.22	5.72	19.02	55.4	0.000	0.000
2 29 44.00	40.37	5.67	19.16	55.6	0.000	0.000
2 29 45.00	40.31	5.77	19.20	55.6	0.000	0.000

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
2 29 46.00	40.69	5.79	19.49	56.0	0.000	0.000
2 29 47.00	40.59	5.70	19.52	55.9	0.000	0.000
2 29 48.00	40.77	5.72	19.59	56.1	0.000	0.000
2 29 49.00	40.76	5.75	19.59	56.1	0.000	0.000
2 29 50.00	40.94	5.74	19.66	56.3	0.000	0.000
2 29 51.00	40.90	5.64	20.41	56.5	0.000	0.000
2 29 52.00	41.07	5.79	19.72	56.5	0.000	0.000
2 29 53.00	41.24	5.81	19.79	56.6	0.000	0.000
2 29 54.00	41.13	5.70	19.73	56.5	0.000	0.000
2 29 55.00	41.73	5.70	20.50	57.4	0.000	0.000
2 29 56.00	41.53	5.72	20.47	57.2	0.000	0.000
2 29 57.00	41.87	5.70	20.80	57.6	0.000	0.000
2 29 58.00	42.05	5.79	20.88	57.8	0.000	0.000
2 21 59.00	42.21	5.60	21.03	58.0	0.000	0.000
2 30 0.00	42.14	5.70	21.48	58.1	0.000	0.000
2 30 35.00	48.19	6.15	23.53	64.4	0.000	0.000
2 30 36.00	49.19	6.69	22.95	65.2	0.000	0.000
2 30 37.00	49.89	6.88	23.25	66.0	0.000	0.000
2 30 38.00	50.46	7.07	23.14	66.5	0.000	0.000
2 30 39.00	[illegible]	[illegible]	[illegible]	[illegible]	0.000	0.000
2 30 40.00	51.18	7.34	22.62	67.0	0.000	0.000
2 30 41.00	50.33	7.08	21.99	66.0	0.000	0.000
2 30 42.00	51.47	7.45	22.12	67.2	0.000	0.000
2 30 43.00	51.63	7.51	21.85	67.2	0.000	0.000
2 30 44.00	51.76	7.63	21.10	67.1	0.000	0.000
2 30 45.00	51.87	7.65	21.11	67.2	0.000	0.000
2 30 46.00	51.93	7.68	20.93	67.2	0.000	0.000
2 30 47.00	51.93	7.80	20.02	66.9	0.000	0.000
2 30 48.00	52.52	7.88	20.22	67.8	0.000	0.000
2 30 49.00	52.38	7.91	19.74	67.3	0.000	0.000
2 30 50.00	52.51	7.96	19.55	67.3	0.000	0.000
2 30 51.00	52.56	8.10	18.51	67.1	0.000	0.000
2 30 52.00	52.63	8.11	18.54	67.7	0.000	0.000
2 30 53.00	52.86	8.16	18.49	67.4	0.000	0.000
2 30 54.00	52.97	8.19	18.30	67.5	0.000	0.000
2 30 55.00	53.28	8.35	17.59	67.6	0.000	0.000
2 30 56.00	53.28	8.35	17.59	67.6	0.000	0.000
2 30 57.00	53.31	8.38	17.30	67.5	0.000	0.000
2 30 58.00	53.68	8.40	17.17	67.0	0.000	0.000
2 30 59.00	59.63	10.28	18.58	74.1	0.000	0.000
2 31 0.00	53.34	8.50	15.92	67.2	0.000	0.000
2 31 1.00	53.02	8.62	15.90	67.5	0.000	0.000
2 31 2.00	53.60	8.68	15.70	67.6	0.000	0.000
2 31 3.00	59.92	10.50	16.92	73.9	0.000	0.000

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
2 31 4.00	53.92	8.62	14.94	67.6	0.000	0.000
2 31 5.00	60.35	10.72	16.48	74.4	0.000	0.000
2 31 6.00	61.39	11.01	16.46	75.4	0.000	0.000
2 31 7.00	61.29	11.06	16.00	75.2	0.000	0.000
2 31 8.00	60.91	11.15	14.92	74.6	0.000	0.000
2 31 9.00	61.61	11.29	15.08	75.4	0.000	0.000
2 31 10.00	61.17	11.16	14.75	74.8	0.000	0.000
2 31 11.00	61.47	11.35	13.80	75.0	0.000	0.000
2 31 12.00	62.54	11.70	14.04	76.1	0.000	0.000
2 31 13.00	62.40	11.64	13.94	75.9	0.000	0.000
2 31 14.00	62.63	11.75	13.64	76.1	0.000	0.000
2 31 15.00	62.89	11.87	13.29	76.3	0.000	0.000
2 31 16.00	62.95	11.72	12.90	76.3	0.000	0.000
2 31 17.00	63.09	11.98	12.95	76.5	0.000	0.000
2 31 18.00	63.43	12.11	12.32	78.7	0.000	0.000
2 31 19.00	63.97	12.96	12.01	77.2	0.000	0.000
2 31 20.00	64.31	12.28	12.03	77.5	0.000	0.000
2 31 21.00	64.40	12.32	11.92	77.6	0.000	0.000
2 31 22.00	65.36	12.69	11.28	78.5	0.000	0.000
2 31 23.00	65.95	12.78	10.87	78.6	0.000	0.000
2 31 24.00	65.62	12.66	10.47	78.6	0.000	0.000
2 31 25.00	66.40	13.07	10.32	79.4	0.000	0.000
2 31 26.00	66.11	12.93	10.27	79.1	0.000	0.000
2 31 27.00	66.20	13.14	9.36	79.2	0.000	0.000
2 31 28.00	67.00	13.22	9.09	79.9	0.000	0.000
2 31 29.00	66.67	12.98	9.05	79.5	0.000	0.000
2 31 30.00	66.89	13.18	8.25	79.7	0.000	0.000
2 31 31.00	67.85	13.59	8.05	80.7	0.000	0.000
2 31 32.00	68.62	13.88	7.72	81.4	0.000	0.000
2 31 33.00	69.46	14.19	7.42	82.5	0.000	0.000
2 31 34.00	69.14	13.99	7.37	81.9	0.000	0.000
2 31 35.00	68.97	14.11	6.59	81.7	0.000	0.000
2 31 36.00	70.02	14.57	6.26	82.7	0.000	0.000

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
3 41 36.00	13296.00	2.865	2.865	10.5					
3 41 37.00	1.00	2.792	-0.073	10.8					
3 41 38.00	1.00	2.888	0.096	10.4					
3 41 39.00	1.00	2.864	-0.024	10.5					
3 41 40.00	1.00	2.888	0.024	10.4					
3 41 41.00	1.00	2.792	-0.096	10.8					
3 41 42.00	1.00	2.792	0.000	10.8					
3 41 43.00	1.00	2.792	-0.000	10.8					
3 41 44.00	1.00	2.817	0.024	10.7					
3 41 45.00	1.00	2.768	-0.049	10.9					
3 41 46.00	1.00	2.720	-0.048	11.1					
3 41 47.00	1.00	2.816	0.096	10.7					
3 41 48.00	1.00	2.768	-0.048	10.9					
3 41 49.00	1.00	2.840	0.072	10.6					
3 41 50.00	1.00	2.744	-0.096	11.0					
3 41 51.00	1.00	2.768	0.024	10.9					
3 41 52.00	1.00	2.744	-0.024	11.0					
3 41 53.00	1.00	2.696	-0.048	11.2					
3 41 54.00	1.00	2.672	-0.024	11.3					
3 41 55.00	1.00	2.551	-0.120	11.8					
3 41 56.00	1.00	2.551	0.000	11.8					
3 41 57.00	1.00	2.481	-0.070	12.1					
3 41 58.00	1.00	2.479	-0.002	12.1					
3 41 59.00	1.00	2.431	-0.048	12.4					
3 42 0.00	1.00	2.431	0.000	12.4					
3 42 1.00	1.00	2.431	0.000	12.4					
3 42 2.00	1.00	2.407	-0.024	12.5					
3 42 3.00	1.00	2.335	-0.072	12.9					
3 42 4.00	1.00	2.311	-0.024	13.0					
3 42 5.00	1.00	2.311	0.000	13.0					
3 42 6.00	1.00	2.263	-0.048	13.3					
3 42 7.00	1.00	2.168	-0.096	13.9					
3 42 8.00	1.00	2.167	0.001	13.9					
3 42 9.00	1.00	2.214	0.048	13.6					
3 42 10.00	1.00	2.118	-0.096	14.2					
3 42 11.00	1.00	2.094	-0.024	14.4					
3 42 12.00	1.00	2.070	-0.024	14.5					
3 42 13.00	1.00	2.094	0.024	14.4					
3 42 14.00	1.00	2.022	-0.072	14.9					
3 42 15.00	1.00	2.070	0.048	14.5					
3 42 16.00	1.00	1.998	-0.072	15.1					
3 42 17.00	1.00	2.040	0.046	14.7					
3 42 18.00	1.00	3.880	1.850	7.7					
3 42 19.00	1.00	3.780	-0.100	7.0					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
3 42 20.00	1.00	3.815	0.028	7.9					
3 42 21.00	1.00	1.902	-1.913	15.8					
3 42 22.00	1.00	1.902	-0.001	15.8					
3 42 23.00	1.00	1.974	0.072	15.2					
3 42 24.00	1.00	1.805	-0.168	16.7					
3 42 25.00	1.00	1.877	0.072	16.0					
3 42 26.00	1.00	1.902	0.024	15.8					
3 42 27.00	1.00	1.805	-0.096	16.7					
3 42 28.00	1.00	1.781	-0.024	16.9					
3 42 29.00	1.00	1.781	0.000	16.9					
3 42 30.00	1.00	1.805	0.024	16.7					
3 42 31.00	1.00	1.757	-0.048	17.1					
3 42 32.00	1.00	1.661	-0.096	18.1					
3 42 33.00	1.00	1.685	0.024	17.9					
3 42 34.00	1.00	1.661	-0.024	18.1					
3 42 35.00	1.00	1.661	0.000	18.1					
3 42 36.00	1.00	1.709	0.048	17.6					
3 42 37.00	1.00	1.589	-0.120	18.9					
3 42 38.00	1.00	1.589	-0.001	18.9					
3 42 39.00	1.00	1.637	0.048	18.4					
3 42 40.00	1.00	1.589	-0.048	18.9					
3 42 41.00	1.00	1.492	-0.096	20.2					
3 42 42.00	1.00	1.565	0.072	19.2					
3 42 43.00	1.00	1.589	0.024	18.9					
3 42 44.00	1.00	1.516	-0.072	19.8					
3 42 45.00	1.00	1.565	0.048	19.2					
3 42 46.00	1.00	1.589	0.024	18.9					
3 42 47.00	1.00	1.468	-0.120	20.5					
3 42 48.00	1.00	1.444	-0.024	20.8					
3 42 49.00	1.00	1.516	0.072	19.8					
3 42 50.00	1.00	1.468	-0.048	20.5					
3 42 51.00	1.00	1.492	0.024	20.2					
3 42 52.00	1.00	1.446	-0.046	20.8					
3 42 53.00	1.00	1.444	-0.002	20.8					
3 42 54.00	1.00	1.396	-0.048	21.6					
3 42 55.00	1.00	1.444	0.048	20.8					
3 42 56.00	1.00	1.396	-0.048	21.6					
3 42 57.00	1.00	1.444	0.048	20.8					
3 42 58.00	1.00	1.372	-0.072	21.9					
3 42 59.00	1.00	1.329	-0.043	22.6					
3 43 0.00	1.00	1.327	-0.002	22.7					
3 43 1.00	1.00	1.349	0.022	22.3					
3 43 2.00	1.00	1.326	-0.023	22.7					
3 43 3.00	1.00	1.329	0.003	22.6					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
3 43 4.00	1.00	1.377	0.048	21.9					
3 43 5.00	1.00	1.290	-0.087	23.3					
3 43 6.00	1.00	1.212	-0.078	24.8					
3 43 7.00	1.00	1.265	0.051	23.8					
3 43 8.00	1.00	1.236	-0.027	24.4					
3 43 9.00	1.00	1.281	0.045	23.9					
3 43 10.00	1.00	1.310	0.029	23.0					
3 43 11.00	1.00	1.206	-0.105	25.0					
3 43 12.00	1.00	1.196	-0.010	25.2					
3 43 13.00	1.00	1.353	0.158	22.2					
3 43 14.00	1.00	1.278	-0.075	23.6					
3 43 15.00	1.00	1.297	0.020	23.2					
3 43 16.00	1.00	1.209	-0.088	24.9					
3 43 17.00	1.00	1.212	0.003	24.8					
3 43 18.00	1.00	1.126	-0.086	26.7					
3 43 19.00	1.00	1.131	0.005	26.6					
3 43 20.00	1.00	1.083	-0.048	27.8					
3 43 21.00	1.00	1.107	0.024	27.2					
3 43 22.00	1.00	1.131	0.024	26.6					
3 43 23.00	1.00	1.084	-0.047	27.0					
3 43 24.00	1.00	1.021	-0.063	29.5					
3 43 25.00	1.00	1.061	0.041	28.4					
3 43 26.00	1.00	1.156	0.094	26.0					
3 43 27.00	1.00	1.063	-0.072	27.0					
3 43 28.00	1.00	1.037	-0.046	29.0					
3 43 29.00	1.00	1.063	0.026	28.3					

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 41 36.00	1.87	1.09	-3.75	10.5	0.000	0.000
3 41 37.00	2.14	1.10	-3.77	10.8	0.000	0.000
3 41 38.00	1.79	1.06	-3.69	10.4	0.000	0.000
3 41 39.00	1.88	1.05	-3.70	10.5	0.000	0.000
3 41 40.00	1.79	1.03	-3.68	10.4	0.000	0.000
3 41 41.00	2.14	1.05	-3.76	10.8	0.000	0.000
3 41 42.00	2.14	1.06	-3.79	10.8	0.000	0.000
3 41 43.00	2.14	1.05	-3.75	10.8	0.000	0.000
3 41 44.00	2.05	1.04	-3.75	10.7	0.000	0.000
3 41 45.00	-12.96	-8.93	-3.07	10.9	0.000	0.000
3 41 46.00	2.41	1.03	-3.86	11.1	0.000	0.000
3 41 47.00	2.05	0.97	-3.75	10.7	0.000	0.000
3 41 48.00	2.23	0.95	-3.80	10.9	0.000	0.000
3 41 49.00	1.96	0.91	-3.75	10.6	0.000	0.000
3 41 50.00	2.32	0.98	-3.83	11.0	0.000	0.000
3 41 51.00	2.23	0.94	-3.83	10.9	0.000	0.000
3 41 52.00	2.32	0.88	-3.87	11.0	0.000	0.000
3 41 53.00	2.50	0.84	-3.94	11.2	0.000	0.000
3 41 54.00	2.60	0.78	-3.97	11.3	0.000	0.000
3 41 55.00	3.11	0.73	-4.11	11.0	0.000	0.000
3 41 56.00	3.10	0.55	-4.14	11.0	0.000	0.000
3 41 57.00	3.42	0.63	-4.24	12.1	0.000	0.000
3 41 58.00	3.42	0.56	-4.27	12.1	0.000	0.000
3 41 59.00	3.65	0.49	-4.34	12.4	0.000	0.000
3 42 0.00	3.64	0.44	-4.36	12.4	0.000	0.000
3 42 1.00	3.64	0.36	-4.37	12.4	0.000	0.000
3 42 2.00	3.75	0.31	-4.44	12.5	0.000	0.000
3 42 3.00	4.12	0.25	-4.53	12.9	0.000	0.000
3 42 4.00	4.24	0.23	-4.61	13.0	0.000	0.000
3 42 5.00	4.23	0.14	-4.68	13.0	0.000	0.000
3 42 6.00	4.47	-0.08	-4.74	13.3	0.000	0.000
3 42 7.00	9.04	-0.24	-4.89	13.9	0.000	0.000
3 42 8.00	9.01	-0.37	-4.90	13.9	0.000	0.000
3 42 9.00	4.70	-0.46	-4.89	13.6	0.000	0.000
3 42 10.00	5.28	-0.64	-5.07	14.2	0.000	0.000
3 42 11.00	5.41	-0.80	-5.17	14.4	0.000	0.000
3 42 12.00	5.55	-0.91	-5.22	14.5	0.000	0.000
3 42 13.00	5.36	-1.04	-5.22	14.4	0.000	0.000
3 42 14.00	9.82	-1.20	-9.42	14.9	0.000	0.000
3 42 15.00	5.49	-1.23	-5.31	14.5	0.000	0.000
3 42 16.00	9.99	-1.42	-9.53	15.1	0.000	0.000
3 42 17.00	9.50	-1.50	-9.49	14.7	0.000	0.000
3 42 18.00	-1.00	-0.46	-5.90	7.7	0.000	0.000
3 42 19.00	-0.80	-0.94	-9.62	7.9	0.000	0.000

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 42 20.00	-0.94	-0.60	-3.64	7.0	0.000	0.000
3 42 21.00	6.52	-2.04	-5.92	15.8	0.000	0.000
3 42 22.00	6.50	-2.12	-5.96	15.6	0.000	0.000
3 42 23.00	5.91	-2.14	-5.86	15.2	0.000	0.000
3 42 24.00	7.24	-2.41	-6.30	16.7	0.000	0.000
3 42 25.00	6.62	-2.32	-6.15	16.0	0.000	0.000
3 42 26.00	6.43	-2.28	-6.11	15.8	0.000	0.000
3 42 27.00	7.23	-2.35	-6.37	16.7	0.000	0.000
3 42 28.00	7.43	-2.41	-6.46	16.9	0.000	0.000
3 42 29.00	7.43	-2.38	-6.48	16.9	0.000	0.000
3 42 30.00	7.22	-2.34	-6.42	16.7	0.000	0.000
3 42 31.00	7.65	-2.36	-6.59	17.1	0.000	0.000
3 42 32.00	8.56	-2.52	-6.94	18.1	0.000	0.000
3 42 33.00	8.32	-2.42	-6.88	17.9	0.000	0.000
3 42 34.00	8.56	-2.45	-6.99	18.1	0.000	0.000
3 42 35.00	8.55	-2.43	-7.01	18.1	0.000	0.000
3 42 36.00	8.10	-2.23	-6.86	17.6	0.000	0.000
3 42 37.00	9.36	-2.39	-7.24	18.9	0.000	0.000
3 42 38.00	9.39	-2.35	-7.21	18.9	0.000	0.000
3 42 39.00	8.92	-2.20	-6.91	18.4	0.000	0.000
3 42 40.00	9.47	-2.20	-7.03	18.9	0.000	0.000
3 42 41.00	10.68	-2.30	-7.25	20.2	0.000	0.000
3 42 42.00	9.87	-1.99	-6.85	19.2	0.000	0.000
3 42 43.00	9.63	-1.87	-6.87	18.9	0.000	0.000
3 42 44.00	10.52	-1.92	-6.84	19.8	0.000	0.000
3 42 45.00	9.99	-1.77	-6.55	19.2	0.000	0.000
3 42 46.00	9.76	-1.65	-6.32	18.9	0.000	0.000
3 42 47.00	11.28	-1.71	-6.66	20.5	0.000	0.000
3 42 48.00	11.65	-1.60	-6.65	20.8	0.000	0.000
3 42 49.00	10.72	-1.48	-6.34	19.8	0.000	0.000
3 42 50.00	11.37	-1.41	-6.43	20.5	0.000	0.000
3 42 51.00	11.08	-1.29	-6.29	20.2	0.000	0.000
3 42 52.00	11.73	-1.25	-6.41	20.8	0.000	0.000
3 42 53.00	11.77	-1.13	-6.40	20.8	0.000	0.000
3 42 54.00	12.50	-1.08	-6.49	21.6	0.000	0.000
3 42 55.00	11.83	-0.91	-6.25	20.8	0.000	0.000
3 42 56.00	12.53	-0.84	-6.44	21.6	0.000	0.000
3 42 57.00	11.66	-0.64	-6.20	20.8	0.000	0.000
3 42 58.00	12.94	-0.57	-6.43	21.9	0.000	0.000
3 42 59.00	13.63	-0.50	-6.50	22.6	0.000	0.000
3 43 0.00	13.80	-0.30	-6.50	22.7	0.000	0.000
3 43 1.00	13.39	-0.16	-6.42	22.3	0.000	0.000
3 43 2.00	13.73	-0.02	-6.50	22.7	0.000	0.000
3 43 3.00	13.71	0.20	-6.40	22.8	0.000	0.000

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 43 4.00	12.94	0.36	-6.24	21.9	0.000	0.000
3 43 5.00	14.38	0.54	-6.57	23.3	0.000	0.000
3 43 6.00	15.65	0.78	-6.69	24.6	0.000	0.000
3 43 7.00	14.88	0.94	-6.65	23.8	0.000	0.000
3 43 8.00	15.36	1.15	-6.85	24.4	0.000	0.000
3 43 9.00	14.54	1.36	-6.57	23.5	0.000	0.000
3 43 10.00	14.02	1.50	-6.46	23.0	0.000	0.000
3 43 11.00	15.95	1.60	-6.94	25.0	0.000	0.000
3 43 12.00	16.17	2.02	-6.66	25.2	0.000	0.000
3 43 13.00	13.29	2.10	-6.29	22.2	0.000	0.000
3 43 14.00	14.55	2.31	-6.59	23.6	0.000	0.000
3 43 15.00	14.19	2.59	-6.49	23.9	0.000	0.000
3 43 16.00	15.61	2.91	-6.67	24.9	0.000	0.000
3 43 17.00	15.71	3.26	-6.94	24.8	0.000	0.000
3 43 18.00	17.55	3.79	-7.25	26.7	0.000	0.000
3 43 19.00	17.36	4.07	-7.31	26.6	0.000	0.000
3 43 20.00	18.45	4.51	-7.59	27.8	0.000	0.000
3 43 21.00	17.82	4.79	-7.46	27.2	0.000	0.000
3 43 22.00	17.24	4.86	-7.31	26.6	0.000	0.000
3 43 23.00	18.31	5.31	-7.56	27.8	0.000	0.000
3 43 24.00	19.94	5.79	-7.91	29.5	0.000	0.000
3 43 25.00	18.80	5.87	-7.70	28.4	0.000	0.000
3 43 26.00	16.55	5.55	-7.27	26.0	0.000	0.000
3 43 27.00	18.16	6.08	-7.69	27.8	0.000	0.000
3 43 28.00	19.28	6.61	-7.97	29.0	0.000	0.000
3 43 29.00	18.59	6.54	-7.95	28.9	0.000	0.000

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
3 45 22.00	13522.00	11.818	11.818	21.2					
3 45 23.00	1.00	11.892	0.073	21.0					
3 45 24.00	1.00	12.013	0.122	20.8					
3 45 25.00	1.00	12.110	0.097	20.7					
3 45 26.00	1.00	12.114	0.004	20.6					
3 45 27.00	1.00	12.214	0.101	20.5					
3 45 28.00	1.00	12.288	0.073	20.4					
3 45 29.00	1.00	12.342	0.054	20.3					
3 45 37.00	8.00	12.919	0.577	19.4					
3 45 38.00	1.00	12.862	-0.057	19.4					
3 45 39.00	1.00	12.942	0.080	19.3					
3 45 40.00	1.00	13.064	0.122	19.1					
3 45 41.00	1.00	13.043	-0.021	19.2					
3 45 42.00	1.00	13.179	0.136	19.0					
3 45 43.00	1.00	13.114	-0.065	19.1					
3 45 44.00	1.00	13.116	0.001	19.1					
3 45 45.00	1.00	13.171	0.055	19.0					
3 45 46.00	1.00	13.092	-0.079	19.1					
3 45 47.00	1.00	13.060	-0.032	19.2					
3 45 48.00	1.00	12.957	-0.103	19.3					
3 45 49.00	1.00	12.850	-0.107	19.5					
3 45 50.00	1.00	12.855	0.004	19.5					
3 45 51.00	1.00	12.788	-0.067	19.6					
3 45 52.00	1.00	12.716	-0.071	19.7					
3 45 53.00	1.00	12.764	0.047	19.6					
3 45 54.00	1.00	12.680	-0.083	19.7					
3 45 55.00	1.00	12.732	0.051	19.6					
3 45 56.00	1.00	12.657	-0.075	19.8					
3 45 57.00	1.00	12.677	0.020	19.7					
3 45 58.00	1.00	12.629	-0.048	19.8					
3 45 59.00	1.00	12.638	0.009	19.8					
3 46 0.00	1.00	12.584	-0.055	19.9					
3 46 1.00	1.00	12.570	-0.014	19.9					
3 46 2.00	1.00	12.662	0.092	19.8					
3 46 3.00	1.00	12.592	-0.070	19.9					
3 46 4.00	1.00	12.610	0.018	19.8					
3 46 5.00	1.00	12.472	-0.139	20.1					
3 46 6.00	1.00	181.778	169.306	1.4					
3 46 7.00	1.00	12.478	*******	20.0					
3 46 8.00	1.00	12.350	-0.129	20.3					
3 47 59.00	111.00	0.000	-12.350	0.0					
3 48 0.00	1.00	10.618	10.618	23.6					
3 48 1.00	1.00	10.644	0.026	23.5					
3 48 2.00	1.00	10.575	-0.071	23.7					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
3 48 3.00	1.00	10.527	-0.046	23.8					
3 48 4.00	1.00	10.552	0.025	23.7					
3 48 5.00	1.00	10.486	-0.066	23.9					
3 48 6.00	1.00	10.534	0.048	23.7					
3 48 7.00	1.00	10.488	-0.045	23.8					
3 48 8.00	1.00	10.515	0.027	23.8					
3 48 9.00	1.00	10.493	-0.023	23.8					
3 48 10.00	1.00	10.378	-0.115	24.1					
3 48 11.00	1.00	10.479	0.101	23.9					
3 48 12.00	1.00	10.475	-0.004	23.9					
3 48 13.00	1.00	10.459	-0.017	23.9					
3 48 14.00	1.00	10.413	-0.046	24.0					
3 48 15.00	1.00	10.461	0.048	23.9					
3 48 16.00	1.00	10.513	0.052	23.8					
3 48 17.00	1.00	10.524	0.011	23.8					
3 48 18.00	1.00	10.479	-0.045	23.9					
3 48 19.00	1.00	10.032	-0.447	24.9					
3 48 20.00	1.00	9.985	-0.047	25.0					
3 48 21.00	1.00	9.937	-0.048	25.2					
3 48 22.00	1.00	9.868	-0.069	25.3					
3 48 23.00	1.00	9.771	-0.098	25.6					
3 48 24.00	1.00	9.776	0.005	25.6					
3 48 25.00	1.00	9.700	-0.075	25.8					
3 48 26.00	1.00	9.636	-0.065	26.0					
3 48 27.00	1.00	9.566	-0.070	26.1					
3 48 28.00	1.00	9.540	-0.026	26.2					
3 48 29.00	1.00	9.520	-0.020	26.3					
3 48 30.00	1.00	9.474	-0.046	26.4					
3 48 31.00	1.00	9.402	-0.072	26.6					
3 48 32.00	1.00	9.354	-0.048	26.7					
3 48 33.00	1.00	9.254	-0.100	27.0					
3 48 34.00	1.00	9.286	0.033	26.9					
3 48 35.00	1.00	9.258	-0.028	27.0					
3 48 36.00	1.00	9.167	-0.091	27.3					
3 48 37.00	1.00	9.169	0.002	27.3					
3 48 38.00	1.00	9.095	-0.074	27.5					
3 48 39.00	1.00	9.021	-0.074	27.7					
3 48 40.00	1.00	9.047	0.026	27.6					
3 48 41.00	1.00	8.973	-0.074	27.9					
3 48 42.00	1.00	8.901	-0.072	28.1					
3 48 43.00	1.00	8.851	-0.050	28.3					
3 48 44.00	1.00	8.776	-0.074	28.5					
3 48 45.00	1.00	8.717	-0.060	28.7					
3 48 46.00	1.00	8.666	-0.050	28.9					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
3 48 47.00	1.00	8.690	0.024	28.6					
3 48 48.00	1.00	8.578	-0.112	29.2					
3 48 49.00	1.00	8.592	0.013	29.1					
3 48 50.00	1.00	8.542	-0.050	29.3					
3 48 51.00	1.00	8.424	-0.117	29.7					
3 48 52.00	1.00	8.350	-0.074	30.0					
3 48 53.00	1.00	8.273	-0.077	30.2					
3 48 54.00	1.00	8.079	-0.194	31.0					
3 48 55.00	1.00	8.010	-0.069	31.2					
3 48 56.00	1.00	7.885	-0.125	31.7					
3 48 57.00	1.00	7.715	-0.170	32.4					
3 48 58.00	1.00	7.666	-0.048	32.6					
3 48 59.00	1.00	7.524	-0.144	33.2					
3 49 0.00	1.00	7.428	-0.096	33.7					
3 49 1.00	1.00	7.385	-0.043	33.9					
3 49 2.00	1.00	7.282	-0.103	34.3					
3 49 3.00	1.00	7.112	-0.170	35.2					
3 49 4.00	1.00	7.043	-0.069	35.5					
3 49 5.00	1.00	6.947	-0.096	36.0					
3 49 6.00	1.00	6.899	-0.048	36.3					
3 49 7.00	1.00	6.770	-0.129	36.9					
3 49 8.00	1.00	6.710	-0.060	37.3					
3 49 9.00	1.00	6.631	-0.079	37.7					
3 49 10.00	1.00	6.585	-0.045	38.0					
3 49 11.00	1.00	6.578	-0.007	38.0					
3 49 12.00	1.00	6.391	-0.187	39.1					
3 49 13.00	1.00	6.405	0.014	39.1					
3 49 14.00	1.00	6.301	-0.104	39.7					
3 49 15.00	1.00	6.140	-0.161	40.7					
3 49 16.00	1.00	6.147	0.007	40.7					
3 49 17.00	1.00	6.104	-0.043	41.0					
3 49 18.00	1.00	6.030	-0.074	41.5					
3 49 19.00	1.00	6.017	-0.013	41.6					
3 49 20.00	1.00	5.895	-0.122	42.4					
3 49 21.00	1.00	5.862	-0.032	42.7					
3 49 22.00	1.00	5.865	0.003	42.6					
3 49 23.00	1.00	5.767	-0.098	43.4					
3 49 24.00	1.00	5.719	-0.048	43.7					
3 49 25.00	1.00	5.674	-0.045	44.1					
3 49 26.00	1.00	5.680	0.006	44.0					
3 49 27.00	1.00	5.638	-0.041	44.4					
3 49 28.00	1.00	5.435	-0.203	46.0					
3 49 29.00	1.00	5.459	0.024	45.8					
3 49 30.00	1.00	5.469	0.010	45.7					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
3 49 31.00	1.00	5.355	-0.114	46.7					
3 49 32.00	1.00	5.326	-0.029	47.0					
3 49 33.00	1.00	5.193	-0.132	48.2					
3 49 34.00	1.00	5.214	0.021	48.0					
3 49 35.00	1.00	5.214	0.000	48.0					
3 49 36.00	1.00	5.113	-0.101	48.9					
3 49 37.00	1.00	5.074	-0.039	49.3					
3 49 38.00	1.00	5.017	-0.057	49.9					
3 49 39.00	1.00	4.949	-0.069	50.5					
3 49 40.00	1.00	4.919	-0.030	50.8					
3 49 41.00	1.00	4.880	-0.039	51.3					
3 49 42.00	1.00	4.866	-0.014	51.4					
3 49 43.00	1.00	4.823	-0.043	51.9					
3 49 44.00	1.00	4.842	0.019	51.7					
3 49 45.00	1.00	4.788	-0.054	52.2					
3 49 46.00	1.00	4.815	0.027	51.9					
3 49 47.00	1.00	4.677	-0.138	53.5					
3 49 48.00	1.00	4.632	-0.045	54.0					
3 49 49.00	1.00	4.543	-0.089	55.1					
3 49 50.00	1.00	4.638	0.095	53.9					
3 49 51.00	1.00	4.454	-0.184	56.2					
3 49 52.00	1.00	4.608	0.154	54.3					
3 49 53.00	1.00	4.438	-0.170	56.4					
3 49 54.00	1.00	4.448	0.009	56.2					
3 49 55.00	1.00	4.420	-0.027	56.6					
3 49 56.00	1.00	4.363	-0.058	57.3					
3 49 57.00	1.00	4.388	0.025	57.0					
3 49 58.00	1.00	4.284	-0.103	58.4					
3 49 59.00	1.00	4.244	-0.040	58.9					
3 50 0.00	1.00	4.306	0.061	58.1					
3 50 1.00	1.00	4.281	-0.025	58.4					
3 50 2.00	1.00	4.226	-0.054	59.2					
3 50 3.00	1.00	4.196	-0.030	59.6					
3 50 4.00	1.00	4.167	-0.030	60.0					
3 50 5.00	1.00	4.294	0.127	58.3					
3 50 6.00	1.00	4.070	-0.224	61.5					
3 50 7.00	1.00	4.146	0.076	60.3					
3 50 8.00	1.00	4.087	-0.059	61.2					
3 50 9.00	1.00	4.077	-0.010	61.4					
3 50 10.00	1.00	4.083	0.006	61.3					
3 50 11.00	1.00	4.101	0.018	61.0					
3 50 12.00	1.00	3.987	-0.114	62.7					

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 45 22.00	12.65	5.65	-1.10	21.2	0.000	0.000
3 45 23.00	12.54	5.73	-1.07	21.0	0.000	0.000
3 45 24.00	12.34	5.63	-1.06	20.8	0.000	0.000
3 45 25.00	12.19	5.56	-0.94	20.7	0.000	0.000
3 45 26.00	12.19	5.49	-0.97	20.6	0.000	0.000
3 45 27.00	12.03	5.40	-0.97	20.5	0.000	0.000
3 45 28.00	11.92	5.32	-0.90	20.4	0.000	0.000
3 45 29.00	11.84	5.25	-0.85	20.3	0.000	0.000
3 45 37.00	11.01	4.62	-0.56	19.4	0.000	0.000
3 45 38.00	11.11	4.54	-0.58	19.4	0.000	0.000
3 45 39.00	11.00	4.43	-0.54	19.3	0.000	0.000
3 45 40.00	10.82	4.38	-0.51	19.1	0.000	0.000
3 45 41.00	10.87	4.27	-0.49	19.2	0.000	0.000
3 45 42.00	10.67	4.19	-0.45	19.0	0.000	0.000
3 45 43.00	10.77	4.10	-0.37	19.1	0.000	0.000
3 45 44.00	10.78	3.98	-0.35	19.1	0.000	0.000
3 45 45.00	10.71	3.78	-0.17	19.0	0.000	0.000
3 45 46.00	10.82	3.72	-0.03	19.1	0.000	0.000
3 45 47.00	10.88	3.55	0.07	19.2	0.000	0.000
3 45 48.00	11.03	3.41	0.26	19.3	0.000	0.000
3 45 49.00	11.17	3.36	0.51	19.5	0.000	0.000
3 45 50.00	11.17	3.20	0.58	19.5	0.000	0.000
3 45 51.00	11.26	3.02	0.73	19.6	0.000	0.000
3 45 52.00	11.35	2.95	0.93	19.7	0.000	0.000
3 45 53.00	11.27	2.77	1.06	19.6	0.000	0.000
3 45 54.00	11.38	2.78	1.21	19.7	0.000	0.000
3 45 55.00	11.27	2.77	1.42	19.6	0.000	0.000
3 45 56.00	11.37	2.71	1.59	19.8	0.000	0.000
3 45 57.00	11.31	2.69	1.78	19.7	0.000	0.000
3 45 58.00	11.36	2.77	1.88	19.8	0.000	0.000
3 45 59.00	11.31	2.66	2.09	19.8	0.000	0.000
3 46 0.00	11.37	2.65	2.27	19.9	0.000	0.000
3 46 1.00	11.35	2.66	2.47	19.9	0.000	0.000
3 46 2.00	11.18	2.58	2.59	19.8	0.000	0.000
3 46 3.00	11.25	2.61	2.78	19.9	0.000	0.000
3 46 4.00	11.19	2.63	2.93	19.8	0.000	0.000
3 46 5.00	11.36	2.64	3.17	20.1	0.000	0.000
3 46 6.50	~~-6.81~~	-2.02	~~-1.11~~	1.4	0.000	0.000
3 46 7.00	11.28	2.65	3.47	20.0	0.000	0.000
3 46 8.00	11.43	2.65	3.70	20.3	0.000	0.000
3 47 59.00	-8.15	1.98	-1.43	0.0	0.000	0.000
3 48 0.00	14.44	4.17	4.89	23.6	0.000	0.000
3 48 1.00	14.41	4.09	4.79	23.5	0.000	0.000
3 48 2.00	14.59	4.16	4.72	23.7	0.000	0.000

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 48 3.00	14.75	4.24	4.50	23.8	0.000	0.000
3 48 4.00	14.75	4.16	4.30	23.7	0.000	0.000
3 48 5.00	14.91	4.27	4.21	23.9	0.000	0.000
3 48 6.00	14.86	4.15	4.00	23.7	0.000	0.000
3 48 7.00	15.01	4.17	3.83	23.8	0.000	0.000
3 48 8.00	14.97	4.25	3.67	23.8	0.000	0.000
3 48 9.00	15.07	4.20	3.49	23.8	0.000	0.000
3 48 10.00	15.36	4.27	3.35	24.1	0.000	0.000
3 48 11.00	15.15	4.25	3.24	23.9	0.000	0.000
3 48 12.00	15.18	4.17	3.15	23.9	0.000	0.000
3 48 13.00	15.22	4.23	3.13	23.9	0.000	0.000
3 48 14.00	15.33	4.24	3.09	24.0	0.000	0.000
3 48 15.00	15.26	4.13	2.93	23.9	0.000	0.000
3 48 16.00	15.15	4.23	2.81	23.8	0.000	0.000
3 48 17.00	15.15	4.13	2.72	23.8	0.000	0.000
3 48 18.00	15.28	4.09	2.61	23.9	0.000	0.000
3 48 19.00	16.36	4.31	2.50	24.9	0.000	0.000
3 48 20.00	16.50	4.26	2.41	25.0	0.000	0.000
3 48 21.00	16.66	4.12	2.24	25.2	0.000	0.000
3 48 22.00	16.85	4.14	2.13	25.3	0.000	0.000
3 48 23.00	17.12	4.15	2.01	25.6	0.000	0.000
3 48 24.00	17.13	3.97	1.84	25.6	0.000	0.000
3 48 25.00	17.36	3.93	1.76	25.8	0.000	0.000
3 48 26.00	17.56	3.86	1.59	26.0	0.000	0.000
3 48 27.00	17.77	3.79	1.49	26.1	0.000	0.000
3 48 28.00	17.86	3.74	1.37	26.2	0.000	0.000
3 48 29.00	17.93	3.61	1.30	26.3	0.000	0.000
3 48 30.00	18.07	3.53	1.22	26.4	0.000	0.000
3 48 31.00	18.28	3.55	1.16	26.6	0.000	0.000
3 48 32.00	18.44	3.42	1.05	26.7	0.000	0.000
3 48 33.00	18.75	3.34	0.89	27.0	0.000	0.000
3 48 34.00	18.66	3.29	0.79	26.9	0.000	0.000
3 48 35.00	18.76	3.13	0.63	27.0	0.000	0.000
3 48 36.00	19.04	3.15	0.49	27.3	0.000	0.000
3 48 37.00	19.05	3.12	0.38	27.3	0.000	0.000
3 48 38.00	19.28	2.99	0.22	27.5	0.000	0.000
3 48 39.00	19.52	3.05	0.08	27.7	0.000	0.000
3 48 40.00	19.44	2.96	0.05	27.8	0.000	0.000
3 48 41.00	19.68	2.89	-0.13	27.9	0.000	0.000
3 48 42.00	19.91	2.85	-0.28	28.1	0.000	0.000
3 48 43.00	20.08	2.76	-0.26	28.3	0.000	0.000
3 48 44.00	20.33	2.66	-0.45	28.5	0.000	0.000
3 48 45.00	20.52	2.62	-0.54	28.7	0.000	0.000
3 48 46.00	20.70	2.59	-0.68	28.9	0.000	0.000

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 48 47.00	20.63	2.40	-0.92	28.8	0.000	0.000
3 48 48.00	21.00	2.41	-1.05	29.2	0.000	0.000
3 48 49.00	20.96	2.48	-1.09	29.1	0.000	0.000
3 48 50.00	21.13	2.55	-1.11	29.3	0.000	0.000
3 48 51.00	21.53	2.68	-1.22	29.7	0.000	0.000
3 48 52.00	21.79	2.76	-1.21	30.0	0.000	0.000
3 48 53.00	22.08	2.63	-1.27	30.2	0.000	0.000
3 48 54.00	22.80	2.70	-1.39	31.0	0.000	0.000
3 48 55.00	23.07	2.76	-1.26	31.2	0.000	0.000
3 48 56.00	23.58	2.73	-1.31	31.7	0.000	0.000
3 48 57.00	24.26	2.75	-1.42	32.4	0.000	0.000
3 48 58.00	24.46	2.80	-1.38	32.6	0.000	0.000
3 48 59.00	25.09	2.76	-1.48	33.2	0.000	0.000
3 49 0.00	25.52	2.63	-1.45	33.7	0.000	0.000
3 49 1.00	25.71	2.57	-1.39	33.9	0.000	0.000
3 49 2.00	26.20	2.36	-1.48	34.3	0.000	0.000
3 49 3.00	27.02	2.36	-1.73	35.2	0.000	0.000
3 49 4.00	27.36	2.32	-1.69	35.5	0.000	0.000
3 49 5.00	27.85	2.23	-1.73	36.0	0.000	0.000
3 49 6.00	28.10	2.12	-1.81	36.3	0.000	0.000
3 49 7.00	28.80	2.04	-1.87	36.9	0.000	0.000
3 49 8.00	29.12	1.93	-1.80	37.3	0.000	0.000
3 49 9.00	29.57	1.87	-1.93	37.7	0.000	0.000
3 49 10.00	29.83	1.68	-2.03	38.0	0.000	0.000
3 49 11.00	29.87	1.61	-2.12	38.0	0.000	0.000
3 49 12.00	30.98	1.53	-2.13	39.1	0.000	0.000
3 49 13.00	30.89	1.42	-2.09	39.1	0.000	0.000
3 49 14.00	31.54	1.35	-2.19	39.7	0.000	0.000
3 49 15.00	32.57	1.29	-2.32	40.7	0.000	0.000
3 49 16.00	32.53	1.21	-2.27	40.7	0.000	0.000
3 49 17.00	32.80	0.98	-2.49	41.0	0.000	0.000
3 49 18.00	33.30	1.02	-2.63	41.5	0.000	0.000
3 49 19.00	33.39	0.92	-2.57	41.6	0.000	0.000
3 49 20.00	34.24	0.70	-2.70	42.4	0.000	0.000
3 49 21.00	34.47	0.61	-2.97	42.7	0.000	0.000
3 49 22.00	34.44	0.48	-2.94	42.6	0.000	0.000
3 49 23.00	35.10	0.42	-3.19	43.4	0.000	0.000
3 49 24.00	35.51	0.28	-3.32	43.7	0.000	0.000
3 49 25.00	35.86	0.19	-3.24	44.1	0.000	0.000
3 49 26.00	35.81	0.17	-3.31	44.0	0.000	0.000
3 49 27.00	36.12	0.03	-3.51	44.4	0.000	0.000
3 49 28.00	37.77	0.04	-3.70	46.0	0.000	0.000
3 49 29.00	37.56	-0.16	-3.79	45.8	0.000	0.000
3 49 30.00	37.46	-0.22	-4.05	45.7	0.000	0.000

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 49 31.00	38.44	-0.16	-4.10	46.7	0.000	0.000
3 49 32.00	38.68	-0.23	-4.19	47.0	0.000	0.000
3 49 33.00	39.86	-0.30	-4.50	48.2	0.000	0.000
3 49 34.00	39.66	-0.40	-4.51	48.0	0.000	0.000
3 49 35.00	39.64	-0.62	-4.69	48.0	0.000	0.000
3 49 36.00	40.58	-0.72	-4.83	48.9	0.000	0.000
3 49 37.00	40.96	-0.69	-4.72	49.3	0.000	0.000
3 49 38.00	41.51	-0.83	-4.80	49.9	0.000	0.000
3 49 39.00	42.20	-0.87	-4.88	50.5	0.000	0.000
3 49 40.00	42.49	-1.13	-4.85	50.8	0.000	0.000
3 49 41.00	42.89	-1.09	-4.94	51.3	0.000	0.000
3 49 42.00	43.04	-1.16	-4.88	51.4	0.000	0.000
3 49 43.00	43.49	-1.26	-4.94	51.9	0.000	0.000
3 49 44.00	43.29	-1.32	-4.88	51.7	0.000	0.000
3 49 45.00	43.86	-1.48	-5.01	52.2	0.000	0.000
3 49 46.00	43.55	-1.70	-4.91	51.9	0.000	0.000
3 49 47.00	45.07	-1.75	-5.10	53.5	0.000	0.000
3 49 48.00	45.59	-1.65	-5.28	54.0	0.000	0.000
3 49 49.00	46.66	-1.73	-5.16	55.1	0.000	0.000
3 49 50.00	45.52	-1.84	-5.13	53.9	0.000	0.000
3 49 51.00	47.73	-1.89	-5.42	56.2	0.000	0.000
3 49 52.00	45.86	-1.92	-5.20	54.3	0.000	0.000
3 49 53.00	47.92	-2.10	-5.41	56.4	0.000	0.000
3 49 54.00	47.60	-2.13	-5.40	56.2	0.000	0.000
3 49 55.00	48.15	-2.19	-5.31	56.6	0.000	0.000
3 49 56.00	48.88	-2.27	-5.46	57.3	0.000	0.000
3 49 57.00	48.55	-2.24	-5.62	57.0	0.000	0.000
3 49 58.00	49.96	-2.05	-5.41	58.4	0.000	0.000
3 49 59.00	50.49	-2.12	-5.66	58.9	0.000	0.000
3 50 0.00	49.65	-1.92	-5.77	58.1	0.000	0.000
3 50 1.00	50.01	-1.75	-5.62	58.4	0.000	0.000
3 50 2.00	50.77	-1.62	-5.65	59.2	0.000	0.000
3 50 3.00	51.20	-1.41	-5.75	59.6	0.000	0.000
3 50 4.00	51.61	-1.57	-5.85	60.0	0.000	0.000
3 50 5.00	49.81	-1.58	-6.05	58.3	0.000	0.000
3 50 6.00	53.05	-1.15	-6.02	61.5	0.000	0.000
3 50 7.00	51.93	-1.31	-5.85	60.3	0.000	0.000
3 50 8.00	52.80	-1.17	-6.11	61.2	0.000	0.000
3 50 9.00	52.95	-0.86	-6.16	61.4	0.000	0.000
3 50 10.00	52.87	-0.90	-5.96	61.3	0.000	0.000
3 50 11.00	52.60	-0.66	-6.23	61.0	0.000	0.000
3 50 12.00	54.36	-0.53	-6.11	62.7	0.000	0.000

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
3 51 59.00	13919.00	302.449	302.449	2.5					
3 52 0.00	1.00	9.590	*******	79.3					
3 52 1.00	1.00	9.493	-0.097	80.1					
3 52 2.00	1.00	9.517	0.024	79.9					
3 52 3.00	1.00	9.470	-0.047	80.3					
3 52 4.00	1.00	9.471	0.001	80.3					
3 52 5.00	1.00	9.447	-0.024	80.5					
3 52 6.00	1.00	9.396	-0.051	81.0					
3 52 7.00	1.00	9.394	-0.002	81.0					
3 52 8.00	1.00	9.278	-0.116	82.0					
3 52 9.00	1.00	9.300	0.022	81.8					
3 52 10.00	1.00	9.232	-0.068	82.4					
3 52 11.00	1.00	9.180	-0.052	82.9					
3 52 12.00	1.00	9.182	0.001	82.9					
3 52 13.00	1.00	9.128	-0.053	83.3					
3 52 14.00	1.00	9.177	0.049	82.9					
3 52 15.00	1.00	9.107	-0.070	83.5					
3 52 16.00	1.00	9.091	-0.017	83.7					
3 52 17.00	1.00	9.031	-0.059	84.2					
3 52 18.00	1.00	8.916	-0.115	85.3					
3 52 19.00	1.00	8.939	0.023	85.1					
3 52 20.00	1.00	8.888	-0.051	85.6					
3 52 21.00	1.00	8.825	-0.063	86.2					
3 52 22.00	1.00	8.920	0.095	85.3					
3 52 23.00	1.00	8.821	-0.099	86.2					
3 52 24.00	1.00	8.772	-0.049	86.7					
3 52 25.00	1.00	8.768	-0.004	86.8					
3 52 26.00	1.00	8.703	-0.064	87.4					
3 52 27.00	1.00	8.629	-0.075	88.2					
3 52 28.00	1.00	8.581	-0.048	88.7					
3 52 29.00	1.00	8.559	-0.021	88.9					
3 52 30.00	1.00	8.603	0.044	88.4					
3 52 31.00	1.00	8.578	-0.025	88.7					
3 52 32.00	1.00	8.486	-0.093	89.6					
3 52 33.00	1.00	8.507	0.022	89.4					
3 52 34.00	1.00	8.340	-0.167	91.2					
3 52 35.00	1.00	8.390	0.049	90.7					
3 52 36.00	1.00	8.388	-0.001	90.7					
3 52 37.00	1.00	8.362	-0.026	91.0					
3 52 38.00	1.00	8.361	-0.001	91.0					
3 52 39.00	1.00	8.335	-0.026	91.3					
3 52 40.00	1.00	8.294	-0.041	91.7					
3 52 41.00	1.00	8.215	-0.078	92.6					
3 52 42.00	1.00	8.269	0.054	92.0					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (R FEET)	DELTA LENGTH (R FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (R FEET)	DELTA WIDTH (R FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
3 52 43.00	1.00	8.172	-0.097	93.1					
3 52 44.00	1.00	8.167	-0.005	93.1					
3 52 45.00	1.00	8.214	0.047	92.6					
3 52 46.00	1.00	8.143	-0.071	93.4					
3 52 47.00	1.00	8.072	-0.071	94.2					
3 52 48.00	1.00	8.194	0.121	92.8					
3 52 49.00	1.00	8.097	-0.098	93.9					
3 52 50.00	1.00	7.998	-0.099	95.1					
3 52 51.00	1.00	8.024	0.026	94.8					
3 52 52.00	1.00	7.935	-0.090	95.9					
3 52 53.00	1.00	7.930	-0.004	95.9					
3 52 54.00	1.00	7.953	0.023	95.7					
3 52 55.00	1.00	8.023	0.070	94.8					
3 52 56.00	1.00	7.878	-0.145	96.6					
3 52 57.00	1.00	7.933	0.055	95.9					
3 52 58.00	1.00	7.931	-0.002	95.9					
3 52 59.00	1.00	7.783	-0.148	97.7					
3 53 0.00	1.00	7.783	0.000	97.7					
3 53 1.00	1.00	7.784	0.001	97.7					
3 53 2.00	1.00	7.783	-0.001	97.7					
3 53 3.00	1.00	7.734	-0.049	98.4					
3 53 4.00	1.00	7.686	-0.047	99.0					
3 53 5.00	1.00	7.734	0.047	98.4					
3 53 6.00	1.00	7.637	-0.096	99.6					
3 53 7.00	1.00	7.661	0.024	99.3					
3 53 8.00	1.00	7.611	-0.050	99.9					
3 53 9.00	1.00	7.666	0.055	99.2					
3 53 10.00	1.00	7.611	-0.056	100.0					
3 53 11.00	1.00	7.444	-0.167	102.2					
3 53 12.00	1.00	7.609	0.165	100.0					
3 53 13.00	1.00	7.514	-0.095	101.2					
3 53 14.00	1.00	7.536	0.022	100.9					
3 53 15.00	1.00	7.418	-0.118	102.6					
3 53 16.00	1.00	7.514	0.095	101.2					
3 53 17.00	1.00	7.488	-0.026	101.6					
3 53 18.00	1.00	7.417	-0.071	102.6					
3 53 19.00	1.00	7.414	-0.002	102.6					
3 53 20.00	1.00	7.392	-0.022	102.9					
3 53 21.00	1.00	7.367	-0.025	103.3					
3 53 22.00	1.00	7.390	0.023	102.9					
3 53 23.00	1.00	7.441	0.051	102.2					
3 53 24.00	1.00	7.488	0.047	101.6					
3 55 2.00	98.00	9.010	1.530	84.4					
3 55 3.00	1.00	8.964	-0.046	84.9					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (L FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (L FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
9 55 4.00	1.00	8.989	0.025	84.6					
9 55 5.00	1.00	9.098	0.069	84.0					
9 55 6.00	1.00	9.039	-0.020	84.2					
9 55 7.00	1.00	9.111	0.072	83.5					
9 55 8.00	1.00	9.134	0.023	83.3					
9 55 9.00	1.00	9.119	-0.020	83.5					
9 55 10.00	1.00	9.136	0.023	83.3					
9 55 11.00	1.00	9.261	0.146	82.0					
9 55 12.00	1.00	9.259	-0.025	82.2					

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 51 59.00	-10.96	0.96	-2.64	2.5	0.000	0.000
3 52 0.00	66.76	-8.10	-15.10	79.3	0.000	0.000
3 52 1.00	67.58	-8.31	-15.15	80.1	0.000	0.000
3 52 2.00	67.41	-8.49	-14.89	79.9	0.000	0.000
3 52 3.00	67.75	-8.70	-15.09	80.3	0.000	0.000
3 52 4.00	67.73	-8.83	-15.13	80.3	0.000	0.000
3 52 5.00	67.94	-9.00	-14.97	80.5	0.000	0.000
3 52 6.00	68.35	-9.27	-15.08	81.0	0.000	0.000
3 52 7.00	68.32	-9.40	-15.25	81.0	0.000	0.000
3 52 8.00	69.35	-9.57	-15.20	82.0	0.000	0.000
3 52 9.00	69.13	-9.78	-15.17	81.8	0.000	0.000
3 52 10.00	69.72	-9.85	-15.24	82.4	0.000	0.000
3 52 11.00	70.14	-10.18	-15.35	82.9	0.000	0.000
3 52 12.00	70.11	-10.41	-15.32	82.9	0.000	0.000
3 52 13.00	70.54	-10.55	-15.58	83.3	0.000	0.000
3 52 14.00	70.14	-10.56	-15.23	82.9	0.000	0.000
3 52 15.00	70.69	-10.92	-15.58	83.5	0.000	0.000
3 52 16.00	70.88	-10.69	-15.44	83.7	0.000	0.000
3 52 17.00	71.39	-11.10	-15.53	84.2	0.000	0.000
3 52 18.00	72.48	-11.23	-15.72	85.3	0.000	0.000
3 52 19.00	72.22	-11.00	-15.95	85.1	0.000	0.000
3 52 20.00	72.74	-11.17	-15.73	85.0	0.000	0.000
3 52 21.00	73.34	-11.40	-15.73	86.2	0.000	0.000
3 52 22.00	72.39	-11.21	-15.96	85.3	0.000	0.000
3 52 23.00	73.35	-11.39	-15.88	86.2	0.000	0.000
3 52 24.00	73.84	-11.20	-16.06	86.7	0.000	0.000
3 52 25.00	73.83	-11.29	-16.20	86.8	0.000	0.000
3 52 26.00	74.55	-11.40	-15.86	87.4	0.000	0.000
3 52 27.00	75.30	-11.23	-16.09	88.2	0.000	0.000
3 52 28.00	75.70	-11.42	-16.54	88.7	0.000	0.000
3 52 29.00	75.99	-11.26	-16.39	88.9	0.000	0.000
3 52 30.00	75.52	-11.41	-16.25	88.4	0.000	0.000
3 52 31.00	75.76	-11.33	-16.40	88.7	0.000	0.000
3 52 32.00	76.81	-11.48	-15.99	89.8	0.000	0.000
3 52 33.00	76.59	-11.29	-16.05	89.4	0.000	0.000
3 52 34.00	78.30	-11.45	-16.28	91.2	0.000	0.000
3 52 35.00	77.87	-11.30	-16.04	90.7	0.000	0.000
3 52 36.00	77.87	-11.51	-15.97	90.7	0.000	0.000
3 52 37.00	78.20	-11.13	-16.01	91.0	0.000	0.000
3 52 38.00	78.26	-11.30	-15.58	91.0	0.000	0.000
3 52 39.00	78.49	-11.65	-15.70	91.3	0.000	0.000
3 52 40.00	78.98	-11.50	-15.66	91.7	0.000	0.000
3 52 41.00	79.02	-11.71	-15.80	92.0	0.000	0.000
3 52 42.00	79.10	-12.12	-15.58	92.0	0.000	0.000

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 52 43.00	80.29	-12.20	-15.62	93.1	0.000	0.[illegible]
3 52 44.00	80.40	-11.90	-15.51	93.1	0.000	0.[illegible]
3 52 45.00	79.05	-12.21	-15.32	92.6	0.000	0.[illegible]
3 52 46.00	80.63	-12.30	-15.52	93.4	0.000	0.[illegible]
3 52 47.00	81.52	-12.21	-15.27	94.2	0.000	0.[illegible]
3 52 48.00	80.05	-12.50	-15.33	92.8	0.000	0.[illegible]
3 52 49.00	81.09	-12.79	-15.61	93.9	0.000	0.[illegible]
3 52 50.00	82.30	-12.97	-15.33	95.1	0.000	0.[illegible]
3 52 51.00	82.05	-12.94	-15.09	94.8	0.000	0.[illegible]
3 52 52.00	83.05	-13.40	-15.18	95.9	0.000	0.[illegible]
3 52 53.00	83.13	-13.08	-15.22	95.9	0.000	0.[illegible]
3 52 54.00	82.82	-13.48	-15.11	95.7	0.000	0.[illegible]
3 52 55.00	81.98	-13.64	-15.03	94.8	0.000	0.[illegible]
3 52 56.00	83.74	-13.56	-15.09	96.6	0.000	0.[illegible]
3 52 57.00	83.05	-13.74	-14.96	95.9	0.000	0.[illegible]
3 52 58.00	83.14	-13.54	-14.72	95.9	0.000	0.[illegible]
3 52 59.00	84.88	-13.77	-15.34	97.7	0.000	0.[illegible]
3 53 0.00	84.78	-14.19	-15.62	97.7	0.000	0.[illegible]
3 53 1.00	84.72	-14.35	-15.70	97.7	0.000	0.[illegible]
3 53 2.00	84.82	-14.27	-15.27	97.7	0.000	0.[illegible]
3 53 3.00	85.35	-14.44	-15.80	98.4	0.000	0.[illegible]
3 53 4.00	85.98	-14.53	-15.77	99.0	0.000	0.[illegible]
3 53 5.00	85.33	-14.25	-16.15	98.4	0.000	0.[illegible]
3 53 6.00	86.62	-14.27	-15.97	99.6	0.000	0.[illegible]
3 53 7.00	86.32	-13.70	-16.32	99.3	0.000	0.[illegible]
3 53 8.00	87.13	-12.86	-16.24	99.9	0.000	0.[illegible]
3 53 9.00	86.50	-11.90	-16.16	99.2	0.000	0.[illegible]
3 53 10.00	87.26	-11.11	-16.62	100.0	0.000	0.[illegible]
3 53 11.00	89.59	-10.42	-16.70	102.2	0.000	0.[illegible]
3 53 12.00	87.36	-10.25	-16.60	100.0	0.000	0.[illegible]
3 53 13.00	88.74	-8.93	-16.73	101.2	0.000	0.[illegible]
3 53 14.00	88.49	-8.10	-16.80	100.9	0.000	0.[illegible]
3 53 15.00	90.13	-7.39	-17.07	102.6	0.000	0.[illegible]
3 53 16.00	88.82	-6.77	-17.27	101.2	0.000	0.[illegible]
3 53 17.00	89.21	-5.98	-17.31	101.6	0.000	0.[illegible]
3 53 18.00	90.17	-5.49	-17.62	102.6	0.000	0.[illegible]
3 53 19.00	90.18	-5.19	-17.63	102.6	0.000	0.[illegible]
3 53 20.00	90.53	-4.56	-17.74	102.9	0.000	0.[illegible]
3 53 21.00	90.00	-4.74	-18.22	103.5	0.000	0.[illegible]
3 53 22.00	90.43	-4.35	-18.58	102.9	0.000	0.[illegible]
3 53 23.00	89.72	-4.35	-18.50	102.2	0.000	0.[illegible]
3 53 24.00	89.11	-4.08	-18.30	101.0	0.000	0.[illegible]
3 55 2.00	73.15	2.27	-6.53	84.4	0.000	0.[illegible]
3 55 3.00	73.66	2.04	-6.43	84.9	0.000	0.[illegible]

GEMINI XI EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
3 59 4.00	73.45	2.41	-6.13	84.6	0.000	0.000
3 59 5.00	72.83	2.42	-5.65	84.0	0.000	0.000
3 59 6.00	73.03	2.42	-5.42	84.2	0.000	0.000
3 59 7.00	72.36	2.72	-5.04	83.5	0.000	0.000
3 59 8.00	72.10	2.60	-4.62	83.3	0.000	0.000
3 59 9.00	72.30	2.79	-4.05	83.5	0.000	0.000
3 59 10.00	72.16	3.06	-3.07	83.3	0.000	0.000
3 59 11.00	70.00	3.22	-3.39	82.0	0.000	0.000
3 59 12.00	7[illegible].08	3.13	-3.09	82.2	0.000	0.000

APPENDIX G

Times of Sunrise and Sunset

Table 6. Spacecraft Illumination

	S/C Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	1	-22.0	7.0	0:22:24:02.6	0:12:53.6	Sunset
Sunrise	1	125.1	-18.0	0:23:01:23.0	0:50:14.0	Sunrise
Sunset	2	-53.0	12.0	0:23:52:43.4	1:41:34.4	Sunset
Sunrise	2	88.0	-23.0	1:00:30:03.9	2:18:54.9	Sunrise
~~Sunset~~	~~2~~	-97.0	23.0	1:01:22:15.9	3:11:06.9	Sunset
Sunrise	3	50.0	-27.0	1:01:59:19.7	3:48:10.7	Sunrise
Sunset	3	-117.0	21.0	1:02:52:17.4	4:41:10.4	Sunset
Sunrise	4	25.8	-27.5	1:03:29:03.9	5:17:54.9	Sunrise
Sunset	4	-131.3	16.9	1:04:22:44.7	6:11:35.7	Sunset
Sunrise	5	5.8	-27.6	1:04:59:25.4	6:48:16.4	Sunrise
Sunset	5	-155.2	17.3	1:05:53:07.5	7:41:58.5	Sunset
Sunrise	6	-16.3	-26.8	1:06:29:35.1	8:18:26.1	Sunrise
Sunset	6	-173.5	16.7	1:07:25:18.7	9:14:09.7	Sunset
Sunrise	7	-39.5	-26.7	1:08:01:37.1	9:50:28.1	Sunrise
Sunset	7	162.1	16.6	1:08:57:20.4	10:46:11.4	Sunset
Sunrise	8	-62.7	-26.7	1:09:33:38.8	11:22:29.8	Sunrise
Sunset	8	139.4	16.5	1:10:29:22.1	12:18:13.1	Sunset
Sunrise	8	-85.8	-26.6	1:11:05:40.6	12:54:31.6	Sunrise
Sunset	9	119.7	13.0	1:12:01:23.9	13:50:14.9	Sunset
Sunrise	9	-109.0	-26.5	1:12:37:42.4	14:26:33.4	Sunrise

Table 6. Spacecraft Illumination (Continued)

	S/C Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	10	96.5	12.9	1:13:33:25.6	15:22:16.6	Sunset
Sunrise	10	-132.1	-26.5	1:14:09:44.2	15:58:35.2	Sunrise
Sunset	11	73.2	12.7	1:15:05:27.2	16:54:18.2	Sunset
Sunrise	11	-155.3	-26.4	1:15:41:45.9	17:30:36.9	Sunrise
~~Sunset~~	~~12~~	50.0	12.6	1:16:37:29.0	18:26:20.0	Sunset
Sunrise	12	-178.5	-26.3	1:17:13:47.7	19:02:38.7	Sunrise
Sunset	13	26.8	12.4	1:18:09:30.4	19:58:21.4	Sunset
Sunrise	13	158.4	-26.2	1:18:45:49.1	20:34:40.1	Sunrise
Sunset	14	3.6	12.3	1:19:41:31.9	21:30:22.9	Sunset
Sunrise	14	135.6	-26.1	1:20:17:53.0	22:06:44.0	Sunrise
Sunset	15	-19.8	12.2	1:21:13:47.5	23:02:38.5	Sunset
Sunrise	15	112.0	-26.1	1:21:50:02.0	23:38:53.0	Sunrise
Sunset	16	-43.4	12.3	1:22:45:55.8	24:34:46.8	Sunset
Sunrise	16	88.4	-26.1	1:23:22:10.6	25:11:01.6	Sunrise
Sunset	17	-67.1	12.3	2:00:18:04.2	26:06:55.2	Sunset
Sunrise	17	64.7	-26.1	2:00:54:19.0	26:43:10.0	Sunrise
Sunset	17	-90.7	12.4	2:01:50:12.4	27:39:03.4	Sunset
Sunrise	18	41.1	-26.1	2:02:26:27.4	28:15:18.2	Sunrise
Sunset	18	-114.3	12.4	2:03:22:20.8	29:11:11.8	Sunset
Sunrise	19	17.5	-26.1	2:03:58:35.6	29:47:26.6	Sunrise

Table 6. Spacecraft Illumination (Continued)

	S/C Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	19	-137.87	12.463	2:04:54:29.3	30:43:20.3	Sunset
Sunrise	20	-6.1315	-26.191	2:05:30:44.1	31:19:35.1	Sunrise
Sunset	20	-161.48	12.505	2:06:26:37.5	32:15:28.5	Sunset
Sunrise	21	-29.755	-26.212	2:07:02:52.5	32:51:43.5	Sunrise
~~Sunset~~	~~21~~	174.91	12.548	2:07:58:45.9	33:47:36.9	Sunset
Sunrise	22	-53.378	-26.233	2:08:35:00.5	34:23:51.5	Sunrise
Sunset	22	151.31	12.590	2:09:30:54.4	35:19:45.5	Sunset
Sunrise	23	-73.057	-25.270	2:10:07:09.2	35:56:00.2	Sunrise
Sunset	23	130.999	10.852	2:11:03:02.8	36:51:53.8	Sunset
Sunrise	23	-100.622	-26.276	2:11:39:17.7	37:28:08.7	Sunrise
Sunset	24	104.10	12.674	2:12:35:11.1	38:24:02.1	Sunset
Sunrise	24	-124.244	-26.296	2:13:11:26.0	39:00:17.0	Sunrise
Sunset	25	83.8	10.9	2:14:07:19.6	39:56:10.6	Sunset
Sunrise	25	-143.9	-25.3	2:14:43:34.3	40:32:25.3	Sunrise
Sunset	26	60.2	11.0	2:15:39:28.1	41:28:19.1	Sunset
Sunrise	26	-163.6	-24.4	2:16:15:42.9	42:04:33.9	Sunrise
Sunset	27	36.6	11.0	2:17:11:36.5	43:00:27.5	Sunset
Sunrise	27	172.8	-24.4	2:17:47:51.4	43:36:42.5	Sunrise
Sunset	28	16.3	9.3	2:18:43:44.9	44:32:35.9	Sunset
Sunrise	28	149.1	-24.4	2:19:19:59.6	45:08:50.6	Sunrise

Table 6. Spacecraft Illumination (Continued)

	S/C Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	29	-7.3	9.3	2:20:15:53.5	46:04:44.5	Sunset
Sunrise	29	125.5	-24.5	2:20:52:08.1	46:40:59.1	Sunrise
Sunset	30	-31.0	9.4	2:21:48:08.1	47:36:59.1	Sunset
Sunrise	30	93.5	-26.5	2:22:22:00.9	48:13:14.1	Sunrise
Sunset	31	-55.5	9.9	2:23:20:00.9	49:09:44.1	Sunset
Sunrise	31	68.8	-26.7	2:23:57:08.1	49:45:59.1	Sunrise
Sunset	32	-73.6	6.8	3:00:53:38.1	50:42:29.1	Sunset
Sunrise	32	52.0	-25.2	3:01:29:53.1	51:18:44.1	Sunrise
Sunset	32	-98.1	7.3	3:02:26:22.1	52:15:13.1	Sunset
Sunrise	33	27.3	-25.5	3:03:02:36.6	52:51:27.6	Sunrise
Sunset	33	-122.3	7.9	3:03:59:04.6	53:47:55.6	Sunset
Sunrise	34	5.1	-25.7	3:04:35:17.6	54:24:08.6	Sunrise
Sunset	34	-140.7	4.5	3:05:31:44.6	55:20:35.6	Sunset
Sunrise	35	-6.9	-21.6	3:06:07:59.6	55:56:50.6	Sunrise
Sunset	35	-165.2	5.2	3:07:04:29.6	56:53:20.6	Sunset
Sunrise	36	-31.5	-21.9	3:07:40:44.6	57:29:35.6	Sunrise
Sunset	36	176.6	2.0	3:08:37:14.6	58:26:05.6	Sunset
Sunrise	37	-48.9	-19.6	3:09:13:29.6	59:02:20.6	Sunrise
Sunset	37	152.1	2.6	3:10:09:58.6	59:58:49.6	Sunset
Sunrise	38	-73.5	-20.0	3:10:46:12.6	60:35:03.6	Sunrise

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Table 6. Spacecraft Illumination (Continued)

	S/C Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	38	127.6	3.1	3:11:42:40.6	61:31:31.6	Sunset
Sunrise	38	-98.1	-20.5	3:12:18:53.6	62:07:44.6	Sunrise
Sunset	39	103.1	3.6	3:13:15:21.9	63:04:12.9	Sunset
Sunrise	39	-122.8	-20.8	3:13:51:36.9	63:40:27.9	Sunrise
~~Sunset~~	~~40~~	78.6	4.2	3:14:48:05.2	64:36:56.2	Sunset
Sunrise	40	-147.4	-21.2	3:15:24:20.2	65:13:11.2	Sunrise
Sunset	41	54.1	4.7	3:16:20:25.2	66:09:16.2	Sunset
Sunrise	41	-172.0	-21.6	3:16:56:37.2	66:45:28.2	Sunrise
Sunset	42	36.0	1.5	3:17:53:05.2	67:41:56.2	Sunset
Sunrise	42	177.6	-16.1	3:18:29:19.2	68:18:10.2	Sunrise
Sunset	43	17.8	-1.75	3:19:25:49.8	69:14:40.8	Sunset
Sunrise	43	153.0	-16.6	3:20:02:02.8	69:50:53.8	Sunrise
Sunset	44	-6.7	-1.2	3:20:58:30.8	70:47:21.8	Sunset
Sunrise	44	128.4	-17.0	3:21:34:43.0	71:23:34.0	Sunrise
Sunset	45	-18.4	-8.1	3:22:31:26.3	72:20:17.3	Sunset
Sunrise	45	110.7	-14.2	3:23:07:40.7	72:56:31.7	Sunrise
Sunset	46	-55.7	-0.1	4:00:04:09.4	73:53:00.4	Sunset
Sunrise	46	86.1	-14.7	4:00:40:24.0	74:29:15.0	Sunrise
Sunset	47	-73.9	-3.4	4:01:36:48.8	75:25:39.8	Sunset
Sunrise	47	61.6	-15.2	4:02:13:03.2	76:01:54.2	Sunrise

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Table 6. Spacecraft Illumination (Continued)

	S/C Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	47	-98.4	-2.8	4:03:09:08.2	76:57:59.2	Sunset
Sunrise	48	37.0	-15.6	4:03:45:08.9	77:33:59.9	Sunrise
Sunset	48	-116.5	-6.0	4:04:41:24.3	78:30:15.3	Sunset
Sunrise	49	19.2	-12.8	4:05:17:39.3	79:06:30.3	Sunrise
Sunset	49	-150.0	-0.1	4:06:14:09.6	80:03:00.6	Sunset

Table 7. Agena 10 Illumination

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	1	-15.0	16.5	0:20:50:58.7	-1:20:10.3	Sunset
Sunrise	1	122.3	-26.8	0:21:27:38.1	-0:43:30.9	Sunrise
Sunset	2	-39.0	16.9	0:22:21:20.1	0:10:11.1	Sunset
Sunrise	2	98.2	-27.0	0:22:57:59.7	0:46:50.7	Sunrise
~~Sunset~~	~~3~~	-63.0	17.3	0:23:51:41.5	1:40:32.5	Sunset
Sunrise	3	74.1	-27.2	1:00:28:21.6	2:17:12.6	Sunrise
Sunset	3	-90.6	19.3	1:01:22:03.2	3:10:54.2	Sunset
Sunrise	4	50.0	-27.4	1:01:58:43.3	3:47:34.3	Sunrise
Sunset	4	-107.4	16.5	1:02:52:24.8	4:41:15.8	Sunset
Sunrise	5	34.0	-25.9	1:03:29:03.9	5:18:01.2	Sunrise
Sunset	5	-124.3	13.5	1:04:22:39.4	6:11:30.4	Sunset
Sunrise	6	10.0	-26.1	1:04:59:30.1	6:48:21.1	Sunrise
Sunset	6	-148.1	13.9	1:05:53:01.4	7:41:52.4	Sunset
Sunrise	7	-16.3	-26.8	1:06:29:38.3	8:18:29.3	Sunrise
Sunset	7	-170.7	13.4	1:07:25:13.7	9:14:04.7	Sunset
Sunrise	8	-39.5	-26.7	1:08:01:40.0	9:50:31.0	Sunrise
Sunset	8	166.1	13.3	1:08:57:15.5	10:46:06.5	Sunset
Sunrise	9	-62.7	-26.7	1:09:33:41.6	11:22:32.6	Sunrise
Sunset	9	142.9	13.2	1:10:29:17.3	12:18:08.3	Sunset
Sunrise	9	-85.8	-26.6	1:11:05:43.2	12:54:34.2	Sunrise

Table 7. Agena 10 Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	10	119.7	13.0	1:12:01:19.0	13:50:10.1	Sunset
Sunrise	10	-109.0	-26.5	1:12:37:44.7	14:26:35.7	Sunrise
Sunset	11	96.5	12.9	1:13:33:21.0	15:22:12.0	Sunset
Sunrise	11	-132.1	-26.5	1:14:09:46.3	15:58:37.3	Sunrise
Sunset	12	73.2	12.7	1:15:05:22.9	16:54:13.9	Sunset
Sunrise	12	-155.3	-26.4	1:15:41:47.9	17:30:38.9	Sunrise
Sunset	13	50.0	12.6	1:16:37:24.8	18:26:15.8	Sunset
Sunrise	13	-178.5	-26.3	1:17:13:49.4	19:02:40.4	Sunrise
Sunset	14	26.4	12.4	1:18:09:26.1	19:58:17.1	Sunset
Sunrise	14	158.4	-26.2	1:18:45:50.5	20:34:41.5	Sunrise
Sunset	15	3.6	12.3	1:19:41:27.8	21:30:18.8	Sunset
Sunrise	15	135.6	-26.1	1:20:17:53.9	22:06:44.9	Sunrise
Sunset	16	-19.7	12.2	1:21:13:41.3	23:02:32.3	Sunset
Sunrise	16	112.2	-26.0	1:21:49:59.0	23:38:50.0	Sunrise
Sunset	17	-43.1	12.1	1:22:45:51.3	24:34:38.2	Sunset
Sunrise	17	88.8	-26.0	1:23:22:03.8	25:10:54.8	Sunrise
Sunset	18	-66.5	12.1	2:00:17:53.4	26:06:44.4	Sunset
Sunrise	18	65.4	-25.9	2:00:54:10.1	26:43:01.1	Sunrise
Sunset	18	-89.9	12.0	2:01:49:58.6	27:38:49.6	Sunset
Sunrise	19	49.9	-23.9	2:02:26:16.2	28:15:07.2	Sunrise

Table 7. Agena Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	19	-113.4	12.0	2:03:22:03.4	29:10:54.4	Sunset
Sunrise	20	26.5	-23.9	2:03:58:22.1	29:47:13.1	Sunrise
Sunset	20	-136.7	11.9	2:04:54:07.7	30:42:58.7	Sunset
Sunrise	21	3.1	-23.8	2:05:30:27.9	31:19:18.9	Sunrise
~~Sunset~~	~~21~~	-153.6	8.2	2:06:26:12.1	32:15:03.1	Sunset
Sunrise	22	-20.3	-23.8	2:07:02:33.6	32:51:24.6	Sunrise
Sunset	22	-177.0	8.2	2:07:58:16.6	33:47:07.6	Sunset
Sunrise	23	-43.7	-23.8	2:08:34:39.2	34:23:30.2	Sunrise
Sunset	23	159.6	8.1	2:09:30:21.1	35:19:12.1	Sunset
Sunrise	24	-67.1	-23.7	2:10:06:44.7	35:55:37.7	Sunrise
Sunset	24	136.1	8.1	2:11:02:25.7	36:51:16.7	Sunset
Sunrise	24	-90.5	-23.7	2:11:38:50.0	37:27:41.0	Sunrise
Sunset	25	112.7	8.0	2:12:34:30.4	38:23:21.4	Sunset
Sunrise	25	-113.9	-23.7	2:13:10:55.3	38:59:46.3	Sunrise
Sunset	26	85.9	9.8	2:14:06:35.1	39:55:26.1	Sunset
Sunrise	26	-137.3	-23.6	2:14:43:00.5	40:31:51.5	Sunrise
Sunset	27	62.6	9.7	2:15:38:39.9	41:27:30.9	Sunset
Sunrise	27	-160.6	-23.6	2:16:15:05.6	42:03:56.6	Sunrise
Sunset	28	42.5	7.9	2:17:10:44.8	42:59:35.8	Sunset
Sunrise	28	175.9	-23.5	2:17:47:10.6	43:36:01.6	Sunrise

Table 7. Agena 10 Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	29	19.1	7.8	2:18:42:49.8	44:31:40.8	Sunset
Sunrise	29	152.5	-23.5	2:19:19:15.6	45:08:06.6	Sunrise
Sunset	30	-4.3	7.8	2:20:14:54.9	46:03:45.9	Sunset
Sunrise	30	129.1	-23.5	2:20:51:20.4	46:40:11.4	Sunrise
Sunset	31	-27.7	7.7	2:21:47:00.0	47:35:51.0	Sunset
Sunrise	31	105.7	-23.4	2:22:23:25.2	48:12:16.2	Sunrise
Sunset	32	-51.1	7.6	2:23:19:05.3	49:07:56.3	Sunset
Sunrise	32	82.3	-23.4	2:23:55:30.0	49:44:21.0	Sunrise
Sunset	33	-74.5	7.6	3:00:51:10.7	50:40:01.7	Sunset
Sunrise	33	58.9	-23.4	3:01:27:34.6	51:16:25.6	Sunrise
Sunset	33	-98.0	7.5	3:02:23:16.1	52:12:07.1	Sunset
Sunrise	34	35.6	-23.3	3:02:59:39.2	52:48:30.2	Sunrise
Sunset	34	-121.4	7.4	3:03:55:21.7	53:44:12.7	Sunset
Sunrise	35	12.2	-23.3	3:04:31:43.8	54:20:34.8	Sunrise
Sunset	35	-144.8	7.4	3:05:27:27.5	55:16:18.5	Sunset
Sunrise	36	-11.2	-23.3	3:06:03:48.3	55:52:39.3	Sunrise
Sunset	36	-168.2	7.4	3:06:59:33.3	56:48:24.3	Sunset
Sunrise	37	-34.6	-23.2	3:07:35:52.8	57:24:43.8	Sunrise
Sunset	37	168.4	7.3	3:08:31:39.3	58:20:30.3	Sunset
Sunrise	38	-58.0	-23.2	3:09:07:57.2	58:56:48.2	Sunrise

Table 7. Agena 10 Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	38	145.0	7.2	3:10:03:45.4	59:52:36.4	Sunset
Sunrise	38	-81.4	-23.1	3:10:01:01.2	60:28:52.2	Sunrise
Sunset	39	121.6	7.2	3:11:35:51.7	61:24:42.7	Sunset
Sunrise	39	-104.7	-23.1	3:12:12:07.6	62:00:58.6	Sunrise
Sunset	40	98.2	7.1	3:13:07:57.2	62:56:48.2	Sunset
Sunrise	40	-120.8	-20.4	3:13:44:13.8	63:33:04.8	Sunrise
Sunset	41	74.8	7.0	3:14:40:02.5	64:28:53.5	Sunset
Sunrise	41	-144.1	-20.4	3:15:16:19.9	65:05:10.9	Sunrise
Sunset	42	51.3	7.0	3:16:12:07.0	66:00:58.0	Sunset
Sunrise	42	-167.5	-20.3	3:16:48:25.8	66:37:16.8	Sunrise
Sunset	43	34.4	3.2	3:17:44:11.6	67:33:02.6	Sunset
Sunrise	43	169.0	-20.3	3:18:20:31.6	68:09:22.6	Sunrise
Sunset	44	11.0	3.1	3:19:16:16.2	69:05:07.2	Sunset
Sunrise	44	145.7	-20.3	3:19:52:37.3	69:41:28.3	Sunrise
Sunset	45	-12.4	3.1	3:20:48:20.9	70:37:11.9	Sunset
Sunrise	45	122.3	-20.2	3:21:24:42.9	71:13:33.9	Sunrise
Sunset	46	-35.9	3.0	3:22:20:25.6	72:09:16.6	Sunset
Sunrise	46	99.9	-20.2	3:22:56:48.4	72:45:39.4	Sunrise
Sunset	47	-59.3	2.9	3:23:52:30.4	73:41:21.4	Sunset
Sunrise	47	75.5	-20.1	4:00:28:53.7	74:17:44.7	Sunrise

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Table 7. Agena 10 Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunset	47	-82.7	2.9	4:01:24:35.3	75:13:26.3	Sunset
Sunrise	48	52.1	-20.1	4:02:00:59.0	75:49:50.0	Sunrise
Sunset	48	-106.0	2.8	4:02:56:40.3	76:45:31.3	Sunset
Sunrise	49	28.7	-20.0	4:03:33:04.2	77:22:55.2	Sunrise
Sunset	49	-129.5	2.8	4:04:28:45.4	78:17:36.4	Sunset
Sunrise	50	5.3	-20.0	4:05:05:09.3	78:54:00.3	Sunrise
Sunset	50	-152.9	2.7	4:06:00:50.5	79:49:41.5	Sunset

Table 8. Passive Agena Illumination

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunrise	1	117.0	-28.2	0:21:07:24.9	-1:03:44.1	Sunrise
Sunset	1	-29.9	14.7	0:22:03:39.3	-0:07:29.7	Sunset
Sunrise	2	100.5	-27.3	0:22:39:49.2	0:28:40.2	Sunrise
Sunset	2	-47.7	11.8	0:23:36:03.4	1:24:54.4	Sunset
Sunrise	3	75.74	-27.5	1:00:12:13.4	2:01:04.4	Sunrise
Sunset	3	-79.06	15.7	1:01:08:27.5	2:57:18.5	Sunset
Sunrise	4	50.97	-27.6	1:01:44:37.5	3:33:28.5	Sunrise
Sunset	4	-103.65	16.17	1:02:40:51.5	4:29:42.5	Sunset
Sunrise	5	26.19	-27.8	1:03:17:01.4	5:05:52.4	Sunrise
Sunset	5	-121.4	13.3	1:04:13:15.4	6:02:06.4	Sunset
Sunrise	6	9.5	-26.6	1:04:49:25.9	6:38:16.9	Sunrise
Sunset	6	-145.9	13.8	1:05:45:39.5	7:34:30.5	Sunset
Sunrise	7	-15.2	-26.9	1:06:21:50.2	8:10:41.2	Sunrise
Sunset	7	-170.5	14.3	1:07:18:03.7	9:06:54.7	Sunset
Sunrise	8	-39.9	-27.1	1:07:54:14.4	9:43:05.4	Sunrise
Sunset	8	164.8	14.7	1:08:50:27.8	10:39:18.8	Sunset
Sunrise	9	-64.7	-27.3	1:09:26:38.5	11:15:29.5	Sunrise
Sunset	9	140.29	15.29	1:10:22:51.9	12:11:42.9	Sunset
Sunrise	9	-89.4	-27.5	1:10:59:02.5	12:47:53.5	Sunrise
Sunset	10	122.4	12.37	1:11:55:15.9	13:44:06.9	Sunset

Table 8. Passive Agena 8 Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunrise	10	-106.18	-26.2	1:12:31:26.9	14:20:17.9	Sunrise
Sunset	11	97.9	12.8	1:13:27:40.0	15:16:31.0	Sunset
Sunrise	11	-130.9	-26.48	1:14:03:51.2	15:52:42.2	Sunrise
Sunset	12	73.36	13.3	1:15:00:04.2	16:48:55.2	Sunset
Sunrise	12	-155.6	-26.7	1:15:36:15.5	17:25:06.5	Sunrise
Sunset	13	48.8	13.8	1:16:32:28.5	18:21:19.5	Sunset
Sunrise	13	179.5	-26.9	1:17:08:39.6	18:57:30.6	Sunrise
Sunset	14	24.2	14.3	1:18:04:52.6	19:53:43.6	Sunset
Sunrise	14	154.8	-27.15	1:18:41:03.7	20:29:54.7	Sunrise
Sunset	15	6.3	11.4	1:19:37:16.6	21:26:07.6	Sunset
Sunrise	15	138.06	-25.7	1:20:13:28.0	22:02:19.0	Sunrise
Sunset	16	-18.1	11.9	1:21:09:40.8	22:58:31.8	Sunset
Sunrise	16	113.3	-26.0	1:21:45:52.4	23:34:43.4	Sunrise
Sunset	17	-42.7	12.4	1:22:42:04.7	24:30:55.7	Sunset
Sunrise	17	88.5	-26.25	1:23:18:19.1	25:07:10.1	Sunrise
Sunset	18	-67.2	12.9	2:00:14:26.0	26:03:17.1	Sunset
Sunrise	18	63.8	-26.4	2:00:50:40.9	26:39:31.9	Sunrise
Sunset	18	-91.8	13.4	2:01:46:53.6	27:35:44.6	Sunset
Sunrise	19	39.1	-26.7	2:02:23:05.0	28:11:56.0	Sunrise
Sunset	19	109.7	10.4	2:03:19:17.7	29:08:08.7	Sunset

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Table 8. Passive Agena 8 Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunrise	20	22.3	-25.2	2:03:55:29.2	29:44:20.2	Sunrise
Sunset	20	-134.3	10.9	2:04:51:41.9	30:40:32.9	Sunset
~~Sunrise~~	21	-2.4	-25.48	2:05:27:53.7	31:16:44.7	Sunrise
Sunset	21	-158.8	11.4	2:06:24:06.3	32:12:57.3	Sunset
~~Sunrise~~	~~22~~	-27.13	-25.75	2:07:00:18.0	32:49:09.0	Sunrise
Sunset	22	176.6	11.9	2:07:56:30.7	33:45:21.7	Sunset
Sunrise	23	-51.8	-26.0	2:08:32:42.3	34:21:33.3	Sunrise
Sunset	23	152.09	12.4	2:09:28:55.0	35:17:46.0	Sunset
Sunrise	24	-76.6	-26.2	2:10:05:06.4	35:53:57.4	Sunrise
Sunset	24	134.1	9.4	2:11:01:19.1	36:50:10.1	Sunset
Sunrise	24	-93.46	-24.6	2:11:37:30.4	37:26:21.4	Sunrise
Sunset	25	109.6	9.9	2:12:33:43.4	38:22:34.4	Sunset
Sunrise	25	-118.17	-24.9	2:13:09:55.1	38:58:46.1	Sunrise
Sunset	26	85.07	10.4	2:14:06:07.7	39:54:58.7	Sunset
Sunrise	26	-142.8	-25.2	2:14:42:19.5	40:31:10.5	Sunrise
Sunset	27	60.5	10.9	2:15:38:32.2	41:27:23.2	Sunset
Sunrise	27	-167.6	-25.5	2:16:14:43.8	42:03:34.8	Sunrise
Sunset	28	36.0	11.46	2:17:10:56.5	42:59:47.5	Sunset
Sunrise	28	167.6	-25.7	2:17:47:08.0	43:35:59.0	Sunrise
Sunset	29	18.01	8.3	2:18:43:20.8	44:32:11.8	Sunset

Table 8. Passive Agena 8 Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunrise	29	150.7	-24.0	2:19:19:32.1	45:08:23.1	Sunrise
Sunset	30	-6.5	8.9	2:20:15:45.1	46:04:36.1	Sunset
Sunrise	30	126.05	-24.3	2:20:51:56.6	46:40:47.6	Sunrise
Sunset	31	-31.03	9.4	2:21:48:09.5	47:37:00.5	Sunset
Sunrise	31	101.35	-24.6	2:22:24:21.0	48:13:12.1	Sunrise
Sunset	32	-55.5	9.9	2:23:20:34.7	49:09:25.7	Sunset
Sunrise	32	76.6	-24.9	2:23:56:46.2	49:45:37.2	Sunrise
Sunset	33	-80.1	10.4	3:00:52:59.9	50:41:50.9	Sunset
Sunrise	33	59.6	-23.0	3:01:29:11.4	51:18:02.4	Sunrise
Sunset	34	-98.1	7.3	3:02:25:25.0	52:14:16.1	Sunset
Sunrise	34	34.9	-23.3	3:03:01:36.6	52:50:27.6	Sunrise
Sunset	35	-122.6	7.8	3:03:57:50.2	53:46:41.3	Sunset
Sunrise	35	10.2	-23.6	3:04:34:01.8	54:22:52.8	Sunrise
Sunset	36	-147.1	8.4	3:05:30:15.4	55:19:06.4	Sunset
Sunrise	36	-14.4	-24.0	3:06:06:27.0	55:55:18.0	Sunrise
Sunset	36	-171.6	8.9	3:07:02:40.6	56:51:31.6	Sunset
Sunrise	37	-39.1	-24.3	3:07:38:52.2	57:27:43.2	Sunrise
Sunset	37	163.8	9.4	3:08:35:05.8	58:23:56.8	Sunset
Sunrise	38	-56.2	-22.3	3:09:11:17.4	59:00:08.4	Sunrise
Sunset	38	145.7	6.3	3:10:07:31.0	59:56:22.0	Sunset

Table 8. Passive Agena 8 Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunrise	38	-80.8	-22.6	3:10:43:42.6	60:32:33.6	Sunrise
Sunset	39	121.2	6.8	3:11:39:56.3	61:28:47.3	Sunset
Sunrise	39	-105.5	-23.0	3:12:16:07.8	62:04:58.8	Sunrise
Sunset	40	96.7	7.3	3:13:12:21.5	63:01:12.5	Sunset
Sunrise	40	-130.2	-23.3	3:13:48:23.0	63:37:14.0	Sunrise
Sunset	41	72.2	7.8	3:14:44:36.7	64:33:27.7	Sunset
Sunrise	41	-154.8	-23.7	3:15:20:48.2	65:09:39.2	Sunrise
Sunset	42	47.7	8.4	3:16:17:01.9	66:05:52.9	Sunset
Sunrise	42	-172.0	-21.5	3:16:53:13.4	66:42:04.4	Sunrise
Sunset	43	29.6	5.2	3:17:49:27.1	67:38:18.1	Sunset
Sunrise	43	163.3	-21.9	3:18:25:38.7	68:14:29.7	Sunrise
Sunset	44	5.1	5.7	3:19:21:52.4	69:10:43.4	Sunset
Sunrise	44	138.6	-22.3	3:19:58:03.9	69:46:54.9	Sunrise
Sunset	44	-19.3	6.3	3:20:54:17.6	70:43:08.6	Sunset
Sunrise	45	113.9	-22.6	3:21:30:29.1	71:19:20.1	Sunrise
Sunset	46	-43.8	6.8	3:22:26:42.8	72:15:33.8	Sunset
Sunrise	46	89.3	-23.0	3:23:02:54.3	72:51:45.3	Sunrise
Sunset	47	-68.3	7.3	3:23:59:08.0	73:47:59.0	Sunset
Sunrise	47	72.1	-20.8	4:00:35:19.5	74:24:10.5	Sunrise
Sunset	47	-86.5	4.2	4:01:31:33.2	75:20:24.2	Sunset

Table 8. Passive Agena 8 Illumination (Continued)

	Agena 10 Rev. No.	Longitude (deg)	Latitude (deg)	GMT (day:hr:min:sec)	GET (hr:min:sec)	
Sunrise	48	47.4	-21.2	4:02:07:44.7	75:56:35.7	Sunrise
Sunset	48	110.9	4.7	4:03:03:58.4	76:52:49.4	Sunset
Sunrise	49	22.8	-21.5	4:03:40:10.0	77:29:01.0	Sunrise
Sunset	49	-135.4	5.2	4:04:36:23.6	78:25:14.6	Sunset
Sunrise	50	-1.8	21.9	4:05:12:35.2	79:01:26.2	Sunrise
Sunset	50	-159.9	5.7	4:06:08:48.8	79:57:39.8	Sunset

APPENDIX H

Program Electron

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 11.347		********			
44 40 11.363	66.00	********	14.00		
44 40 11.378		********			
44 40 11.394	66.00	********	14.00		
44 40 11.409		********			
44 40 11.425	66.00	123.00	15.00		
44 40 11.441		123.00			
44 40 11.456	66.00	121.00	14.00		
44 40 11.472		120.00			
44 40 11.488	66.00	119.00	15.00		
44 40 11.503		117.00			
44 40 11.519	66.00	115.00	14.00		
44 40 11.534		114.00			
44 40 11.550	65.00	111.00	14.00	42.5	57.4
44 40 11.566		106.00			
44 40 11.581	66.00	100.00	14.00		
44 40 11.597		94.00			
44 40 11.613	66.00	86.00	14.00		
44 40 11.628		78.00			
44 40 11.644	66.00	68.00	15.00		
44 40 11.659		59.00			
44 40 11.675	66.00	49.00	15.00		
44 40 11.691		40.00			
44 40 11.706	66.00	33.00	14.00		
44 40 11.722		29.00			
44 40 11.738	66.00	26.00	14.00		
44 40 11.753		25.00			
44 40 11.769	65.00	24.00	15.00		
44 40 11.784		24.00			
44 40 11.800	66.00	23.00	15.00		
44 40 11.816		23.00			
44 40 11.831	65.00	23.00	15.00		
44 40 11.847		23.00			
44 40 11.863	65.00	22.00	14.00		
44 40 11.878		22.00			
44 40 11.894	66.00	21.00	14.00		
44 40 11.909		21.00			
44 40 11.925	9.00	21.00	15.00		
44 40 11.941		111.00			
44 40 11.956	9.00	115.00	9.00		
44 40 11.972		12.00			
44 40 11.988	115.00	18.00	115.00		
44 40 12.003		********			
44 40 12.019	66.00	********	16.00		
44 40 12.034		********			
44 40 12.050	66.00	********	15.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 12.066		********			
44 40 12.081	65.00	********	15.00		
44 40 12.097		********			
44 40 12.113	66.00	********	15.00		
44 40 12.128		********			
44 40 12.144	66.00	********	15.00		
44 40 12.159		********			
44 40 12.175	66.00	********	15.00		
44 40 12.191		********			
44 40 12.206	66.00	********	15.00		
44 40 12.222		********			
44 40 12.238	66.00	********	15.00		
44 40 12.253		********			
44 40 12.269	66.00	********	15.00		
44 40 12.284		********			
44 40 12.300	66.00	********	15.00		
44 40 12.316		********			
44 40 12.331	66.00	********	14.00		
44 40 12.347		********			
44 40 12.363	65.00	********	15.00		
44 40 12.378		********			
44 40 12.394	65.00	********	15.00		
44 40 12.409		********			
44 40 12.425	66.00	********	14.00		
44 40 12.441		********			
44 40 12.456	66.00	********	15.00		
44 40 12.472		********			
44 40 12.488	66.00	123.00	14.00		
44 40 12.503		123.00			
44 40 12.519	66.00	121.00	15.00		
44 40 12.534		122.00			
44 40 12.550	66.00	120.00	14.00	42.5	57.4
44 40 12.566		119.00			
44 40 12.581	65.00	117.00	14.00		
44 40 12.597		115.00			
44 40 12.613	66.00	111.00	15.00		
44 40 12.628		106.00			
44 40 12.644	66.00	100.00	14.00		
44 40 12.659		94.00			
44 40 12.675	66.00	86.00	15.00		
44 40 12.691		78.00			
44 40 12.706	66.00	68.00	14.00		
44 40 12.722		59.00			
44 40 12.738	66.00	49.00	15.00		
44 40 12.753		40.00			
44 40 12.769	66.00	33.00	15.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET. 0 CTS= .02 V. 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 12.784		34.00			
44 40 12.800	65.00	29.00	14.00		
44 40 12.816		26.00			
44 40 12.831	65.00	25.00	15.00		
44 40 12.847		24.00			
44 40 12.863	66.00	24.00	14.00		
44 40 12.878		24.00			
44 40 12.894	66.00	23.00	14.00		
44 40 12.909		23.00			
44 40 12.925	66.00	22.00	15.00		
44 40 12.941		22.00			
44 40 12.956	65.00	22.00	14.00		
44 40 12.972		22.00			
44 40 12.988	65.00	21.00	15.00		
44 40 13.003		111.00			
44 40 13.019	9.00	116.00	8.00		
44 40 13.034		116.00			
44 40 13.050	114.00	12.00	114.00		
44 40 13.066		18.00			
44 40 13.081	66.00	********	15.00		
44 40 13.097		********			
44 40 13.113	66.00	********	15.00		
44 40 13.128		********			
44 40 13.144	66.00	********	15.00		
44 40 13.159		********			
44 40 13.175	66.00	********	15.00		
44 40 13.191		********			
44 40 13.206	66.00	********	14.00		
44 40 13.222		********			
44 40 13.238	66.00	********	15.00		
44 40 13.253		********			
44 40 13.269	66.00	********	15.00		
44 40 13.284		********			
44 40 13.300	66.00	********	14.00		
44 40 13.316		********			
44 40 13.331	66.00	********	15.00		
44 40 13.347		********			
44 40 13.363	66.00	********	14.00		
44 40 13.378		********			
44 40 13.394	66.00	********	15.00		
44 40 13.409		********			
44 40 13.425	66.00	********	14.00		
44 40 13.441		********			
44 40 13.456	66.00	********	15.00		
44 40 13.472		********			
44 40 13.488	66.00	********	14.00		

GEMINI X-AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 13.503		********			
44 40 13.519	66.00	********	14.00		
44 40 13.534		********			
44 40 13.550	66.00	********	14.00	42.5	57.4
44 40 13.566		********			
44 40 13.581	66.00	123.00	14.00		
44 40 13.597		122.00			
44 40 13.613	66.00	120.00	14.00		
44 40 13.628		119.00			
44 40 13.644	66.00	117.00	15.00		
44 40 13.659		115.00			
44 40 13.675	65.00	111.00	15.00		
44 40 13.691		106.00			
44 40 13.706	66.00	100.00	14.00		
44 40 13.722		94.00			
44 40 13.738	66.00	86.00	14.00		
44 40 13.753		78.00			
44 40 13.769	66.00	68.00	14.00		
44 40 13.784		68.00			
44 40 13.800	66.00	59.00	15.00		
44 40 13.816		49.00			
44 40 13.831	65.00	40.00	14.00		
44 40 13.847		33.00			
44 40 13.863	65.00	29.00	14.00		
44 40 13.878		26.00			
44 40 13.894	66.00	25.00	15.00		
44 40 13.909		24.00			
44 40 13.925	65.00	24.00	14.00		
44 40 13.941		23.00			
44 40 13.956	65.00	22.00	14.00		
44 40 13.972		23.00			
44 40 13.988	66.00	22.00	15.00		
44 40 14.003		22.00			
44 40 14.019	66.00	21.00	14.00		
44 40 14.034		22.00			
44 40 14.050	66.00	22.00	15.00		
44 40 14.066		21.00			
44 40 14.081	8.00	111.00	9.00		
44 40 14.097		115.00			
44 40 14.113	115.00	12.00	115.00		
44 40 14.128		18.00			
44 40 14.144	66.00	********	15.00		
44 40 14.159		********			
44 40 14.175	66.00	********	15.00		
44 40 14.191		********			
44 40 14.206	66.00	********	15.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 14.941		26.00			
44 40 14.956	65.00	25.00	15.00		
44 40 14.972		24.00			
44 40 14.988	66.00	24.00	14.00		
44 40 15.003		23.00			
44 40 15.019	66.00	23.00	15.00		
44 40 15.034		23.00			
44 40 15.050	66.00	23.00	15.00		
44 40 15.066		22.00			
44 40 15.081	65.00	22.00	15.00		
44 40 15.097		21.00			
44 40 15.113	65.00	21.00	15.00		
44 40 15.128		21.00			
44 40 15.144	9.00	111.00	9.00		
44 40 15.159		115.00			
44 40 15.175	115.00	12.00	115.00		
44 40 15.191		18.00			
44 40 15.206	66.00	********	16.00		
44 40 15.222		********			
44 40 15.238	66.00	********	15.00		
44 40 15.253		********			
44 40 15.269	66.00	********	15.00		
44 40 15.284		********			
44 40 15.300	66.00	********	15.00		
44 40 15.316		********			
44 40 15.331	65.00	********	15.00		
44 40 15.347		********			
44 40 15.363	66.00	********	15.00		
44 40 15.378		********			
44 40 15.394	66.00	********	14.00		
44 40 15.409		********			
44 40 15.425	66.00	********	14.00		
44 40 15.441		********			
44 40 15.456	66.00	********	15.00		
44 40 15.472		********			
44 40 15.488	66.00	********	15.00		
44 40 15.503		********			
44 40 15.519	66.00	********	14.00		
44 40 15.534		********			
44 40 15.550	66.00	********	14.00	42.5	57.4
44 40 15.566		********			
44 40 15.581	66.00	********	14.00		
44 40 15.597		********			
44 40 15.613	66.00	********	14.00		
44 40 15.628		********			
44 40 15.644	66.00	********	14.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	FL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	FL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 16.378		119.00			
44 40 16.394	53.00	117.00	0.00		
44 40 16.409		121.00			
44 40 16.425	53.00	121.00	0.00		
44 40 16.441		122.00			
44 40 16.456	53.00	122.00	0.00		
44 40 16.472		123.00			
44 40 16.488	53.00	********	3.00		
44 40 16.503		********			
44 40 16.519	55.00	********	1.00		
44 40 16.534		********			
44 40 16.550	55.00	********	4.00	42.5	57.4
44 40 16.566		********			
44 40 16.581	55.00	********	6.00		
44 40 16.597		********			
44 40 16.613	56.00	********	6.00		
44 40 16.628		********			
44 40 16.644	57.00	********	6.00		
44 40 16.659		122.00			
44 40 16.675	57.00	********	7.00		
44 40 16.691		********			
44 40 16.706	57.00	********	8.00		
44 40 16.722		123.00			
44 40 16.738	56.00	122.00	7.00		
44 40 16.753		122.00			
44 40 16.769	57.00	122.00	8.00		
44 40 16.784		122.00			
44 40 16.800	27.00	115.00	6.00		
44 40 16.816		102.00			
44 40 16.831	0.00	98.00	0.00		
44 40 16.847		102.00			
44 40 16.863	0.00	99.00	0.00		
44 40 16.878		94.00			
44 40 16.894	0.00	95.00	0.00		
44 40 16.909		95.00			
44 40 16.925	0.00	97.00	0.00		
44 40 16.941		94.00			
44 40 16.956	0.00	94.00	0.00		
44 40 16.972		92.00			
44 40 16.988	0.00	90.00	0.00		
44 40 17.003		92.00			
44 40 17.019	0.00	92.00	0.00		
44 40 17.034		92.00			
44 40 17.050	0.00	80.00	0.00		
44 40 17.066		69.00			
44 40 17.081	0.00	60.00	0.00		

start energizing 16.440

2d firing at 16.725

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 17.097		81.00			
44 40 17.113	0.00	53.00	0.00		
44 40 17.128		45.00			
44 40 17.144	0.00	46.00	0.00		
44 40 17.159		41.00			
44 40 17.175	0.00	40.00	0.00		
44 40 17.191		38.00			
44 40 17.206	0.00	39.00	0.00		
44 40 17.222		39.00			
44 40 17.238	0.00	34.00	0.00		
44 40 17.253		38.00			
44 40 17.269	30.00	103.00	0.00		
44 40 17.284		111.00			
44 40 17.300	115.00	115.00	8.00		
44 40 17.316		12.00			
44 40 17.331	36.00	17.00	115.00		
44 40 17.347		117.00			
44 40 17.363	45.00	116.00	0.00		
44 40 17.378		114.00			
44 40 17.394	46.00	120.00	0.00		
44 40 17.409		122.00			
44 40 17.425	48.00	********	0.00		
44 40 17.441		123.00			
44 40 17.456	49.00	123.00	0.00		
44 40 17.472		121.00			
44 40 17.488	51.00	********	0.00		
44 40 17.503		********			
44 40 17.519	54.00	********	4.00		
44 40 17.534		********			
44 40 17.550	52.00	********	5.00	42.5	57.4
44 40 17.566		********			
44 40 17.581	50.00	********	0.00		
44 40 17.597		********			
44 40 17.613	52.00	********	0.00		
44 40 17.628		********			
44 40 17.644	53.00	********	3.00		
44 40 17.659		********			
44 40 17.675	54.00	********	5.00		
44 40 17.691		********			
44 40 17.706	54.00	********	6.00		
44 40 17.722		********			
44 40 17.738	64.00	71.00	10.00		
44 40 17.753		117.00			
44 40 17.769	61.00	123.00	32.00		
44 40 17.784		123.00			
44 40 17.800	60.00	122.00	16.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 17.816		122.00		17.825	Commence 3d firing Δt=1.3 sec.
44 40 17.831	56.00	121.00	0.00		
44 40 17.847		121.00			
44 40 17.863	56.00	121.00	3.00		
44 40 17.878		120.00			
44 40 17.894	56.00	120.00	10.00		
44 40 17.909		119.00			
44 40 17.925	55.00	118.00	6.00		
44 40 17.941		116.00			
44 40 17.956	0.00	109.00	0.00		
44 40 17.972		113.00			
44 40 17.988	0.00	113.00	0.00		
44 40 18.003		119.00			
44 40 18.019	0.00	112.00	0.00		
44 40 18.034		112.00			
44 40 18.050	0.00	114.00	0.00		
44 40 18.066		107.00			
44 40 18.081	0.00	113.00	0.00		
44 40 18.097		115.00			
44 40 18.113	0.00	109.00	0.00		
44 40 18.128		112.00			
44 40 18.144	0.00	111.00	0.00		
44 40 18.159		109.00			
44 40 18.175	0.00	107.00	0.00		
44 40 18.191		106.00			
44 40 18.206	0.00	108.00	0.00		
44 40 18.222		111.00			
44 40 18.238	0.00	109.00	0.00		
44 40 18.253		73.00			
44 40 18.269	0.00	36.00	0.00		
44 40 18.284		36.00			
44 40 18.300	0.00	35.00	0.00		
44 40 18.316		34.00			
44 40 18.331	67.00	33.00	0.00		
44 40 18.347		111.00			
44 40 18.363	115.00	116.00	6.00		
44 40 18.378		12.00			
44 40 18.394	3.00	14.00	114.00		
44 40 18.409		99.00			
44 40 18.425	0.00	98.00	0.00		
44 40 18.441		96.00			
44 40 18.456	2.00	93.00	0.00		
44 40 18.472		99.00			
44 40 18.488	0.00	95.00	0.00		
44 40 18.503		96.00		S/C Release	
44 40 18.519	5.00	96.00	0.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

	TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
	44 40 19.253		34.00			
	44 40 19.269	51.00	33.00	7.00		
	44 40 19.284		33.00			
	44 40 19.300	53.00	30.00	8.00		
	44 40 19.316		29.00			
	44 40 19.331	53.00	28.00	11.00		
	44 40 19.347		27.00			
	44 40 19.363	55.00	26.00	17.00		
	44 40 19.378		25.00			
	44 40 19.394	38.00	24.00	$\boxed{25.00}$		
	44 40 19.409		~~111.00~~			
	44 40 19.425	114.00	~~116.00~~	20.00		
	44 40 19.441		~~12.00~~			
	44 40 19.456	114.00	[illegible]	115.00		
	44 40 19.472		********			
	44 40 19.488	57.00	********	37.00		
	44 40 19.503		********			
	44 40 19.519	58.00	********	40.00		
	44 40 19.534		********			
	44 40 19.550	58.00	********	43.00	42.5	57.4
	44 40 19.566		********			
	44 40 19.581	58.00	********	45.00		
	44 40 19.597		********			
	44 40 19.613	58.00	********	46.00		
	44 40 19.628		********			
	44 40 19.644	59.00	********	47.00		
	44 40 19.659		********			
	44 40 19.675	60.00	********	48.00		
	44 40 19.691		********			
	44 40 19.706	60.00	********	49.00		
	44 40 19.722		********			
	44 40 19.738	60.00	********	50.00		
	44 40 19.753		********			
	44 40 19.769	60.00	********	50.00		
9.7	44 40 19.784		********			
	44 40 19.800	60.00	********	51.00		
	44 40 19.816		********			
	44 40 19.831	61.00	********	51.00		
	44 40 19.847		********			
	44 40 19.863	61.00	********	52.00		
	44 40 19.878		********			
	44 40 19.894	50.00	122.00	51.00		
	44 40 19.909		121.00			
	44 40 19.925	49.00	122.00	50.00		
	44 40 19.941		122.00			
	44 40 19.956	50.00	121.00	49.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

	TIME HR	MI	SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
	44	40	19.972		120.00			
	44	40	19.988	50.00	120.00	50.00		
	44	40	20.003		118.00			
	44	40	20.019	50.00	118.00	50.00		
	44	40	20.034		118.00			
	44	40	20.050	53.00	117.00	50.00		
	44	40	20.066		114.00			
	44	40	20.081	53.00	113.00	53.00		
	44	40	20.097		112.00			
	44	40	20.113	53.00	111.00	54.00		
9.9	44	40	20.128		109.00			
	44	40	20.144	56.00	107.00	54.00		
	44	40	20.159		103.00			
	44	40	20.175	57.00	99.00	55.00		
	44	40	20.191		91.00			
	44	40	20.206	58.00	81.00	55.00		
	44	40	20.222		72.00			
	44	40	20.238	58.00	61.00	56.00		
	44	40	20.253		51.00			
	44	40	20.269	59.00	42.00	56.00		
	44	40	20.284		42.00			
	44	40	20.300	59.00	35.00	56.00		
	44	40	20.316		30.00			
	44	40	20.331	60.00	27.00	56.00		
	44	40	20.347		26.00			
	44	40	20.363	60.00	25.00	57.00		
	44	40	20.378		24.00			
	44	40	20.394	60.00	24.00	57.00		
	44	40	20.409		23.00			
	44	40	20.425	60.00	23.00	57.00		
	44	40	20.441		23.00			
10.2	44	40	20.456	61.00	22.00	57.00		
	44	40	20.472		111.00			
	44	40	20.488	19.00	116.00	21.00		
	44	40	20.503		12.00			
	44	40	20.519	115.00	17.00	114.00		
	44	40	20.534		17.00			
	44	40	20.550	61.00	********	59.00	42.5	57.4
	44	40	20.566		********			
	44	40	20.581	61.00	********	59.00		
	44	40	20.597		********			
	44	40	20.613	62.00	********	60.00		
	44	40	20.628		********			
	44	40	20.644	62.00	********	60.00		
	44	40	20.659		********			
	44	40	20.675	62.00	********	60.00		

$\Delta(\log I) = \Delta C$

$\frac{\Delta C}{\Delta t} = \frac{57}{109}$

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

	TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
	44 40 20.691		********			
	44 40 20.706	62.00	********	60.00		
	44 40 20.722		********			
	44 40 20.738	62.00	********	60.00		
	44 40 20.753		********			
	44 40 20.769	62.00	********	60.00		
10.6	44 40 20.784		********			
	44 40 20.800	62.00	********	61.00		
	44 40 20.816		93.00			
	44 40 20.831	62.00	********	61.00		
	44 40 20.847		********			
	44 40 20.863	62.00	********	61.00		
	44 40 20.878		********			
	44 40 20.894	62.00	********	61.00		
	44 40 20.909		********			
	44 40 20.925	62.00	********	61.00		
	44 40 20.941		********			
	44 40 20.956	62.00	********	62.00		
	44 40 20.972		********			
	44 40 20.988	62.00	********	62.00		
	44 40 21.003		********			
	44 40 21.019	62.00	********	62.00		
	44 40 21.034		********			
	44 40 21.050	62.00	********	62.00		
	44 40 21.066		123.00			
	44 40 21.081	62.00	123.00	62.00		
	44 40 21.097		122.00			
	44 40 21.113	62.00	121.00	62.00		
	44 40 21.128		119.00			
	44 40 21.144	62.00	118.00	62.00		
	44 40 21.159		117.00			
	44 40 21.175	62.00	115.00	62.00		
	44 40 21.191		113.00			
	44 40 21.206	62.00	111.00	62.00		
	44 40 21.222		106.00			
	44 40 21.238	62.00	99.00	62.00		
	44 40 21.253		91.00			
	44 40 21.269	62.00	80.00	62.00		
11.0	44 40 21.284		80.00			
	44 40 21.300	62.00	71.00	62.00		
	44 40 21.316		61.00			
	44 40 21.331	62.00	49.00	44.00		
	44 40 21.347		40.00			
	44 40 21.363	62.00	33.00	63.00		
	44 40 21.378		29.00			
	44 40 21.394	62.00	27.00	63.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 21.409		26.00			
44 40 21.425	61.00	8.00	63.00		
44 40 21.441		49.00			
44 40 21.456	********	46.00	62.00		
44 40 21.472		46.00			
44 40 21.488	62.00	23.00	63.00		
44 40 21.503		23.00			
44 40 21.519	********	22.00	63.00		
44 40 21.534		19.00		?	Three seconds of missing data
44 40 24.300	62.00	123.00	68.00		
44 40 24.316		122.00			
44 40 24.331	61.00	121.00	68.00		
44 40 24.347		120.00			
44 40 24.363	62.00	118.00	69.00		
44 40 24.378		117.00			
44 40 24.394	62.00	114.00	69.00		
44 40 24.409		112.00			
44 40 24.425	62.00	107.00	69.00		
14.1 44 40 24.441		101.00			
44 40 24.456	62.00	93.00	69.00		
44 40 24.472		82.00			
44 40 24.488	62.00	71.00	70.00		
44 40 24.503		61.00			
44 40 24.519	62.00	50.00	70.00		
44 40 24.534		50.00			
44 40 24.550	62.00	42.00	70.00		
44 40 24.566		35.00			
44 40 24.581	62.00	29.00	70.00		
44 40 24.597		27.00			
44 40 24.613	62.00	25.00	70.00		
44 40 24.628		25.00			
44 40 24.644	62.00	24.00	70.00		
44 40 24.659		24.00			
44 40 24.675	62.00	23.00	71.00		
44 40 24.691		23.00			
44 40 24.706	62.00	23.00	71.00		
44 40 24.722		22.00			
44 40 24.738	18.00	111.00	71.00		
44 40 24.753		115.00			
44 40 24.769	115.00	12.00	26.00		
44 40 24.784		12.00			
44 40 24.800	63.00	17.00	115.00		
44 40 24.816		********			
44 40 24.831	63.00	********	72.00		
44 40 24.847		********			
44 40 24.863	63.00	********	72.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

	TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
	44 40 24.878		********			
	44 40 24.894	63.00	********	72.00		
	44 40 24.909		********			
	44 40 24.925	63.00	********	73.00		
	44 40 24.941		********			
	44 40 24.956	63.00	********	73.00		
	44 40 24.972		********			
	44 40 24.988	63.00	********	73.00		
	44 40 25.003		********			
	44 40 25.019	63.00	********	73.00		
	44 40 25.034		********			
	44 40 25.050	63.00	********	73.00		
	44 40 25.066		********			
	44 40 25.081	63.00	********	73.00		
	44 40 25.097		********			
	44 40 25.113	63.00	********	73.00		
	44 40 25.128		********			
	44 40 25.144	63.00	********	73.00		
	44 40 25.159		********			
	44 40 25.175	63.00	********	73.00		
	44 40 25.191		********			
	44 40 25.206	63.00	********	73.00		
15.2	44 40 25.222		********			
	44 40 25.238	63.00	********	74.00		
	44 40 25.253		********			
	44 40 25.269	63.00	********	73.00		
	44 40 25.284		********			
	44 40 25.300	63.00	********	74.00		
	44 40 25.316		********			
	44 40 25.331	63.00	********	74.00		
	44 40 25.347		********			
	44 40 25.363	63.00	********	74.00		
	44 40 25.378		********			
	44 40 25.394	63.00	123.00	74.00		
	44 40 25.409		122.00			
	44 40 25.425	63.00	120.00	74.00		
	44 40 25.441		119.00			
	44 40 25.456	63.00	116.00	74.00		
	44 40 25.472		113.00			
	44 40 25.488	63.00	108.00	74.00		
	44 40 25.503		101.00			
	44 40 25.519	64.00	92.00	74.00		
	44 40 25.534		92.00			
	44 40 25.550					
	44 40 25.566		70.00			
	44 40 25.581	64.00	60.00	74.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 25.597		49.00			
44 40 25.613	64.00	40.00	74.00		
44 40 25.628		33.00			
44 40 25.644	64.00	29.00	75.00		
44 40 25.659		26.00			
44 40 25.675	64.00	25.00	74.00		
44 40 25.691		24.00			
44 40 25.706	64.00	24.00	75.00		
44 40 25.722		23.00			
44 40 25.738	64.00	23.00	75.00		
44 40 25.753		22.00			
44 40 25.769	48.00	31.00	74.00		
44 40 25.784		31.00			
44 40 25.800	62.00	30.00	0.00		
44 40 25.816		111.00			
44 40 25.831	115.00	116.00	17.00		
44 40 25.847		12.00			
44 40 25.863	31.00	14.00	114.00		
44 40 25.878		115.00			
44 40 25.894	27.00	110.00	0.00		
44 40 25.909		106.00			
44 40 25.925	29.00	111.00	0.00		
44 40 25.941		108.00			
44 40 25.956	29.00	107.00	0.00		
44 40 25.972		117.00			
44 40 25.988	30.00	112.00	0.00		
44 40 26.003		106.00			
44 40 26.019	30.00	107.00	0.00		
44 40 26.034		107.00			
44 40 26.050	44.00	81.00	0.00		
44 40 26.066		96.00			
44 40 26.081	53.00	103.00	0.00		
44 40 26.097		115.00			
44 40 26.113	55.00	123.00	35.00		
44 40 26.128		********			
44 40 26.144	56.00	********	43.00		
44 40 26.159		********			
44 40 26.175	58.00	********	38.00		
44 40 26.191		********			
44 40 26.206	59.00	********	44.00		
44 40 26.222		********			
44 40 26.238	59.00	********	49.00		
44 40 26.253		********			
44 40 26.269	59.00	********	55.00		
44 40 26.234		********			
44 40 26.300	59.00	********	58.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 26.316		********			
44 40 26.331	59.00	********	61.00		
44 40 26.347		********			
44 40 26.363	59.00	********	63.00		
44 40 26.378		********			
44 40 26.394	60.00	********	65.00		
44 40 26.409		123.00			
44 40 26.425	60.00	123.00	66.00		
44 40 26.441		122.00			
44 40 26.456	61.00	121.00	68.00		
44 40 26.472		119.00			
44 40 26.488	60.00	118.00	68.00		
44 40 26.503		116.00			
44 40 26.519	61.00	114.00	69.00		
44 40 26.534		114.00			
44 40 26.550	61.00	111.00	70.00	42.5	57.4
44 40 26.566		107.00			
44 40 26.581	61.00	102.00	70.00		
44 40 26.597		94.00			
44 40 26.613	62.00	84.00	70.00		
44 40 26.628		73.00			
44 40 26.644	62.00	63.00	71.00		
44 40 26.659		53.00			
44 40 26.675	62.00	42.00	72.00		
44 40 26.691		35.00			
44 40 26.706	62.00	30.00	72.00		
44 40 26.722		27.00			
44 40 26.738	62.00	26.00	72.00		
44 40 26.753		25.00			
44 40 26.769	62.00	24.00	72.00		
44 40 26.784		24.00			
44 40 26.800	62.00	24.00	73.00		
44 40 26.816		24.00			
44 40 26.831	62.00	23.00	73.00		
44 40 26.847		23.00			
44 40 26.863	18.00	23.00	73.00		
44 40 26.878		111.00			
44 40 26.894	115.00	115.00	28.00		
44 40 26.909		12.00			
44 40 26.925	63.00	18.00	114.00		
44 40 26.941		********			
44 40 26.956	63.00	********	75.00		
44 40 26.972		********			
44 40 26.988	63.00	********	75.00		
44 40 27.003		********			
44 40 27.019	63.00	********	75.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 27.034		********			
44 40 27.050	63.00	********	75.00		
44 40 27.066		********			
44 40 27.081	63.00	********	75.00		
44 40 27.097		********			
44 40 27.113	63.00	********	75.00		
44 40 27.128		********			
44 40 27.144	63.00	********	75.00		
44 40 27.159		********			
44 40 27.175	63.00	********	75.00		
44 40 27.191		********			
44 40 27.206	63.00	********	76.00		
44 40 27.222		********			
44 40 27.238	63.00	********	76.00		
44 40 27.253		********			
44 40 27.269	63.00	********	76.00		
44 40 27.284		********			
44 40 27.300	63.00	********	76.00		
44 40 27.316		********			
44 40 27.331	63.00	********	76.00		
44 40 27.347		********			
44 40 27.363	63.00	********	76.00		
44 40 27.378		********			
44 40 27.394	63.00	********	76.00		
44 40 27.409		********			
44 40 27.425	63.00	********	76.00		
44 40 27.441		********			
44 40 27.456	64.00	********	77.00		
44 40 27.472		********			
44 40 27.488	63.00	********	76.00		
44 40 27.503		********			
44 40 27.519	64.00	********	77.00		
44 40 27.534		********			
44 40 27.550	64.00	123.00	77.00	42.5	57.4
44 40 27.566		121.00			
44 40 27.581	64.00	119.00	77.00		
44 40 27.597		117.00			
44 40 27.613	64.00	114.00	77.00		
44 40 27.628		109.00			
44 40 27.644	64.00	101.00	77.00		
44 40 27.659		92.00			
44 40 27.675	64.00	81.00	77.00		
44 40 27.691		70.00			
44 40 27.706	64.00	60.00	77.00		
44 40 27.722		49.00			
44 40 27.738	64.00	40.00	77.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

	TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
	44 40 27.753		33.00			
	44 40 27.769	64.00	29.00	77.00		
18.5	44 40 27.784		29.00			
	44 40 27.800	64.00	26.00	77.00		
	44 40 27.816		25.00			
	44 40 27.831	64.00	24.00	77.00		
	44 40 27.847		24.00			
	44 40 27.863	64.00	23.00	77.00		
	44 40 27.878		23.00			
	44 40 27.894	64.00	23.00	77.00		
	44 40 27.909		22.00			
	44 40 27.925	15.00	22.00	77.00		
	44 40 27.941		111.00			
	44 40 27.956	15.00	116.00	22.00		
	44 40 27.972		12.00			
	44 40 27.988	114.00	18.00	114.00		
	44 40 28.003		********			
	44 40 28.019	65.00	********	79.00		
	44 40 28.034		********			
	44 40 28.050	65.00	********	79.00		
	44 40 28.066		********			
	44 40 28.081	65.00	********	79.00		
	44 40 28.097		********			
	44 40 28.113	65.00	********	78.00		
	44 40 28.128		********			
	44 40 28.144	65.00	********	78.00		
	44 40 28.159		********			
	44 40 28.175	65.00	********	79.00		
	44 40 28.191		********			
	44 40 28.206	65.00	********	79.00		
	44 40 28.222		********			
	44 40 28.238	65.00	********	79.00		
	44 40 28.253		********			
	44 40 28.269	65.00	********	79.00		
	44 40 28.284		********			
	44 40 28.300	65.00	********	79.00		
	44 40 28.316		********			
	44 40 28.331	65.00	********	79.00		
	44 40 28.347		********			
	44 40 28.363	64.00	********	72.00		
	44 40 28.378		********			
	44 40 28.394	64.00	********	70.00		
	44 40 28.409		********			
	44 40 28.425	64.00	********	69.00		
	44 40 28.441		********			
	44 40 28.456	65.00	********	71.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 28.472		********			
44 40 28.488	67.00	********	71.00		
44 40 28.503		********			
44 40 28.519	67.00	********	71.00		
44 40 28.534		********			
44 40 28.550	67.00	********	71.00	42.5	57.4
44 40 28.566		122.00			
44 40 28.581	67.00	119.00	70.00		
44 40 28.597		121.00			
44 40 28.613	68.00	123.00	73.00		
44 40 28.628		122.00			
44 40 28.644	68.00	121.00	75.00		
44 40 28.659		119.00			
44 40 28.675	65.00	114.00	74.00		
44 40 28.691		110.00			
44 40 28.706	65.00	93.00	72.00		
44 40 28.722		98.00			
44 40 28.738	65.00	79.00	73.00		
44 40 28.753		68.00			
44 40 28.769	64.00	61.00	74.00		
44 40 28.784		61.00			
44 40 28.800	65.00	49.00	75.00		
44 40 28.816		44.00			
44 40 28.831	66.00	36.00	76.00		
44 40 28.847		30.00			
44 40 28.863	65.00	27.00	76.00		
44 40 28.878		26.00			
44 40 28.894	66.00	25.00	77.00		
44 40 28.909		24.00			
44 40 28.925	65.00	24.00	76.00		
44 40 28.941		23.00			
44 40 28.956	65.00	23.00	77.00		
44 40 28.972		23.00			
44 40 28.988	66.00	22.00	77.00		
44 40 29.003		111.00			
44 40 29.019	14.00	115.00	32.00		
44 40 29.034		116.00			
44 40 29.050	114.00	12.00	115.00		
44 40 29.066		18.00			
44 40 29.081	66.00	********	79.00		
44 40 29.097		********			
44 40 29.113	66.00	********	78.00		
44 40 29.128		********			
44 40 29.144	66.00	********	79.00		
44 40 29.159		********			
44 40 29.175	66.00	********	78.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 29.191		[illegible]			
44 40 29.206	66.00	********	78.00		
44 40 29.222		********			
44 40 29.238	66.00	********	78.00		
44 40 29.253		********			
44 40 29.269	66.00	********	78.00		
44 40 29.284		********			
44 40 29.300	66.00	********	78.00		
44 40 29.316		********			
44 40 29.331	66.00	********	78.00		
44 40 29.347		********			
44 40 29.363	66.00	********	79.00		
44 40 29.378		********			
44 40 29.394	66.00	********	78.00		
44 40 29.409		********			
44 40 29.425	66.00	********	79.00		
44 40 29.441		********			
44 40 29.456	66.00	********	79.00		
44 40 29.472		********			
44 40 29.488	66.00	********	78.00		
44 40 29.503		********			
44 40 29.519	66.00	********	78.00		
44 40 29.534		********			
44 40 29.551	66.00	********	79.00	42.5	57.4
44 40 29.567		********			
44 40 29.582	66.00	********	79.00		
44 40 29.598		********			
44 40 29.614	66.00	********	79.00		
44 40 29.629		********			
44 40 29.645	66.00	********	79.00		
44 40 29.660		********			
44 40 29.676	66.00	********	79.00		
44 40 29.692		122.00			
44 40 29.707	66.00	120.00	79.00		
44 40 29.723		118.00			
44 40 29.739	66.00	114.00	79.00		
44 40 29.754		108.00			
44 40 29.770	66.00	101.00	79.00		
44 40 29.785		101.00			
44 40 29.801	66.00	90.00	79.00		
44 40 29.817		79.00			
44 40 29.832	66.00	69.00	79.00		
44 40 29.848		58.00			
44 40 29.864	66.00	48.00	79.00		
44 40 29.879		39.00			
44 40 29.895	66.00	32.00	79.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 29.910		29.00			
44 40 29.926	66.00	26.00	79.00		
44 40 29.942		25.00			
44 40 29.957	66.00	24.00	79.00		
44 40 29.973		24.00			
44 40 29.989	66.00	23.00	79.00		
44 40 30.004		23.00			
44 40 30.020	66.00	22.00	79.00		
44 40 30.035		23.00			
44 40 30.051	66.00	22.00	79.00		
44 40 30.067		22.00			
44 40 30.082	13.00	111.00	20.00		
44 40 30.098		116.00			
44 40 30.114	115.00	12.00	114.00		
44 40 30.129		18.00			
44 40 30.145	66.00	********	81.00		
44 40 30.160		********			
44 40 30.176	66.00	********	81.00		
44 40 30.192		********			
44 40 30.207	66.00	********	80.00		
44 40 30.223		********			
44 40 30.239	66.00	********	80.00		
44 40 30.254		********			
44 40 30.270	66.00	********	80.00		
44 40 30.285		********			
44 40 30.301	66.00	********	80.00		
44 40 30.317		********			
44 40 30.332	66.00	********	80.00		
44 40 30.348		********			
44 40 30.364	66.00	********	80.00		
44 40 30.379		********			
44 40 30.395	66.00	********	80.00		
44 40 30.410		********			
44 40 30.426	66.00	********	80.00		
44 40 30.442		********			
44 40 30.457	66.00	********	80.00		
44 40 30.473		********			
44 40 30.489	66.00	********	80.00		
44 40 30.504		********			
44 40 30.520	66.00	********	80.00		
44 40 30.535		********			
44 40 30.551	66.00	********	80.00	42.5	57.4
44 40 30.567		********			
44 40 30.582	66.00	********	80.00		
44 40 30.598		********			
44 40 30.614	66.00	********	80.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

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TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 30.629		********			
44 40 30.645	65.00	********	80.00		
44 40 30.660		********			
44 40 30.676	66.00	********	80.00		
44 40 30.692		********			
44 40 30.707	66.00	********	80.00		
44 40 30.723		********			
44 40 30.739	66.00	********	80.00		
44 40 30.754		123.00			
44 40 30.770	66.00	121.00	80.00		
44 40 30.785		121.00			
44 40 30.801	66.00	118.00	80.00		
44 40 30.817		115.00			
44 40 30.832	66.00	109.00	80.00		
44 40 30.848		101.00			
44 40 30.864	66.00	90.00	80.00		
44 40 30.879		80.00			
44 40 30.895	66.00	69.00	81.00		
44 40 30.910		58.00			
44 40 30.926	66.00	48.00	80.00		
44 40 30.942		39.00			
44 40 30.957	66.00	32.00	80.00		
44 40 30.973		28.00			
44 40 30.989	66.00	26.00	81.00		
44 40 31.004		25.00			
44 40 31.020	66.00	24.00	81.00		
44 40 31.035		24.00			
44 40 31.051	66.00	24.00	81.00		
44 40 31.067		24.00			
44 40 31.082	66.00	23.00	81.00		
44 40 31.098		23.00			
44 40 31.114	66.00	22.00	81.00		
44 40 31.129		22.00			
44 40 31.145	12.00	111.00	18.00		
44 40 31.160		115.00			
44 40 31.176	115.00	12.00	115.00		
44 40 31.192		18.00			
44 40 31.207	67.00	********	82.00		
44 40 31.223		********			
44 40 31.239	67.00	********	82.00		
44 40 31.254		********			
44 40 31.270	67.00	********	82.00		
44 40 31.285		********			
44 40 31.301	67.00	********	82.00		
44 40 31.317		********			
44 40 31.332	67.00	********	81.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 31.348		********			
44 40 31.364	67.00	********	81.00		
44 40 31.379		********			
44 40 31.395	66.00	********	81.00		
44 40 31.410		********			
44 40 31.426	66.00	********	81.00		
44 40 31.442		********			
44 40 31.457	67.00	********	81.00		
44 40 31.473		********			
44 40 31.489	67.00	********	81.00		
44 40 31.504		********			
44 40 31.520	67.00	********	81.00		
44 40 31.535		********			
44 40 31.551	67.00	********	81.00	42.5	57.4
44 40 31.567		********			
44 40 31.582	66.00	********	81.00		
44 40 31.598		********			
44 40 31.614	66.00	********	81.00		
44 40 31.629		********			
44 40 31.645	66.00	********	81.00		
44 40 31.660		********			
44 40 31.676	66.00	********	81.00		
44 40 31.692		********			
44 40 31.707	66.00	********	81.00		
44 40 31.723		********			
44 40 31.739	67.00	********	81.00		
44 40 31.754		********			
44 40 31.770	66.00	********	81.00		
44 40 31.785		********			
44 40 31.801	66.00	********	81.00		
44 40 31.817		********			
44 40 31.832	66.00	123.00	81.00		
44 40 31.848		121.00			
44 40 31.864	66.00	119.00	81.00		
44 40 31.879		115.00			
44 40 31.895	66.00	107.00	75.00		
44 40 31.910		98.00			
44 40 31.926	66.00	89.00	74.00		
44 40 31.942		76.00			
44 40 31.957	66.00	68.00	75.00		
44 40 31.973		56.00			
44 40 31.989	66.00	46.00	75.00		
44 40 32.004		38.00			
44 40 32.020	66.00	32.00	75.00		
44 40 32.035		32.00			
44 40 32.051	66.00	28.00	75.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 32.067		26.00			
44 40 32.082	66.00	25.00	77.00		
44 40 32.098		24.00			
44 40 32.114	66.00	24.00	77.00		
44 40 32.129		24.00			
44 40 32.145	66.00	23.00	77.00		
44 40 32.160		23.00			
44 40 32.176	66.00	23.00	78.00		
44 40 32.192		22.00			
44 40 32.207	13.00	111.00	22.00		
44 40 32.223		115.00			
44 40 32.239	114.00	12.00	22.00		
44 40 32.254		18.00			
44 40 32.270	67.00	********	114.00		
44 40 32.285		********			
44 40 32.301	67.00	********	80.00		
44 40 32.317		********			
44 40 32.332	66.00	********	80.00		
44 40 32.348		********			
44 40 32.364	67.00	********	80.00		
44 40 32.379		********			
44 40 32.395	67.00	********	80.00		
44 40 32.410		********			
44 40 32.426	66.00	********	80.00		
44 40 32.442		********			
44 40 32.457	67.00	********	80.00		
44 40 32.473		********			
44 40 32.489	67.00	********	80.00		
44 40 32.504		********			
44 40 32.520	66.00	********	80.00		
44 40 32.535		********			
44 40 32.551	67.00	********	80.00	42.5	57.4
44 40 32.567		********			
44 40 32.582	67.00	********	80.00		
44 40 32.598		********			
44 40 32.614	67.00	********	80.00		
44 40 32.629		********			
44 40 32.645	67.00	********	80.00		
44 40 32.660		********			
44 40 32.676	67.00	********	80.00		
44 40 32.692		********			
44 40 32.707	66.00	********	80.00		
44 40 32.723		********			
44 40 32.739	67.00	********	80.00		
44 40 32.754		********			
44 40 32.770	67.00	********	80.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 32.785		********			
44 40 32.801	66.00	********	80.00		
44 40 32.817		********			
44 40 32.832	67.00	********	80.00		
44 40 32.848		********			
44 40 32.864	66.00	********	80.00		
44 40 32.879		********			
44 40 32.895	66.00	123.00	81.00		
44 40 32.910		122.00			
44 40 32.926	66.00	119.00	81.00		
44 40 32.942		115.00			
44 40 32.957	66.00	109.00	81.00		
44 40 32.973		100.00			
44 40 32.989	67.00	89.00	81.00		
44 40 33.004		79.00			
44 40 33.020	67.00	68.00	81.00		
44 40 33.035		68.00			
44 40 33.051	66.00	57.00	81.00		
44 40 33.067		47.00			
44 40 33.082	67.00	38.00	81.00		
44 40 33.098		32.00			
44 40 33.114	66.00	29.00	81.00		
44 40 33.129		26.00			
44 40 33.145	67.00	25.00	81.00		
44 40 33.160		25.00			
44 40 33.176	67.00	24.00	81.00		
44 40 33.192		23.00			
44 40 33.207	66.00	23.00	81.00		
44 40 33.223		23.00			
44 40 33.239	67.00	23.00	81.00		
44 40 33.254		22.00			
44 40 33.270	12.00	103.00	81.00		
44 40 33.285		111.00			
44 40 33.301	114.00	116.00	17.00		
44 40 33.317		12.00			
44 40 33.332	67.00	18.00	115.00		
44 40 33.348		********			
44 40 33.364	67.00	********	82.00		
44 40 33.379		********			
44 40 33.395	67.00	********	82.00		
44 40 33.410		********			
44 40 33.426	67.00	********	82.00		
44 40 33.442		********			
44 40 33.457	67.00	********	82.00		
44 40 33.473		********			
44 40 33.489	67.00	********	82.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 33.504		********			
44 40 33.520	67.00	********	82.00		
44 40 33.535		********			
44 40 33.551	67.00	********	82.00	42.5	57.4
44 40 33.567		********			
44 40 33.582	67.00	********	82.00		
44 40 33.598		********			
44 40 33.614	67.00	********	82.00		
44 40 33.629		********			
44 40 33.645	67.00	********	82.00		
44 40 33.660		********			
44 40 33.676	67.00	********	82.00		
44 40 33.692		********			
44 40 33.707	67.00	********	82.00		
44 40 33.723		********			
44 40 33.739	67.00	********	82.00		
44 40 33.754		********			
44 40 33.770	67.00	********	82.00		
44 40 33.785		********			
44 40 33.801	67.00	********	82.00		
44 40 33.817		********			
44 40 33.832	67.00	********	82.00		
44 40 33.848		********			
44 40 33.864	67.00	********	82.00		
44 40 33.879		********			
44 40 33.895	67.00	********	82.00		
44 40 33.910		********			
44 40 33.926	67.00	********	82.00		
44 40 33.942		********			
44 40 33.957	67.00	********	82.00		
44 40 33.973		122.00			
44 40 33.989	67.00	119.00	82.00		
44 40 34.004		115.00			
44 40 34.020	67.00	109.00	82.00		
44 40 34.035		109.00			
44 40 34.051	67.00	100.00	81.00		
44 40 34.067		89.00			
44 40 34.082	67.00	79.00	82.00		
44 40 34.098		67.00			
44 40 34.114	67.00	57.00	82.00		
44 40 34.129		47.00			
44 40 34.145	67.00	38.00	81.00		
44 40 34.160		32.00			
44 40 34.176	67.00	28.00	81.00		
44 40 34.192		26.00			
44 40 34.207	67.00	25.00	82.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 34.223		24.00			
44 40 34.239	67.00	23.00	82.00		
44 40 34.254		23.00			
44 40 34.270	67.00	23.00	82.00		
44 40 34.285		23.00			
44 40 34.301	67.00	23.00	82.00		
44 40 34.317		22.00			
44 40 34.332	12.00	22.00	82.00		
44 40 34.348		111.00			
44 40 34.364	115.00	116.00	15.00		
44 40 34.379		12.00			
44 40 34.395	67.00	18.00	115.00		
44 40 34.410		********			
44 40 34.426	67.00	********	83.00		
44 40 34.442		********			
44 40 34.457	67.00	********	83.00		
44 40 34.473		********			
44 40 34.489	67.00	********	83.00		
44 40 34.504		********			
44 40 34.520	67.00	********	83.00		
44 40 34.535		********			
44 40 34.551	67.00	********	82.00	42.5	57.4
44 40 34.567		********			
44 40 34.582	67.00	********	82.00		
44 40 34.598		********			
44 40 34.614	67.00	********	82.00		
44 40 34.629		********			
44 40 34.645	67.00	********	82.00		
44 40 34.660		********			
44 40 34.676	67.00	********	82.00		
44 40 34.692		********			
44 40 34.707	67.00	********	82.00		
44 40 34.723		********			
44 40 34.739	67.00	********	82.00		
44 40 34.754		********			
44 40 34.770	67.00	********	82.00		
44 40 34.785		********			
44 40 34.801	67.00	********	82.00		
44 40 34.817		********			
44 40 34.832	67.00	********	82.00		
44 40 34.848		********			
44 40 34.864	67.00	********	82.00		
44 40 34.879		********			
44 40 34.895	67.00	********	82.00		
44 40 34.910		********			
44 40 34.926	67.00	********	82.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR	MI	SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44	40	34.942		********			
44	40	34.957	67.00	********	82.00		
44	40	34.973		********			
44	40	34.989	67.00	********	82.00		
44	40	35.004		********			
44	40	35.020	67.00	********	82.00		
44	40	35.035		********			
44	40	35.051	67.00	122.00	82.00		
44	40	35.067		119.00			
44	40	35.082	67.00	115.00	82.00		
44	40	35.098		108.00			
44	40	35.114	67.00	100.00	82.00		
44	40	35.129		89.00			
44	40	35.145	67.00	78.00	82.00		
44	40	35.160		67.00			
44	40	35.176	67.00	57.00	82.00		
44	40	35.192		46.00			
44	40	35.207	67.00	38.00	82.00		
44	40	35.223		31.00			
44	40	35.239	67.00	28.00	82.00		
44	40	35.254		26.00			
44	40	35.270	67.00	25.00	82.00		
44	40	35.285		25.00			
44	40	35.301	67.00	24.00	82.00		
44	40	35.317		24.00			
44	40	35.332	67.00	23.00	82.00		
44	40	35.348		23.00			
44	40	35.364	67.00	23.00	82.00		
44	40	35.379		22.00			
44	40	35.395	12.00	22.00	82.00		
44	40	35.410		111.00			
44	40	35.426	113.00	115.00	15.00		
44	40	35.442		12.00			
44	40	35.457	115.00	18.00	114.00		
44	40	35.473		********			
44	40	35.489	68.00	********	83.00		
44	40	35.504		********			
44	40	35.520	67.00	********	83.00		
44	40	35.535		********			
44	40	35.551	67.00	********	83.00	42.5	57.4
44	40	35.567		********			
44	40	35.582	67.00	********	83.00		
44	40	35.598		********			
44	40	35.614	67.00	********	83.00		
44	40	35.629		********			
44	40	35.645	67.00	********	83.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 35.660		********			
44 40 35.676	67.00	********	82.00		
44 40 35.692		********			
44 40 35.707	67.00	********	83.00		
44 40 35.723		********			
44 40 35.739	67.00	********	83.00		
44 40 35.754		********			
44 40 35.770	67.00	********	83.00		
44 40 35.785		********			
44 40 35.801	67.00	********	83.00		
44 40 35.817		********			
44 40 35.832	67.00	********	83.00		
44 40 35.848		********			
44 40 35.864	67.00	********	82.00		
44 40 35.879		********			
44 40 35.895	67.00	********	82.00		
44 40 35.910		********			
44 40 35.926	67.00	********	82.00		
44 40 35.942		********			
44 40 35.957	67.00	********	82.00		
44 40 35.973		********			
44 40 35.989	67.00	********	82.00		
44 40 36.004		********			
44 40 36.020	67.00	********	82.00		
44 40 36.035		********			
44 40 36.051	67.00	********	82.00		
44 40 36.067		********			
44 40 36.082	67.00	********	82.00		
44 40 36.098		********			
44 40 36.114	67.00	122.00	82.00		
44 40 36.129		119.00			
44 40 36.145	67.00	115.00	82.00		
44 40 36.160		108.00			
44 40 36.176	67.00	100.00	82.00		
44 40 36.192		89.00			
44 40 36.207	67.00	78.00	82.00		
44 40 36.223		67.00			
44 40 36.239	67.00	56.00	82.00		
44 40 36.254		46.00			
44 40 36.270	67.00	38.00	82.00		
44 40 36.285		36.00			
44 40 36.301	67.00	31.00	82.00		
44 40 36.317		28.00			
44 40 36.332	67.00	26.00	82.00		
44 40 36.348		25.00			
44 40 36.364	67.00	24.00	82.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	FL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	FL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 36.379		24.00			
44 40 36.395	67.00	23.00	82.00		
44 40 36.410		23.00			
44 40 36.426	67.00	[illegible].00	82.00		
44 40 36.442		22.00			
44 40 36.457	67.00	21.00	82.00		
44 40 36.473		111.00			
44 40 36.489	12.00	115.00	16.00		
44 40 36.504		12.00			
44 40 36.520	115.00	18.00	115.00		
44 40 36.535		18.00			
44 40 36.551	68.00	********	83.00	42.5	57.4
44 40 36.567		********			
44 40 36.582	67.00	********	83.00		
44 40 36.598		********			
44 40 36.614	67.00	********	83.00		
44 40 36.629		********			
44 40 36.645	67.00	********	83.00		
44 40 36.660		********			
44 40 36.676	67.00	********	83.00		
44 40 36.692		********			
44 40 36.707	67.00	********	83.00		
44 40 36.723		********			
44 40 36.739	67.00	********	83.00		
44 40 36.754		********			
44 40 36.770	67.00	********	83.00		
44 40 36.785		********			
44 40 36.801	67.00	********	83.00		
44 40 36.817		********			
44 40 36.832	67.00	********	83.00		
44 40 36.848		********			
44 40 36.864	67.00	********	83.00		
44 40 36.879		********			
44 40 36.895	67.00	********	83.00		
44 40 36.910		********			
44 40 36.926	67.00	********	83.00		
44 40 36.942		********			
44 40 36.957	67.00	********	82.00		
44 40 36.973		********			
44 40 36.989	67.00	********	83.00		
44 40 37.004		********			
44 40 37.020	67.00	********	83.00		
44 40 37.035		********			
44 40 37.051	67.00	********	83.00		
44 40 37.067		********			
44 40 37.082	67.00	********	82.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 37.098		********			
44 40 37.114	67.00	********	82.00		
44 40 37.129		********			
44 40 37.145	67.00	********	82.00		
44 40 37.160		********			
44 40 37.176	67.00	122.00	82.00		
44 40 37.192		119.00			
44 40 37.207	67.00	115.00	82.00		
44 40 37.223		108.00			
44 40 37.239	67.00	99.00	82.00		
44 40 37.254		89.00			
44 40 37.270	67.00	77.00	82.00		
44 40 37.285		78.00			
44 40 37.301	67.00	67.00	82.00		
44 40 37.317		56.00			
44 40 37.332	67.00	46.00	82.00		
44 40 37.348		37.00			
44 40 37.364	67.00	31.00	82.00		
44 40 37.379		28.00			
44 40 37.395	67.00	26.00	82.00		
44 40 37.410		25.00			
44 40 37.426	67.00	24.00	82.00		
44 40 37.442		24.00			
44 40 37.457	67.00	23.00	82.00		
44 40 37.473		23.00			
44 40 37.489	67.00	23.00	82.00		
44 40 37.504		22.00			
44 40 37.520	67.00	22.00	82.00		
44 40 37.535		22.00			
44 40 37.551	12.00	111.00	15.00	42.5	57.4
44 40 37.567		116.00			
44 40 37.582	114.00	12.00	115.00		
44 40 37.598		18.00			
44 40 37.614	67.00	********	84.00		
44 40 37.629		********			
44 40 37.645	67.00	********	83.00		
44 40 37.660		********			
44 40 37.676	67.00	********	83.00		
44 40 37.692		********			
44 40 37.707	67.00	********	83.00		
44 40 37.723		********			
44 40 37.739	67.00	********	83.00		
44 40 37.754		********			
44 40 37.770	67.00	********	83.00		
44 40 37.785		********			
44 40 37.801	67.00	********	83.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 37.817		********			
44 40 37.832	67.00	********	83.00		
44 40 37.848		********			
44 40 37.864	67.00	********	83.00		
44 40 37.879		********			
44 40 37.895	67.00	********	83.00		
44 40 37.910		********			
44 40 37.926	67.00	********	83.00		
44 40 37.942		********			
44 40 37.957	67.00	********	83.00		
44 40 37.973		********			
44 40 37.989	67.00	********	83.00		
44 40 38.004		********			
44 40 38.020	67.00	********	83.00		
44 40 38.035		********			
44 40 38.051	67.00	********	83.00		
44 40 38.067		********			
44 40 38.082	67.00	********	83.00		
44 40 38.098		********			
44 40 38.114	67.00	********	83.00		
44 40 38.129		********			
44 40 38.145	67.00	********	82.00		
44 40 38.160		********			
44 40 38.176	67.00	********	82.00		
44 40 38.192		********			
44 40 38.207	67.00	********	82.00		
44 40 38.223		********			
44 40 38.239	67.00	122.00	82.00		
44 40 38.254		119.00			
44 40 38.270	67.00	115.00	82.00		
44 40 38.285		115.00			
44 40 38.301	67.00	108.00	82.00		
44 40 38.317		99.00			
44 40 38.332	67.00	89.00	82.00		
44 40 38.348		78.00			
44 40 38.364	67.00	67.00	82.00		
44 40 38.379		56.00			
44 40 38.395	67.00	46.00	82.00		
44 40 38.410		37.00			
44 40 38.426	67.00	31.00	82.00		
44 40 38.442		28.00			
44 40 38.457	67.00	25.00	82.00		
44 40 38.473		25.00			
44 40 38.489	67.00	24.00	82.00		
44 40 38.504		24.00			
44 40 38.520	67.00	23.00	82.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 38.535		23.00			
44 40 38.551	67.00	23.00	82.00	42.5	57.4
44 40 38.567		22.00			
44 40 38.582	67.00	22.00	82.00		
44 40 38.598		22.00			
44 40 38.614	11.00	111.00	15.00		
44 40 38.629		116.00			
44 40 38.645	114.00	12.00	115.00		
44 40 38.660		18.00			
44 40 38.676	68.00	********	83.00		
44 40 38.692		********			
44 40 38.707	67.00	********	83.00		
44 40 38.723		********			
44 40 38.739	67.00	********	83.00		
44 40 38.754		********			
44 40 38.770	68.00	********	83.00		
44 40 38.785		********			
44 40 38.801	67.00	********	83.00		
44 40 38.817		********			
44 40 38.832	67.00	********	83.00		
44 40 38.848		********			
44 40 38.864	67.00	********	83.00		
44 40 38.879		********			
44 40 38.895	67.00	********	83.00		
44 40 38.910		********			
44 40 38.926	67.00	********	83.00		
44 40 38.942		********			
44 40 38.957	67.00	********	83.00		
44 40 38.973		********			
44 40 38.989	67.00	********	83.00		
44 40 39.004		********			
44 40 39.020	67.00	********	83.00		
44 40 39.035		********			
44 40 39.051	67.00	********	83.00		
44 40 39.067		********			
44 40 39.082	67.00	********	83.00		
44 40 39.098		********			
44 40 39.114	67.00	********	83.00		
44 40 39.129		********			
44 40 39.145	67.00	********	82.00		
44 40 39.160		********			
44 40 39.176	67.00	********	82.00		
44 40 39.192		********			
44 40 39.207	67.00	********	82.00		
44 40 39.223		********			
44 40 39.239	67.00	********	82.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 39.254		********			
44 40 39.270	67.00	********	82.00		
44 40 39.285		********			
44 40 39.301	67.00	********	82.00		
44 40 39.317		122.00			
44 40 39.332	67.00	119.00	82.00		
44 40 39.348		115.00			
44 40 39.364	67.00	108.00	82.00		
44 40 39.379		99.00			
44 40 39.395	67.00	88.00	82.00		
44 40 39.410		77.00			
44 40 39.426	67.00	66.00	82.00		
44 40 39.442		56.00			
44 40 39.457	67.00	45.00	82.00		
44 40 39.473		37.00			
44 40 39.489	67.00	31.00	82.00		
44 40 39.504		28.00			
44 40 39.520	67.00	26.00	82.00		
44 40 39.535		26.00			
44 40 39.551	67.00	25.00	82.00	42.5	57.4
44 40 39.567		24.00			
44 40 39.582	67.00	24.00	82.00		
44 40 39.598		23.00			
44 40 39.614	67.00	23.00	82.00		
44 40 39.629		22.00			
44 40 39.645	67.00	22.00	82.00		
44 40 39.660		22.00			
44 40 39.676	12.00	111.00	15.00		
44 40 39.692		116.00			
44 40 39.707	115.00	12.00	112.00		
44 40 39.723		18.00			
44 40 39.739	68.00	********	115.00		
44 40 39.754		********			
44 40 39.770	68.00	********	83.00		
44 40 39.785		********			
44 40 39.801	68.00	********	83.00		
44 40 39.817		********			
44 40 39.832	68.00	********	83.00		
44 40 39.848		********			
44 40 39.864	67.00	********	83.00		
44 40 39.879		********			
44 40 39.895	67.00	********	83.00		
44 40 39.910		********			
44 40 39.926	67.00	********	83.00		
44 40 39.942		********			
44 40 39.957	68.00	********	83.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 39.973		********			
44 40 39.989	68.00	********	83.00		
44 40 40.004		********			
44 40 40.020	68.00	********	83.00		
44 40 40.035		********			
44 40 40.051	68.00	********	83.00		
44 40 40.067		********			
44 40 40.082	68.00	********	83.00		
44 40 40.098		********			
44 40 40.114	67.00	********	83.00		
44 40 40.129		********			
44 40 40.145	67.00	********	83.00		
44 40 40.160		********			
44 40 40.176	68.00	********	83.00		
44 40 40.192		********			
44 40 40.207	67.00	********	82.00		
44 40 40.223		********			
44 40 40.239	67.00	********	82.00		
44 40 40.254		********			
44 40 40.270	67.00	********	82.00		
44 40 40.285		********			
44 40 40.301	67.00	********	82.00		
44 40 40.317		********			
44 40 40.332	67.00	********	82.00		
44 40 40.348		********			
44 40 40.364	67.00	********	82.00		
44 40 40.379		123.00			
44 40 40.395	67.00	119.00	82.00		
44 40 40.410		115.00			
44 40 40.426	67.00	108.00	82.00		
44 40 40.442		99.00			
44 40 40.457	67.00	88.00	82.00		
44 40 40.473		77.00			
44 40 40.489	67.00	66.00	82.00		
44 40 40.504		55.00			
44 40 40.520	67.00	45.00	82.00		
44 40 40.535		45.00			
44 40 40.551	67.00	37.00	82.00	42.5	57.4
44 40 40.567		31.00			
44 40 40.582	67.00	27.00	82.00		
44 40 40.598		25.00			
44 40 40.614	67.00	25.00	82.00		
44 40 40.629		24.00			
44 40 40.645	67.00	24.00	82.00		
44 40 40.660		23.00			
44 40 40.676	67.00	23.00	82.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 40.692		22.00			
44 40 40.707	67.00	22.00	82.00		
44 40 40.723		22.00			
44 40 40.739	11.00	111.00	82.00		
44 40 40.754		115.00			
44 40 40.770	115.00	12.00	14.00		
44 40 40.785		12.00			
44 40 40.801	68.00	12.00	114.00		
44 40 40.817		********			
44 40 40.832	68.00	********	83.00		
44 40 40.848		********			
44 40 40.864	68.00	********	83.00		
44 40 40.879		********			
44 40 40.895	68.00	********	83.00		
44 40 40.910		********			
44 40 40.926	68.00	********	83.00		
44 40 40.942		********			
44 40 40.957	68.00	********	83.00		
44 40 40.973		********			
44 40 40.989	68.00	********	82.00		
44 40 41.004		********			
44 40 41.020	68.00	********	83.00		
44 40 41.035		********			
44 40 41.051	67.00	********	82.00		
44 40 41.067		********			
44 40 41.082	67.00	********	82.00		
44 40 41.098		********			
44 40 41.114	68.00	********	82.00		
44 40 41.129		********			
44 40 41.145	68.00	********	82.00		
44 40 41.160		********			
44 40 41.176	60.00	********	82.00		
44 40 41.192		********			
44 40 41.207	47.00	********	14.00		
44 40 41.223		********			
44 40 41.239	45.00	108.00	92.00		
44 40 41.254		123.00			
44 40 41.270	45.00	123.00	78.00		
44 40 41.285		123.00			
44 40 41.301	45.00	122.00	79.00		
44 40 41.317		121.00			
44 40 41.332	14.00	113.00	74.00		
44 40 41.348		120.00			
44 40 41.364	50.00	120.00	79.00		
44 40 41.379		116.00			
44 40 41.395	53.00	117.00	64.00		

Thruster
firings

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 41.410		101.00			
44 40 41.426	24.00	116.00	79.00		
44 40 41.442		115.00			
44 40 41.457	57.00	112.00	80.00		
44 40 41.473		109.00			
44 40 41.4[illegible]	60.00	104.00	88.00		
44 40 41.504		96.00			
44 40 41.520	61.00	86.00	80.00		
44 40 41.535		86.00			
Gap → 44 40 42.988	67.00	********	82.00		
44 40 43.004		********			
44 40 43.019	67.00	********	80.00		
44 40 43.035		********			
44 40 43.050	67.00	********	82.00		
44 40 43.066		********			
44 40 43.082	67.00	********	82.00		
44 40 43.097		********			
44 40 43.113	67.00	********	82.00		
44 40 43.129		********			
44 40 43.144	67.00	********	82.00		
44 40 43.160		********			
44 40 43.175	67.00	********	82.00		
44 40 43.191		********			
44 40 43.207	67.00	********	82.00		
44 40 43.222		93.00			
44 40 43.238	67.00	********	82.00		
44 40 43.254		61.00			
44 40 43.269	67.00	********	82.00		
44 40 43.285		********			
44 40 43.300	67.00	********	81.00		
44 40 43.316		********			
44 40 43.332	67.00	********	80.00		
44 40 43.347		********			
44 40 43.363	67.00	********	81.00		
44 40 43.379		********			
44 40 43.394	67.00	********	81.00		
44 40 43.410		********			
44 40 43.425	67.00	********	81.00		
44 40 43.441		********			
44 40 43.457	67.00	********	81.00		
44 40 43.472		********			
44 40 43.488	67.00	********	81.00		
44 40 43.504		********			
44 40 43.519	67.00	********	81.00		
44 40 43.535		********			
44 40 43.550	67.00	61.00	81.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 43.566		********			
44 40 43.582	67.00	123.00	81.00		
44 40 43.597		120.00			
44 40 43.613	67.00	115.00	81.00		
44 40 43.629		108.00			
44 40 43.644	67.00	99.00	81.00		
44 40 43.660		87.00			
44 40 43.675	67.00	76.00	81.00		
44 40 43.691		65.00			
44 40 43.707	67.00	55.00	81.00		
44 40 43.722		45.00			
44 40 43.738	67.00	36.00	81.00		
44 40 43.754		31.00			
44 40 43.769	67.00	28.00	81.00		
44 40 43.785		28.00			
44 40 43.800	67.00	26.00	81.00		
44 40 43.816		25.00			
44 40 43.832	67.00	24.00	81.00		
44 40 43.847		24.00			
44 40 43.863	67.00	31.00	81.00		
44 40 43.879		23.00			
44 40 43.894	67.00	22.00	81.00		
44 40 43.910		22.00			
44 40 43.925	12.00	22.00	80.00		
44 40 43.941		111.00			
44 40 43.957	12.00	116.00	13.00		
44 40 43.972		12.00			
44 40 43.988	115.00	18.00	114.00		
44 40 44.004		********			
44 40 44.019	67.00	********	82.00		
44 40 44.035		********			
44 40 44.050	67.00	********	82.00		
44 40 44.066		********			
44 40 44.082	67.00	********	82.00		
44 40 44.097		********			
44 40 44.113	67.00	********	82.00		
44 40 44.129		********			
44 40 44.144	67.00	********	82.00		
44 40 44.160		********			
44 40 44.175	67.00	********	81.00		
44 40 44.191		********			
44 40 44.207	68.00	********	81.00		
44 40 44.222		********			
44 40 44.238	68.00	********	81.00		
44 40 44.254		********			
44 40 44.269	68.00	********	81.00		

GEMINI X AGENA FLIGHT TEST DATA REV NO 28/29 ANT R/T
SUBSYSTEM H-COMMUNICATIONS AND CONTROL

TIME HR MI SEC	PL1 ION DETECTOR NUMBER 1 0 CTS= .02 V 125 CT=5.02V COUNTS	PL2 ELECTRON DET 0 CTS= .02 V 125 CT=5.02V COUNTS	PL3 ION DETECTOR NUMBER 2 0 CTS= .02 V 125 CT=5.02V COUNTS	PL4 TEMPERATURE OF ION DETECTOR NUMBER 1 DEG F	PL5 TEMPERATURE OF ION DETECTOR NUMBER 2 DEG F
44 40 44.285		********			
44 40 44.300	68.00	********	81.00		
44 40 44.316		********			
44 40 44.332	68.00	********	81.00		
44 40 44.347		********			
44 40 44.363	67.00	********	81.00		
44 40 44.379		********			
44 40 44.394	67.00	********	81.00		
44 40 44.410		********			
44 40 44.425	67.00	********	81.00		
44 40 44.441		********			
44 40 44.457	67.00	********	81.00		
44 40 44.472		********			
44 40 44.488	67.00	********	81.00		
44 40 44.504		********			
44 40 44.519	68.00	********	81.00		
44 40 44.535		********			
44 40 44.550					
44 40 44.567		********			
44 40 44.582	67.00	********	81.00		
44 40 44.598		********			
44 40 44.614	67.00	********	81.00		
44 40 44.629		********			
44 40 44.645	67.00	123.00	81.00		
44 40 44.660		120.00			
44 40 44.676	67.00	115.00	81.00		
44 40 44.692		108.00			
44 40 44.707	67.00	98.00	81.00		
44 40 44.723		87.00			
44 40 44.739	67.00	77.00	81.00		
44 40 44.754		65.00			
44 40 44.770	67.00	55.00	81.00		
44 40 44.785		55.00			
44 40 44.801	67.00	44.00	81.00		
44 40 44.817		36.00			
44 40 44.832	67.00	31.00	81.00		
44 40 44.848		27.00			
44 40 44.864	67.00	26.00	81.00		
44 40 44.879		25.00			
44 40 44.895	67.00	24.00	80.00		
44 40 44.910		24.00			
44 40 44.926	67.00	23.00	80.00		
44 40 44.942		23.00			
44 40 44.957	67.00	22.00	80.00		
44 40 44.973		22.00			
44 40 44.989	67.00	22.00	81.00		

TRANSLATIONAL

1345-52 07/30/66

GT-X REV 28 (CNV) BILEVEL EVENT DATA 1 BIT

HR MIN SECONDS	TCA 9,10 TYDY FIRES AFT GE09	TCA11,12 LXRX FIRES FWD GE11	TCA 13 LH FIRES LEFT GE13	TCA 14 RH FIRES RIGHT GE14	TCA 15 BOTT FIRES DOWN GE15	TCA 16 TOP FIRES UP GE16
44 35 16.950	FIRE	FIRE	FIRE	FIRE	FIRE	FIRE
44 40 3.625	OFF	OFF	OFF	OFF	OFF	OFF
44 40 15.625		FIRE				
44 40 16.225		OFF				
44 40 16.725		FIRE				
44 40 17.225		OFF				
44 40 17.825		FIRE				
44 40 19.125		OFF				
44 40 23.325		FIRE				
44 40 23.625		OFF				
44 40 25.725		FIRE				
44 40 26.025		OFF				
44 40 28.225					FIRE	
44 40 28.525					OFF	
44 41 22.525	TO 44 41	22.625 MISSING DATA				
44 41 38.725	FIRE					
44 41 38.925	OFF					
44 41 48.900	TO 44 41	49.000 MISSING DATA				
44 41 57.000	OFF	OFF	OFF	OFF	OFF	OFF

ROTATIONAL

1345-52 07/30/66

GT-X REV 28 (CNV) BILEVEL EVENT DATA 1 BIT

HR MIN SECONDS	TCA 1 LH FIRES DOWN	TCA 2 RH FIRES DOWN	TCA 3 BOTT FIRES RIGHT	TCA 4 TOP FIRES RIGHT	TCA 5 RH FIRES UP	TCA 6 LH FIRES UP	TCA 7 TOP FIRES LEFT	TCA 8 BOTT FIRES LEFT
	GE01	GE02	GE03	GE04	GE05	GE06	GE07	GE08
44 35 16.950	FIRE	FIRE	FIRE	FIRE	FIRE	FIRE	FIRE	FIRE
44 40 3.725	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
44 40 17.025							FIRE	FIRE
44 40 17.125							OFF	OFF
44 40 19.825					FIRE	FIRE		
44 40 20.125					OFF	OFF		
44 40 22.225							FIRE	FIRE
44 40 22.625							OFF	OFF
44 40 23.425							FIRE	FIRE
44 40 23.825							OFF	OFF
44 40 23.925							FIRE	FIRE
44 40 24.025							OFF	OFF
44 40 25.725							FIRE	FIRE
44 40 26.125							OFF	OFF
44 40 31.625							FIRE	FIRE
44 40 32.125							OFF	OFF
44 40 41.125			FIRE	FIRE				
44 40 41.425			OFF	OFF				
44 41 17.925	FIRE	FIRE						
44 41 18.025	OFF	OFF						
44 41 19.525	FIRE	FIRE						
44 41 19.625	OFF	OFF						
44 41 20.225								FIRE
44 41 20.325	FIRE	FIRE					FIRE	
44 41 20.425	OFF	OFF					OFF	OFF
44 41 21.625	FIRE	FIRE						
44 41 21.925	OFF	OFF						
44 41 22.525	TO 44 41	22.625	MISSING DATA					
44 41 24.925	FIRE	FIRE						
44 41 25.025	OFF	OFF						
44 41 29.025							FIRE	FIRE
44 41 29.125							OFF	OFF
44 41 29.425							FIRE	FIRE
44 41 29.525							OFF	OFF
44 41 29.825							FIRE	FIRE
44 41 29.925							OFF	OFF
44 41 30.725							FIRE	FIRE
44 41 30.825							OFF	OFF
44 41 41.325			FIRE	FIRE				
44 41 41.325	OFF	OFF	FIRE	FIRE	OFF	OFF	OFF	OFF

GEMINI X FLIGHT TEST DATA REV NO 28 CNV D/T
ONBOARD COMPUTER WORDS (MODE 3, CATCH-UP)

TIME HR MI SEC	DK01 PITCH GIMBAL DEGREES	DK02 YAW GIMBAL DEGREES	DK03 ROLL GIMBAL DEGREES	DK04 ACCUM OF X ACCEL SFXP COUNTS	DK05 ACCUM OF Y ACCEL SFYP COUNTS	DK06 ACCUM OF Z ACCEL SFZP COUNTS	DK13 TIME IN MODE SECONDS	DK14 FLOW TAG
44 38 57.72	179.5	0.6	181.3	118	120	-179	503.76	4133980
44 39 0.12	179.5	0.5	181.3	117	120	-183	506.33	4131951
44 39 2.52	179.5	0.5	181.3	119	123	-182	508.90	4145766
44 39 4.92	179.5	0.5	181.2	120	121	-184	510.97	4133980
44 39 7.32	179.5	0.5	181.1	120	124	-184	513.54	4128810
44 39 9.72	179.5	0.5	181.1	119	125	-184	516.11	4145766
44 39 12.12	179.5	0.5	181.1	120	125	-183	518.18	4133980
44 39 14.52	179.5	0.5	181.0	122	124	-186	520.75	4128810
44 39 16.92	179.5	0.4	181.0	123	128	-189	523.32	4145295
44 39 19.32	179.6	0.4	180.9	122	127	-188	525.40	4133980
44 39 21.72	179.6	0.4	180.9	122	127	-190	527.96	4128810
44 39 24.12	179.6	0.4	180.8	123	128	-191	530.53	4145295
44 39 26.52	179.6	0.4	180.8	123	127	-190	532.61	4199504
44 39 28.92	179.6	0.3	180.7	124	129	-191	535.03	3477573
44 39 31.32	179.6	0.4	180.6	125	129	-192	537.64	3489949
44 39 33.72	179.6	0.3	180.6	125	129	-194	539.83	3477573
44 39 36.12	179.6	0.3	180.5	125	131	-192	542.44	3489949
44 39 38.52	179.6	0.3	180.5	127	131	-196	544.63	3543109
44 39 40.92	179.6	0.3	180.4	127	132	-194	547.24	3489949
44 39 43.32	179.6	0.3	180.4	127	130	-196	549.44	3543109
44 39 45.72	179.6	0.3	180.3	130	134	-197	552.05	3489949
44 39 48.12	179.7	0.3	180.3	128	134	-199	554.24	3477573
44 39 50.52	179.6	0.2	180.3	130	134	-197	556.85	3489949
44 39 52.92	179.7	0.2	180.2	132	136	-199	559.05	3543109
44 39 55.32	179.7	0.2	180.1	130	135	-201	561.65	3489949
44 39 57.72	179.7	0.1	180.1	132	137	-201	563.85	3543109
44 40 0.12	179.7	0.1	180.0	130	137	-201	566.45	3489949
44 40 2.52	179.7	0.1	180.0	133	137	-204	568.64	3477573
44 40 4.92	179.7	0.1	179.9	133	138	-204	571.23	3489949
44 40 7.32	179.7	0.1	179.8	132	136	-205	573.42	3506744
44 40 9.72	179.7	0.1	179.8	134	139	-205	576.01	3489949
44 40 12.13	179.7	0.0	179.8	135	139	-206	578.20	3572280
44 40 14.53	179.7	0.1	179.7	135	140	-20[illegible]	580.80	3489949
44 40 16.93	179.8	0.0	179.6	137	140	-208	582.99	3572359
44 40 19.33	180.6	359.7	179.6	148	141	-209	585.58	3473418
44 40 21.73	180.6	359.0	179.7	147	141	-210	588.17	3424399
44 40 24.13	180.5	358.5	179.8	151	140	-210	590.35	3473450
44 40 26.53	180.2	357.9	179.9	152	143	-211	592.94	3424399
44 40 28.93	180.0	357.3	180.0	153	143	-214	595.12	3476591
44 40 31.33	179.8	356.9	179.9	153	144	-214	597.72	3489935
44 40 33.73	179.6	357.6	179.7	155	144	-215	599.92	3476591
44 40 36.13	179.4	359.0	179.6	156	144	-216	602.52	3424399
44 40 38.53	179.2	0.4	179.3	156	146	-216	604.70	3476591
44 40 40.93	179.0	1.6	179.1	156	145	-217	607.30	3424870
44 40 43.33	178.7	1.7	179.0	157	147	-210	609.49	3479084
44 40 45.73	178.5	1.4	178.9	157	148	-218	612.08	3490406

GEMINI X FLIGHT TEST DATA REV NO 28 CNV D/T
ONBOARD COMPUTER WORDS (MODE 3, CATCH-UP)

TIME HR MI SEC	DK01 PITCH GIMBAL DEGREES	DK02 YAW GIMBAL DEGREES	DK03 ROLL GIMBAL DEGREES	DK04 ACCUM OF X ACCEL SFXP COUNTS	DK05 ACCUM OF Y ACCEL SFYP COUNTS	DK06 ACCUM OF Z ACCEL SFZP COUNTS	DK13 TIME IN MODE SECONDS	DK14 FLOW TAG
44 40 48.13	178.2	1.3	178.8	157	146	-220	614.27	3479084
44 40 50.53	178.0	1.1	178.7	158	149	-219	616.87	3490406
44 40 52.93	177.8	0.9	178.6	158	149	-221	619.05	3477573
44 40 55.33	177.5	0.7	178.5	159	149	-33	621.65	3489949
44 40 57.73	177.3	0.5	178.4	159	150	-225	623.84	3477573
44 41 0.13	177.0	0.3	178.3	160	150	-224	626.44	3489949
44 41 2.53	176.8	0.1	178.2	162	150	-34	628.63	3477573
44 41 4.93	176.5	360.0	178.1	160	151	-228	631.24	3489949
44 41 7.33	176.3	359.7	177.9	162	151	-226	633.43	3477573
44 41 9.73	176.0	359.6	177.8	164	155	-228	636.04	3489949
44 41 12.13	175.8	359.4	177.7	162	151	-230	638.24	3543109
44 41 14.53	175.5	359.2	177.6	165	153	-231	640.85	3489949
44 41 16.93	175.3	359.0	177.4	165	155	-233	643.04	3477573
44 41 19.33	175.1	358.8	177.3	165	154	-41	645.70	3490406
44 41 21.73	175.4	358.7	177.1	166	154		648.03	3686557
44 41 24.13	175.8	358.7	176.9	168	157	-232	650.28	3479084
44 41 26.53	176.3	358.6	176.7	167	156	-233	652.56	4980863
44 41 28.93	176.9	358.6	176.4	168	156	-234	655.04	4980858
44 41 31.33	177.5	358.6	176.1	167	157	-237	657.47	4849781
44 41 33.73	178.1	358.9	175.8	169	159	-239	659.88	4849781
44 41 36.13	178.7	359.2	175.5	170	159	-238	662.30	4849776
44 41 38.53	179.4	359.5	175.2	170	160	-238	664.72	4849776
44 41 40.93	179.9	359.9	174.8	170	160	-240	667.14	4849706
44 41 43.33	180.4	0.1	174.5	171	160	-239	669.55	4849706
44 41 45.73	180.9	0.3	174.2	169	162	-241	671.96	4849706
44 41 48.10	181.4	0.5	174.1	172	162		674.21	4849786
44 41 50.50	181.9	0.5	174.3	170	163	-242	676.67	4980853
44 41 52.90	182.3	0.5	174.3	172	163	-244	679.36	4931727
44 41 55.30	182.9	0.5	174.7	171	163	-245	681.46	3473525
44 41 57.70	183.2	0.6	175.1	172	165	-246	683.74	4918383
44 42 0.10	183.5	0.6	175.5	173	166	-247	686.41	4866205
44 42 2.50	183.8	0.6	175.9	173	164	-249	688.75	3473450
44 42 4.90	184.1	0.6	176.3	175	167	-249	691.09	3473525
44 42 7.30	184.2	0.7	176.7	175	166	-249	693.76	4800655
44 42 9.70	184.4	0.8	177.1	174	168	-250	696.01	3489949
44 42 12.10	184.4	0.8	177.6	177	169	-251	698.10	3479084
44 42 14.50	184.3	0.7	178.0	176	169	-252	700.60	5079608
44 42 16.90	184.3	0.4	178.5	178	167	-252	703.36	3621007
44 42 19.30								
44 42 21.70	184.0	359.4	179.4	177	171	-253	707.86	3479084
44 42 24.10	183.6	359.1	179.9	178	171	-254	710.37	3473418
44 42 26.50	183.3	359.0	180.4	179	172	-63	712.88	3490406
44 42 28.90	182.9	358.7	180.9	182	171	-258	715.24	3489949
44 42 31.30	182.6	358.7	181.3	182	172	-64	717.59	3473418
44 42 33.70	182.3	358.6	181.8	182	172	-258	719.88	3675692
44 42 36.10	182.0	358.5	182.2	184	175	-258	722.54	3424399

GEMINI X FLIGHT TEST DATA REV NO 28 CNV D/T
ONBOARD COMPUTER WORDS (MODE 3, CATCH-UP)

TIME HR MI SEC	DK01 PITCH GIMBAL DEGREES	DK02 YAW GIMBAL DEGREES	DK03 ROLL GIMBAL DEGREES	DK04 ACCUM OF X ACCEL SFXP COUNTS	DK05 ACCUM OF Y ACCEL SFYP COUNTS	DK06 ACCUM OF Z ACCEL SFZP COUNTS	DK13 TIME IN MODE SECONDS	DK14 FLOW TAG
44 42 38.50	181.7	358.4	182.7	182	172	-260	724.74	3473450
44 42 40.90	181.3	358.3	183.1	185	173	-261	727.34	3489935
44 42 43.30	181.0	358.2	183.6	183	177	-261	729.52	3476591
44 42 45.70	180.7	358.1	184.0	185	176	-263	732.12	3489935
44 42 48.10	180.3	358.0	184.5	186	176	-262	734.30	3476591
44 42 50.50	180.0	357.9	184.9	187	177	-265	736.61	3703352
44 42 52.90	179.7	357.8	185.4	187	178	-265	739.28	3490406
44 42 55.30	179.6	357.7	185.8	187	178	-265	741.48	3544620
44 42 57.70	179.4	357.7	186.3	189	178	-267	744.09	3490406
44 43 0.10	179.3	357.6	186.6	189	180	-269	746.28	3544620
44 43 2.50	179.1	357.5	187.1	189	178	-269	748.89	3490406
44 43 4.90	179.1	357.4	187.5	189	180	-269	751.09	3542127
44 43 7.30	179.1	357.3	187.8	190	182	-272	753.70	3490406
44 43 9.70	179.2	357.3	187.7	191	182	-271	755.90	3542127
44 43 12.10	179.3	357.4	187.5	192	182	-272	758.51	3489935
44 43 19.30	179.8	358.2	185.7	194	184	-276	765.51	3476591
44 43 21.70	180.2	358.7	185.1	192	183		768.12	3489935
44 43 24.10	180.6		184.4	194	185	-278	770.31	3476591
44 43 26.50	181.2	359.4	183.6	195	184		772.90	3490406
44 43 28.90	181.6	359.6	183.1	195	186	-279	775.09	3479084
44 43 31.30	182.1	359.7	182.4	196	188	-278	777.68	3490406
44 43 33.70	182.2	363.4	181.8	196	189	-280	779.87	3479084
44 43 36.10	182.3	0.0	181.2	195	189	-281	782.46	3490406
44 43 38.50	182.4	0.0	180.6	197	190	-281	784.65	3477573
44 43 40.90	182.6	360.0	180.0	196	190	-282	787.25	3489949
44 43 43.30	182.7	359.9	179.5	198	189	-284	789.43	3477573
44 43 45.70	182.8	359.9	178.8	199	191	-285	792.02	3489949
44 43 48.10	182.9	359.9	178.3	199	190	-285	794.20	3479084
44 43 50.50	183.1	359.8	177.8	200	193	-284	796.93	3621007
44 43 52.90	183.2	351.8	177.1	199	192	-287	799.16	3473450
44 43 55.30	183.3	359.8	176.6	202	194	-286	801.75	3489935
44 43 57.70	183.5	359.9	176.0	201	193	-287	803.98	3489949
44 44 0.10	183.6	0.0	175.6	201	192	-289	806.31	3673199
44 44 2.50	183.7	0.1	175.2	203	193	-288	808.94	3489935
44 44 4.90	183.9	0.3	174.9	203	195	-291	811.12	3476591
44 44 7.30	183.9	0.4	174.5	204	195	-292	813.35	3703352
44 44 9.70	183.9	0.5	174.1	205	197	-293	816.08	3621478
44 44 12.10	183.8	14.5	173.8	204	195	-294	818.30	3476591
44 44 14.50	183.8	0.8	173.4	205	197	-295	820.89	3490408
44 44 16.90	183.7	0.9	173.5	207	198	-295	823.07	3479084
44 44 19.30	183.7	1.1	173.4	206	199	-296	825.66	3490406
44 44 21.70	183.7	1.2	173.6	208	197	-298	827.84	3477575
44 44 24.10	183.6	1.3	173.8	207	200	-297	830.44	3489949
44 44 26.50	183.6	1.4	174.1	209	200	-299	832.62	3477573
44 44 28.90	183.5	1.6	174.3	208	201	-297	835.22	3489949
44 44 31.30								

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 39.78	100839.78	11.627	11.627	37.9					
44 40 39.95	0.17	11.681	0.053	37.8					
44 40 40.12	0.17	11.567	-0.114	38.1					
44 40 40.28	0.17	11.391	-0.176	38.7					
44 40 40.45	0.17	11.448	0.057	38.5					
44 40 40.62	0.17	11.387	-0.060	38.7					
44 40 40.78	0.17	11.299	-0.088	39.0					
44 40 40.95	0.17	11.244	-0.055	39.2					
44 40 41.12	0.17	11.156	-0.088	39.5					
44 40 41.28	0.17	11.155	-0.002	39.5					
44 40 41.45	0.17	11.041	-0.113	39.9					
44 40 41.62	0.17	11.067	0.025	39.9					
44 40 41.78	0.17	10.979	-0.088	40.2					
44 40 41.95	0.17	10.861	-0.117	40.6					
44 40 42.12	0.17	10.803	-0.059	40.8					
44 40 42.28	0.17	10.772	-0.031	40.9					
44 40 42.45	0.17	10.744	-0.028	41.1					
44 40 42.62	0.17	10.625	-0.119	41.5					
44 40 42.78	0.17	10.567	-0.059	41.7					
44 40 42.95	0.17	10.567	0.000	41.7					
44 40 43.12	0.17	10.482	-0.084	42.1					
44 40 43.28	0.17	10.449	-0.033	42.2					
44 40 43.45	0.17	10.360	-0.090	42.6					
44 40 43.62	0.17	10.334	-0.026	42.7					
44 40 43.78	0.17	10.248	-0.086	43.0					
44 40 43.95	0.17	10.275	0.027	42.9					
44 40 44.12	0.17	10.156	-0.119	43.4					
44 40 44.28	0.17	10.127	-0.029	43.6					
44 40 44.45	0.17	10.099	-0.027	43.7					
44 40 44.62	0.17	10.070	-0.029	43.8					
44 40 44.78	0.17	9.955	-0.115	44.3					
44 40 44.95	0.17	10.039	0.084	43.9					
44 40 45.12	0.17	9.894	-0.145	44.6					
44 40 45.28	0.17	9.955	0.061	44.3					
44 40 45.45	0.17	9.806	-0.149	45.0					
44 40 45.62	0.17	9.808	0.002	45.0					
44 40 45.78	0.17	9.691	-0.117	45.5					
44 40 45.95	0.17	9.662	-0.029	45.7					
44 40 46.12	0.17	9.601	-0.001	45.9					
44 40 46.28	0.17	9.513	-0.088	46.4					
44 40 46.45	0.17	9.450	-0.063	46.8					
44 40 46.62	0.17	9.561	0.111	46.2					
44 40 46.78	0.17	9.406	-0.154	46.9					
44 40 46.95	0.17	9.394	-0.012	47.0					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 47.12	0.17	9.335	-0.059	47.2					
44 40 47.28	0.17	9.196	-0.140	48.0					
44 40 47.45	0.17	9.306	0.110	47.4					
44 40 47.62	0.17	9.162	-0.145	48.1					
44 40 47.78	0.17	9.193	0.032	48.0					
44 40 47.95	0.17	9.137	-0.056	48.3					
44 40 48.12	0.17	9.123	-0.014	48.3					
44 40 48.28	0.17	9.079	-0.045	48.6					
44 40 48.45	0.17	8.988	-0.090	49.1					
44 40 48.62	0.17	8.974	-0.014	49.2					
44 40 48.78	0.17	8.959	-0.015	49.2					
44 40 48.95	0.17	8.869	-0.090	49.7					
44 40 49.12	0.17	8.959	0.090	49.2					
44 40 49.28	0.17	8.871	-0.088	49.7					
44 40 49.45	0.17	8.900	0.029	49.6					
44 40 49.62	0.17	8.754	-0.146	50.4					
44 40 49.78	0.17	8.751	-0.002	50.4					
44 40 49.95	0.17	8.698	-0.054	50.7					
44 40 50.12	0.17	8.632	-0.066	51.1					
44 40 50.28	0.17	8.675	0.042	50.8					
44 40 50.45	0.17	8.573	-0.101	51.4					
44 40 50.62	0.17	8.629	0.055	51.1					
44 40 50.78	0.17	8.484	-0.145	52.0					
44 40 50.95	0.17	8.451	-0.032	52.2					
44 40 51.12	0.17	8.458	0.007	52.1					
44 40 51.28	0.17	8.398	-0.061	52.5					
44 40 51.45	0.17	8.398	0.000	52.5					
44 40 51.62	0.17	8.419	0.021	52.4					
44 40 51.78	0.17	8.398	-0.021	52.5					
44 40 51.95	0.17	8.371	-0.027	52.7					
44 40 52.12	0.17	8.396	0.025	52.5					
44 40 52.28	0.17	8.400	0.004	52.5					
44 40 52.45	0.17	8.253	-0.146	53.4					
44 40 52.62	0.17	8.224	-0.029	53.6					
44 40 52.78	0.17	8.224	0.000	53.6					
44 40 52.95	0.17	8.152	-0.073	54.1					
44 40 53.12	0.17	8.171	0.019	54.0					
44 40 53.28	0.17	8.126	-0.045	54.3					
44 40 53.45	0.17	7.953	-0.173	55.5					
44 40 53.62	0.17	8.054	0.101	54.8					
44 40 53.78	0.17	7.923	-0.130	55.7					
44 40 53.95	0.17	8.031	0.108	54.9					
44 40 54.12	0.17	7.923	-0.108	55.7					
44 40 54.28	0.17	7.866	-0.057	56.1					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (X FEET)	DELTA LENGTH (X FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (X FEET)	DELTA WIDTH (X FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 54.45	0.17	7.834	-0.032	56.3					
44 40 54.62	0.17	7.777	-0.057	56.7					
44 40 54.78	0.17	7.834	0.057	56.5					
44 40 54.95	0.17	7.804	-0.030	56.5					
44 40 55.12	0.17	7.718	-0.086	57.1					
44 40 55.28	0.17	7.685	-0.033	57.4					
44 40 55.45	0.17	7.688	0.002	57.4					
44 40 55.62	0.17	7.629	-0.059	57.8					
44 40 55.78	0.17	7.717	0.088	57.2					
44 40 55.95	0.17	7.628	-0.089	57.8					
44 40 56.12	0.17	7.572	-0.056	58.3					
44 40 56.28	0.17	7.570	-0.001	58.3					
44 40 56.45	0.17	7.511	-0.060	58.7					
44 40 56.62	0.17	7.539	0.029	58.5					
44 40 56.78	0.17	7.539	0.000	58.5					
44 40 56.95	0.17	7.393	-0.146	59.7					
44 40 57.12	0.17	7.394	0.001	59.7					
44 40 57.28	0.17	7.305	-0.090	60.4					
44 40 57.45	0.17	7.335	0.030	60.1					
44 40 57.62	0.17	7.393	0.058	59.7					
44 40 57.78	0.17	7.276	-0.117	60.6					
44 40 57.95	0.17	7.275	-0.001	60.6					
44 40 58.12	0.17	7.217	-0.058	61.1					
44 40 58.28	0.17	7.246	0.029	60.9					
44 40 58.45	0.17	7.187	-0.059	61.4					
44 40 58.62	0.17	7.246	0.059	60.9					
44 40 58.78	0.17	7.221	-0.025	61.1					
44 40 58.95	0.17	7.100	-0.121	62.1					
44 40 59.12	0.17	7.070	-0.030	62.4					
44 40 59.28	0.17	7.040	-0.030	62.7					
44 40 59.45	0.17	7.011	-0.029	62.9					
44 40 59.62	0.17	7.069	0.059	62.4					
44 40 59.78	0.17	7.011	-0.058	62.9					
44 40 59.95	0.17	7.040	0.029	62.7					
44 41 0.12	0.17	6.981	-0.059	63.2					
44 41 0.28	0.17	6.952	-0.029	63.4					
44 41 0.45	0.17	6.923	-0.029	63.7					
44 41 0.62	0.17	6.806	-0.117	64.8					
44 41 0.78	0.17	6.864	0.058	64.3					
44 41 0.95	0.17	6.835	-0.029	64.5					
44 41 1.12	0.17	6.864	0.029	64.3					
44 41 1.28	0.17	6.805	-0.059	64.8					
44 41 1.45	0.17	6.747	-0.059	65.4					
44 41 1.62	0.17	6.571	-0.176	67.1					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 41 1.78	0.17	6.629	0.059	66.5					
44 41 1.95	0.17	6.571	-0.059	67.1					
44 41 2.12	0.17	6.571	0.000	67.1					
44 41 2.28	0.17	6.571	-0.000	67.1					
44 41 2.45	0.17	6.864	0.293	64.3					
44 41 2.62	0.17	6.780	-0.084	65.1					
44 41 2.78	0.17	6.717	-0.063	65.7					
44 41 2.95	0.17	6.688	-0.029	65.9					
44 41 3.12	0.17	6.541	-0.147	67.4					
44 41 3.28	0.17	6.600	0.059	66.8					
44 41 3.45	0.17	6.483	-0.117	68.0					
44 41 3.62	0.17	6.542	0.059	67.4					
44 41 3.78	0.17	6.454	-0.088	68.3					
44 41 3.95	0.17	6.512	0.058	67.7					
44 41 4.12	0.17	6.512	-0.000	67.7					
44 41 4.28	0.17	6.395	-0.117	69.0					
44 41 4.45	0.17	6.189	-0.205	71.3					
44 41 4.62	0.17	6.160	-0.029	71.6					
44 41 4.78	0.17	6.248	0.088	70.6					
44 41 4.95	0.17	6.230	-0.018	70.8					
44 41 5.12	0.17	6.307	0.077	69.9					
44 41 5.28	0.17	6.250	-0.057	70.6					
44 41 5.45	0.17	6.190	-0.060	71.3					
44 41 5.62	0.17	6.162	-0.028	71.6					
44 41 5.78	0.17	6.190	0.028	71.3					
44 41 5.95	0.17	6.308	0.118	69.9					
44 41 6.12	0.17	6.191	-0.117	71.2					
44 41 6.28	0.17	6.102	-0.089	72.3					
44 41 6.45	0.17	6.161	0.059	71.6					
44 41 6.62	0.17	6.131	-0.029	71.9					
44 41 6.78	0.17	6.116	-0.016	72.1					
44 41 6.95	0.17	5.956	-0.159	74.1					
44 41 7.12	0.17	5.985	0.028	73.7					
44 41 7.28	0.17	5.986	0.001	73.7					
44 41 7.45	0.17	6.014	0.028	73.3					
44 41 7.62	0.17	5.964	-0.050	74.0					
44 41 7.78	0.17	5.973	0.009	73.8					
44 41 7.95	0.17	6.014	0.041	73.3					
44 41 8.12	0.17	5.885	-0.128	74.9					
44 41 8.28	0.17	5.902	0.015	74.8					
44 41 8.45	0.17	5.961	0.061	74.0					
44 41 8.62	0.17	5.958	-0.004	74.0					
44 41 8.78	0.17	5.840	-0.111	75.4					
44 41 8.95	0.17	5.871	0.028	75.1					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 41 9.12	0.17	5.642	-0.029	75.5					
44 41 9.28	0.17	5.613	-0.029	75.9					
44 41 9.45	0.17	5.610	-0.003	75.9					
44 41 9.62	0.17	5.720	-0.090	77.1					
44 41 9.78	0.17	5.710	-0.010	77.3					
44 41 9.95	0.17	5.763	0.074	76.3					
44 41 10.12	0.17	5.725	-0.059	77.0					
44 41 10.28	0.17	5.694	-0.031	77.5					
44 41 10.45	0.17	5.664	-0.029	77.9					
44 41 10.62	0.17	5.722	0.057	77.1					
44 41 10.78	0.17	5.635	-0.087	78.3					
44 41 10.95	0.17	5.663	0.028	77.9					
44 41 11.12	0.17	5.637	-0.028	78.3					
44 41 11.28	0.17	5.606	-0.031	78.7					
44 41 11.45	0.17	5.698	0.092	77.4					

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 39.78	29.32	-4.52	-2.12	37.9	0.000	0.000
44 40 39.95	29.15	-4.48	-2.10	37.8	0.000	0.000
44 40 40.12	29.51	-4.60	-2.20	38.1	0.000	0.000
44 40 40.28	30.00	-5.66	-2.22	38.7	0.000	0.000
44 40 40.45	29.81	-5.66	-2.28	38.5	0.000	0.000
44 40 40.62	30.00	-5.75	-2.33	38.7	0.000	0.000
44 40 40.78	30.30	-5.81	-2.30	39.0	0.000	0.000
44 40 40.95	30.49	-5.85	-2.37	39.2	0.000	0.000
44 40 41.12	30.80	-5.84	-2.39	39.5	0.000	0.000
44 40 41.28	30.81	-5.82	-2.41	39.5	0.000	0.000
44 40 41.45	31.21	-5.88	-2.45	39.9	0.000	0.000
44 40 41.62	31.12	-5.85	-2.51	39.9	0.000	0.000
44 40 41.78	31.44	-5.84	-2.51	40.2	0.000	0.000
44 40 41.95	31.67	-5.86	-2.55	40.6	0.000	0.000
44 40 42.12	32.09	-5.69	-2.57	40.8	0.000	0.000
44 40 42.28	32.21	-5.85	-2.63	40.9	0.000	0.000
44 40 42.45	32.52	-5.79	-2.64	41.2	0.000	0.000
44 40 42.62	32.78	-5.87	-2.69	41.5	0.000	0.000
44 40 42.78	33.01	-5.87	-2.68	41.7	0.000	0.000
44 40 42.95	33.01	-5.87	-2.70	41.7	0.000	0.000
44 40 43.12	33.30	-5.80	-2.82	42.1	0.000	0.000
44 40 43.28	33.40	-5.82	-2.84	42.2	0.000	0.000
44 40 43.45	33.84	-5.86	-2.90	42.6	0.000	0.000
44 40 43.62	33.95	-5.69	-2.96	42.7	0.000	0.000
44 40 43.78	34.31	-5.90	-2.96	43.0	0.000	0.000
44 40 43.95	34.19	-5.87	-3.00	42.9	0.000	0.000
44 40 44.12	34.70	-5.82	-3.01	43.4	0.000	0.000
44 40 44.28	34.83	-5.81	-3.07	43.6	0.000	0.000
44 40 44.45	34.95	-5.82	-3.12	43.7	0.000	0.000
44 40 44.62	35.07	-5.85	-3.13	43.8	0.000	0.000
44 40 44.78	35.50	-5.86	-3.20	44.3	0.000	0.000
44 40 44.95	35.21	-5.77	-3.24	43.9	0.000	0.000
44 40 45.12	35.85	-5.83	-3.22	44.6	0.000	0.000
44 40 45.28	35.50	-5.80	-3.25	44.3	0.000	0.000
44 40 45.45	36.24	-5.90	-3.33	45.0	0.000	0.000
44 40 45.62	36.24	-5.87	-3.35	45.0	0.000	0.000
44 40 45.78	36.78	-5.92	-3.40	45.5	0.000	0.000
44 40 45.95	36.91	-5.94	-3.42	45.7	0.000	0.000
44 40 46.12	37.20	-5.91	-3.49	45.9	0.000	0.000
44 40 46.28	37.63	-5.93	-3.51	46.4	0.000	0.000
44 40 46.45	38.04	-5.94	-3.52	46.6	0.000	0.000
44 40 46.62	37.90	-5.70	-3.61	46.2	0.000	0.000
44 40 46.78	38.10	-5.87	-3.64	46.9	0.000	0.000
44 40 46.95	38.22	-5.85	-3.64	47.0	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 47.12	38.51	-5.85	-3.75	47.2	0.000	0.000
44 40 47.29	39.22	-5.97	-3.76	48.0	0.000	0.000
44 40 47.45	38.66	-5.66	-3.61	47.4	0.000	0.000
44 40 47.62	39.41	-5.88	-3.84	48.1	0.000	0.000
44 40 47.78	39.24	-5.86	-3.90	48.0	0.000	0.000
44 40 47.95	39.53	-5.89	-3.93	48.3	0.000	0.000
44 40 48.12	39.63	-5.64	-3.91	48.3	0.000	0.000
44 40 48.28	39.99	-4.59	-4.00	48.6	0.000	0.000
44 40 48.45	40.43	-4.62	-4.04	49.1	0.000	0.000
44 40 48.62	40.41	-5.85	-4.07	49.2	0.000	0.000
44 40 48.78	40.50	-5.63	-4.11	49.2	0.000	0.000
44 40 48.95	41.08	-4.70	-4.18	49.7	0.000	0.000
44 40 49.12	40.58	-4.65	-4.21	49.2	0.000	0.000
44 40 49.28	41.07	-4.67	-4.21	49.7	0.000	0.000
44 40 49.45	40.91	-4.63	-4.27	49.6	0.000	0.000
44 40 49.62	41.74	-4.62	-4.35	50.4	0.000	0.000
44 40 49.78	41.75	-4.59	-4.33	50.4	0.000	0.000
44 40 49.95	42.06	-4.64	-4.39	50.7	0.000	0.000
44 40 50.12	42.44	-4.61	-4.47	51.1	0.000	0.000
44 40 50.28	42.18	-4.71	-4.48	50.8	0.000	0.000
44 40 50.45	42.80	-4.54	-4.51	51.4	0.000	0.000
44 40 50.62	42.46	-4.52	-4.59	51.1	0.000	0.000
44 40 50.78	43.34	-4.54	-4.62	52.0	0.000	0.000
44 40 50.95	43.53	-4.55	-4.67	52.2	0.000	0.000
44 40 51.12	43.49	-4.55	-4.69	52.1	0.000	0.000
44 40 51.28	43.86	-4.57	-4.76	52.5	0.000	0.000
44 40 51.45	43.86	-4.51	-4.76	52.5	0.000	0.000
44 40 51.62	43.74	-4.47	-4.73	52.4	0.000	0.000
44 40 51.78	43.86	-4.45	-4.86	52.5	0.000	0.000
44 40 51.95	44.03	-4.52	-4.85	52.7	0.000	0.000
44 40 52.12	43.87	-4.49	-4.97	52.5	0.000	0.000
44 40 52.28	43.83	-4.48	-5.05	52.5	0.000	0.000
44 40 52.45	44.76	-4.53	-5.11	53.4	0.000	0.000
44 40 52.62	44.95	-4.54	-5.12	53.6	0.000	0.000
44 40 52.78	44.96	-4.48	-5.12	53.6	0.000	0.000
44 40 52.95	45.42	-4.70	-5.15	54.1	0.000	0.000
44 40 53.12	45.29	-4.56	-5.25	54.0	0.000	0.000
44 40 53.28	45.60	-4.55	-5.19	54.3	0.000	0.000
44 40 53.45	46.70	-4.45	-5.30	55.3	0.000	0.000
44 40 53.62	46.00	-4.55	-5.37	54.8	0.000	0.000
44 40 53.78	46.90	-4.40	-5.50	55.7	0.000	0.000
44 40 53.95	46.22	-4.60	-5.49	54.0	0.000	0.000
44 40 54.12	46.90	-4.40	-5.48	55.7	0.000	0.000
44 40 54.28	47.38	-4.40	-5.59	56.1	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 54.45	47.61	-4.37	-5.65	56.3	0.000	0.000
44 40 54.62	48.02	-4.36	-5.66	56.7	0.000	0.000
44 40 54.78	47.60	-4.37	-5.70	56.5	0.000	0.000
44 40 54.95	47.82	-4.32	-5.74	56.5	0.000	0.000
44 40 55.12	48.46	-4.02	-5.78	57.1	0.000	0.000
44 40 55.28	48.70	-4.03	-5.87	57.4	0.000	0.000
44 40 55.45	48.67	-4.33	-5.91	57.4	0.000	0.000
44 40 55.62	49.11	-4.32	-5.97	57.8	0.000	0.000
44 40 55.78	48.46	-4.02	-6.01	57.2	0.000	0.000
44 40 55.95	49.11	-4.25	-6.06	57.8	0.000	0.000
44 40 56.12	49.54	-4.30	-6.12	58.3	0.000	0.000
44 40 56.28	49.55	-4.31	-6.12	58.3	0.000	0.000
44 40 56.45	50.01	-4.29	-6.15	58.7	0.000	0.000
44 40 56.62	49.78	-4.28	-6.18	58.5	0.000	0.000
44 40 56.78	49.78	-4.22	-6.28	58.5	0.000	0.000
44 40 56.95	50.93	-4.27	-6.34	59.7	0.000	0.000
44 40 57.12	50.92	-4.30	-6.39	59.7	0.000	0.000
44 40 57.28	51.65	-4.23	-6.45	60.4	0.000	0.000
44 40 57.45	51.40	-4.22	-6.50	60.1	0.000	0.000
44 40 57.62	50.93	-4.17	-6.47	59.7	0.000	0.000
44 40 57.78	51.88	-4.21	-6.59	60.6	0.000	0.000
44 40 57.95	51.89	-4.17	-6.64	60.6	0.000	0.000
44 40 58.12	52.38	-4.20	-6.65	61.1	0.000	0.000
44 40 58.28	52.13	-4.15	-6.73	60.9	0.000	0.000
44 40 58.45	52.62	-4.21	-6.82	61.4	0.000	0.000
44 40 58.62	52.12	-4.19	-6.85	60.9	0.000	0.000
44 40 58.78	52.33	-3.84	-6.87	61.1	0.000	0.000
44 40 58.95	53.37	-4.17	-6.91	62.1	0.000	0.000
44 40 59.12	53.63	-4.07	-7.01	62.4	0.000	0.000
44 40 59.28	53.89	-4.08	-7.06	62.7	0.000	0.000
44 40 59.45	54.14	-4.09	-7.15	62.9	0.000	0.000
44 40 59.62	53.62	-4.04	-7.16	62.4	0.000	0.000
44 40 59.78	54.13	-4.06	-7.25	62.9	0.000	0.000
44 40 59.95	53.87	-4.05	-7.28	62.7	0.000	0.000
44 41 0.12	54.40	-4.03	-7.33	63.2	0.000	0.000
44 41 0.28	54.67	-4.01	-7.35	63.4	0.000	0.000
44 41 0.45	54.92	-4.02	-7.45	63.7	0.000	0.000
44 41 0.62	56.02	-4.06	-7.52	64.8	0.000	0.000
44 41 0.78	55.40	-4.00	-7.55	64.3	0.000	0.000
44 41 0.95	55.73	-4.01	-7.60	64.5	0.000	0.000
44 41 1.12	55.65	-4.00	-7.68	64.5	0.000	0.000
44 41 1.28	56.00	-4.02	-7.70	64.8	0.000	0.000
44 41 1.45	56.56	-4.01	-7.64	65.4	0.000	0.000
44 41 1.62	58.31	-3.06	-8.00	67.1	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 41 1.78	57.32	-3.96	-11.33	66.9	0.000	0.000
44 41 1.95	57.91	-3.88	-11.44	67.1	0.000	0.000
44 41 2.12	57.90	-3.91	-11.47	67.1	0.000	0.000
44 41 2.28	58.30	-3.88	-8.11	67.1	0.000	0.000
44 41 2.45	55.41	-3.78	-8.18	64.3	0.000	0.000
44 41 2.62	55.81	-3.61	-11.49	65.1	0.000	0.000
44 41 2.78	56.40	-3.81	-11.61	65.7	0.000	0.000
44 41 2.95	56.68	-3.82	-11.70	65.9	0.000	0.000
44 41 3.12	58.15	-3.84	-11.87	67.4	0.000	0.000
44 41 3.28	57.54	-3.78	-11.86	66.8	0.000	0.000
44 41 3.45	58.74	-3.78	-12.04	68.0	0.000	0.000
44 41 3.62	58.12	-3.72	-12.00	67.4	0.000	0.000
44 41 3.78	59.03	-3.75	-12.14	68.5	0.000	0.000
44 41 3.95	58.42	-3.69	-12.13	67.7	0.000	0.000
44 41 4.12	58.41	-3.65	-12.19	67.7	0.000	0.000
44 41 4.28	59.65	-3.66	-12.35	69.0	0.000	0.000
44 41 4.45	61.89	-3.77	-12.78	71.5	0.000	0.000
44 41 4.62	62.22	-3.70	-12.66	71.6	0.000	0.000
44 41 4.78	61.24	-3.67	-12.65	70.6	0.000	0.000
44 41 4.95	61.44	-3.39	-12.77	70.8	0.000	0.000
44 41 5.12	60.57	-3.64	-12.66	69.9	0.000	0.000
44 41 5.28	61.20	-3.58	-12.79	70.6	0.000	0.000
44 41 5.45	61.87	-3.56	-12.93	71.3	0.000	0.000
44 41 5.62	62.19	-3.55	-12.98	71.6	0.000	0.000
44 41 5.78	61.89	-3.56	-13.04	71.3	0.000	0.000
44 41 5.95	60.52	-3.40	-12.92	69.9	0.000	0.000
44 41 6.12	61.83	-3.44	-13.10	71.2	0.000	0.000
44 41 6.28	62.89	-3.47	-13.29	72.3	0.000	0.000
44 41 6.45	62.19	-3.41	-13.39	71.6	0.000	0.000
44 41 6.62	62.50	-3.40	-13.29	71.9	0.000	0.000
44 41 6.78	62.69	-3.38	-13.29	72.1	0.000	0.000
44 41 6.95	64.59	-3.39	-13.63	74.1	0.000	0.000
44 41 7.12	64.23	-3.34	-13.66	73.7	0.000	0.000
44 41 7.28	64.21	-3.34	-13.72	73.7	0.000	0.000
44 41 7.45	63.54	-3.07	-15.61	73.3	0.000	0.000
44 41 7.62	64.10	-3.34	-15.57	74.0	0.000	0.000
44 41 7.78	64.30	-3.05	-13.04	73.8	0.000	0.000
44 41 7.95	63.09	-3.33	-13.81	73.3	0.000	0.000
44 41 8.12	65.42	-3.07	-14.16	74.9	0.000	0.000
44 41 8.28	65.22	-3.28	-14.16	74.8	0.000	0.000
44 41 8.45	64.49	-3.30	-14.15	74.0	0.000	0.000
44 41 8.62	64.17	-3.29	-15.04	74.0	0.000	0.000
44 41 8.78	69.97	-3.07	-10.12	79.4	0.000	0.000
44 41 8.95	69.56	-3.20	-14.41	79.1	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 41 9.12	65.94	-3.08	-14.44	75.9	0.000	0.000
44 41 9.28	66.31	-3.09	-14.53	75.9	0.000	0.000
44 41 9.45	66.33	-3.18	-14.63	75.9	0.000	0.000
44 41 9.62	67.51	-3.12	-14.77	77.1	0.000	0.000
44 41 9.78	67.65	-2.88	-14.82	77.3	0.000	0.000
44 41 9.95	66.65	-3.14	-14.81	76.3	0.000	0.000
44 41 10.12	67.41	-3.11	-14.98	77.0	0.000	0.000
44 41 10.28	67.82	-3.12	-15.08	77.5	0.000	0.000
44 41 10.45	68.21	-3.09	-15.18	77.8	0.000	0.000
44 41 10.62	67.43	-3.07	-15.11	77.1	0.000	0.000
44 41 10.78	68.61	-3.01	-15.26	78.3	0.000	0.000
44 41 10.95	68.22	-3.00	-15.31	77.9	0.000	0.000
44 41 11.12	68.56	-3.01	-15.40	78.3	0.000	0.000
44 41 11.28	69.99	-2.97	-15.48	78.7	0.000	0.000
44 41 11.45	67.72	-2.90	-15.30	77.4	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 21.62	4.62	-0.62	-0.64	11.5	0.000	0.000
44 40 21.78	4.42	-0.34	-0.95	10.9	0.000	0.000
44 40 21.95	4.05	-0.31	-0.93	11.3	0.000	0.000
44 40 22.12	5.67	-0.32	-0.87	12.1	0.000	0.000
44 40 22.28	6.04	-0.61	-0.55	12.5	0.000	0.000
44 40 22.45	5.63	-0.57	-0.59	12.1	0.000	0.000
44 40 22.62	6.19	-0.57	-0.80	12.7	0.000	0.000
44 40 22.78	6.10	-0.55	-0.89	12.6	0.000	0.000
44 40 22.95	6.62	-0.23	-0.84	13.3	0.000	0.000
44 40 23.12	5.87	-0.22	-0.91	12.3	0.000	0.000
44 40 23.28	5.31	-0.17	-0.95	11.6	0.000	0.000
44 40 23.45	6.17	-0.15	-0.91	12.0	0.000	0.000
44 40 23.62	6.55	-0.14	-0.90	13.0	0.000	0.000
44 40 23.78	6.64	-0.40	-0.89	13.1	0.000	0.000
44 40 23.95	8.35	-0.44	-0.81	14.8	0.000	0.000
44 40 24.12	7.67	-0.46	-0.85	13.9	0.000	0.000
44 40 24.28	7.53	-0.08	-0.49	14.0	0.000	0.000
44 40 24.45	6.19	-0.05	-0.62	12.7	0.000	0.000
44 40 24.62	8.39	-0.03	-0.83	14.0	0.000	0.000
44 40 24.78	7.63	-0.01	-0.87	14.3	0.000	0.000
44 40 24.95	7.90	0.02	-0.69	14.4	0.000	0.000
44 40 25.12	7.36	0.02	-0.91	13.8	0.000	0.000
44 40 25.28	8.86	0.05	-0.80	15.3	0.000	0.000
44 40 25.45	8.16	0.07	-0.53	14.0	0.000	0.000
44 40 25.62	9.03	0.12	-0.47	15.9	0.000	0.000
44 40 25.78	10.81	0.14	-0.78	17.3	0.000	0.000
44 40 25.95	10.53	0.17	-0.84	17.0	0.000	0.000
44 40 26.12	9.16	0.14	-0.91	15.6	0.000	0.000
44 40 26.28	10.65	0.21	-0.81	17.1	0.000	0.000
44 40 26.45	9.63	0.16	-0.87	16.1	0.000	0.000
44 40 26.62	9.64	0.20	-0.90	16.1	0.000	0.000
44 40 26.78	10.91	0.29	-0.86	17.4	0.000	0.000
44 40 26.95	10.98	0.33	-0.87	17.4	0.000	0.000
44 40 27.12	12.15	0.36	-0.79	18.6	0.000	0.000
44 40 27.28	11.37	0.35	-0.84	17.8	0.000	0.000
40 40 27.45	9.76	0.29	-0.81	16.2	0.000	0.000
44 40 27.62	12.22	0.34	-0.81	18.7	0.000	0.000
44 40 27.78	12.09	0.40	-0.86	18.5	0.000	0.000
44 40 27.95	12.20	0.39	-0.85	18.6	0.000	0.000
44 40 28.12	12.66	0.44	-0.85	19.1	0.000	0.000
44 40 28.28	14.27	0.50	-0.29	20.8	0.000	0.000
44 40 28.45	12.86	0.48	-0.40	19.3	0.000	0.000
44 40 28.62	12.89	0.50	-0.83	19.8	0.000	0.000
44 40 28.78	13.05	0.55	-0.90	20.3	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 28.95	12.12	0.97	-1.00	10.6	0.000	0.000
44 40 29.12	13.71	1.07	-0.96	20.2	0.000	0.000
44 40 29.28	15.92	1.22	-0.93	22.4	0.000	0.000
44 40 29.45	14.50	0.63	-0.46	21.0	0.000	0.000
44 40 29.62	14.77	0.65	-0.45	21.2	0.000	0.000
44 40 29.78	15.38	0.72	-1.02	21.8	0.000	0.000
44 40 29.95	12.90	0.62	-1.08	19.4	0.000	0.000
44 40 30.12	12.76	0.66	-1.12	19.2	0.000	0.000
44 40 30.28	11.32	1.05	-1.21	17.0	0.000	0.000
44 40 30.45	13.33	1.19	-1.15	19.8	0.000	0.000
44 40 30.62	15.42	1.37	0.54	22.0	0.000	0.000
44 40 30.78	14.20	1.20	0.39	20.8	0.000	0.000
44 40 30.95	16.73	0.91	-1.12	23.2	0.000	0.000
44 40 31.12	15.17	0.08	-1.21	21.6	0.000	0.000
44 40 31.28	16.16	0.89	-1.17	22.6	0.000	0.000
44 40 31.45	13.91	0.77	-1.23	20.4	0.000	0.000
44 40 31.62	14.75	0.76	-1.25	21.2	0.000	0.000
44 40 31.78	17.97	2.52	0.97	24.2	0.000	0.000
44 40 31.95	15.29	1.30	0.34	21.8	0.000	0.000
44 40 32.12	21.99	1.02	0.90	28.0	0.000	0.000
44 40 32.28	18.70	0.50	-1.32	25.2	0.000	0.000
44 40 32.45	16.30	0.75	-1.33	22.7	0.000	0.000
44 40 32.62	19.17	0.03	-1.34	25.6	0.000	0.000
44 40 32.78	18.51	0.74	-1.30	25.0	0.000	0.000
44 40 32.95	23.13	5.23	-1.38	30.0	0.000	0.000
44 40 33.12	10.15	4.29	-1.40	25.0	0.000	0.000
44 40 33.28	20.88	4.70	-1.40	27.7	0.000	0.000
44 40 33.45	15.42	0.53	-1.45	21.0	0.000	0.000
44 40 33.62	19.09	0.62	-1.40	25.5	0.000	0.000
44 40 33.78	18.68	0.01	-1.48	25.1	0.000	0.000
44 40 33.95	16.99	0.52	-1.51	23.4	0.000	0.000
44 40 34.12	18.48	0.53	-1.51	24.9	0.000	0.000
44 40 34.28	16.73	3.01	-1.56	23.5	0.000	0.000
44 40 34.45	20.31	6.01	-1.57	27.1	0.000	0.000
44 40 34.62	19.69	-0.21	-1.66	26.5	0.000	0.000
44 40 34.78	18.40	-0.21	-1.60	24.9	0.000	0.000
44 40 34.95	24.60	0.49	-1.60	31.0	0.000	0.000
44 40 35.12	10.44	0.27	-1.61	26.9	0.000	0.000
44 40 35.28	21.42	0.52	-1.60	27.9	0.000	0.000
44 40 35.45	24.92	2.06	-1.70	31.4	0.000	0.000
44 40 35.62	20.25	2.56	-1.78	26.7	0.000	0.000
44 40 35.78	23.22	-0.40	-1.70	29.7	0.000	0.000
44 40 35.95	20.90	-0.01	-1.74	33.0	0.000	0.000
44 40 30.12	20.73	-0.93	-1.76	27.2	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO D/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 36.28	20.23	-0.55	-1.82	20.7	0.000	0.000
44 40 36.45	22.42	-0.63	-1.84	28.9	0.000	0.000
44 40 36.02	22.90	1.42	-1.83	29.4	0.000	0.000
44 40 36.70	25.70	1.55	-1.89	32.2	0.000	0.000
44 40 36.95	29.44	1.77	-2.02	35.9	0.000	0.000
44 40 37.12	23.75	1.42	-1.91	30.2	0.000	0.000
44 40 37.28	22.64	1.30	-1.93	29.1	0.000	0.000
44 40 37.45	27.94	-1.01	-2.01	34.4	0.000	0.000
44 40 37.62	28.12	-1.04	-2.01	34.6	0.000	0.000
44 40 37.70	23.11	-0.97	-1.97	29.6	0.000	0.000
44 40 37.95	26.36	-1.00	-2.06	32.8	0.000	0.000
44 40 38.12	10.72	-0.90	-1.97	23.2	0.000	0.000
44 40 38.20	29.14	1.40	-2.12	35.6	0.000	0.000
44 40 38.45	23.42	1.07	-2.13	29.9	0.000	0.000
44 40 38.62	20.12	-1.36	-2.16	34.0	0.000	0.000
44 40 38.70	19.05	-1.14	-2.05	20.4	0.000	0.000
44 40 38.95	23.02	-1.21	-2.15	29.5	0.000	0.000
44 40 39.12	25.03	-1.33	-2.19	31.8	0.000	0.000
44 40 39.20	36.65	-1.94	-2.40	42.9	0.000	0.000
44 40 39.45	24.14	-2.13	-2.20	30.6	0.000	0.000
44 40 39.62	25.91	-2.31	-2.29	32.4	0.000	0.000

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 6.95	0.17	4.052	0.193	7.3	2.094	-0.014	4.3	3.0	7.3
44 40 7.12	0.17	3.875	-0.178	7.6	2.075	-0.019	4.4	3.3	7.6
44 40 7.28	0.17	3.817	-0.058	7.7	2.005	-0.070	4.5	3.2	7.7
44 40 7.45	0.17	3.809	-0.007	7.8	2.091	0.086	4.3	3.4	7.8
44 40 7.62	0.17	3.874	0.065	7.6	2.027	-0.065	4.5	3.2	7.6
44 40 7.78	0.17	4.031	0.157	7.3	2.037	0.010	4.5	2.9	7.3
44 40 7.95	0.17	4.011	-0.020	7.4	2.001	-0.036	4.5	2.8	7.4
44 40 8.12	0.17	4.091	0.080	7.2	2.109	0.108	4.3	2.9	7.2
44 40 8.28	0.17	4.028	-0.063	7.3	2.025	-0.084	4.5	2.9	7.3
44 40 8.45	0.17	3.852	-0.166	7.7	2.028	0.002	4.5	3.2	7.7
44 40 8.62	0.17	3.783	-0.078	7.8	2.015	-0.012	4.5	3.3	7.8
44 40 8.78	0.17	3.921	0.137	7.5	2.014	-0.002	4.5	3.0	7.5
44 40 8.95	0.17	3.961	0.040	7.5	2.088	0.074	4.3	3.1	7.5
44 40 9.12	0.17	3.874	-0.087	7.6	2.074	-0.014	4.4	3.3	7.6
44 40 9.28	0.17	3.961	0.087	7.5	2.037	-0.038	4.5	3.0	7.5
44 40 9.45	0.17	3.806	-0.155	7.8	1.976	-0.061	4.6	3.2	7.8
44 40 9.62	0.17	3.915	0.109	7.6	2.030	0.074	4.4	3.1	7.6
44 40 9.78	0.17	3.867	-0.047	7.6	2.038	-0.012	4.5	3.2	7.6
44 40 9.95	0.17	3.994	0.127	7.4	1.989	-0.049	4.6	2.8	7.4
44 40 10.12	0.17	3.984	-0.010	7.4	1.977	-0.012	4.6	2.8	7.4
44 40 10.28	0.17	3.966	-0.018	7.5	2.040	0.064	4.5	3.0	7.5
44 40 10.45	0.17	4.174	0.208	7.1	2.037	-0.004	4.5	2.6	7.1
44 40 10.62	0.17	4.038	-0.135	7.3	2.008	-0.028	4.5	2.8	7.3
44 40 10.78	0.17	3.855	-0.183	7.7	2.013	0.005	4.5	3.2	7.7
44 40 10.95	0.17	3.924	0.069	7.5	2.062	0.049	4.4	3.1	7.5
44 40 11.12	0.17	3.673	-0.251	8.1	2.039	-0.023	4.5	3.6	8.1
44 40 11.28	0.17	3.906	0.233	7.6	2.016	-0.024	4.5	3.1	7.6
44 40 11.45	0.17	4.009	0.103	7.4	2.075	0.059	4.4	3.0	7.4
44 40 11.62	0.17	3.766	-0.243	7.9	2.024	-0.051	4.5	3.4	7.9
44 40 11.78	0.17	3.882	0.116	7.6	1.996	-0.028	4.5	3.1	7.6
44 40 11.95	0.17	3.829	-0.053	7.7	2.013	0.017	4.5	3.2	7.7
44 40 12.12	0.17	3.909	0.080	7.6	1.943	-0.070	4.7	2.9	7.6
44 40 12.28	0.17	3.765	-0.145	7.9	2.030	0.088	4.5	3.4	7.9
44 40 12.45	0.17	3.881	0.116	7.6	1.987	-0.043	4.6	3.1	7.6
44 40 12.62	0.17	3.854	-0.027	7.7	2.087	0.100	4.4	3.3	7.7
44 40 12.78	0.17	4.078	0.224	7.3	2.078	-0.009	4.4	2.9	7.3
44 40 12.95	0.17	3.880	-0.198	7.6	1.991	-0.086	4.6	3.1	7.6
44 40 13.12	0.17	3.950	0.070	7.5	2.118	0.127	4.3	3.2	7.5
44 40 13.28	0.17	3.977	0.027	7.4	2.062	-0.056	4.4	3.0	7.4
44 40 13.45	0.17	3.977	-0.001	7.4	2.039	-0.023	4.5	3.0	7.4
44 40 13.62	0.17	3.933	-0.043	7.5	2.115	0.077	4.3	3.2	7.5
44 40 13.78	0.17	3.939	0.006	7.5	2.025	-0.090	4.5	3.0	7.5
44 40 13.95	0.17	3.865	-0.074	7.7	2.138	0.113	4.2	3.4	7.7
44 40 14.12	0.17	3.853	-0.012	7.7	2.066	-0.070	4.4	3.3	7.7

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 14.28	0.17	3.913	0.060	7.6	1.925	-0.143	4.7	2.8	7.6
44 40 14.45	0.17	3.940	0.027	7.5	2.053	0.129	4.4	3.1	7.5
44 40 14.62	0.17	3.961	0.021	7.5	1.989	-0.064	4.6	2.9	7.5
44 40 14.78	0.17	4.008	0.047	7.4	2.057	0.068	4.4	3.0	7.4
44 40 14.95	0.17	3.913	-0.094	7.6	1.975	-0.082	4.6	3.0	7.6
44 40 15.12	0.17	4.054	0.140	7.3	2.013	0.038	4.5	2.8	7.3
44 40 15.28	0.17	3.923	-0.131	7.5	2.042	0.030	4.4	3.1	7.5
44 40 15.45	0.17	3.887	-0.035	7.6	2.011	-0.031	4.5	3.1	7.6
44 40 15.62	0.17	4.032	0.145	7.3	2.064	0.053	4.4	2.9	7.3
44 40 15.78	0.17	3.957	-0.075	7.5	1.961	-0.103	4.6	2.8	7.5
44 40 15.95	0.17	3.882	-0.076	7.6	2.015	0.054	4.5	3.1	7.6
44 40 16.12	0.17	3.989	0.108	7.4	1.968	-0.048	4.6	2.8	7.4
44 40 16.28	0.17	3.873	-0.116	7.6	1.886	-0.082	4.8	2.8	7.6
44 40 16.45	0.17	3.974	0.101	7.4	1.943	0.056	4.7	2.8	7.4
44 40 16.62	0.17	3.915	-0.059	7.6	1.926	-0.018	4.7	2.8	7.6
44 40 16.78	0.17	3.980	0.065	7.4	1.977	0.051	4.6	2.8	7.4
44 40 16.95	0.17	3.742	-0.238	7.9	1.919	-0.059	4.7	3.2	7.9
44 40 17.12	0.17	3.813	0.070	7.8	1.894	-0.024	4.8	3.0	7.8
44 40 17.28	0.17	3.635	-0.178	8.1	1.790	-0.105	5.1	3.1	8.1
44 40 17.45	0.17	3.673	0.038	8.1	1.750	-0.040	5.2	2.9	8.1
44 40 17.62	0.17	3.488	-0.185	8.5	1.679	-0.071	5.4	3.1	8.5
44 40 17.78	0.17	3.577	0.089	8.3	1.678	-0.001	5.4	2.9	8.3
44 40 17.95	0.17	3.674	0.097	8.1	1.695	0.017	5.4	2.7	8.1
44 40 18.12	0.17	3.563	-0.111	8.3	1.615	-0.080	5.6	2.7	8.3
44 40 18.28	0.17	3.431	-0.132	8.6	1.560	-0.055	5.8	2.8	8.6
44 40 18.45	0.17	3.453	0.022	8.6	1.475	-0.085	6.2	2.4	8.6
44 40 18.62	0.17	3.626	0.174	8.2	1.459	-0.015	6.2	1.9	8.2
44 40 18.78	0.17	3.349	-0.277	8.8	1.365	-0.094	6.7	2.2	8.8
44 40 18.95	0.17	3.274	-0.075	9.0	1.373	0.008	6.6	2.4	9.0
44 40 19.12	0.17	3.130	-0.145	9.5	1.440	0.067	6.3	3.1	9.5
46 43 19.28	0.17	3.019	-0.111	9.8	1.413	-0.027	6.4	3.4	9.8
44 40 19.45	0.17	3.135	0.116	9.4	1.428	0.016	6.4	3.1	9.4
44 40 19.62	0.17	3.135	0.001	9.4	1.430	0.002	6.4	3.1	9.4
44 40 19.78	0.17	3.020	-0.116	9.8	1.394	-0.037	6.5	3.5	9.8
44 40 19.95	0.17	3.191	0.171	9.3	1.403	0.069	6.2	3.1	9.3
44 40 20.12	0.17	2.911	-0.280	10.2	1.386	-0.077	6.8	3.6	10.2
44 40 20.28	0.17	3.124	0.213	9.5	1.417	0.030	6.4	3.1	9.5
44 40 20.45	0.17	2.775	-0.349	10.7	1.356	-0.060	6.7	4.0	10.7
44 40 20.62	0.17	2.881	0.106	10.3	1.357	0.001	6.7	3.6	10.3
44 40 20.78	0.17	2.925	0.044	10.1	1.286	-0.072	7.1	3.0	10.1
44 40 20.95	0.17	2.743	-0.182	10.8	1.150	-0.135	7.9	2.9	10.8
44 40 21.12	0.17	2.926	0.183	10.1	1.337	0.187	6.8	3.3	10.1
44 40 21.28	0.17	2.705	-0.222	10.9	1.255	-0.082	7.2	3.7	10.9
44 40 21.45	0.17	2.494	-0.210	11.9	1.146	-0.109	7.9	3.0	11.9

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INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 21.62	0.17	2.615	0.121	11.5	1.133	-0.013	8.0	3.3	11.5
44 40 21.78	0.17	2.718	0.103	10.9	1.141	0.008	8.0	2.9	10.9
44 40 21.95	0.17	2.616	-0.102	11.3	1.089	-0.051	8.3	3.0	11.3
44 40 22.12	0.17	2.438	-0.178	12.1	1.019	-0.070	8.9	3.2	12.1
44 40 22.28	0.17	2.360	-0.078	12.5	1.080	0.062	8.4	4.1	12.5
44 40 22.45	0.17	2.441	0.080	12.1	1.048	-0.032	8.7	3.5	12.1
44 40 22.62	0.17	2.338	-0.103	12.7	0.957	-0.092	9.5	3.2	12.7
44 40 22.78	0.17	2.340	0.002	12.6	0.994	0.038	9.1	3.5	12.6
44 40 22.95	0.17	2.229	-0.111	13.3	0.973	-0.021	9.3	3.9	13.3
44 40 23.12	0.17	2.401	0.172	12.3	1.008	0.035	9.0	3.3	12.3
44 40 23.28	0.17	2.516	0.115	11.8	1.128	0.120	8.0	3.7	11.8
44 40 23.45	0.17	2.343	-0.173	12.6	1.148	0.019	7.9	4.7	12.6
44 40 23.62	0.17	2.275	-0.068	13.0	1.125	-0.023	8.1	4.9	13.0
44 40 23.78	0.17	2.258	-0.017	13.1	1.176	0.052	7.7	5.4	13.1
44 40 23.95	0.17	1.997	-0.261	14.8	1.110	-0.066	8.2	6.6	14.8
44 40 24.12	0.17	2.124	0.127	13.9	1.084	-0.027	8.4	5.5	13.9
44 40 24.28	0.17	2.112	-0.012	14.0	1.004	-0.080	9.0	5.0	14.0
44 40 24.45	0.17	2.336	0.224	12.7	1.136	0.132	8.0	4.7	12.7
44 40 24.62	0.17	1.993	-0.343	14.8	0.971	-0.165	9.4	5.5	14.8
44 40 24.78	0.17	2.072	0.078	14.3	0.983	0.012	9.2	5.0	14.3
44 40 24.95	0.17	2.050	-0.021	14.4	1.062	0.079	8.5	5.9	14.4
44 40 25.12	0.17	2.142	0.092	13.8	1.009	-0.053	9.0	4.8	13.8
44 40 25.28	0.17	1.932	-0.209	15.3	0.970	-0.039	9.4	5.9	15.3
44 40 25.45	0.17	2.022	0.089	14.6	0.999	0.028	9.1	5.5	14.6
44 40 25.62	0.17	1.907	-0.115	15.5	0.948	-0.050	9.6	5.9	15.5
44 40 25.78	0.17	1.713	-0.194	17.3	0.885	-0.063	10.3	7.0	17.3
44 40 25.95	0.17	1.742	0.029	17.0	0.926	0.041	9.8	7.2	17.0
44 40 26.12	0.17	1.898	0.156	15.6	0.904	-0.022	10.0	5.5	15.6
44 40 26.28	0.17	1.729	-0.169	17.1	0.931	0.027	9.8	7.4	17.1
44 40 26.45	0.17	1.840	0.110	16.1	0.914	-0.017	9.9	6.1	16.1
44 40 26.62	0.17	1.838	-0.002	16.1	0.861	-0.054	10.5	5.5	16.1
44 40 26.78	0.17	1.703	-0.135	17.4	0.882	0.021	10.3	7.1	17.4
44 40 26.95	0.17	1.697	-0.006	17.4	0.884	0.002	10.3	7.2	17.4
44 40 27.12	0.17	1.590	-0.107	18.6	0.723	-0.160	12.6	6.0	18.6
44 40 27.28	0.17	1.660	0.070	17.8	0.788	0.065	11.5	6.3	17.8
44 40 27.45	0.17	1.825	0.165	16.2	0.800	0.012	11.4	4.9	16.2
44 40 27.62	0.17	1.584	-0.241	18.7	0.771	-0.029	11.8	6.9	18.7
44 40 27.78	0.17	1.596	0.012	18.5	0.754	-0.017	12.0	6.5	18.5
44 40 27.95	0.17	1.586	-0.010	18.6	0.725	-0.029	12.5	6.1	18.6
44 40 28.12	0.17	1.550	-0.037	19.1	0.771	0.046	11.8	7.3	19.1
44 40 28.28	0.17	1.425	-0.124	20.8	0.710	-0.061	12.8	8.0	20.8
44 40 28.45	0.17	1.530	0.105	19.3	0.677	-0.033	13.4	5.9	19.3
44 40 28.62	0.17	1.530	-0.000	19.3	0.720	0.043	12.6	6.7	19.3
44 40 28.78	0.17	1.457	-0.073	20.3	0.759	0.039	12.0	8.3	20.3

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 28.95	0.17	1.591	0.134	18.6	0.722	-0.037	12.6	6.0	18.6
44 40 29.12	0.17	1.466	-0.125	20.2	0.715	-0.007	12.7	7.5	20.2
44 40 29.28	0.17	1.321	-0.145	22.4	0.704	-0.011	12.9	9.5	22.4
44 40 29.45	0.17	1.410	0.089	21.0	0.695	-0.009	13.1	7.9	21.0
44 40 29.62	0.17	1.392	-0.018	21.2	0.771	0.076	11.8	9.5	21.2
44 40 29.78	0.17	1.355	-0.037	21.8	0.715	-0.056	12.7	9.1	21.8
44 40 29.95	0.17	1.529	0.173	19.4	0.736	0.020	12.3	7.0	19.4
44 40 30.12	0.17	1.540	0.012	19.2	0.695	-0.041	13.1	6.1	19.2
44 40 30.28	0.17	1.664	0.123	17.8	0.823	0.129	11.0	6.7	17.8
44 40 30.45	0.17	1.494	-0.170	19.8	0.688	-0.135	13.2	6.6	19.8
44 40 30.62	0.17	1.345	-0.150	22.0	0.627	-0.061	14.5	7.5	22.0
44 40 30.78	0.17	1.424	0.080	20.8	0.775	0.148	11.7	9.1	20.8
44 40 30.95	0.17	1.276	-0.148	23.2	0.634	-0.141	14.3	8.8	23.2
44 40 31.12	0.17	1.368	0.092	21.6	0.664	0.031	13.7	8.0	21.6
44 40 31.28	0.17	1.308	-0.060	22.6	0.600	-0.065	15.1	7.5	22.6
44 40 31.45	0.17	1.453	0.145	20.4	0.587	-0.013	15.5	4.9	20.4
44 40 31.62	0.17	1.396	-0.057	21.2	0.694	0.107	13.1	8.1	21.2
44 40 31.78	0.17	1.225	-0.171	24.2	0.642	-0.052	14.1	10.0	24.2
44 40 31.95	0.17	1.354	0.129	21.8	0.650	0.007	14.0	7.9	21.8
44 40 32.12	0.17	1.034	-0.319	28.6	0.551	-0.099	16.5	12.1	28.6
44 40 32.28	0.17	1.176	0.142	25.2	0.684	0.134	13.3	11.9	25.2
44 40 32.45	0.17	1.301	0.125	22.7	0.595	-0.089	15.3	7.5	22.7
44 40 32.62	0.17	1.155	-0.146	25.6	0.554	-0.041	16.4	9.2	25.6
44 40 32.78	0.17	1.185	0.031	25.0	0.608	0.054	14.9	10.0	25.0
44 40 32.95	0.17	0.985	-0.200	30.0	0.659	0.051	13.8	16.2	30.0
44 40 33.12	0.17	1.185	0.200	25.0	0.586	-0.073	15.5	9.5	25.0
44 40 33.28	0.17	1.067	-0.118	27.7	0.589	0.003	15.4	12.3	27.7
44 40 33.45	0.17	1.353	0.286	21.9	0.573	-0.015	15.8	6.0	21.9
44 40 33.62	0.17	1.159	-0.195	25.5	0.603	0.030	15.1	10.5	25.5
44 40 33.78	0.17	1.178	0.019	25.1	0.685	0.082	13.2	11.9	25.1
44 40 33.95	0.17	1.263	0.085	23.4	0.599	-0.086	15.2	8.3	23.4
44 40 34.12	0.17	1.187	-0.076	24.9	0.526	-0.073	17.3	7.7	24.9
44 40 34.28	0.17	1.261	0.073	23.5	0.609	0.083	14.9	8.6	23.5
44 40 34.45	0.17	1.091	-0.169	27.1	0.582	-0.027	15.6	11.5	27.1
44 40 34.62	0.17	1.126	0.034	26.3	0.710	0.128	12.8	13.5	26.3
44 40 34.78	0.17	1.189	0.063	24.9	0.501	-0.209	18.1	6.8	24.9
44 40 34.95	0.17	0.953	-0.235	31.0	0.641	0.140	14.2	16.9	31.0
44 40 35.12	0.17	1.189	0.236	24.9	0.574	-0.067	15.8	9.1	24.9
44 40 35.28	0.17	1.062	-0.127	27.9	0.522	-0.053	17.4	10.4	27.9
44 40 35.45	0.17	0.942	-0.120	31.4	0.516	-0.006	17.6	13.8	31.4
44 40 35.62	0.17	1.107	0.165	26.7	0.609	0.093	14.9	11.8	26.7
44 40 35.78	0.17	0.998	-0.109	29.7	0.554	-0.055	16.4	13.3	29.7
44 40 35.95	0.17	0.896	-0.102	33.0	0.597	0.043	15.2	17.8	33.0
44 40 36.12	0.17	1.089	0.193	27.2	0.548	-0.049	16.6	10.6	27.2

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 36.28	0.17	1.109	0.021	26.7	0.673	0.125	13.5	13.2	26.7
44 40 36.45	0.17	1.025	-0.084	28.9	0.514	-0.159	17.7	11.2	28.9
44 40 36.62	0.17	1.005	-0.020	29.4	0.573	0.059	15.8	13.6	29.4
44 40 36.78	0.17	0.920	-0.085	32.2	0.519	-0.054	17.5	14.7	32.2
44 40 36.95	0.17	0.824	-0.096	35.9	0.523	0.003	17.4	18.5	35.9
44 40 37.12	0.17	0.979	0.155	30.2	0.514	-0.008	17.7	12.6	30.2
44 40 37.28	0.17	1.016	0.038	29.1	0.537	0.023	16.9	12.2	29.1
44 40 37.45	0.17	0.860	-0.156	34.4	0.444	-0.093	20.5	13.9	34.4
44 40 37.62	0.17	0.856	-0.004	34.6	0.436	-0.008	20.8	13.7	34.6
44 40 37.78	0.17	1.001	0.145	29.6	0.472	0.035	19.3	10.3	29.8
44 40 37.95	0.17	0.902	-0.099	32.8	0.508	0.037	17.9	14.9	32.8
44 40 38.12	0.17	1.175	0.274	25.2	0.424	-0.084	21.4	3.7	25.2
44 40 38.28	0.17	0.831	-0.345	35.6	0.382	-0.042	23.7	11.9	35.6
44 40 38.45	0.17	0.990	0.159	29.9	0.519	0.136	17.5	12.4	29.9
44 40 38.62	0.17	0.855	-0.135	34.6	0.547	0.028	16.6	18.0	34.6
44 40 38.78	0.17	1.120	0.265	26.4	0.496	-0.051	18.3	8.1	26.4
44 40 38.95	0.17	1.003	-0.117	29.5	0.529	0.033	17.2	12.3	29.5
44 40 39.12	0.17	0.927	-0.076	31.9	0.529	-0.000	17.2	14.7	31.9
44 40 39.28	0.17	0.689	-0.238	42.9	0.384	-0.145	23.7	19.3	42.9
44 40 39.45	0.17	0.965	0.276	30.6	0.323	-0.060	28.1	2.6	30.6
44 40 39.62	0.17	0.912	-0.053	32.4	0.382	0.059	23.7	8.7	32.4
44 40 39.78	0.17	11.627	10.715	37.9					
44 40 39.95	0.17	11.681	0.053	37.8					
44 40 40.12	0.17	11.567	-0.114	38.1					
44 40 40.28	0.17	11.391	-0.176	38.7					
44 40 40.45	0.17	11.448	0.057	38.5					
44 40 40.62	0.17	11.387	-0.060	38.7					
44 40 40.78	0.17	11.300	-0.088	39.0					
44 40 40.95	0.17	11.244	-0.055	39.2					
44 40 41.12	0.17	11.156	-0.088	39.5					
44 40 41.28	0.17	11.155	-0.002	39.5					
44 40 41.45	0.17	11.041	-0.113	39.9					
44 40 41.62	0.17	11.067	0.025	39.9					
44 40 41.78	0.17	10.979	-0.088	40.2					
44 40 41.95	0.17	10.861	-0.117	40.6					
44 40 42.12	0.17	10.803	-0.059	40.8					
44 40 42.28	0.17	10.772	-0.031	40.9					
44 40 42.45	0.17	10.744	-0.028	41.1					
44 40 42.62	0.17	10.625	-0.119	41.5					
44 40 42.78	0.17	10.567	-0.059	41.7					
44 40 42.95	0.17	10.567	0.000	41.7					
44 40 43.12	0.17	10.482	-0.084	42.1					
44 40 43.28	0.17	10.449	-0.033	42.2					
44 40 43.45	0.17	10.380	-0.090	42.6					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 43.62	0.17	10.334	-0.026	42.7					
44 40 43.78	0.17	10.248	-0.086	43.0					
44 40 43.95	0.17	10.275	0.027	42.9					
44 40 44.12	0.17	10.156	-0.119	43.4					
44 40 44.28	0.17	10.127	-0.029	43.6					
44 40 44.45	0.17	10.099	-0.027	43.7					
44 40 44.62	0.17	10.070	-0.029	43.8					
44 40 44.78	0.17	9.955	-0.115	44.3					
44 40 44.95	0.17	10.039	0.084	43.9					
44 40 45.12	0.17	9.894	-0.145	44.6					
44 40 45.28	0.17	9.955	0.061	44.3					
44 40 45.45	0.17	9.806	-0.149	45.0					
44 40 45.62	0.17	9.808	0.002	45.0					
44 40 45.78	0.17	9.691	-0.117	45.5					
44 40 45.95	0.17	9.662	-0.029	45.7					
44 40 46.12	0.17	9.601	-0.061	45.9					
44 40 46.28	0.17	9.513	-0.088	46.4					
44 40 46.45	0.17	9.430	-0.083	46.8					
44 40 46.62	0.17	9.541	0.111	46.2					
44 40 46.78	0.17	9.406	-0.134	46.9					
44 40 46.95	0.17	9.394	-0.012	47.0					
44 40 47.12	0.17	9.335	-0.059	47.2					
44 40 47.28	0.17	9.196	-0.140	48.0					
44 40 47.45	0.17	9.306	0.110	47.4					
44 40 47.62	0.17	9.162	-0.145	48.1					
44 40 47.78	0.17	9.193	0.032	48.0					
44 40 47.95	0.17	9.137	-0.056	48.3					
44 40 48.12	0.17	9.123	-0.014	48.3					
44 40 48.28	0.17	9.079	-0.045	48.6					
44 40 48.45	0.17	8.988	-0.090	49.1					
44 40 48.62	0.17	8.974	-0.014	49.2					
44 40 48.78	0.17	8.959	-0.015	49.2					
44 40 48.95	0.17	8.869	-0.090	49.7					
44 40 49.12	0.17	8.959	0.090	49.2					
44 40 49.28	0.17	8.871	-0.088	49.7					
44 40 49.45	0.17	8.900	0.029	49.6					
44 40 49.62	0.17	8.754	-0.146	50.4					
44 40 49.78	0.17	8.751	-0.002	50.4					
44 40 49.95	0.17	8.698	-0.054	50.7					
44 40 50.12	0.17	8.632	-0.066	51.1					
44 40 50.28	0.17	8.675	0.042	50.8					
44 40 50.45	0.17	8.573	-0.101	51.4					
44 40 50.62	0.17	8.629	0.055	51.1					
44 40 50.78	0.17	8.484	-0.145	52.0					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 50.95	0.17	8.451	-0.032	52.2					
44 40 51.12	0.17	8.458	0.007	52.1					
44 40 51.28	0.17	8.398	-0.061	52.5					
44 40 51.45	0.17	8.398	0.000	52.5					
44 40 51.62	0.17	8.419	0.021	52.4					
44 40 51.78	0.17	8.398	-0.021	52.5					
44 40 51.95	0.17	8.371	-0.027	52.7					
44 40 52.12	0.17	8.396	0.025	52.5					
44 40 52.28	0.17	8.400	0.004	52.5					
44 40 52.45	0.17	8.253	-0.146	53.4					
44 40 52.62	0.17	8.224	-0.029	53.6					
44 40 52.78	0.17	8.224	0.000	53.6					
44 40 52.95	0.17	8.152	-0.073	54.1					
44 40 53.12	0.17	8.171	0.019	54.0					
44 40 53.28	0.17	8.126	-0.045	54.3					
44 40 53.45	0.17	7.953	-0.173	55.5					
44 40 53.62	0.17	8.054	0.101	54.8					
44 40 53.78	0.17	7.923	-0.130	55.7					
44 40 53.95	0.17	8.031	0.108	54.9					
44 40 54.12	0.17	7.923	-0.108	55.7					
44 40 54.28	0.17	7.866	-0.057	56.1					
44 40 54.45	0.17	7.834	-0.032	56.3					
44 40 54.62	0.17	7.777	-0.057	56.7					
46 40 54.78	0.17	7.834	0.057	56.3					
44 40 54.95	0.17	7.804	-0.030	56.5					
44 40 55.12	0.17	7.718	-0.086	57.1					
44 40 55.28	0.17	7.685	-0.033	57.4					
44 40 55.45	0.17	7.688	0.002	57.4					
44 40 55.62	0.17	7.629	-0.059	57.8					
44 40 55.78	0.17	7.717	0.088	57.2					
44 40 55.95	0.17	7.628	-0.089	57.8					
44 40 56.12	0.17	7.572	-0.056	58.3					
44 40 56.28	0.17	7.570	-0.001	58.3					
44 40 56.45	0.17	7.511	-0.060	58.7					
44 40 56.62	0.17	7.539	0.029	58.5					
44 40 56.78	0.17	7.539	0.000	58.5					
44 40 56.95	0.17	7.393	-0.146	59.7					
44 40 57.12	0.17	7.394	0.001	59.7					
44 40 57.28	0.17	7.305	-0.090	60.4					
44 40 57.45	0.17	7.335	0.030	60.1					
44 40 57.62	0.17	7.393	0.058	59.7					
44 40 57.78	0.17	7.276	-0.117	60.6					
44 40 57.95	0.17	7.275	-0.001	60.8					
44 40 58.12	0.17	7.217	-0.058	61.1					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 58.28	0.17	7.246	0.029	60.9					
44 40 58.45	0.17	7.187	-0.059	61.4					
44 40 58.62	0.17	7.246	0.059	60.9					
44 40 58.78	0.17	7.221	-0.025	61.1					
44 40 58.95	0.17	7.100	-0.121	62.1					
44 40 59.12	0.17	7.070	-0.030	62.4					
44 40 59.28	0.17	7.040	-0.030	62.7					
44 40 59.45	0.17	7.011	-0.029	62.9					
44 40 59.62	0.17	7.069	0.059	62.4					
44 40 59.78	0.17	7.011	-0.058	62.9					
44 40 59.95	0.17	7.040	0.029	62.7					
44 41 0.12	0.17	6.981	-0.059	63.2					
44 41 0.28	0.17	6.952	-0.029	63.4					
44 41 0.45	0.17	6.923	-0.029	63.7					
44 41 0.62	0.17	6.806	-0.117	64.8					
44 41 0.78	0.17	6.864	0.058	64.3					
44 41 0.95	0.17	6.835	-0.029	64.5					
44 41 1.12	0.17	6.864	0.029	64.3					
44 41 1.28	0.17	6.805	-0.059	64.8					
44 41 1.45	0.17	6.747	-0.059	65.4					
44 41 1.62	0.17	6.571	-0.176	67.1					
44 41 1.78	0.17	6.629	0.059	66.5					
44 41 1.95	0.17	6.571	-0.059	67.1					
44 41 2.12	0.17	6.571	0.000	67.1					
44 41 2.28	0.17	6.571	-0.000	67.1					
44 41 2.45	0.17	6.864	0.293	64.3					
44 41 2.62	0.17	6.780	-0.084	65.1					
44 41 2.78	0.17	6.717	-0.063	65.7					
44 41 2.95	0.17	6.688	-0.029	65.9					
44 41 3.12	0.17	6.541	-0.147	67.4					
44 41 3.28	0.17	6.600	0.059	66.8					
44 41 3.45	0.17	6.483	-0.117	68.0					
44 41 3.62	0.17	6.542	0.059	67.4					
44 41 3.78	0.17	6.454	-0.088	68.3					
44 41 3.95	0.17	6.512	0.058	67.7					
44 41 4.12	0.17	6.512	-0.000	67.7					
44 41 4.28	0.17	6.395	-0.117	69.0					
44 41 4.45	0.17	6.189	-0.205	71.3					
44 41 4.62	0.17	6.160	-0.029	71.6					
44 41 4.78	0.17	6.248	0.088	70.6					
44 41 4.95	0.17	6.230	-0.018	70.8					
44 41 5.12	0.17	6.307	0.077	69.9					
44 41 5.28	0.17	6.250	-0.057	70.6					
44 41 5.45	0.17	6.190	-0.060	71.5					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 41 5.62	0.17	6.162	-0.028	71.6					
44 41 5.78	0.17	6.190	0.028	71.3					
44 41 5.95	0.17	6.308	0.118	69.9					
44 41 6.12	0.17	6.191	-0.117	71.2					
44 41 6.28	0.17	6.102	-0.089	72.3					
44 41 6.45	0.17	6.161	0.059	71.6					
44 41 6.62	0.17	6.131	-0.029	71.9					
44 41 6.78	0.17	6.116	-0.016	72.1					
44 41 6.95	0.17	5.956	-0.159	74.1					
44 41 7.12	0.17	5.985	0.028	73.7					
44 41 7.28	0.17	5.986	0.001	73.7					
44 41 7.45	0.17	6.014	0.028	73.3					
44 41 7.62	0.17	5.964	-0.050	74.0					
44 41 7.78	0.17	5.973	0.009	73.8					
44 41 7.95	0.17	6.014	0.041	73.3					
44 41 8.12	0.17	5.885	-0.128	74.9					
44 41 8.28	0.17	5.901	0.015	74.8					
44 41 8.45	0.17	5.961	0.061	74.0					
44 41 8.62	0.17	5.958	-0.004	74.0					
44 41 8.78	0.17	5.846	-0.111	75.4					
44 41 8.95	0.17	5.871	0.025	75.1					
44 41 9.12	0.17	5.842	-0.029	75.5					
44 41 9.28	0.17	5.813	-0.029	75.9					
44 41 9.45	0.17	5.810	-0.003	75.9					
44 41 9.62	0.17	5.720	-0.090	77.1					
44 41 9.78	0.17	5.710	-0.010	77.3					
44 41 9.95	0.17	5.783	0.074	76.3					
44 41 10.12	0.17	5.725	-0.059	77.0					
44 41 10.28	0.17	5.694	-0.031	77.5					
44 41 10.45	0.17	5.664	-0.029	77.9					
44 41 10.62	0.17	5.722	0.057	77.1					
44 41 10.78	0.17	5.635	-0.087	78.3					
44 41 10.95	0.17	5.663	0.028	77.9					
44 41 11.12	0.17	5.637	-0.026	78.2					
44 41 11.28	0.17	5.606	-0.031	78.7					
44 41 11.45	0.17	5.698	0.092	77.4					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH (X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH (Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 16.28	160816.28	3.621	3.621	8.2					
44 40 16.45	0.17	3.628	0.006	0.2					
44 40 16.62	0.17	3.859	0.231	7.7					
44 40 16.78	0.17	3.600	-0.259	8.2					
44 40 16.95	0.17	3.731	0.131	7.9					
44 40 17.12	0.17	3.476	-0.255	8.5					
44 40 17.28	0.17	3.661	0.185	8.1					
44 40 17.45	0.17	3.765	0.104	7.9					
44 40 17.62	0.17	3.823	0.058	7.7					
44 40 17.78	0.17	3.639	-0.184	8.1					
44 40 17.95	0.17	3.608	-0.031	8.2					
44 40 18.12	0.17	3.415	-0.193	8.7					
44 40 18.28	0.17	3.653	0.239	8.1					
44 40 18.45	0.17	3.514	-0.140	8.4					
44 40 18.62	0.17	3.633	0.119	8.1					
44 40 18.78	0.17	3.534	-0.099	8.4					
44 40 18.95	0.17	3.426	-0.108	8.6					
44 40 19.12	0.17	3.499	0.073	8.5					
44 40 19.28	0.17	3.367	-0.132	8.8					
44 40 19.45	0.17	3.349	-0.018	8.8					
44 40 19.62	0.17	3.187	-0.162	9.3					
44 40 19.78	0.17	3.238	0.051	9.1					
44 40 19.95	0.17	3.324	0.086	8.9					
44 40 20.12	0.17	2.931	-0.393	10.1					
44 40 20.28	0.17	2.976	0.044	9.9					
44 40 20.45	0.17	2.809	-0.167	10.9					
44 40 20.62	0.17	2.823	0.014	10.9					
44 40 20.78	0.17	2.750	-0.074	10.8					
44 40 20.95	0.17	2.884	0.135	10.3					
44 40 21.12	0.17	2.839	-0.045	10.6					
44 40 21.28	0.17	2.618	-0.222	11.3					
44 40 21.45	0.17	2.669	0.052	11.1					
44 40 21.62	0.17	2.658	-0.011	11.1					
44 40 21.78	0.17	2.537	-0.122	11.7					
44 40 21.95	0.17	2.590	0.053	11.4					
44 40 22.12	0.17	2.298	-0.292	12.9					
44 40 22.28	0.17	2.404	0.107	12.3					
44 40 22.45	0.17	2.390	-0.014	12.6					
44 40 22.62	0.17	2.479	0.089	11.9					
44 40 22.78	0.17	2.204	-0.215	13.1					
44 40 22.95	0.17	2.198	-0.007	13.5					
44 40 23.12	0.17	2.410	0.212	12.3					
44 40 23.28	0.17	2.204	-0.206	13.4					
44 40 23.45	0.17	2.191	-0.014	13.5					

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (X FEET)	DELTA LENGTH (X FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (X FEET)	DELTA WIDTH (X FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 23.62	0.27	2.100	-0.005	23.5					

GEMINI X EXPERIMENT S-26 (TELECORDER)

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 16.28	1.62	1.18	-0.90	8.2	0.000	0.000
44 40 16.45	1.60	1.16	-0.90	8.2	0.000	0.000
44 40 16.62	1.13	1.06	-0.97	7.7	0.000	0.000
44 40 16.78	1.67	1.19	-0.91	8.2	0.000	0.000
44 40 16.95	1.39	1.09	-0.93	7.9	0.000	0.000
44 40 17.12	1.96	1.19	-0.80	8.5	0.000	0.000
44 40 17.28	1.54	1.11	-0.93	8.1	0.000	0.000
44 40 17.45	1.32	1.05	-0.96	7.9	0.000	0.000
44 40 17.62	1.20	1.07	-0.95	7.7	0.000	0.000
44 40 17.78	1.57	1.12	-0.72	8.1	0.000	0.000
44 40 17.95	1.63	1.13	-0.68	8.2	0.000	0.000
44 40 18.12	2.08	1.21	-0.61	8.7	0.000	0.000
44 40 18.28	1.56	1.09	-0.91	8.1	0.000	0.000
44 40 18.45	1.68	1.13	-0.89	8.4	0.000	0.000
44 40 18.62	1.58	1.07	-0.66	8.1	0.000	0.000
44 40 18.78	1.81	1.09	-0.65	8.6	0.000	0.000
44 40 18.95	2.07	1.12	-0.62	8.6	0.000	0.000
44 40 19.12	1.89	1.09	-0.64	8.5	0.000	0.000
44 40 19.28	2.22	1.13	-0.58	8.8	0.000	0.000
44 40 19.45	2.27	1.13	-0.60	8.8	0.000	0.000
44 40 19.62	2.70	1.19	-0.69	9.3	0.000	0.000
44 40 19.78	2.57	1.09	-0.52	9.1	0.000	0.000
44 40 19.95	2.34	1.04	-0.57	8.9	0.000	0.000
44 40 20.12	3.50	1.21	-0.33	10.1	0.000	0.000
44 40 20.28	3.37	1.13	-0.40	9.9	0.000	0.000
44 40 20.45	3.95	1.20	-0.33	10.5	0.000	0.000
44 40 20.62	3.89	1.18	-0.33	10.5	0.000	0.000
44 40 20.78	4.18	1.10	-0.32	11.0	0.000	0.000
44 40 20.95	3.69	1.04	-0.36	10.3	0.000	0.000
44 40 21.12	3.05	1.05	-0.37	10.4	0.000	0.000
44 40 21.28	4.73	1.13	-0.27	11.3	0.000	0.000
44 40 21.45	4.52	1.08	-0.33	11.1	0.000	0.000
44 40 21.62	4.56	1.04	-0.30	11.2	0.000	0.000
44 40 21.78	5.10	1.39	-0.36	11.7	0.000	0.000
44 40 21.95	4.67	1.26	-0.60	11.0	0.000	0.000
44 40 22.12	6.30	1.45	-0.49	12.9	0.000	0.000
44 40 22.28	5.74	1.05	-0.21	12.3	0.000	0.000
44 40 22.45	5.83	0.94	-0.23	12.4	0.000	0.000
44 40 22.62	5.42	0.93	-0.63	11.9	0.000	0.000
44 40 22.78	6.54	1.00	-0.40	13.1	0.000	0.000
44 40 22.95	6.91	1.28	-0.49	13.3	0.000	0.000
44 40 23.12	5.74	1.18	-0.37	12.3	0.000	0.000
44 40 23.28	6.00	1.21	-0.40	13.4	0.000	0.000
44 40 23.45	6.06	1.20	-0.40	13.3	0.000	0.000

GEMINI X EXPERIMENT S-26 (TELECORDEX)

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 23.62	0.99	1.21	-0.45	15.5	0.000	0.000

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 39 59.62	160799.62	4.082	4.082	7.2	2.111	2.111	4.3	2.9	7.2
44 39 59.78	0.17	3.974	-0.107	7.4	2.111	-0.000	4.3	3.1	7.4
44 39 59.95	0.17	4.040	0.066	7.3	2.062	-0.049	4.4	2.9	7.3
44 40 0.12	0.17	3.941	-0.099	7.5	2.062	-0.000	4.4	3.1	7.5
44 40 0.28	0.17	3.887	-0.054	7.6	2.099	0.038	4.3	3.3	7.6
44 40 0.45	0.17	3.978	0.091	7.4	2.042	-0.057	4.4	3.0	7.4
44 40 0.62	0.17	3.866	-0.112	7.7	1.938	-0.105	4.7	3.0	7.7
44 40 0.78	0.17	3.893	0.027	7.6	2.043	0.105	4.4	3.2	7.6
44 40 0.95	0.17	3.948	0.055	7.5	2.070	0.027	4.4	3.1	7.5
44 40 1.12	0.17	4.033	0.085	7.3	2.098	0.028	4.3	3.0	7.3
44 40 1.28	0.17	3.968	-0.065	7.5	2.095	-0.003	4.5	3.1	7.5
44 40 1.45	0.17	3.941	-0.027	7.5	2.033	-0.062	4.5	3.0	7.5
44 40 1.62	0.17	4.036	0.095	7.3	1.938	-0.095	4.7	2.6	7.3
44 40 1.78	0.17	3.866	-0.170	7.7	1.947	0.009	4.7	3.0	7.7
44 40 1.95	0.17	3.844	-0.022	7.7	2.082	0.135	4.4	3.3	7.7
44 40 2.12	0.17	4.037	0.193	7.3	1.932	-0.149	4.7	2.6	7.3
44 40 2.28	0.17	4.024	-0.012	7.3	2.003	0.070	4.5	2.6	7.3
44 40 2.45	0.17	3.872	-0.152	7.6	2.000	-0.002	4.5	3.1	7.6
44 40 2.62	0.17	4.035	0.163	7.3	2.026	0.025	4.5	2.8	7.3
44 40 2.78	0.17	3.947	-0.088	7.5	2.039	0.013	4.5	3.0	7.5
44 40 2.95	0.17	3.920	-0.026	7.5	2.092	0.053	4.3	3.2	7.5
44 40 3.12	0.17	4.090	0.169	7.2	2.001	-0.091	4.5	2.7	7.2
44 40 3.28	0.17	3.941	-0.149	7.5	2.082	0.081	4.4	3.1	7.5
44 40 3.45	0.17	3.985	0.044	7.4	2.053	-0.030	4.4	3.0	7.4
44 40 3.62	0.17	4.017	0.032	7.4	2.137	0.084	4.2	3.1	7.4
44 40 3.78	0.17	4.053	0.036	7.3	2.003	-0.134	4.5	2.8	7.3
44 40 3.95	0.17	3.900	-0.155	7.6	2.087	0.084	4.4	3.2	7.6
44 40 4.12	0.17	3.886	-0.0.1	7.6	2.054	-0.033	4.4	3.2	7.6
44 40 4.28	0.17	3.918	0.032	7.5	2.012	-0.042	4.5	3.0	7.5
44 40 4.45	0.17	3.914	-0.004	7.6	2.053	0.041	4.4	3.1	7.6
44 40 4.62	0.17	3.904	-0.011	7.6	2.052	-0.001	4.4	3.2	7.6
44 40 4.78	0.17	3.934	0.030	7.5	2.051	-0.001	4.4	3.1	7.5
44 40 4.95	0.17	3.990	0.056	7.4	2.087	0.036	4.4	3.1	7.4
44 40 5.12	0.17	4.025	0.034	7.3	2.080	-0.006	4.4	3.0	7.3
44 40 5.28	0.17	3.947	-0.078	7.5	2.062	-0.019	4.4	3.1	7.5
44 40 5.45	0.17	4.013	0.066	7.4	2.116	0.054	4.3	3.1	7.4
44 40 5.62	0.17	3.763	-0.250	7.9	2.102	-0.014	4.3	3.5	7.9
44 40 5.78	0.17	3.754	-0.009	7.9	2.088	-0.014	4.3	3.5	7.9
44 40 5.95	0.17	3.954	0.200	7.5	1.988	-0.100	4.6	2.9	7.5
44 40 6.12	0.17	3.910	-0.044	7.6	2.019	0.031	4.5	3.1	7.6
44 40 6.28	0.17	3.858	-0.052	7.7	2.079	0.050	4.4	3.3	7.7
44 40 6.45	0.17	3.858	0.000	7.7	2.088	0.013	4.3	3.3	7.7
44 40 6.62	0.17	3.874	0.008	7.6	2.051	-0.037	4.4	3.2	7.6
44 40 6.78	0.17	3.859	-0.015	7.7	2.100	0.097	4.3	3.4	7.7

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 6.95	0.17	4.052	0.193	7.3	2.094	-0.014	4.3	3.0	7.3
44 40 7.12	0.17	3.875	-0.178	7.6	2.075	-0.019	4.4	3.3	7.6
44 40 7.28	0.17	3.817	-0.058	7.7	2.005	-0.070	4.5	3.2	7.7
44 40 7.45	0.17	3.809	-0.007	7.8	2.091	0.086	4.3	3.4	7.8
44 40 7.62	0.17	3.874	0.065	7.6	2.027	-0.065	4.5	3.2	7.6
44 40 7.78	0.17	4.031	0.157	7.3	2.037	0.010	4.5	2.9	7.3
44 40 7.95	0.17	4.011	-0.020	7.4	2.001	-0.036	4.5	2.8	7.4
44 40 8.12	0.17	4.091	0.080	7.2	2.109	0.108	4.3	2.9	7.2
44 40 8.28	0.17	4.028	-0.063	7.3	2.025	-0.084	4.5	2.9	7.3
44 40 8.45	0.17	3.862	-0.166	7.7	2.028	0.002	4.5	3.2	7.7
44 40 8.62	0.17	3.783	-0.078	7.8	2.015	-0.012	4.5	3.3	7.8
44 40 8.78	0.17	3.921	0.137	7.5	2.014	-0.002	4.5	3.0	7.5
44 40 8.95	0.17	3.961	0.040	7.5	2.088	0.074	4.3	3.1	7.5
44 40 9.12	0.17	3.874	-0.087	7.6	2.074	-0.014	4.4	3.3	7.6
44 40 9.28	0.17	3.961	0.087	7.5	2.037	-0.038	4.5	3.0	7.5
44 40 9.45	0.17	3.806	-0.155	7.8	1.976	-0.061	4.6	3.2	7.8
44 40 9.62	0.17	3.915	0.109	7.6	2.050	0.074	4.4	3.1	7.6
44 40 9.78	0.17	3.867	-0.047	7.6	2.038	-0.012	4.5	3.2	7.6
44 40 9.95	0.17	3.994	0.127	7.4	1.989	-0.049	4.6	2.6	7.4
44 40 10.12	0.17	3.984	-0.010	7.4	1.977	-0.012	4.6	2.9	7.4
44 40 10.28	0.17	3.966	-0.018	7.5	2.040	0.064	4.5	3.0	7.5
44 40 10.45	0.17	4.174	0.208	7.1	2.037	-0.004	4.5	2.6	7.1
44 40 10.62	0.17	4.038	-0.135	7.3	2.008	-0.028	4.5	2.8	7.3
44 40 10.78	0.17	3.855	-0.183	7.7	2.013	0.005	4.5	3.2	7.7
44 40 10.95	0.17	3.924	0.069	7.5	2.062	0.049	4.4	3.1	7.5
44 40 11.12	0.17	3.673	-0.251	8.1	2.039	-0.023	4.5	3.6	8.1
44 40 11.28	0.17	3.906	0.233	7.6	2.016	-0.024	4.5	3.1	7.6
44 40 11.45	0.17	4.009	0.103	7.4	2.075	0.059	4.4	3.0	7.4
44 40 11.62	0.17	3.766	-0.243	7.9	2.024	-0.051	4.5	3.4	7.9
44 40 11.78	0.17	3.882	0.116	7.6	1.996	-0.028	4.5	3.1	7.6
44 40 11.95	0.17	3.829	-0.053	7.7	2.013	0.017	4.5	3.2	7.7
44 40 12.12	0.17	3.909	0.080	7.6	1.943	-0.070	4.7	2.9	7.6
44 40 12.28	0.17	3.765	-0.145	7.9	2.030	0.088	4.5	3.4	7.9
44 40 12.45	0.17	3.881	0.116	7.6	1.987	-0.043	4.6	3.1	7.6
44 40 12.62	0.17	3.854	-0.027	7.7	2.087	0.100	4.4	3.3	7.7
44 40 12.78	0.17	4.078	0.224	7.3	2.078	-0.009	4.4	2.9	7.3
44 40 12.95	0.17	3.880	-0.198	7.6	1.991	-0.088	4.6	3.1	7.6
44 40 13.12	0.17	3.950	0.070	7.5	2.118	0.127	4.3	3.2	7.5
44 40 13.28	0.17	3.977	0.027	7.4	2.062	-0.056	4.4	3.0	7.4
44 40 13.45	0.17	3.977	-0.001	7.4	2.03[illegible]	-0.023	4.5	3.0	7.4
44 40 13.62	0.17	3.933	-0.043	7.5	2.115	0.077	4.3	3.2	7.5
44 40 13.78	0.17	3.939	0.000	7.5	2.025	-0.090	4.5	3.0	7.5
44 40 13.95	0.17	3.869	-0.076	7.7	2.138	0.113	4.2	3.4	7.7
44 40 14.12	0.17	3.853	-0.012	7.7	2.000	-0.070	4.4	3.3	7.7

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 14.28	0.17	3.915	0.060	7.6	1.925	-0.145	4.7	2.8	7.6
44 40 14.45	0.17	3.940	0.027	7.5	2.053	0.129	4.4	3.1	7.5
44 40 14.62	0.17	3.961	0.021	7.5	1.989	-0.064	4.6	2.9	7.5
44 40 14.78	0.17	4.008	0.047	7.4	2.057	0.068	4.4	3.0	7.4
44 40 14.95	0.17	3.913	-0.094	7.6	1.975	-0.082	4.6	3.0	7.6
44 40 15.12	0.17	4.054	0.140	7.3	2.013	0.038	4.5	2.8	7.3
44 40 15.28	0.17	3.923	-0.131	7.5	2.042	0.030	4.4	3.1	7.5
44 40 15.45	0.17	3.887	-0.035	7.6	2.011	-0.031	4.5	3.1	7.6
44 40 15.62	0.17	4.032	0.145	7.3	2.064	0.053	4.4	2.9	7.3
44 40 15.78	0.17	3.957	-0.075	7.5	1.961	-0.103	4.6	2.8	7.5
44 40 15.95	0.17	3.882	-0.076	7.6	2.015	0.054	4.5	3.1	7.6
44 40 16.12	0.17	3.989	0.108	7.4	1.968	-0.048	4.6	2.8	7.4
44 40 16.28	0.17	3.873	-0.116	7.6	1.886	-0.082	4.8	2.8	7.6
44 40 16.45	0.17	3.974	0.101	7.4	1.943	0.056	4.7	2.8	7.4
44 40 16.62	0.17	3.915	-0.058	7.6	1.926	-0.018	4.7	2.8	7.6
44 40 16.78	0.17	3.980	0.065	7.4	1.977	0.051	4.6	2.8	7.4
44 40 16.95	0.17	3.742	-0.238	7.9	1.919	-0.058	4.7	3.2	7.9
44 40 17.12	0.17	3.813	0.070	7.8	1.894	-0.024	4.8	3.0	7.8
44 40 17.28	0.17	3.635	-0.178	8.1	1.790	-0.105	5.1	3.1	8.1
44 40 17.45	0.17	3.673	0.038	8.1	1.750	-0.040	5.2	2.9	8.1
44 40 17.62	0.17	3.488	-0.185	8.5	1.679	-0.071	5.4	3.1	8.5
44 40 17.78	0.17	3.577	0.089	8.3	1.678	-0.001	5.4	2.9	8.3
44 40 17.95	0.17	3.674	0.097	8.1	1.695	0.017	5.4	2.7	8.1
44 40 18.12	0.17	3.563	-0.111	8.3	1.615	-0.080	5.6	2.7	8.3
44 40 18.28	0.17	3.431	-0.132	8.6	1.550	-0.055	5.8	2.8	8.6
44 40 18.45	0.17	3.453	0.022	8.6	1.475	-0.085	6.2	2.4	8.6
44 40 18.62	0.17	3.626	0.174	8.2	1.459	-0.015	6.2	1.9	8.2
44 40 18.78	0.17	3.349	-0.277	8.8	1.365	-0.094	6.7	2.2	8.8
44 40 18.95	0.17	3.274	-0.075	9.0	1.373	0.008	6.6	2.4	9.0
44 40 19.12	0.17	3.130	-0.145	9.3	1.440	0.067	6.3	3.1	9.3
44 40 19.28	0.17	3.019	-0.111	9.6	1.413	-0.027	6.4	3.4	9.6
44 40 19.45	0.17	3.135	0.116	9.4	1.428	0.016	6.4	3.1	9.4
44 40 19.62	0.17	3.135	0.001	9.4	1.430	0.002	6.4	3.1	9.4
44 40 19.78	0.17	3.020	-0.116	9.6	1.394	-0.037	6.5	3.3	9.6
44 40 19.95	0.17	3.191	0.171	9.3	1.463	0.069	6.2	3.1	9.3
44 40 20.12	0.17	2.911	-0.280	10.2	1.386	-0.077	6.6	3.6	10.2
44 40 20.28	0.17	3.124	0.215	9.5	1.417	0.030	6.4	3.1	9.5
44 40 20.45	0.17	2.775	-0.349	10.7	1.350	-0.060	6.7	4.0	10.7
44 40 20.62	0.17	2.881	0.106	10.3	1.357	0.001	6.7	3.6	10.3
44 40 20.78	0.17	2.925	0.044	10.1	1.286	-0.072	7.1	3.0	10.1
44 40 20.95	0.17	2.743	-0.182	10.8	1.150	-0.135	7.9	2.9	10.8
44 40 21.12	0.17	2.926	0.183	10.1	1.337	0.187	6.8	3.3	10.1
44 40 21.28	0.17	2.705	-0.222	10.9	1.255	-0.082	7.2	3.7	10.9
44 40 21.45	0.17	2.494	-0.210	11.8	1.140	-0.108	7.8	3.9	11.8

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 21.62	0.17	2.615	0.121	11.3	1.133	-0.013	8.0	3.3	11.3
44 40 21.78	0.17	2.718	0.103	10.9	1.141	0.008	8.0	2.9	10.9
44 40 21.95	0.17	2.616	-0.102	11.3	1.089	-0.051	8.3	3.0	11.3
44 40 22.12	0.17	2.438	-0.178	12.1	1.019	-0.070	8.9	3.2	12.1
44 40 22.28	0.17	2.362	-0.076	12.5	1.080	0.062	8.4	4.1	12.5
44 40 22.45	0.17	2.441	0.080	12.1	1.048	-0.032	8.7	3.5	12.1
44 40 22.62	0.17	2.338	-0.103	12.7	0.957	-0.092	9.5	3.2	12.7
44 40 22.78	0.17	2.340	0.002	12.6	0.994	0.038	9.1	3.5	12.6
44 40 22.95	0.17	2.229	-0.111	13.3	0.973	-0.021	9.3	3.9	13.3
44 40 23.12	0.17	2.401	0.172	12.3	1.008	0.035	9.0	3.3	12.3
44 40 23.28	0.17	2.516	0.115	11.8	1.128	0.120	8.0	3.7	11.8
44 40 23.45	0.17	2.343	-0.173	12.6	1.148	0.019	7.9	4.7	12.6
44 40 23.62	0.17	2.275	-0.068	13.0	1.125	-0.023	8.1	4.9	13.0
44 40 23.78	0.17	2.258	-0.017	13.1	1.176	0.052	7.7	5.4	13.1
44 40 23.95	0.17	1.997	-0.261	14.8	1.110	-0.066	8.2	6.6	14.8
44 40 24.12	0.17	2.124	0.127	13.9	1.084	-0.027	8.4	5.5	13.9
44 40 24.28	0.17	2.112	-0.012	14.0	1.004	-0.080	9.0	5.0	14.0
44 40 24.45	0.17	2.336	0.224	12.7	1.136	0.132	8.0	4.7	12.7
44 40 24.62	0.17	1.993	-0.343	14.8	0.971	-0.165	9.4	5.5	14.8
44 40 24.78	0.17	2.072	0.078	14.3	0.983	0.012	9.2	5.0	14.3
44 40 24.95	0.17	2.050	-0.021	14.4	1.062	0.079	8.5	5.9	14.4
44 40 25.12	0.17	2.142	0.092	13.8	1.009	-0.053	9.0	4.8	13.8
44 40 25.28	0.17	1.932	-0.209	15.3	0.970	-0.039	9.4	5.9	15.3
44 40 25.45	0.17	2.022	0.089	14.6	0.999	0.028	9.1	5.5	14.6
44 40 25.62	0.17	1.907	-0.115	15.5	0.948	-0.050	9.6	5.9	15.5
44 40 25.78	0.17	1.713	-0.194	17.3	0.885	-0.063	10.3	7.0	17.3
44 40 25.95	0.17	1.742	0.029	17.0	0.926	0.041	9.8	7.2	17.0
44 40 26.12	0.17	1.898	0.156	15.6	0.904	-0.022	10.0	5.5	15.6
44 40 26.28	0.17	1.729	-0.169	17.1	0.931	0.027	9.8	7.4	17.1
44 40 26.45	0.17	1.840	0.110	16.1	0.914	-0.017	9.9	6.1	16.1
44 40 26.62	0.17	1.838	-0.002	16.1	0.861	-0.054	10.5	5.5	16.1
44 40 26.78	0.17	1.703	-0.135	17.4	0.882	0.021	10.3	7.1	17.4
44 40 26.95	0.17	1.697	-0.006	17.4	0.884	0.002	10.3	7.2	17.4
44 40 27.12	0.17	1.590	-0.107	18.6	0.723	-0.160	12.6	6.0	18.6
44 40 27.28	0.17	1.660	0.070	17.8	0.788	0.065	11.5	6.3	17.8
44 40 27.45	0.17	1.825	0.165	16.2	0.800	0.012	11.4	4.9	16.2
44 40 27.62	0.17	1.584	-0.241	18.7	0.771	-0.029	11.8	6.9	18.7
44 40 27.78	0.17	1.596	0.012	18.5	0.754	-0.017	12.0	6.5	18.5
44 40 27.95	0.17	1.586	-0.010	18.6	0.725	-0.029	12.5	6.1	18.6
44 40 28.12	0.17	1.550	-0.037	19.1	0.771	0.046	11.8	7.3	19.1
44 40 28.28	0.17	1.425	-0.124	20.8	0.710	-0.061	12.8	8.0	20.8
44 40 28.45	0.17	1.530	0.105	19.3	0.677	-0.033	13.4	5.9	19.3
44 40 28.62	0.17	1.530	-0.000	19.3	0.720	0.043	12.6	6.7	19.3
44 40 28.78	0.17	1.457	-0.073	20.3	0.759	0.039	12.0	8.3	20.3

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 28.95	0.17	1.591	0.134	18.6	0.722	-0.037	12.6	6.0	18.6
44 40 29.12	0.17	1.466	-0.125	20.2	0.715	-0.007	12.7	7.5	20.2
44 40 29.28	0.17	1.321	-0.145	22.4	0.704	-0.011	12.9	9.5	22.4
44 40 29.45	0.17	1.410	0.089	21.0	0.695	-0.009	13.1	7.9	21.0
44 40 29.62	0.17	1.392	-0.018	21.2	0.771	0.076	11.8	9.5	21.2
44 40 29.78	0.17	1.355	-0.037	21.0	0.715	-0.056	12.7	9.1	21.8
44 40 29.95	0.17	1.529	0.173	19.4	0.736	0.020	12.3	7.0	19.4
44 40 30.12	0.17	1.540	0.012	19.2	0.695	-0.041	13.1	6.1	19.2
44 40 30.28	0.17	1.664	0.123	17.8	0.823	0.129	11.0	6.7	17.8
44 40 30.45	0.17	1.494	-0.170	19.8	0.688	-0.135	13.2	6.6	19.8
44 40 30.62	0.17	1.345	-0.150	22.0	0.627	-0.061	14.5	7.5	22.0
44 40 30.78	0.17	1.424	0.080	20.8	0.775	0.148	11.7	9.1	20.8
44 40 30.95	0.17	1.276	-0.148	23.2	0.634	-0.141	14.3	8.8	23.2
44 40 31.12	0.17	1.368	0.092	21.6	0.664	0.031	13.7	8.0	21.6
44 40 31.28	0.17	1.308	-0.060	22.6	0.600	-0.065	15.1	7.5	22.6
44 40 31.45	0.17	1.453	0.145	20.4	0.587	-0.013	15.5	4.9	20.4
44 40 31.62	0.17	1.396	-0.057	21.2	0.694	0.107	13.1	8.1	21.2
44 40 31.78	0.17	1.225	-0.171	24.2	0.642	-0.052	14.1	10.0	24.2
44 40 31.95	0.17	1.354	0.129	21.8	0.650	0.007	14.0	7.9	21.8
44 40 32.12	0.17	1.034	-0.319	28.6	0.551	-0.099	16.5	12.1	28.6
44 40 32.28	0.17	1.176	0.142	25.2	0.684	0.134	13.3	11.9	25.2
44 40 32.45	0.17	1.301	0.125	22.7	0.595	-0.089	15.3	7.5	22.7
44 40 32.62	0.17	1.155	-0.146	25.6	0.556	-0.041	16.4	9.2	25.6
44 40 32.78	0.17	1.185	0.031	25.0	0.608	0.054	14.9	10.0	25.0
44 40 32.95	0.17	0.985	-0.200	30.0	0.659	0.051	13.8	16.2	30.0
44 40 33.12	0.17	1.185	0.200	25.0	0.586	-0.073	15.5	9.5	25.0
44 40 33.28	0.17	1.067	-0.118	27.7	0.589	0.003	15.4	12.3	27.7
44 40 33.45	0.17	1.353	0.286	21.9	0.573	-0.015	15.8	6.0	21.0
44 40 33.62	0.17	1.159	-0.195	25.5	0.603	0.030	15.1	10.5	25.5
44 40 33.78	0.17	1.178	0.019	25.1	0.685	0.082	13.2	11.9	25.1
44 40 33.95	0.17	1.263	0.085	23.4	0.599	-0.086	15.2	8.3	23.4
44 40 34.12	0.17	1.187	-0.076	24.9	0.526	-0.073	17.3	7.7	24.9
44 40 34.28	0.17	1.261	0.073	23.5	0.609	0.083	14.9	8.6	23.5
44 40 34.45	0.17	1.091	-0.169	27.1	0.582	-0.027	15.6	11.5	27.1
44 40 34.62	0.17	1.126	0.034	26.3	0.710	0.128	12.8	13.5	26.3
44 40 34.78	0.17	1.189	0.063	24.9	0.501	-0.209	18.1	6.8	24.9
44 40 34.95	0.17	0.935	-0.255	31.0	0.641	0.140	14.2	16.9	31.0
44 40 35.12	0.17	1.189	0.256	24.9	0.574	-0.067	15.8	9.1	24.9
44 40 35.28	0.17	1.062	-0.127	27.9	0.522	-0.053	17.4	10.4	27.9
44 40 35.45	0.17	0.942	-0.120	31.4	0.510	-0.000	17.8	13.0	31.4
44 40 35.62	0.17	1.107	0.165	26.7	0.609	0.093	14.9	11.8	26.7
44 40 35.78	0.17	0.990	-0.100	29.7	0.554	-0.055	16.4	13.3	29.7
44 40 35.95	0.17	0.890	-0.102	33.0	0.597	0.043	15.2	17.0	33.0
44 40 36.12	0.17	1.009	0.193	27.2	0.508	-0.046	16.6	10.6	27.2

INTERMEDIATE OUTPUT FOR QUALITY CONTROL

ELAPSED TIME HRS MIN SEC	DELTA TIME (SEC)	IMAGE LENGTH (K FEET)	DELTA LENGTH (K FEET)	D FROM LENGTH(X) (FEET)	IMAGE WIDTH (K FEET)	DELTA WIDTH (K FEET)	D FROM WIDTH(Y) (FEET)	DELTA DISTANCE (FEET)	BEST EST. OF D (FEET)
44 40 36.28	0.17	1.109	0.021	26.7	0.673	0.125	13.5	13.2	26.7
44 40 36.45	0.17	1.025	-0.084	28.9	0.514	-0.159	17.7	11.2	28.9
44 40 36.62	0.17	1.005	-0.020	29.4	0.573	0.059	15.8	13.6	29.4
44 40 36.78	0.17	0.920	-0.085	32.2	0.519	-0.054	17.5	14.7	32.2
44 40 36.95	0.17	0.824	-0.096	35.9	0.523	0.005	17.4	10.9	35.9
44 40 37.12	0.17	0.979	0.155	30.2	0.514	-0.008	17.7	12.6	30.2
44 40 37.28	0.17	1.016	0.038	29.1	0.537	0.023	16.9	12.2	29.1
44 40 37.45	0.17	0.860	-0.156	34.4	0.444	-0.093	20.5	13.9	34.4
44 40 37.62	0.17	0.856	-0.004	34.6	0.436	-0.008	20.6	13.7	34.6
44 40 37.78	0.17	1.001	0.145	29.6	0.472	0.035	19.3	10.3	29.6
44 40 37.95	0.17	0.902	-0.099	32.8	0.50[illegible]	0.037	17.9	14.9	32.8
44 40 38.12	0.17	1.175	0.274	25.2	0.424	-0.084	21.4	9.7	25.2
44 40 38.28	0.17	0.831	-0.345	35.6	0.382	-0.042	23.7	11.9	35.6
44 40 38.45	0.17	0.990	0.159	29.9	0.519	0.136	17.5	12.4	29.9
44 40 38.62	0.17	0.855	-0.135	34.6	0.547	0.028	16.6	18.0	34.6
44 40 38.78	0.17	1.120	0.265	26.4	0.496	-0.051	10.3	0.1	26.4
44 40 38.95	0.17	1.003	-0.117	29.5	0.529	0.033	17.2	12.3	29.5
44 40 39.12	0.17	0.927	-0.076	31.9	0.529	-0.000	17.2	14.7	31.9
44 40 39.28	0.17	0.689	-0.238	42.9	0.384	-0.145	23.7	19.9	42.9
44 40 39.45	0.17	0.965	0.276	30.6	0.323	-0.060	28.1	2.6	30.6
44 40 39.62	0.17	0.912	-0.053	32.4	0.392	0.059	23.7	6.7	32.4

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 39 59.62	0.79	-0.84	-1.18	7.2	0.000	0.000
44 39 59.78	0.95	-0.85	-1.18	7.4	0.000	0.000
44 39 59.95	0.83	-0.85	-1.19	7.3	0.000	0.000
44 40 0.12	1.01	-0.87	-1.17	7.5	0.000	0.000
44 40 0.28	1.11	-0.88	-1.16	7.6	0.000	0.000
44 40 0.45	0.94	-0.84	-1.17	7.4	0.000	0.000
44 40 0.62	1.16	-0.87	-1.16	7.7	0.000	0.000
44 40 0.78	1.10	-0.87	-1.16	7.6	0.000	0.000
44 40 0.95	1.00	-0.87	-1.16	7.5	0.000	0.000
44 40 1.12	0.84	-0.86	-1.17	7.3	0.000	0.000
44 40 1.28	0.96	-0.88	-1.16	7.5	0.000	0.000
44 40 1.45	1.01	-0.87	-1.17	7.5	0.000	0.000
44 40 1.62	0.83	-0.87	-1.17	7.3	0.000	0.000
44 40 1.78	1.15	-0.89	-1.16	7.7	0.000	0.000
44 40 1.95	1.20	-0.88	-1.17	7.7	0.000	0.000
44 40 2.12	0.83	-0.85	-1.18	7.3	0.000	0.000
44 40 2.28	0.86	-0.84	-1.18	7.5	0.000	0.000
44 40 2.45	1.14	-0.87	-1.17	7.6	0.000	0.000
44 40 2.62	0.84	-0.85	-1.19	7.5	0.000	0.000
44 40 2.78	1.00	-0.88	-1.18	7.5	0.000	0.000
44 40 2.95	1.05	-0.87	-1.18	7.9	0.000	0.000
44 40 3.12	0.74	-0.84	-1.18	7.2	0.000	0.000
44 40 3.28	1.01	-0.87	-1.17	7.5	0.000	0.000
44 40 3.45	0.93	-0.85	-1.18	7.4	0.000	0.000
44 40 3.62	0.87	-0.84	-1.19	7.4	0.000	0.000
44 40 3.78	0.81	-0.84	-1.19	7.3	0.000	0.000
44 40 3.95	1.09	-0.87	-1.18	7.8	0.000	0.000
44 40 4.12	1.12	-0.86	-1.17	7.6	0.000	0.000
44 40 4.28	1.06	-0.85	-1.18	7.5	0.000	0.000
44 40 4.45	1.06	-0.87	-1.17	7.6	0.000	0.000
44 40 4.62	1.08	-0.86	-1.16	7.8	0.000	0.000
44 40 4.78	1.02	-0.87	-1.17	7.5	0.000	0.000
44 40 4.95	0.92	-0.85	-1.17	7.4	0.000	0.000
44 40 5.12	0.85	-0.85	-1.17	7.3	0.000	0.000
44 40 5.28	1.00	-0.86	-1.18	7.9	0.000	0.000
44 40 5.45	0.88	-0.86	-1.17	7.4	0.000	0.000
44 40 5.62	1.36	-0.90	-1.19	7.9	0.000	0.000
44 40 5.78	1.38	-0.90	-1.19	7.9	0.000	0.000
44 40 5.95	0.98	-0.87	-1.18	7.5	0.000	0.000
44 40 6.12	1.07	-0.88	-1.18	7.6	0.000	0.000
44 40 6.28	1.17	-0.89	-1.18	7.7	0.000	0.000
44 40 6.45	1.18	-0.88	-1.16	7.7	0.000	0.000
44 40 6.62	1.14	-0.88	-1.17	7.6	0.000	0.000
44 40 6.78	1.17	-0.90	-1.18	7.7	0.000	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	X FEET	Y FEET	Z FEET	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 6.95	0.80	-0.87	-1.17	7.3	0.000	0.000
44 40 7.12	1.14	-0.88	-1.17	7.6	0.000	0.000
44 40 7.28	1.25	-0.90	-1.16	7.7	0.000	0.000
44 40 7.45	1.27	-0.91	-1.16	7.8	0.000	0.000
44 40 7.62	1.14	-0.89	-1.17	7.6	0.000	0.000
44 40 7.78	0.84	-0.85	-1.19	7.3	0.000	0.000
44 40 7.95	0.88	-0.86	-1.19	7.4	0.000	0.000
44 40 8.12	0.74	-0.85	-1.19	7.2	0.000	0.000
44 40 8.28	0.85	-0.85	-1.19	7.3	0.000	0.000
44 40 8.45	1.18	-0.88	-1.17	7.7	0.000	0.000
44 40 8.62	1.32	-0.90	-1.16	7.8	0.000	0.000
44 40 8.78	1.05	-0.87	-1.18	7.5	0.000	0.000
44 40 8.95	0.97	-0.87	-1.18	7.5	0.000	0.000
44 40 9.12	1.14	-0.88	-1.17	7.6	0.000	0.000
44 40 9.28	0.97	-0.86	-1.18	7.5	0.000	0.000
44 40 9.45	1.28	-0.89	-1.16	7.8	0.000	0.000
44 40 9.62	1.06	-0.87	-1.17	7.6	0.000	0.000
44 40 9.78	1.15	-0.87	-1.17	7.6	0.000	0.000
44 40 9.95	0.91	-0.85	-1.17	7.4	0.000	0.000
44 40 10.12	0.93	-0.85	-1.18	7.4	0.000	0.000
44 40 10.28	0.97	-0.85	-1.17	7.5	0.000	0.000
44 40 10.45	0.59	-0.84	-1.19	7.1	0.000	0.000
44 40 10.62	0.83	-0.86	-1.18	7.3	0.000	0.000
44 40 10.78	1.18	-0.88	-1.15	7.7	0.000	0.000
44 40 10.95	1.04	-0.86	-1.17	7.5	0.000	0.000
44 40 11.12	1.56	-0.91	-1.15	8.1	0.000	0.000
44 40 11.28	1.08	-0.88	-1.16	7.6	0.000	0.000
44 40 11.45	0.86	-0.85	-1.16	7.4	0.000	0.000
44 40 11.62	1.36	-0.88	-1.16	7.9	0.000	0.000
44 40 11.78	1.12	-0.87	-1.16	7.6	0.000	0.000
44 40 11.95	1.23	-0.88	-1.15	7.7	0.000	0.000
44 40 12.12	1.07	-0.86	-1.17	7.6	0.000	0.000
44 40 12.28	1.30	-0.88	-1.16	7.9	0.000	0.000
44 40 12.45	1.13	-0.87	-1.17	7.6	0.000	0.000
44 40 12.62	1.18	-0.88	-1.16	7.7	0.000	0.000
44 40 12.78	0.76	-0.84	-1.19	7.3	0.000	0.000
44 40 12.95	1.13	-0.88	-1.16	7.6	0.000	0.000
44 40 13.12	0.99	-0.86	-1.17	7.5	0.000	0.000
44 40 13.28	0.94	-0.87	-1.17	7.4	0.000	0.000
44 40 13.45	0.94	-0.87	-1.18	7.4	0.000	0.000
44 40 13.62	1.02	-0.88	-1.17	7.5	0.000	0.000
44 40 13.78	1.01	-0.87	-1.18	7.5	0.000	0.000
44 40 13.95	1.16	-0.89	-1.17	7.7	0.000	0.000
44 40 14.12	1.18	-0.88	-1.16	7.7	0.000	0.000

$$z = (D - 7.5)\ ft$$

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GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 1.28	7.5	0.018	0.000
44 40 1.45	7.5	0.012	-0.000
44 40 1.62	7.5	-0.017	-0.000
44 40 1.78	7.5	-0.039	-0.000
44 40 1.95	7.5	-0.046	-0.000
44 40 2.12	7.5	-0.055	-0.000
44 40 2.28	7.5	-0.056	-0.000
44 40 2.45	7.5	-0.012	-0.000
44 40 2.62	7.5	0.007	0.000
44 40 2.78	7.5	0.019	0.000
44 40 2.95	7.5	0.018	0.000
44 40 3.12	7.5	0.020	0.000
44 40 3.26	7.5	0.016	0.000
44 40 3.45	7.5	-0.012	-0.000
44 40 3.62	7.5	0.007	0.000
44 40 3.78	7.5	0.020	0.000
44 40 3.95	7.5	0.047	0.000
44 40 4.12	7.5	0.072	0.000
44 40 4.28	7.5	0.089	0.000
44 40 4.45	7.5	0.078	0.000
44 40 4.62	7.5	0.094	0.000
44 40 4.78	7.5	0.114	-0.000
44 40 4.95	7.5	0.087	0.000
44 40 5.12	7.5	0.041	0.000
44 40 5.28	7.5	0.053	0.000
44 40 5.45	7.6	0.042	0.000
44 40 5.62	7.6	0.034	0.000
44 40 5.78	7.6	0.054	0.000
44 40 5.95	7.6	0.060	0.000
44 40 6.12	7.6	0.030	0.000
44 40 6.28	7.6	0.010	0.000
44 40 6.45	7.6	0.001	-0.000
44 40 6.62	7.5	-0.032	-0.000
44 40 6.78	7.6	-0.034	-0.000
44 40 6.95	7.6	-0.032	-0.000
44 40 7.12	7.6	-0.043	-0.000
44 40 7.28	7.6	-0.075	-0.000
44 40 7.45	7.6	-0.040	-0.000
44 40 7.62	7.6	-0.025	-0.000
44 40 7.78	7.6	-0.013	-0.000
44 40 7.95	7.6	-0.015	-0.000
44 40 8.12	7.6	0.002	0.000
44 40 8.28	7.6	-0.004	-0.000
44 40 8.45	7.5	-0.008	-0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 8.62	7.5	-0.004	-0.000
44 40 8.78	7.5	-0.052	0.000
44 40 8.95	7.5	-0.074	-0.000
44 40 9.12	7.5	-0.038	-0.000
44 40 9.28	7.5	-0.008	-0.000
44 40 9.45	7.5	0.045	0.000
44 40 9.62	7.5	0.044	0.000
44 40 9.78	7.5	0.018	0.000
44 40 9.95	7.6	0.019	0.000
44 40 10.12	7.6	0.000	-0.000
44 40 10.28	7.6	0.022	0.000
44 40 10.45	7.6	0.039	0.000
44 40 10.62	7.6	0.052	0.000
44 40 10.78	7.6	0.063	0.000
44 40 10.95	7.6	0.051	0.000
44 40 11.12	7.6	0.035	-0.000
44 40 11.28	7.6	0.061	0.000
44 40 11.45	7.6	0.057	0.000
44 40 11.62	7.6	0.055	0.000
44 40 11.78	7.6	0.024	0.000
44 40 11.95	7.6	0.009	0.000
44 40 12.12	7.6	-0.005	-0.000
44 40 12.28	7.6	-0.047	-0.000
44 40 12.45	7.6	-0.051	-0.000
44 40 12.62	7.6	-0.090	0.000
44 40 12.78	7.6	-0.074	-0.000
44 40 12.95	7.6	-0.037	0.000
44 40 13.12	7.6	-0.060	-0.000
44 40 13.28	7.6	-0.056	-0.000
44 40 13.45	7.5	0.033	0.000
44 40 13.62	7.5	-0.054	-0.000
44 40 13.78	7.5	-0.045	-0.000
44 40 13.95	7.5	-0.056	-0.000
44 40 14.12	7.5	-0.035	-0.000
44 40 14.28	7.5	-0.008	-0.000
44 40 14.45	7.5	0.001	0.000
44 40 14.62	7.5	-0.008	-0.000
44 40 14.78	7.5	-0.005	-0.000
44 40 14.95	7.5	-0.002	-0.000
44 40 15.12	7.5	-0.016	-0.000
44 40 15.28	7.5	0.015	0.000
44 40 15.45	7.5	0.029	0.000
44 40 15.62	7.6	0.076	0.000
44 40 15.78	7.6	0.108	0.000

GEMINI X EXPERIMENT S-26

-7.5

ELAPSED TIME HRS MIN SEC	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 15.95	7.6	0.184	0.000
44 40 16.12	7.7	0.215	0.000
44 40 16.28	7.7	0.237	0.000
44 40 16.45	7.7	0.179	0.000
44 40 16.62	7.8	0.345	0.000
44 40 16.78	7.8	0.390	0.000
44 40 16.95	7.9	0.420	0.000
44 40 17.12	7.9	0.380	0.000
44 40 17.28	8.0	0.488	0.000
44 40 17.45	8.1	0.624	0.000
44 40 17.62	8.2	0.674	0.000
44 40 17.78	8.3 6.8	0.825	0.000
44 40 17.95	8.4	0.792	0.000
44 40 18.12	8.5	0.944	0.000
44 40 18.28	8.6	0.584	0.000
44 40 18.45	8.7	0.488	0.000
44 40 18.62	8.8	0.729	0.000
44 40 18.78	8.9	0.829	0.000
44 40 18.95	9.1	0.603	0.000
44 40 19.12	9.2	0.709	0.000
44 40 19.28	9.3	0.849	0.000
44 40 19.45	9.4	0.780	0.000
44 40 19.62	9.5	0.795	0.000
44 40 19.78	9.7	1.071	0.000
44 40 19.95	9.8	0.812	0.000
44 40 20.12	9.9	0.993	0.000
44 40 20.28	10.1	0.885	0.000
44 40 20.45	10.2	1.067	0.000
44 40 20.62	10.4	1.269	0.000
44 40 20.78	10.6	0.976	0.000
44 40 20.95	10.7	1.037	0.000
44 40 21.12	10.9	1.266	0.000
44 40 21.28	11.0	1.340	0.000
44 40 21.45	11.2	1.270	0.000
44 40 21.62	11.3	1.296	-0.000
44 40 21.78	11.4	1.033	0.000
44 40 21.95	11.6	1.008	0.000
44 40 22.12	11.7	0.784	0.000
44 40 22.28	11.9	1.104	0.000
44 40 22.45	12.1	2.196	0.000
44 40 22.62	12.3	1.032	0.000
44 40 22.78	12.4	0.833	0.000
44 40 22.95	12.6	0.910	0.000
44 40 23.12	12.8	0.071	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 23.28	12.9	0.960	0.000
44 40 23.45	13.0	0.718	-0.000
44 40 23.62	13.2	1.031	0.000
44 40 23.78	13.4	1.200	0.000
44 40 23.95	13.5	2.316	0.000
44 40 24.12	13.8	1.156	0.000
44 40 24.28	14.0	0.895	-0.000
44 40 24.45	14.1	0.924	-0.000
44 40 2<.62	14.3	1.512	0.000
44 40 24.78	14.5	1.323	0.000
44 40 24.95	14.7	1.185	0.000
44 40 25.12	14.9	1.207	0.000
44 40 25.28	15.2	1.350	0.000
44 40 25.45	15.4	1.336	0.000
44 40 25.62	15.6	0.863	0.000
44 40 25.78	15.7	1.225	0.000
44 40 25.95	15.9	1.744	0.000
44 40 26.12 — 15.286	16.2	1.933	0.000
44 40 26.28	16.4	1.337	0.000
11 - 44 40 26.45 - 9.1	16.6	1.017	0.000
44 40 26.62	16.9	-0.598	0.000
44 40 26.78	17.2	1.374	0.000
44 40 26.95	17.4	1.411	0.000
44 40 27.12	17.7	1.454	0.000
44 40 27.28	17.9	1.233	0.000
12 - 44 40 27.45 - 10.6	18.1	1.072	0.000
44 40 27.62	18.3	1.273	0.000
44 40 27.78	18.5	1.258	0.000
44 40 27.95	18.8	1.312	0.000
44 40 28.12	19.0	2.390	-0.000
44 40 28.28	19.2	1.243	0.000
13 - 44 40 28.45 - 11.8	19.3	0.987	0.000
44 40 28.62	19.3	0.851	0.000
44 40 28.78	19.5	0.692	0.000
44 40 28.95	19.6	0.606	0.000
44 40 29.12	19.8	1.333	-0.000
44 40 29.28	20.1	0.962	0.000
14 - 44 40 29.45 - 12.7	20.2	1.130	0.000
44 40 29.62	20.4	1.199	0.000
44 40 29.78	20.5	0.796	0.000
44 40 29.95	20.6	0.580	0.000
44 40 30.12	20.8	0.788	0.000
44 40 30.28	20.9	0.788	0.000
15 - 44 40 30.45 - 13.8	21.3	-0.340	0.000
			0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 30.62	21.6	1.531	0.000
44 40 30.78	21.8	1.478	0.000
44 40 30.95	22.0	1.709	0.000
44 40 31.12	22.1	2.611	0.000
44 40 31.28	22.6	2.659	0.000
16 - 44 40 31.45 - 15.2	22.7	2.674	0.000
44 40 31.62	23.0	3.323	0.000
44 40 31.78	23.1 23?	2.709	0.000
44 40 31.95	23.4	2.109	0.000
44 40 32.12	23.6 — 23?	1.626	0.000
44 40 32.28	24.0	1.293	0.000
17 - 44 40 32.45 - 16.6	24.1	1.023	0.000
44 40 32.62	24.2	0.947	0.000
44 40 32.78	24.4	1.065	0.000
44 40 32.95	24.6	1.363	0.000
44 40 33.12	24.8	0.423	0.000
44 40 33.28	25.3	0.952	0.000
18 - 44 40 33.45 - 17.9	25.4	0.560	0.000
44 40 33.62	25.6	0.620	0.000
44 40 33.78	26.1 ?	0.690	0.000
44 40 33.95	26.0	1.214	0.000
44 40 34.12	26.2	1.276	0.000
44 40 34.28	26.7	1.484	0.000
19 - 44 40 34.45 - 19.3	26.8	1.276	0.000
44 40 34.62	26.8	1.217	0.000
44 40 34.78	26.8	1.656	0.000
44 40 34.95	27.0	1.660	0.000
44 40 35.12	27.2	2.294	0.000
44 40 35.28	27.9	2.583	0.000
20 - 44 40 35.45 - 20.6	28.1	3.252	0.000
44 40 35.62	28.3	4.003	-0.000
44 40 35.78	28.6	3.497	-0.000
44 40 35.95	29.3	2.862	0.000
44 40 36.12	29.6	0.494	0.000
44 40 36.28	29.8	1.628	0.000
21 - 44 40 36.45 - 22.3	29.8	1.817	0.000
44 40 36.62	30.5 ?	1.142	0.000
44 40 36.78	30.2	1.208	0.000
44 40 36.95	30.7	1.132	0.000
44 40 37.12	30.6	0.629	0.000
44 40 37.28	30.5 ?	0.585	0.000
22 - 44 40 37.45 - 23.3	30.8	0.355	0.000
44 40 37.62	31.4	1.125	0.000
44 40 37.78	31.3	2.389	-0.000

GEMINI X EXPERIMENT S-26

	ELAPSED TIME HRS MIN SEC		DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
	44 40 37.95		31.6	0.777	0.000
	44 40 38.12		32.1	1.552	0.000
	44 40 38.28		32.5	0.987	0.000
23	44 40 38.45	25.4	32.9	3.280	-0.000
	44 40 38.62		33.2	1.508	0.000
	44 40 38.78		33.4	3.384	0.000
	44 40 38.95		33.8	2.703	0.000
	44 40 39.12		34.2	2.529	0.000
	44 40 39.28	27.2	34.5	2.894	0.000
24	44 40 39.45	30, 556 mil	34.7	3.493	0.000
	44 40 39.62		35.2	4.608	0.000
	44 40 39.78	2.67 y	35.5	4.230	0.000
	44 40 39.95	4.24 x	36.2	3.089	0.000
	44 40 40.12		36.4	4.627	0.000
	44 40 40.28		37.0	3.095	0.000
25	44 40 40.45	29.8	37.3	2.824	0.000
	44 40 40.62		37.9	1.939	0.000
	44 40 40.78		38.5	1.650	0.000
	44 40 40.95		39.0	1.449	0.000
	44 40 41.12		38.9	2.106	0.000
	44 40 41.28		39.4	2.061	-0.000
26	44 40 41.45	32.4	39.9	1.224	0.000
	44 40 41.62		40.1	1.383	0.000
	44 40 41.78		40.3	1.291	0.000
	44 40 41.95		40.5	1.226	0.000
	44 40 42.12		40.7	1.407	0.000
	44 40 42.28		41.0	1.410	0.000
27	44 40 42.45	33.7	41.2	1.309	0.000
	44 40 42.62		41.4	1.450	0.000
	44 40 42.78		41.6	1.682	0.000
	44 40 42.95		41.8	1.642	0.000
	44 40 43.12		42.0	1.662	0.000
	44 40 43.28		42.2	1.584	0.000
28	44 40 43.45	34.9	42.4	1.212	0.000
	44 40 43.62		42.6	1.238	0.000
	44 40 43.78		42.9	0.873	0.000
	44 40 43.95		43.1	1.286	0.000
	44 40 44.12		43.3	0.989	0.000
	44 40 44.28		43.5	1.124	0.000
29	44 40 44.45	36.2	43.7	1.207	0.000
	44 40 44.62		43.9	-0.286	0.000
	44 40 44.78		44.2	1.564	-0.000
	44 40 44.95		44.4	-0.295	0.000
	44 40 45.12		44.6	1.892	0.000

GEMINI X EXPERIMENT S-26

	ELAPSED TIME HRS MIN SEC		DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
	44 40 45.28		44.8	1.858	0.000
30 –	44 40 45.45	– 37.5	45.0	1.646	-0.000
	44 40 45.62		45.2	1.390	0.000
	44 40 45.78		45.5	1.324	0.000
	44 40 45.95		45.7	1.538	0.000
	44 40 46.12		45.9	1.257	0.000
	44 40 46.28		46.1	1.612	0.000
31 –	44 40 46.45	– 38.5	46.3	1.564	0.000
	44 40 46.62		46.5	1.508	0.000
	44 40 46.78		46.8	1.447	0.000
	44 40 46.95		47.0	1.703	0.000
	44 40 47.12		47.2	1.109	0.000
	44 40 47.28		47.4	1.221	0.000
32 –	44 40 47.45	– 40.2	47.7	0.909	0.000
	44 40 47.62		47.9	0.928	0.000
	44 40 47.78		48.0	1.060	0.000
	44 40 47.95		48.3	0.559	0.000
	44 40 48.12		48.4	1.583	0.000
	44 40 48.28		48.6	0.900	0.000
33 –	44 40 48.45	– 41.4	48.9	1.536	0.000
	44 40 48.62		49.0	1.600	0.000
	44 40 48.78		49.3	1.966	0.000
	44 40 48.95		49.4	2.000	0.000
	44 40 49.12		49.6	1.794	0.000
	44 40 49.28		49.9	1.681	0.000
34 –	44 40 49.45	– 42.6	50.1	1.532	0.000
	44 40 49.62		50.3	1.306	0.000
	44 40 49.78		50.5	1.584	-0.000
	44 40 49.95		50.7	1.700	0.000
	44 40 50.12		50.9	1.672	0.000
	44 40 50.28		51.0	1.277	0.000
35 –	44 40 50.45	– 43.7	51.2	1.042	0.000
	44 40 50.62		51.3	1.228	0.000
	44 40 50.78		51.5	1.077	0.000
	44 40 50.95		51.7	0.980	0.000
	44 40 51.12		51.9	1.084	0.000
	44 40 51.28		52.1	1.116	0.000
36 –	44 40 51.45	– 44.8	52.3	0.786	0.000
	44 40 51.62		52.5	1.380	0.000
	44 40 51.78		52.7	1.267	0.000
	44 40 51.95		52.9	1.025	0.000
	44 40 52.12		53.1	1.129	0.000
	44 40 52.28		53.3	-0.231	-0.000
37 –	44 40 52.45	– 46.0	53.5	1.344	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 52.62	53.7	1.707	0.000
44 40 52.78	53.9	0.159	-0.000
44 40 52.95	54.1 46.4	1.472	0.000
41 40 53.12	54.3	1.502	0.000
44 40 53.28	54.5	1.437	0.000
38 – 44 40 53.45 – 47.2	54.7	1.369	0.000
44 40 53.62	54.9	1.671	0.000
44 40 53.78	55.2	1.942	0.000
44 40 53.95	55.4	1.765	0.000
44 40 54.12	55.6	1.782	0.000
44 40 54.28	55.8	1.585	0.000
39 – 44 40 54.45 – 48.6	56.1	1.518	0.000
44 40 54.62	56.3	1.563	0.000
44 40 54.78	56.5	1.509	0.000
44 40 54.95	56.7	1.383	0.000
44 40 55.12	56.9	1.248	0.000
44 40 55.28	57.1	1.301	0.000
40 – 44 40 55.45 – 49.9	57.4	1.419	0.000
44 40 55.62	57.6	1.573	0.000
44 40 55.78	57.8	1.519	0.000
44 40 55.95	58.0	1.288	0.000
44 40 56.12	58.2	1.480	0.000
44 40 56.28	58.4	2.039	0.000
41 – 44 40 56.45 – 51.2	58.7	1.753	0.000
44 40 56.62	58.9	2.448	0.000
44 40 56.78	59.1	1.334	0.000
44 40 56.95	59.3	0.621	0.000
44 40 57.12	59.5	-0.406	0.000
64 40 57.28	59.7	1.489	0.000
42 – 44 40 57.45 – 52.4	59.9	1.720	0.000
44 40 57.62	60.2	1.736	0.000
44 40 57.78	60.4	1.540	0.000
44 40 57.95	60.6	-4.705	0.000
44 40 58.12	60.8	1.411	0.000
44 40 58.28	61.0	1.540	-0.000
44 40 58.45	61.2	1.395	0.000
44 40 58.62	61.5	1.176	0.000
44 40 58.78	61.7	1.286	0.000
44 40 58.95	61.9	1.468	0.000
44 40 59.12	62.1	1.557	0.000
44 40 59.28	62.3	1.580	0.000
44 40 59.45	62.5	1.250	0.000
44 40 59.62	62.7	1.265	0.000
44 40 59.78	62.9	1.331	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 40 59.95	63.2	3.255	-0.000
44 41 0.12	63.5	1.750	0.000
44 41 0.28	63.8	2.027	0.000
44 41 0.45	64.1	2.035	0.000
44 41 0.62	64.4	1.847	0.000
44 41 0.78	64.5	1.637	0.000
44 41 0.95	64.6	1.334	0.000
44 41 1.12	64.7	1.406	0.000
44 41 1.28	64.9	1.400	0.000
44 41 1.45	65.1	1.475	0.000
44 41 1.62	65.3	1.318	0.000
44 41 1.78	65.6	1.232	-0.000
44 41 1.95	65.8	0.941	0.000
44 41 2.12	66.0	1.167	0.000
44 41 2.28	66.2	1.080	0.000
44 41 2.45	66.3	1.030	0.000
44 41 2.62	66.5	1.228	0.000
44 41 2.78	66.9	1.479	0.000
44 41 2.95	67.2	1.665	0.000
44 41 3.12	67.5	1.636	0.000
44 41 3.28	67.7	2.105	0.000
44 41 3.45	67.9	2.052	0.000
44 41 3.62	68.1	2.629	0.000
44 41 3.78	68.3	2.320	0.000
44 41 3.95	68.5	2.482	0.000
44 41 4.12	68.7	1.995	0.000
44 41 4.28	69.0	2.113	0.000
44 41 4.45	69.2	1.664	0.000
44 41 4.62	69.6	1.558	0.000
44 41 4.78	69.8	1.484	0.000
44 41 4.95	70.0	1.761	0.000
44 41 5.12	70.3	1.600	0.000
44 41 5.28	70.6	2.084	0.000
44 41 5.45	70.9	0.742	0.000
44 41 5.62	71.1	1.252	0.000
44 41 5.78	71.4	1.455	0.000
44 41 5.95	71.7	1.451	0.000
44 41 6.12	71.9	1.709	0.000
44 41 6.28	72.0	1.193	0.000
44 41 6.45	72.2	1.429	0.000
44 41 6.62	72.4	1.439	0.000
44 41 6.78	72.5	1.243	0.000
44 41 6.95	72.7	1.209	0.000
44 41 7.12	73.0	1.002	0.000

GEMINI X EXPERIMENT S-26

ELAPSED TIME HRS MIN SEC	DISTANCE FROM AGENA TO S/C (FEET)	CLOSING VELOCITY (FT/SEC)	ACCELERATION FT/SEC2
44 41 7.28	73.2	0.865	0.000
44 41 7.45	73.3	0.813	0.000
44 41 7.62	73.6	0.979	0.000
44 41 7.78	73.8	1.016	0.000
44 41 7.95	74.1	1.002	0.000
44 41 8.12	74.4	6.293	-0.000
44 41 8.28	74.6	1.074	0.000
44 41 8.45	74.8	1.639	0.000
44 41 8.62	75.1	1.7[illegible]3	0.000
44 41 8.78	75.3	2.023	0.000
44 41 8.95	75.4	1.853	0.000
44 41 9.12	75.6	1.736	0.000
44 41 9.28	75.9	1.461	0.000
44 41 9.45	76.1	1.524	0.000
44 41 9.62	76.3	1.493	0.000
44 41 9.78	76.5	1.449	0.000

CALCULATIONS FOR GEMINI 10

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	33	21.348	2266	0.195	0.7	3.70	3.67	2.3-007	3.29-008	2.49-010
44	33	22.410	2266	0.195	0.7	3.57	3.62	2.1-007	2.75-008	2.11-010
44	33	23.473	2288	0.197	-0.5	2.74	0.86	3.6-010	2.81-008	2.15-010
44	33	24.551	2255	0.194	0.8	4.25	3.89	3.9-007	2.75-008	2.11-010
44	33	25.614	2287	0.197	0.8	4.26	3.91	4.0-007	2.75-008	2.13-010
44	33	26.676	2234	0.193	0.7	3.50	3.58	1.9-007	2.75-008	2.14-010
44	33	28.817	2095	0.181	0.5	2.57	3.18	7.5-008	2.75-008	2.12-010
44	33	29.879	2255	0.194	0.8	4.22	3.88	3.8-007	2.75-008	2.13-010
44	33	30.942	2066	0.178	0.5	2.58	3.17	7.3-008	2.75-008	2.14-010
44	33	33.082	2255	0.194	0.8	4.30	3.90	4.0-007	2.75-008	2.15-010
44	33	34.165	2234	0.193	0.8	4.19	3.87	3.7-007	2.75-008	2.16-010
44	33	35.207	2066	0.178	0.5	3.03	3.36	1.2-007	2.75-008	2.15-010
44	33	36.285	2074	0.179	0.5	3.01	3.35	1.1-007	2.75-008	2.13-010
44	33	37.348	2255	0.194	0.8	4.30	3.90	4.0-007	2.75-008	2.13-010
44	33	38.410	2276	0.196	0.9	4.34	3.92	4.2-007	2.75-008	2.15-010
44	33	39.473	2255	0.194	0.8	4.30	3.90	4.0-007	2.75-008	2.12-010
44	33	40.551	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.13-010
44	33	41.614	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.13-010
44	33	42.676	2074	0.179	0.5	3.01	3.35	1.1-007	2.75-008	2.15-010
44	33	43.739	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.10-010
44	33	44.817	2074	0.179	0.5	3.01	3.35	1.1-007	2.75-008	2.13-010
44	33	45.879	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.15-010
44	33	46.942	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.13-010
44	33	48.004	2074	0.179	0.5	3.01	3.35	1.1-007	2.75-008	2.13-010
44	33	49.082	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.10-010
44	33	50.145	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.11-010
44	33	51.206	2074	0.179	0.5	3.01	3.35	1.1-007	2.75-008	2.11-010
44	33	52.284	2276	0.196	0.9	4.34	3.92	4.2-007	2.75-008	2.11-010
44	33	53.347	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.11-010
44	33	54.409	2255	0.194	0.8	4.09	3.81	3.3-007	2.75-008	2.11-010
44	33	55.672	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.11-010
44	33	56.550	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.11-010
44	33	57.613	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.12-010
44	33	58.675	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.12-010
44	33	59.738	2255	0.194	0.8	4.30	3.90	4.0-007	2.75-008	2.12-010

CALCULATIONS FOR GEMINI 10

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	34	0.816	2074	0.179	0.5	3.01	3.35	1.1-007	2.75-008	2.09-010
44	34	1.878	2009	0.173	0.5	2.90	3.28	9.6-008	2.75-008	2.11-010
44	34	2.941	2019	0.174	0.5	2.91	3.29	9.8-008	2.75-008	2.10-010
44	34	4.003	2066	0.178	0.5	3.00	3.34	1.1-007	2.75-008	2.13-010
44	34	5.081	2009	0.173	0.4	2.22	2.99	4.9-008	2.75-008	2.11-010
44	34	6.144	2074	0.179	0.4	2.34	3.06	5.7-008	2.75-008	2.09-010
44	34	7.206	2066	0.178	0.4	2.33	3.05	5.6-008	2.75-008	2.11-010
44	34	8.284	2074	0.179	0.4	2.34	3.06	5.7-008	2.75-008	2.10-010
44	34	9.347	2069	0.178	0.4	2.33	3.05	5.6-008	2.75-008	2.10-010
44	34	10.409	2069	0.178	0.4	2.33	3.05	5.6-008	2.75-008	2.11-010
44	34	11.472	2074	0.179	0.4	2.34	3.06	5.7-008	2.75-008	2.11-010
44	34	12.550	2100	0.181	0.5	2.63	3.17	7.4-008	2.75-008	2.13-010
44	34	13.613	2100	0.181	0.5	2.63	3.17	7.4-008	2.75-008	2.37-010
44	34	14.675	2100	0.181	0.5	2.63	3.17	7.4-008	2.79-008	2.07-010
44	34	15.738	2079	0.179	0.7	3.78	3.65	2.2-007	3.03-008	2.14-010
44	34	16.816	2066	0.178	0.4	2.33	3.05	5.6-008	2.75-008	2.15-010
44	34	17.878	2074	0.179	0.5	3.01	3.35	1.1-007	2.75-008	2.12-010
44	34	18.941	2019	0.174	0.5	2.91	3.29	9.8-008	2.75-008	2.14-010
44	34	20.003	2895	0.249	1.6	6.21	4.76	2.9-006	2.75-008	2.15-010
44	34	21.081	2083	0.179	0.5	3.03	3.36	1.1-007	2.75-008	2.15-010
44	34	22.144	1990	0.171	0.5	2.91	3.28	9.5-008	2.75-008	2.13-010
44	34	23.206	2053	0.177	0.6	3.58	3.59	1.9-007	2.75-008	2.15-010
44	34	24.284	2109	0.182	0.7	3.71	3.64	2.2-007	2.75-008	2.14-010
44	34	25.347	2109	0.182	0.5	2.64	3.18	7.6-008	2.75-008	2.14-010
44	34	26.409	2100	0.181	0.5	2.63	3.17	7.4-008	2.75-008	2.12-010
44	34	27.472	2074	0.179	0.4	2.34	3.06	5.7-008	2.76-008	2.12-010
44	34	28.550	2109	0.182	0.5	2.64	3.18	7.6-008	2.75-008	2.10-010
44	34	29.613	2100	0.181	0.5	2.63	3.17	7.4-008	2.75-008	2.10-010
44	34	30.675	2066	0.178	0.4	2.33	3.05	5.6-008	2.75-008	2.09-010
44	34	31.738	2066	0.178	0.5	2.65	3.19	7.7-008	2.75-008	2.09-010
44	34	33.878	2059	0.177	0.5	2.89	3.26	9.1-008	2.75-008	2.11-010
44	34	34.941	2276	0.196	0.9	4.34	3.92	4.2-007	2.75-008	2.08-010
44	34	36.003	2109	0.182	0.5	2.87	3.28	9.5-008	2.75-008	2.09-010
44	34	37.081	2255	0.194	0.8	4.30	3.90	4.0-007	2.75-008	2.10-010
44	34	38.144	2255	0.194	0.8	4.30	3.90	4.0-007	2.75-008	2.10-010
44	34	39.206	2255	0.194	0.8	4.30	3.90	4.0-007	2.75-008	2.08-010
44	34	40.284	2117	0.182	0.5	2.88	3.29	9.6-008	2.75-008	2.07-010
44	34	41.347	2109	0.182	0.5	2.87	3.28	9.5-008	2.75-008	2.08-010
44	34	42.409	2109	0.182	0.5	2.87	3.28	9.5-008	2.75-008	2.08-010
44	34	43.472	2255	0.194	0.7	3.85	3.71	2.5-007	2.75-008	2.09-010
44	34	44.550	2276	0.196	0.8	3.90	3.73	2.7-007	2.75-008	2.08-010
44	34	45.613	2118	0.183	0.5	3.01	3.33	1.1-007	2.75-008	2.08-010
44	34	46.675	2297	0.198	0.8	4.08	3.79	3.1-007	2.75-008	2.08-010
44	34	47.738	2319	0.200	0.8	4.14	3.82	3.3-007	2.75-008	2.10-010
44	34	48.816	2297	0.198	0.8	4.27	3.88	3.8-007	2.75-008	2.07-010
44	34	49.878	2255	0.194	0.8	4.10	3.82	3.3-007	2.75-008	2.08-010
44	34	50.941	2255	0.194	0.8	4.05	3.80	3.2-007	2.75-008	2.09-010
44	34	52.003	2276	0.196	0.8	4.13	3.83	3.4-007	2.75-008	2.06-010
44	34	53.081	2354	0.203	0.9	4.36	3.92	4.2-007	2.75-008	2.07-010
44	34	54.144	2255	0.194	0.8	4.05	3.80	3.2-007	2.75-008	2.08-010
44	34	55.206	2331	0.201	0.9	4.27	3.89	3.9-007	2.75-008	2.09-010
44	34	56.284	2276	0.196	0.8	4.09	3.82	3.3-007	2.75-008	2.08-010
44	34	57.347	2255	0.194	0.8	3.88	3.73	2.7-007	2.75-008	2.09-010
44	34	58.409	2255	0.194	0.8	4.05	3.80	3.2-007	2.75-008	2.07-010
44	34	59.472	2354	0.203	0.9	4.31	3.91	4.1-007	2.75-008	2.05-010

CALCULATIONS FOR GEMINI 10

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	35	1.613	2288	0.197	0.7	3.44	3.54	1.8-007	2.75-008	2.07-010
44	35	2.675	2173	0.187	0.5	2.57	3.16	7.3-008	2.75-008	2.07-010
44	35	3.738	2288	0.197	0.7	3.44	3.54	1.8-007	2.75-008	2.07-010
44	35	4.816	2266	0.195	0.7	3.45	3.56	1.8-007	2.75-008	2.07-010
44	35	5.878	2331	0.201	0.8	3.82	3.69	2.5-007	2.76-008	2.08-010
44	35	6.940	2288	0.197	0.7	3.59	3.61	2.0-007	2.75-008	2.07-010
44	35	8.002	2331	0.201	0.8	3.82	3.69	2.5-007	2.75-008	2.07-010
44	35	9.080	2331	0.201	0.8	4.06	3.80	3.1-007	2.75-008	1.97-010
44	35	10.143	2298	0.198	0.7	3.50	3.59	1.9-007	2.75-008	2.08-010
44	35	11.205	2266	0.195	0.7	3.45	3.56	1.8-007	2.75-008	2.05-010
44	35	13.346	2266	0.195	0.7	3.45	3.56	1.8-007	2.75-008	2.07-010
44	35	14.408	2288	0.197	0.7	3.59	3.61	2.0-007	2.75-008	2.00-010
44	35	15.471	2395	0.206	0.8	3.78	3.71	2.6-007	2.76-008	2.07-010
44	35	18.674	2298	0.198	0.6	2.95	3.36	1.1-007	2.77-008	2.04-010
44	35	21.877	2395	0.206	0.7	3.26	3.50	1.6-007	2.75-008	2.08-010
44	35	22.940	2395	0.206	0.7	3.26	3.50	1.6-007	2.75-008	2.09-010
44	35	24.002	2395	0.206	0.7	3.26	3.50	1.6-007	3.03-008	2.07-010
44	35	25.080	2375	0.205	0.7	3.39	3.55	1.8-007	2.75-008	2.04-010
44	35	26.143	2375	0.205	0.7	3.39	3.55	1.8-007	2.71-008	2.18-010
44	35	27.205	2375	0.205	0.7	3.39	3.55	1.8-007	2.71-008	2.07-010
44	35	28.283	2414	0.208	0.7	3.48	3.59	2.0-007	2.67-008	2.25-010
44	35	29.346	2395	0.206	0.7	3.44	3.57	1.9-007	2.73-008	2.05-010
44	35	30.408	2395	0.206	0.7	3.44	3.57	1.9-007	2.73-008	2.06-010
44	35	32.549	2395	0.206	0.7	3.44	3.57	1.9-007	2.68-008	2.51-010
44	35	33.612	2375	0.205	0.7	3.39	3.55	1.8-007	2.66-008	2.07-010
44	35	34.674	2395	0.206	0.7	3.44	3.57	1.9-007	2.84-008	1.99-010
44	35	35.737	2375	0.205	0.6	2.82	3.30	1.0-007	2.63-008	2.07-010
44	35	36.815	2395	0.206	0.7	3.44	3.57	1.9-007	2.63-008	2.06-010
44	35	37.877	2375	0.205	0.7	3.39	3.55	1.8-007	2.63-008	2.07-010
44	35	38.940	2442	0.210	0.8	3.94	3.78	3.0-007	2.62-008	2.07-010
44	35	40.002	2408	0.208	0.7	3.45	3.58	1.9-007	2.62-008	2.08-010
44	35	41.080	2375	0.205	0.7	3.39	3.55	1.8-007	2.66-008	2.06-010
44	35	42.143	2375	0.205	0.7	3.39	3.55	1.8-007	2.63-008	2.51-010
44	35	43.205	2375	0.205	0.6	2.82	3.30	1.0-007	2.60-008	2.07-010
44	35	44.283	2517	0.217	0.8	3.85	3.78	3.0-007	2.60-008	2.07-010
44	35	46.408	2499	0.215	0.8	3.82	3.77	2.9-007	2.56-008	2.07-010
44	35	47.471	2384	0.205	0.5	2.59	3.23	8.5-008	2.53-008	2.06-010
44	35	48.549	2499	0.215	0.7	3.03	3.43	1.3-007	2.51-008	2.08-010
44	35	49.612	2444	0.207	0.5	2.64	3.26	9.0-008	2.51-008	2.06-010
44	35	50.674	2384	0.205	0.5	2.59	3.23	8.5-008	2.51-008	2.07-010
44	35	51.737	2499	0.215	0.7	3.25	3.52	1.7-007	2.51-008	2.08-010
44	35	52.815	2499	0.215	0.7	3.03	3.43	1.3-007	2.51-008	2.09-010
44	35	53.877	2481	0.214	0.7	3.21	3.50	1.6-007	2.51-008	2.06-010
44	35	54.940	2535	0.218	0.7	3.32	3.55	1.8-007	2.51-008	2.06-010
44	35	57.080	2535	0.218	0.7	3.32	3.55	1.8-007	2.51-008	2.06-010
44	35	58.143	2535	0.218	0.7	3.24	3.53	1.7-007	2.51-008	2.04-010
44	35	59.205	2516	0.217	0.5	2.24	3.10	6.2-008	2.57-008	2.04-010

CALCULATIONS FOR GEMINI 10

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	36	0.283	2535	0.218	0.5	2.37	3.15	7.1-008	2.51-008	2.04-010
44	36	3.471	2519	0.217	0.5	2.24	3.10	6.2-008	2.51-008	2.05-010
44	36	4.549	29[illegible]	0.250	1.2	4.95	4.22	8.3-007	2.51-008	2.04-010
44	36	5.612	2490	0.215	0.4	1.79	2.91	4.1-008	2.51-008	2.02-010
44	36	6.674	2604	0.224	0.8	3.66	3.73	2.7-007	2.51-008	2.05-010
44	36	8.815	2641	0.228	0.7	3.10	3.49	1.5-007	2.99-008	2.61-010
44	36	9.877	2604	0.224	0.8	3.66	3.73	2.7-007	2.51-008	2.03-010
44	36	10.940	2624	0.226	0.7	3.06	3.47	1.5-007	2.51-008	2.02-010
44	36	12.002	2624	0.226	0.7	3.06	3.47	1.5-007	2.51-008	2.00-010
44	36	13.080	2624	0.226	0.7	2.98	3.44	1.4-007	2.51-008	2.01-010
44	36	15.205	2624	0.226	0.7	2.98	3.44	1.4-007	2.51-008	2.02-010
44	36	16.283	2857	0.246	1.1	4.35	4.01	5.1-007	2.51-008	2.01-010
44	36	17.346	2624	0.226	0.7	2.98	3.44	1.4-007	2.48-008	1.99-010
44	36	18.408	2624	0.226	0.7	2.98	3.44	1.4-007	2.48-008	1.99-010
44	36	19.471	2624	0.226	0.7	2.98	3.44	1.4-007	2.47-008	2.01-010
44	36	21.612	2606	0.225	0.7	2.94	3.42	1.3-007	2.48-008	1.98-010
44	36	22.674	2624	0.226	0.7	2.98	3.44	1.4-007	2.46-008	2.00-010
44	36	23.737	2606	0.225	0.7	2.94	3.42	1.3-007	2.44-008	2.01-010
44	36	24.815	2624	0.226	0.7	2.98	3.44	1.4-007	2.46-008	2.01-010
44	36	25.877	2664	0.230	0.7	2.96	3.45	1.4-007	2.42-008	2.00-010
44	36	26.940	2664	0.230	0.7	2.96	3.45	1.4-007	2.40-008	2.03-010
44	36	28.002	2672	0.230	0.7	3.02	3.49	1.6-007	2.42-008	1.99-010
44	36	29.080	2687	0.232	0.7	3.00	3.47	1.5-007	2.45-008	2.01-010
44	36	30.143	2657	0.229	0.6	2.79	3.40	1.2-007	2.39-008	1.99-010
44	36	31.205	2672	0.230	0.7	3.02	3.49	1.6-007	2.38-008	1.97-010
44	36	32.283	~~3370~~	0.291	~~1.6~~	5.53	4.43	1.3-006	2.35-008	1.97-010
44	36	33.346	2702	0.233	0.7	3.10	3.53	1.7-007	2.39-008	1.99-010
44	36	34.408	2702	0.233	0.6	2.59	3.30	1.0-007	2.37-008	1.97-010
44	36	35.471	2672	0.230	0.7	3.02	3.49	1.6-007	2.34-008	1.99-010
44	36	36.549	2657	0.229	0.5	2.19	3.14	6.9-008	2.36-008	1.99-010
44	36	37.612	2672	0.230	0.5	2.24	3.17	7.3-008	2.35-008	1.97-010
44	36	38.674	2672	0.230	0.6	2.39	3.23	8.5-008	2.32-008	2.00-010
44	36	39.737	2687	0.232	0.4	1.90	3.01	5.1-008	2.32-008	1.97-010
44	36	40.815	2672	0.230	0.4	1.78	2.95	4.5-008	1.90-008	1.96-010
44	36	41.877	2702	0.233	0.6	2.67	3.33	1.1-007	2.29-008	1.99-010
44	36	42.940	2930	0.252	1.0	3.94	3.85	3.6-007	2.29-008	2.36-010
44	36	45.080	2891	0.249	0.9	3.69	3.76	2.9-007	2.29-008	1.95-010
44	36	47.205	2672	0.230	0.4	1.64	2.90	4.0-008	2.29-008	1.96-010
44	36	48.283	2924	0.252	1.0	4.06	3.92	4.2-007	2.29-008	1.98-010
44	36	49.346	2891	0.249	1.0	3.94	3.88	3.8-007	2.29-008	1.94-010
44	36	50.408	2891	0.249	1.0	3.99	3.89	3.9-007	2.27-008	1.93-010
44	36	52.549	2924	0.252	0.8	3.07	3.50	1.6-007	2.29-008	1.94-010
44	36	53.612	2914	0.251	0.8	2.99	3.47	1.5-007	2.29-008	1.94-010
44	36	54.674	2924	0.252	0.8	3.07	3.50	1.6-007	2.29-008	1.94-010
44	36	55.737	2948	0.254	0.8	3.17	3.55	1.8-007	2.29-008	1.92-010
44	36	56.815	2857	0.246	0.8	3.22	3.57	1.9-007	2.29-008	1.91-010
44	36	57.877	2924	0.252	0.9	3.41	3.65	2.2-007	2.29-008	1.91-010
44	36	58.940	2981	0.257	1.0	3.95	3.87	3.7-007	2.29-008	1.92-010

CALCULATIONS FOR GEMINI 10

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	37	0.002	2914	0.251	0.8	3.36	3.63	2.2-007	2.29-008	1.89-010
44	37	1.080	2948	0.254	0.9	3.47	3.68	2.4-007	2.28-008	1.90-010
44	37	2.143	2857	0.246	0.8	3.22	3.57	1.9-007	2.28-008	1.88-010
44	37	3.205	2927	0.252	1.0	3.91	3.85	3.5-007	2.26-008	1.86-010
44	37	4.283	2948	0.254	0.7	2.66	3.33	1.1-007	2.23-008	1.86-010
44	37	5.346	2914	0.251	0.3	1.34	2.74	2.8-008	2.23-008	1.87-010
44	37	6.408	2857	0.246	0.8	3.30	3.59	2.0-007	2.24-008	1.88-010
44	37	8.549	3012	0.260	0.9	3.43	3.65	2.2-007	2.21-008	1.88-010
44	37	9.612	2963	0.255	0.9	3.48	3.65	2.2-007	2.17-008	1.86-010
44	37	10.674	2987	0.257	0.9	3.53	3.67	2.3-007	2.17-008	1.84-010
44	37	13.877	2914	0.251	0.6	2.51	3.26	9.1-008	2.10-008	1.86-010
44	37	14.940	2987	0.257	0.9	3.45	3.65	2.2-007	2.10-008	1.85-010
44	37	16.002	3023	0.260	0.9	3.57	3.69	2.5-007	2.08-008	1.86-010
44	37	18.143	2987	0.257	0.9	3.45	3.65	2.2-007	2.11-008	1.88-010
44	37	19.205	2987	0.257	0.9	3.53	3.67	2.3-007	2.08-008	1.86-010
44	37	20.283	2963	0.255	0.9	3.48	3.65	2.2-007	2.09-008	1.86-010
44	37	21.346	2927	0.252	0.8	3.37	3.60	2.0-007	2.08-008	1.84-010
44	37	22.408	2963	0.255	0.9	3.48	3.65	2.2-007	2.08-008	1.87-010
44	37	23.471	2927	0.252	0.8	3.37	3.60	2.0-007	2.08-008	1.84-010
44	37	24.549	2967	0.256	1.0	3.93	3.82	3.3-007	2.08-008	1.86-010
44	37	25.612	2967	0.256	1.0	3.93	3.82	3.3-007	2.08-008	1.88-010
44	37	26.674	2963	0.255	0.9	3.48	3.65	2.2-007	2.08-008	1.87-010
44	37	27.737	2963	0.255	0.9	3.48	3.65	2.2-007	2.09-008	1.88-010
44	37	29.877	2963	0.255	0.9	3.48	3.65	2.2-007	2.10-008	1.88-010
44	37	30.940	3003	0.259	1.0	3.74	3.74	2.8-007	2.09-008	1.92-010
44	37	33.080	~~3003~~	0.259	~~-0.1~~	0.22	2.02	5.2-009	2.09-008	1.89-010
44	37	34.143	2967	0.256	1.0	3.93	3.82	3.3-007	2.12-008	1.90-010
44	37	35.205	2967	0.256	1.0	3.93	3.82	3.3-007	2.10-008	1.88-010
44	37	36.283	3038	0.262	1.0	3.86	3.79	3.1-007	2.08-008	1.91-010
44	37	37.346	2967	0.256	1.0	3.93	3.82	3.3-007	2.08-008	1.88-010
44	37	38.408	2967	0.256	0.9	3.62	3.69	2.5-007	2.10-008	1.89-010
44	37	39.471	2967	0.256	1.0	3.93	3.82	3.3-007	2.09-008	1.89-010
44	37	40.549	3038	0.262	1.1	4.08	3.89	3.9-007	2.09-008	1.88-010
44	37	41.612	2967	0.256	0.9	3.56	3.66	2.3-007	2.08-008	1.88-010
44	37	42.674	3003	0.259	1.0	4.00	3.86	3.6-007	2.08-008	1.91-010
44	37	43.737	2967	0.256	1.0	3.93	3.82	3.3-007	2.08-008	1.88-010
44	37	44.815	3003	0.259	1.0	4.00	3.86	3.6-007	2.08-008	1.88-010
44	37	45.877	3003	0.259	1.1	4.24	3.96	4.6-007	2.08-008	1.89-010
44	37	46.940	3038	0.262	1.1	4.08	3.89	3.9-007	2.09-008	1.90-010
44	37	49.080	3003	0.259	0.5	2.09	3.02	5.3-008	2.09-008	1.89-010
44	37	50.143	3118	0.269	1.3	4.75	4.16	7.2-007	2.09-008	1.89-010
44	37	51.205	3043	0.262	1.1	4.22	3.93	4.2-007	2.09-008	1.88-010
44	37	53.346	~~3003~~	0.259	~~-0.1~~	0.22	2.02	5.2-009	2.08-008	1.89-010
44	37	54.408	3081	0.266	1.2	4.54	4.06	5.8-007	2.08-008	1.89-010
44	37	55.471	3043	0.262	1.1	4.22	3.93	4.2-007	2.08-008	1.88-010
44	37	56.549	~~3118~~	0.269	~~-0.3~~	0.97	1.67	2.3-009	2.08-008	1.90-010
44	37	57.612	2782	0.240	0.8	3.16	3.49	1.6-007	2.08-008	1.89-010
44	37	58.674	2809	0.242	1.2	4.90	4.25	8.9-007	2.08-008	1.87-010
44	37	59.737	3118	0.269	1.2	4.47	4.02	5.2-007	2.09-008	1.90-010

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CALCULATIONS FOR GEMINI 10

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	38	1.877	2801	0.241	0.4	1.48	2.75	2.8-008	2.08-008	1.88-010
44	38	2.940	2801	0.241	0.7	2.81	3.33	1.1-007	2.08-008	1.89-010
44	38	5.080	[illegible]	0.241	[illegible]	0.74	1.79	3.1-009	2.08-008	1.88-010
44	38	6.143	3125	0.269	1.2	4.59	4.06	5.7-007	2.08-008	1.90-010
44	38	7.205	2801	0.241	0.7	2.81	3.33	1.1-007	2.08-008	1.90-010
44	38	8.283	3441	0.297	1.0	3.36	3.44	1.4-007	2.08-008	1.91-010
44	38	9.346	3125	0.269	0.2	0.67	2.35	1.1-008	2.08-008	1.89-010
44	38	10.408	2782	0.240	0.3	1.43	2.73	2.7-008	2.08-008	1.90-010
44	38	11.471	3086	0.266	1.2	4.49	4.01	5.2-007	2.08-008	1.89-010
44	38	12.549	2818	0.243	0.4	1.52	2.77	3.0-008	2.08-008	1.90-010
44	38	13.612	2754	0.237	0.7	2.81	3.31	1.0-007	2.08-008	1.88-010
44	38	14.674	2818	0.243	0.4	1.52	2.77	3.0-008	2.08-008	1.88-010
44	38	16.815	3199	0.276	0.1	0.24	2.16	7.3-009	2.08-008	1.91-010
44	38	17.877	2884	0.249	0.6	2.35	3.11	6.5-008	2.08-008	1.88-010
44	38	18.940	2866	0.247	0.7	2.79	3.31	1.0-007	2.08-008	1.90-010
44	38	20.002	2884	0.249	0.7	2.85	3.33	1.1-007	2.08-008	1.90-010
44	38	21.080	2866	0.247	0.7	2.79	3.31	1.0-007	2.08-008	1.91-010
44	38	22.143	2754	0.237	0.4	1.60	2.79	3.1-008	2.08-008	1.91-010
44	38	23.205	2866	0.247	0.7	2.79	3.31	1.0-007	2.08-008	1.90-010
44	38	25.346	2657	0.229	0.5	2.07	3.09	6.1-008	2.12-008	2.00-010
44	38	26.408	2901	0.250	0.8	3.03	3.42	1.3-007	2.08-008	1.90-010
44	38	27.471	2818	0.243	0.6	2.43	3.17	7.3-008	2.12-008	1.99-010
44	38	28.549	2920	0.252	0.8	3.15	3.65	1.4-007	2.08-008	1.90-010
44	38	29.612	2920	0.252	0.9	3.46	3.59	1.9-007	2.11-008	2.02-010
44	38	30.674	2786	0.240	0.5	2.00	2.95	4.4-008	2.08-008	1.91-010
44	38	31.737	2920	0.252	0.9	3.45	3.59	1.9-007	2.08-008	1.88-010
44	38	32.815	2806	0.242	0.0	0.01	2.09	6.1-009	2.09-008	1.90-010
44	38	33.877	2786	0.240	0.5	2.00	2.95	4.4-008	2.08-008	1.89-010
44	38	34.940	2806	0.242	0.5	2.08	2.99	4.8-008	2.08-008	1.90-010
44	38	36.002	3043	0.262	1.1	4.07	3.82	3.3-007	2.08-008	1.90-010
44	38	37.080	2786	0.240	0.5	2.00	2.95	4.4-008	2.08-008	1.90-010
44	38	38.143	2765	0.238	0.6	2.69	3.24	8.6-008	2.08-008	1.91-010
44	38	39.205	2765	0.238	0.5	1.92	2.91	4.1-008	2.08-008	1.88-010
44	38	41.346	2806	0.242	0.7	2.80	3.29	9.7-008	2.08-008	1.91-010
44	38	42.408	2786	0.240	0.5	2.00	2.95	4.4-008	2.08-008	1.90-010
44	38	43.471	2806	0.242	0.7	2.80	3.29	9.7-008	2.08-008	1.90-010
44	38	44.549	2806	0.242	0.7	2.80	3.29	9.7-008	2.08-008	1.92-010
44	38	45.612	2744	0.236	0.6	2.66	3.22	8.3-008	2.08-008	1.90-010
44	38	46.674	2744	0.236	0.6	2.66	3.22	8.3-008	2.08-008	1.92-010
44	38	49.877	2807	0.242	0.7	3.06 24	3.37	1.2-007	2.08-008	1.92-010
44	38	50.940	2827	0.244	0.8	3.45	3.55	1.8-007	2.08-008	1.93-010
44	38	52.002	2807	0.242	0.7	3.04	3.37	1.2-007	2.08-008	1.93-010
44	38	53.080	2807	0.242	0.7	3.04	3.37	1.2-007	2.08-008	1.92-010
44	38	54.143	2819	0.243	0.9	3.54	3.57	1.9-007	2.08-008	1.91-010
44	38	55.205	2841	0.245	0.9	3.59	3.59	2.0-007	2.08-008	1.91-010
44	38	57.346	2862	0.247	0.9	3.63	3.61	2.1-007	2.08-008	1.92-010
44	38	58.408	2862	0.247	0.9	3.63	3.61	2.1-007	2.08-008	1.91-010
44	38	59.471	2862	0.247	0.6	2.59	3.16	7.3-008	2.08-008	1.93-010

CALCULATIONS FOR GEMINI 10

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	39	0.549	3169	0.273	1.3	4.85	4.10	6.4-007	2.08-008	1.92-010
44	39	1.612	2862	0.247	0.7	2.95	3.32	1.0-007	2.08-008	1.92-010
44	39	2.674	2862	0.247	0.7	2.95	3.32	1.0-007	2.08-008	1.92-010
44	39	3.737	2862	0.247	0.7	2.95	3.32	1.0-007	2.09-008	1.94-010
44	39	4.815	3169	0.273	1.3	4.85	4.10	6.4-007	2.08-008	1.93-010
44	39	5.877	2862	0.247	0.7	2.95	3.32	1.0-007	2.08-008	1.93-010
44	39	6.940	2744	0.236	0.6	2.64	3.17	7.4-008	2.08-008	1.93-010
44	39	8.002	2862	0.247	0.8	3.05	3.36	1.1-007	2.08-008	1.92-010
44	39	9.080	2841	0.245	0.7	2.93	3.32	1.1-007	2.08-008	1.91-010
44	39	10.143	2862	0.247	0.7	2.95	3.32	1.0-007	2.08-008	1.93-010
44	39	11.205	2862	0.247	0.7	2.95	3.32	1.0-007	2.08-008	1.93-010
44	39	13.346	2862	0.247	0.8	3.06	3.36	1.1-007	2.08-008	1.93-010
44	39	14.408	2862	0.247	0.7	2.95	3.32	1.0-007	2.08-008	1.92-010
44	39	15.471	2841	0.245	0.7	2.89	3.29	9.7-008	2.08-008	1.92-010
44	39	16.549	3217	0.277	1.5	5.27	4.27	9.3-007	2.08-008	1.92-010
44	39	17.612	2841	0.245	0.7	2.99	3.32	1.1-007	2.08-008	1.94-010
44	39	18.674	2816	0.243	0.7	2.84	3.26	9.2-008	2.08-008	1.94-010
44	39	20.815	3143	0.271	1.4	5.15	4.22	8.2-007	2.08-008	1.95-010
44	39	21.877	~~[illegible]~~	0.233	~~[illegible]~~	2.68	0.86	3.6-010	2.08-008	1.94-010
44	39	22.940	2883	0.248	0.9	3.63	3.58	1.9-007	2.08-008	1.96-010
44	39	24.002	3143	0.271	1.4	5.20	4.23	8.4-007	2.08-008	1.94-010
44	39	25.080	3143	0.271	1.4	5.20	4.23	8.4-007	2.08-008	1.96-010
44	39	26.144	~~[illegible]~~	0.233	~~[illegible]~~	2.68	0.86	3.6-010	2.08-008	1.94-010
44	39	27.206	2786	0.240	0.7	2.98	3.30	1.0-007	2.08-008	1.95-010
44	39	28.269	2763	0.238	0.7	2.92	3.27	9.4-008	2.08-008	1.94-010
44	39	29.347	2763	0.238	0.7	2.92	3.27	9.4-008	2.08-008	1.93-010
44	39	30.409	2796	0.241	0.8	3.17	3.37	1.2-007	2.08-008	1.96-010
44	39	31.472	2796	0.241	0.8	3.17	3.37	1.2-007	2.08-008	1.97-010
44	39	32.550	2841	0.245	0.8	3.32	3.44	1.6-007	2.08-008	1.98-010
44	39	33.613	2819	0.243	0.8	3.25	3.40	1.3-007	2.08-008	1.99-010
44	39	34.675	2796	0.241	0.8	3.17	3.37	1.2-007	2.08-008	1.95-010
44	39	35.738	2819	0.243	0.8	3.25	3.40	1.3-007	2.08-008	2.00-010
44	39	36.816	2819	0.243	0.8	3.25	3.40	1.3-007	2.08-008	1.96-010
44	39	38.941	2796	0.241	0.9	3.77	3.63	2.1-007	2.08-008	1.98-010
44	39	40.003	2796	0.241	0.9	3.77	3.63	2.1-007	2.08-008	2.01-010
44	39	41.081	2819	0.243	0.9	3.89	3.67	2.4-007	2.08-008	2.00-010
44	39	42.144	2819	0.243	0.9	3.82	3.65	2.3-007	2.08-008	1.99-010
44	39	43.206	2796	0.241	0.9	3.77	3.63	2.1-007	2.08-008	2.00-010
44	39	44.269	2819	0.243	0.9	3.82	3.65	2.3-007	2.08-008	2.02-010
44	39	45.347	2819	0.243	0.9	3.82	3.65	2.3-007	2.08-008	2.05-010
44	39	46.409	2819	0.243	0.9	3.82	3.65	2.3-007	2.09-008	2.03-010
44	39	47.472	2819	0.243	1.1	4.36	3.88	3.8-007	2.08-008	2.04-010
44	39	48.550	2796	0.241	1.0	4.34	3.87	3.7-007	2.09-008	2.05-010
44	39	49.613	2680	0.231	0.7	3.24	3.39	1.2-007	2.08-008	2.02-010
44	39	50.675	2774	0.239	0.9	3.60	3.63	2.1-007	2.10-008	2.03-010
44	39	52.816	2657	0.229	0.7	3.17	3.36	1.1-007	2.12-008	2.02-010
44	39	53.878	2751	0.237	0.8	3.54	3.52	1.6-007	2.12-008	2.00-010
44	39	54.941	2796	0.241	1.0	4.34	3.87	3.7-007	2.13-008	2.03-010
44	39	56.003	2657	0.229	0.7	3.17	3.36	1.1-007	2.16-008	2.04-010
44	39	57.081	2657	0.229	0.7	3.17	3.36	1.1-007	2.16-008	2.04-010
44	39	58.144	2657	0.229	0.7	3.17	3.36	1.1-007	2.18-008	2.03-010
44	39	59.206	2774	0.239	0.9	3.62	3.55	1.8-007	2.17-008	2.01-010

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CALCULATIONS FOR GEMINI 10

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	40	0.269	2657	0.229	0.7	3.17	3.36	1.1-007	2.20-008	2.01-010
44	40	2.409	2687	0.232	0.8	3.40	3.44	1.4-007	2.20-008	2.03-010
44	40	3.472	2711	0.234	0.8	3.47	3.48	1.5-007	2.17-008	2.03-010
44	40	5.613	2711	0.234	0.8	3.56	3.51	1.6-007	2.19-008	2.00-010
44	40	6.675	2711	0.234	0.9	3.98	3.69	2.5-007	2.19-008	2.00-010
44	40	7.738	2644	0.228	0.8	3.38	3.42	1.3-007	2.22-008	2.02-010
44	40	9.878	2644	0.228	0.9	3.91	3.65	2.2-007	2.22-008	2.00-010
44	40	10.941	2690	0.232	0.9	4.01	3.70	2.5-007	2.24-008	2.00-010
44	40	13.081	2669	0.230	0.9	3.96	3.67	2.4-007	2.25-008	1.98-010
44	40	14.144	2751	0.237	1.0	4.29	3.80	3.2-007	2.26-008	1.99-010
44	40	19.472	2600	0.224	0.4	1.81	3.98	4.8-007	9.92-009	5.76-009
44	40	20.550	2488	0.214	0.5	2.11	4.11	6.5-007	2.07-008	1.42-008
44	40	25.941	2539	0.219	0.7	3.12	4.51	1.6-006	1.81-008	5.85-008
44	40	29.081	2662	0.229	0.9	3.80	4.69	2.4-006	2.29-008	7.35-008
44	40	30.145	2358	0.203	0.5	2.47	4.26	9.2-007	2.29-008	8.46-008
44	40	31.207	2408	0.208	0.5	2.29	4.10	6.3-007	2.36-008	7.88-008
44	40	32.270	2694	0.232	1.0	4.33	4.86	3.6-006	2.42-008	8.59-008
44	40	33.348	2445	0.211	0.7	3.31	4.54	1.7-006	2.51-008	9.89-008
44	40	34.410	2363	0.204	0.5	2.55	4.23	8.4-007	2.51-008	1.01-007
44	40	35.473	2385	0.206	0.6	2.74	4.29	9.7-007	2.51-008	1.03-007
44	40	37.614	2371	0.204	0.6	2.70	4.27	9.4-007	2.51-008	1.05-007
44	40	38.676	2417	0.208	0.7	3.44	4.55	1.8-006	2.51-008	1.04-007
44	40	39.739	2441	0.210	0.7	3.54	4.58	1.9-006	2.57-008	1.04-007
44	40	45.082	2467	0.213	0.9	4.03	4.73	2.7-006	2.71-008	8.78-008
44	40	46.145	2376	0.205	0.7	3.51	4.54	1.7-006	2.75-008	8.58-008
44	40	49.348	2390	0.206	0.8	3.68	4.58	1.9-006	2.77-008	7.80-008
44	40	52.551	2376	0.205	0.8	3.68	4.57	1.9-006	2.75-008	7.07-008
44	40	53.614	2190	0.189	0.4	2.08	3.92	4.2-007	2.77-008	6.78-008
44	40	56.817	2395	0.206	0.9	4.18	4.74	2.7-006	2.75-008	6.13-008
44	40	58.942	2375	0.205	0.8	4.15	4.73	2.7-006	2.75-008	5.75-008

CALCULATIONS FOR GEMINI 10

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	41	0.004	2375	0.205	0.8	4.15	4.73	2.7-006	2.75-008	5.54-008
44	41	1.082	2395	0.206	0.9	4.18	4.74	2.7-006	2.75-008	5.39-008
44	41	2.145	2298	0.198	0.7	3.65	4.54	1.7-006	2.75-008	5.18-008
44	41	3.207	2375	0.205	0.9	4.18	4.73	2.7-006	2.75-008	5.04-008
44	41	6.410	2253	0.196	0.7	3.62	4.52	1.7-006	2.75-008	4.58-008
44	41	9.614	2331	0.201	0.7	3.72	4.52	1.6-006	2.74-008	4.17-008
44	41	10.676	2331	0.201	0.7	3.72	4.52	1.6-006	2.73-008	4.09-008
44	41	11.739	2331	0.201	0.7	3.72	4.52	1.6-006	2.70-008	3.95-008
44	41	12.817	2331	0.201	0.7	3.72	4.52	1.6-006	2.69-008	3.84-008
44	41	13.879	2331	0.201	0.7	3.72	4.52	1.6-006	2.64-008	3.74-008
44	41	14.942	2192	0.189	0.2	0.96	3.38	1.2-007	2.63-008	3.66-008
44	41	16.004	2331	0.201	0.8	3.77	4.54	1.7-006	2.62-008	3.58-008
44	41	17.082	2212	0.191	0.6	3.10	4.29	9.7-007	2.47-008	3.13-008
44	41	18.145	2331	0.201	0.8	3.77	4.54	1.7-006	2.45-008	2.84-008
44	41	19.207	2401	0.207	0.9	4.17	4.66	2.3-006	2.34-008	2.56-008
44	41	20.270	2331	0.201	0.8	3.77	4.54	1.7-006	2.14-008	1.86-008
44	41	21.348	2401	0.207	0.8	3.94	4.55	1.8-006	2.32-008	2.37-008
44	41	22.410	2354	0.203	0.8	3.99	4.63	2.1-006	2.49-008	2.75-008
44	41	28.817	2377	0.205	0.6	3.02	4.17	7.4-007	2.75-008	3.20-008
44	41	33.083	2331	0.201	0.8	3.98	4.62	2.1-006	2.69-008	2.56-008
44	41	34.146	2355	0.203	0.8	4.08	4.64	2.2-006	2.69-008	2.52-008
44	41	35.208	2401	0.207	0.9	4.25	4.68	2.4-006	2.49-008	2.47-008
44	41	37.349	2138	0.184	0.5	2.60	4.07	5.8-007	2.51-008	2.43-008
44	41	38.411	1945	0.168	0.4	2.46	3.83	3.4-007	1.86-008	1.80-008
44	41	39.474	2842	0.245	0.3	1.24	3.59	2.0-007	2.00-008	2.62-008
44	41	41.615	2354	0.203	0.7	3.65	4.52	1.7-006	1.72-008	1.98-008
44	41	42.677	2340	0.202	0.8	4.01	4.66	2.3-006	1.90-008	1.90-008
44	41	43.740	2307	0.199	0.7	3.39	4.45	1.4-006	1.90-008	1.81-008
44	41	44.818	2326	0.200	0.7	3.66	4.57	1.8-006	1.90-008	1.76-008
44	41	45.880	2307	0.199	0.7	3.39	4.45	1.4-006	1.67-008	1.76-008
44	41	46.943	2307	0.199	0.7	3.62	4.56	1.8-006	1.57-008	1.73-008
44	41	48.005	2562	0.221	0.9	3.92	4.63	2.1-006	1.51-008	1.69-008
44	41	49.083	2326	0.200	0.7	3.39	4.46	1.4-006	1.72-008	1.65-008
44	41	50.146	2234	0.193	0.7	3.45	4.51	1.6-006	1.73-008	1.65-008
44	41	51.208	2221	0.191	0.6	3.23	4.47	1.5-006	1.73-008	1.60-008
44	41	53.349	2202	0.190	0.4	2.36	4.16	7.2-007	1.59-008	1.60-008
44	41	54.411	1977	0.170	0.3	1.57	3.76	2.8-007	1.59-008	1.58-008
44	41	55.474	2245	0.194	0.6	3.15	4.39	1.2-006	1.60-008	1.58-008
44	41	58.677	2193	0.189	0.3	1.36	3.72	2.6-007	1.59-008	1.58-008
44	41	59.740	2273	0.196	0.6	3.11	4.39	1.2-006	1.58-008	1.58-008

* * * CALCULATIONS FOR GEMINI 10 * * *

HR	MI	SEC	T (K)	T (EV)	PHI	PHI N	VTS	I B	I PL 1	I PL 3
44	42	1.880	2378	0.205	0.7	3.62	4.57	1.9-006	1.58-008	1.53-008
44	42	2.943	2261	0.195	0.7	3.38	4.51	1.6-006	1.58-008	1.52-008
44	42	4.005	2261	0.195	0.7	3.38	4.51	1.6-006	1.56-008	1.50-008
44	42	6.146	2175	0.187	0.5	2.47	4.15	7.0-007	1.58-008	1.46-008
44	42	7.208	2201	0.197	0.7	3.42	6.52	1.7-006	1.58-008	1.46-008
44	42	8.271	2173	0.187	0.3	1.82	3.93	4.2-007	1.91-008	1.37-008
44	42	9.349	2243	0.193	0.6	3.21	4.64	1.4-006	1.51-008	1.43-008

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GEMINI X FLIGHT TEST DATA REV NO 28 CNV D/T
OBOARD COMPUTER WORDS (MODE 3, CATCH-UP)

TIME HR	MI	SEC	DK15 INCREMENTAL VELOCITY (X) FPS	DK16 INCREMENTAL VELOCITY (Y) FPS	DK17 INCREMENTAL VELOCITY (Z) FPS	DK18 RADAR RANG FEET	DK19 SINE RADAR ELEVATION DEGREES	DK20 SINE RADAR AZIMUTH DEGREES	DK21 TIME OF THRUST MIDPOINT SECONDS
44	38	57.72	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	0.12	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	2.52	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	4.92	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	7.32	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	9.72	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	12.12	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	14.52	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	16.92	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	19.32	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	21.72	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	24.12	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	26.52	40.79	45.08	25.23	0.246	-2.96	-4.72	0.8
44	39	28.92	-1.71	0.03	0.02	0.246	-2.96	-4.72	0.8
44	39	31.32	-1.76	-0.10	0.07	0.246	-2.96	-4.72	0.8
44	39	33.72	-1.71	-0.01	0.12	0.246	-2.96	-4.72	0.8
44	39	36.12	-1.58	0.18	-0.02	0.246	-2.96	-4.72	0.8
44	39	38.52	-1.63	-0.13	0.04	0.246	-2.96	-4.72	0.8
44	39	40.92	-1.49	0.15	-0.01	0.246	-2.96	-4.72	0.8
44	39	43.32	-1.72	0.04	0.23	0.246	-2.96	-4.72	0.8
44	39	45.72	-1.57	-0.08	-0.08	0.246	-2.96	-4.72	0.8
44	39	48.12	-1.74	-0.09	-0.04	0.246	-2.96	-4.72	0.8
44	39	50.52	-1.79	-0.20	0.01	0.246	-2.96	-4.72	0.8
44	39	52.92	-1.44	0.08	-0.12	0.246	-2.96	-4.72	0.8
44	39	55.32	-1.50	0.17	-0.07	0.246	-2.96	-4.72	0.8
44	39	57.72	-1.57	0.05	-0.10	0.246	-2.96	-4.72	0.8
44	40	0.12	-1.61	0.13	-0.06	0.246	-2.96	-4.72	0.8
44	40	2.52	-1.57	-0.08	-0.01	0.246	-2.96	-4.72	0.8
44	40	4.92	-1.62	0.00	0.13	0.246	-2.96	-4.72	0.8
44	40	7.32	-1.78	-0.00	0.19	0.246	-2.96	-4.72	0.8
44	40	9.72	-1.63	-0.13	-0.04	0.246	-2.96	-4.72	0.8
44	40	12.13	-1.59	0.07	0.01	0.246	-2.96	-4.72	0.8
44	40	14.53	-1.52	-0.00	0.06	0.246	-2.96	-4.72	0.8
44	40	16.93	-1.51	0.03	0.02	0.246	-2.96	-4.72	0.8
44	40	19.33	-0.70	0.01	0.07	0.246	-2.96	-4.72	0.8
44	40	21.73	-0.56	-0.01	0.03	0.246	-2.96	-4.72	0.8
44	40	24.13	-0.32	0.08	-0.02	0.246	-2.96	-4.72	0.8
44	40	26.53	-0.29	0.07	-0.13	0.246	-2.96	-4.72	0.8
44	40	28.53	-0.14	0.15	-0.01	0.246	-2.96	-4.72	0.8
44	40	31.33	-0.29	-0.06	0.05	0.246	-2.96	-4.72	0.8
44	40	33.73	-0.15	0.02	-0.08	0.246	-2.96	-4.72	0.8
44	40	36.13	-0.21	-0.08	0.06	0.246	-2.96	-4.72	0.8
44	40	38.53	-0.16	-0.11	-0.08	0.246	-2.96	-4.72	0.8
44	40	40.93	-0.02	-0.02	-0.10	0.246	-2.96	-4.72	0.8
44	40	43.33	-0.17	-0.03	-0.07	0.246	-2.96	-4.72	0.8
44	40	45.73	-0.04	0.05	0.08	0.246	-2.96	-4.72	0.8

GEMINI X FLIGHT TEST DATA REV NO 28 CNV D/T
OBOARD COMPUTER WORDS (MODE 3, CATCH-UP)

TIME HR MI SEC	DK15 INCREMENTAL VELOCITY (X) FPS	DK16 INCREMENTAL VELOCITY (Y) FPS	DK17 INCREMENTAL VELOCITY (Z) FPS	DK18 RADAR RANG FEET	DK19 SINE RADAR ELEVATION DEGREES	DK20 SINE RADAR AZIMUTH DEGREES	DK21 TIME OF THRUST MIDPOINT SECONDS
44 40 48.13	-0.07	-0.06	-0.06	0.246	-2.96	-4.72	0.8
44 40 50.53	-0.23	-0.08	-0.01	0.246	-2.96	-4.72	0.8
44 40 52.93	-0.29	0.01	-0.03	0.246	-2.96	-4.72	0.8
44 40 55.33	-0.02	-0.01	0.00	0.246	-2.96	-4.72	0.8
44 40 57.73	-0.29	-0.11	-0.04	0.246	-2.96	-4.72	0.8
44 41 0.13	-0.13	-0.04	-0.18	0.246	-2.96	-4.72	0.8
44 41 2.53	-0.11	-0.05	0.07	0.246	-2.96	-4.72	0.8
44 41 4.93	-0.35	0.03	-0.07	0.246	-2.96	-4.72	0.8
44 41 7.33	-0.00	0.13	0.08	0.246	-2.96	-4.72	0.8
44 41 9.73	-0.07	0.00	-0.06	0.246	-2.96	-4.72	0.8
44 41 12.13	-0.32	-0.11	0.18	0.246	-2.96	-4.72	0.8
44 41 14.53	-0.13	-0.00	-0.15	0.246	-2.96	-4.72	0.8
44 41 16.93	-0.14	-0.20	-0.07	0.246	-2.96	-4.72	0.8
44 41 19.33	-0.18	-0.16	0.05	0.246	-2.96	-4.72	0.8
44 41 21.73	-0.14	0.02	-0.18	0.246	-2.96	-4.72	0.8
44 41 24.13	-0.19	-0.10	0.06	0.246	-2.96	-4.72	0.8
44 41 26.53	-0.14	-0.02	-0.08	0.049	-8.03	-9.24	0.8
44 41 28.93	-0.10	-0.14	-0.02	49.201	-17.98	-9.14	3072.8
44 41 31.33	-0.20	-0.15	0.11	0.049	-18.21	-8.37	0.8
44 41 33.73	-0.30	0.15	-0.02	0.049	-21.06	-8.37	0.8
44 41 36.13	-0.16	0.03	-0.06	0.049	-18.21	-8.37	0.8
44 41 38.53	-0.02	0.02	-0.01	0.049	-21.06	-8.37	0.8
44 41 40.93	-0.36	0.10	-0.14	0.049	-21.06	-8.37	0.8
44 41 43.33	-0.41	-0.01	-0.19	0.049	-21.06	-8.37	0.8
44 41 45.73	-0.27	0.08	-0.13	0.049	-21.06	-8.37	0.8
44 41 48.10	-0.32	-0.05	-0.17	0.049	-21.06	-8.37	0.8
44 41 50.50	-0.47	-0.00	-0.03	0.049	-20.25	-10.01	0.8
44 41 52.90	-0.34	0.04	-0.07	0.147	-15.88	-12.00	0.8
44 41 55.30	-0.00	0.12	-0.02	0.098	-15.69	-12.98	0.8
44 41 57.70	-0.02	-0.00	0.12	0.196	-18.13	-15.93	0.8
44 42 0.10	-0.02	-0.02	-0.01	0.196	-18.13	-15.93	0.8
44 42 2.50	-0.35	-0.02	-0.05	0.196	-18.13	-15.93	0.8
44 42 4.90	-0.40	-0.15	-0.17	0.196	-18.13	-15.93	0.8
44 42 7.30	-0.38	-0.15	-0.04	0.196	-18.13	-15.93	0.8
44 42 9.70	-0.13	0.04	-0.17	0.196	-18.13	-15.93	0.8
44 42 12.10	-0.37	0.11	-0.03	0.196	-18.13	-15.93	0.8
44 42 14.50	-0.33	-0.07	-0.16	0.196	-18.13	-15.93	0.8
44 42 16.90	-0.19	-0.00	-0.02	0.196	-18.13	-15.93	0.8
44 42 19.30							
44 42 21.70	-0.30	-0.19	-0.20	0.196	-18.13	-15.93	0.8
44 42 24.10	-0.14	0.05	-0.14	0.196	-18.13	-15.93	0.8
44 42 26.50	-0.30	0.04	-0.08	0.196	-18.13	-15.93	0.8
44 42 28.90	-0.07	-0.17	-0.13	0.196	-18.13	-15.93	0.8
44 42 31.30	-0.10	-0.10	-0.08	0.196	-18.13	-15.93	0.8
44 42 33.70	-0.17	-0.02	-0.13	0.196	-18.13	-15.93	0.8
44 42 36.13	-0.03	-0.12	-0.16	0.196	-18.13	-15.93	0.8

GEMINI X FLIGHT TEST DATA REV NO 28 CNV D/T
OBOARD COMPUTER WORDS (MODE 3, CATCH-UP)

TIME HR MI SEC	DK15 INCREMENTAL VELOCITY (X) FPS	DK16 INCREMENTAL VELOCITY (Y) FPS	DK17 INCREMENTAL VELOCITY (Z) FPS	DK18 RADAR RANG FEET	DK19 SINE RADAR ELEVATION DEGREES	DK20 SINE RADAR AZIMUTH DEGREES	DK21 TIME OF THRUST MIDPOINT SECONDS
44 42 38.50	-0.27	-0.04	-0.30	0.196	-18.13	-15.93	0.8
44 42 40.90	-0.13	-0 14	0.03	0.196	-18.13	-15.93	0.8
44 42 43.30	-0.08	0.03	0.06	0.196	-18.13	-15.93	0.8
44 42 45.70	-0.15	-0.08	-0.14	0.196	-18.13	-15.93	0.8
44 42 48.10	-0.29	0.10	-0.10	0.196	-18.13	-15.93	0.8
44 42 50.50	-0.06	-0.01	-0.13	0.196	-18.13	-15.93	0.8
44 42 52.90	-0.11	-0.03	0.01	0.196	-18.13	-15.93	0.8
44 42 55.30	-0.16	0.05	-0.04	0.196	-18.13	-15.93	0.8
44 42 57.70	-0.03	-0.03	-0.08	0.196	-18.13	-15.93	0.8
44 43 0.10	-0.26	0.02	-0.00	0.196	-18.13	-15.93	0.8
44 43 2.50	-0.13	-0.07	-0.16	0.196	-18.13	-15.93	0.8
44 43 4.90	-0.18	-0.00	-0.11	0.196	-18.13	-15.93	0.8
44 43 7.30	-0.04	0.09	-0.15	0.196	-18.13	-15.93	0.8
44 43 9.70	-0.07	-0.04	-0.19	0.196	-15.32	-15.93	0.8
44 43 12.10	-0.05	-0.03	-0.14	0.196	-18.13	-15.93	0.8
44 43 19.30	-0.20	0.00	-0.17	0.196	-18.13	-15.93	0.8
44 43 21.70	-0.26	0.10	-0.12	0.196	-18.13	-15.93	0.8
44 43 24.10	-0.02	-0.00	-0.17	0.196	-18.13	-15.93	0.8
44 43 26.50	-0.07	-0.03	-0.30	0.196	-18.13	-15.93	0.8
44 43 28.90	-0.10	0.05	0.03	49.349	-18.13	-15.93	0.8
44 43 31.30	-0.27	0.04	-0.10	0.196	-18.13	-15.93	0.8
44 43 33.70	-0.13	0.12	-0.15	0.196	-18.13	-15.93	0.8
44 43 36.10	-0.09	0.11	-0.28	0.196	-18.13	-15.93	0.8
44 43 38.50	-0.15	-0.00	-0.31	0.196	-18.13	-15.93	0.8
44 43 40.90	-0.00	0.08	-0.08	0.196	-18.13	-15.93	0.8
44 43 43.30	-0.14	-0.13	-0.12	0.196	-18.13	-15.93	0.8
44 43 45.70	-0.30	-0.16	-0.07	0.196	-18.13	-15.93	0.8
44 43 48.10	-0.15	-0.08	-0.30	0.196	-18.13	-15.93	0.8
44 43 50.50	-0.31	0.13	-0.34	0.196	-18.13	-15.93	0.8
44 43 52.90	-0.26	-0.10	-0.29	0.196	-18.13	-15.93	0.8
44 43 55.30	-0.00	-0.11	-0.14	0.196	-18.13	-15.93	0.8
44 43 57.70	-0.17	0.07	-0.19	0.196	-15.32	-15.93	0.8
44 44 0.10	-0.03	-0.05	-0.22	0.196	-18.13	-15.93	0.8
44 44 2.50	0.00	-0.05	-0.08	0.196	-18.13	-15.93	0.8
44 44 4.90	-0.14	-0.28	-0.22	0.196	-18.13	-15.93	0.8
44 44 7.30	-0.10	-0.08	-0.17	0.196	-18.13	-15.93	0.8
44 44 9.70	-0.05	-0.10	-0.21	49.349	-15.32	-15.93	0.8
44 44 12.10	-0.20	-0.11	-0.07	0.196	-18.13	-15.93	0.8
44 44 14.50	-0.16	0.08	-0.20	0.196	-18.13	-15.93	0.8
44 44 16.90	-0.21	-0.05	-0.22	0.196	-18.13	-15.93	0.8
44 44 19.30	-32.17	-0.06	-0.19	0.196	-18.13	-15.93	0.8
44 44 21.70	-0.03	-0.17	-0.04	0.196	-18.13	-15.93	0.8
44 44 24.10	0.02	0.01	-0.37	0.196	-18.13	-15.93	0.8
44 44 26.50	-0.04	-0.10	-0.19	0.196	-18.13	-15.93	0.8
44 44 28.90	-0.18	-0.11	-0.36	0.196	-18.13	-15.93	0.8
44 44 31.30							

GEMINI X FLIGHT TEST DATA REV NO 28 CNV D/T
OBOARD COMPUTER WORDS (MODE 3, CATCH-UP)

TIME HR MI SEC	DX15 INCREMENTAL VELOCITY (X) FPS	DX16 INCREMENTAL VELOCITY (Y) FPS	DX17 INCREMENTAL VELOCITY (Z) FPS	DX18 RADAR RANG FEET	DX19 SINE RADAR ELEVATION DEGREES	DX20 SINE RADAR AZIMUTH DEGREES	DX21 TIME OF THRUST MIDPOINT SECONDS
44 44 33.70	-0.19	0.16	-0.39	0.196	-18.13	-15.93	0.8
44 44 36.10	-0.20	0.04	-0.08	0.196	-18.13	-15.93	0.8
44 44 38.50	-0.20	0.02	-0.34	0.196	-18.13	-15.93	0.8
44 44 40.90	-0.16	-0.19	-0.19	0.196	-18.13	-15.93	0.8
44 44 43.30	-0.01	-0.12	-0.14	0.196	-18.13	-15.93	0.8
44 44 45.70	-0.17	-0.10	-0.18	0.196	-18.13	-15.93	3072.8
44 44 48.10	-0.21	-0.24	-0.13	0.196	-18.13	-15.93	0.8
44 44 50.50	-0.17	-0.05	-0.17	0.196	-18.13	-15.93	0.8
44 44 52.90	-0.00	0.03	-0.41	0.196	-18.13	-15.93	0.8
44 44 55.30	-0.18	-32.17	-0.26	0.196	-18.13	-15.93	0.8
44 44 57.70	-0.14	[illegible].01	-0.39	0.196	-18.13	-15.93	0.8
44 45 0.10	-0.08	-0.01	-0.24	0.196	-18.13	-15.93	0.8
44 45 2.50	-0.15	-0.00	-0.10	0.196	-18.13	-15.93	0.8
44 45 4.90	-0.01	0.06	-0.33	0.196	-18.13	-15.93	0.8
44 45 7.30	-0.06	0.05	-0.07	0.196	-18.13	-15.93	0.8
44 45 9.70	-0.00	-0.18	-0.32	0.196	-18.13	-15.93	0.8
44 45 12.10	-0.06	-0.08	-0.36	0.196	-18.13	-15.93	0.8
44 45 14.48	-0.02	-0.10	-0.31	0.196	-18.13	-15.93	0.8
44 45 16.88	-0.17	-0.12	-0.17	0.196	-18.13	-15.93	0.8
44 45 19.28	-0.02	-0.04	-0.21	0.196	-18.13	-15.93	0.8
44 45 21.68	0.01	-0.25	-0.34	0.196	-18.13	-15.93	0.8
44 45 24.08	-0.04	-0.16	-0.20	0.196	-18.13	-15.93	0.8
44 45 26.48	-0.18	0.01	-0.34	0.196	3.10	2.72	0.8
44 45 28.[illegible]8	-0.04	-0.01	-0.20	0.196	4.34	3.53	0.8
44 45 31.28	-0.19	0.09	-0.33	0.246	7.60	2.96	0.8
44 45 33.68	-0.05	-0.03	-0.17	0.393	16.33	-1.86	0.8
44 45 36.08	-0.01	-32.04	-0.32	0.393	21.32	-0.86	0.8
44 45 38.48	-0.00	-0.16	-0.36	0.393	19.74	-0.91	0.8
44 45 40.88	-0.02	0.04	-0.31	0.443	20.04	-0.79	0.8
44 45 43.28	-0.07	-0.08	-0.35	0.443	20.40	-0.72	0.8
44 45 45.68	-0.00	-0.08	-0.30	0.246	20.60	-0.57	0.8
44 45 48.08	-0.08	-0.00	-0.34	0.246	21.22	-0.19	0.8
44 45 50.48	-0.00	-0.04	-0.39	0.246	21.52	0.10	0.8
44 45 52.88	0.01	-0.05	-0.34	0.246	21.63	0.24	0.8
44 45 55.28	-0.13	-0.03	-0.28	0.393	21.68	0.43	0.8
44 45 57.68	-0.08	-0.07	-0.42	0.246	22.35	0.62	0.8
44 46 0.08	-0.15	-0.07	-0.36	0.393	22.60	0.76	0.8
44 46 2.48	-0.07	-0.10	-0.40	0.246	22.81	1.24	0.8
44 46 4.88	0.03	-0.11	-0.35	0.344	23.07	1.38	0.8
44 46 7.28	-0.02	-0.02	-0.39	0.246	23.28	1.53	0.8
44 46 9.68	0.02	-0.02	-0.34	0.393	23.85	1.81	0.8
44 46 12.08	-0.02	0.06	-0.19	0.246	23.95	1.91	0.8
44 46 14.48	-0.08	0.15	-0.42	0.246	23.95	1.91	0.8
44 46 16.88	-0.03	-0.07	-0.37	0.246	23.95	1.91	0.8
44 46 19.28	-0.07	0.02	-0.22	0.246	23.95	1.91	0.8
44 46 21.68	-0.13	-0.33	-0.37	0.246	23.95	1.91	0.8

APPENDIX I

Electrostatic Effect on the Particle Density in the Wake of the Gemini

Electrostatic Effect on the Particle Density in the Wake of the Gemini

The density at a point (x,y,z) is given by:

$$m(x, y, z) = \frac{m_\sigma}{(\nu\tau)^{3/2}\,\bar{v}^3} \int \exp\left\{-\frac{v_x^2 + v_y^2 + (v_z + v)^2}{2\bar{v}^2}\right\} dv_x \, dv_y \, dv_z \qquad (54)$$

where the limits of integration are defined in the following manner. Trace the classical trajectory back from (x,y,z) until it interacts the plane S (fig. 108). Let S be defined as the plane in which the satellite blocks out the maximum number of particles. Let the intersection occur at $(x_o, y_o, 0)$ and $\vec{v}\,(x_o, y_o, x, y, z)$ be the velocity at that point. This is the $\vec{v}$ of equation 52. The limiting value $\vec{v}_o$ occurs for the trajectory which barely touches the satellite.

L94

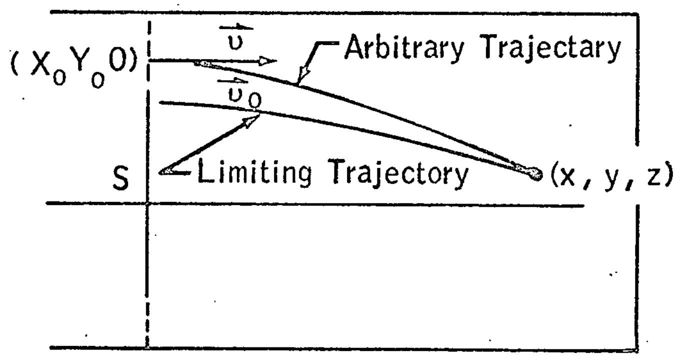

Figure K-1.- Classical trajectory interacts with plane which blocks out maximum particles.

Consider the scattering caused by the shielded truncated cone at the front end of the Gemini. Because of the small Debye length, this part is the most important scatterer, and is shown in figure 109.

Consider the number of ions which get to the points $(0,0,z)$; that is, limit the study to densities on the axis. Because of the geometry of the Gemini, assume no scattering beyond the point P. By geometry, the components of $\vec{v}_1$ are related by the following equation.

$$\frac{v_{x_1}}{v_{z_1}} = - \frac{R_1 + x_1 \cos \theta}{z - x_1 \sin \theta} \qquad (55)$$

Consider rotated axis x, z as shown, and let components of $\vec{v}_1$ along these axes be represented by V_{x1} and V_{z1}. By geometry,

$$V_{z_1} = v_{z_1} \cos \theta - v_{x_1} \sin \theta = v_{z_1} \left(\cos \theta + \frac{R_1 + x_1 \cos \theta}{z - x_1 \sin \theta} \sin \theta \right) \qquad (56)$$

where equation (53) was used. Also,

$$V_{x_1} = v_{z_1} \sin \theta + v_{x_1} \cos \theta = v_{z_1} \left(\sin \theta - \frac{R_1 + x_1 \cos \theta}{z - x_1 \sin \theta} \cos \theta \right) \qquad (57)$$

Let V_{xo} and V_{zo} be components of the particular velocity, along the axes (X and Z), at the front end of the vehicle x_o. Because the force is perpendicular to the vehicle surface,

$$V_{z_o} = V_{z_1} \qquad (58)$$

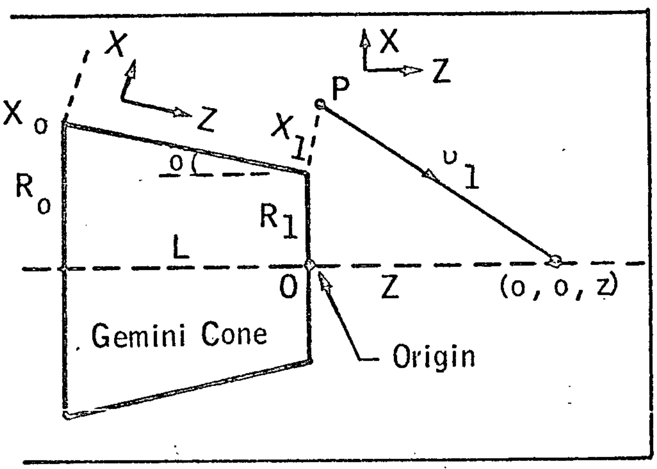

Figure K-2.- C Figure 109.- Scattering effect of shielded truncated cone.

To find V_{xo} in terms of V_{x1}, solve the equation of motion

$$m\ddot{x} = F \tag{59}$$

let λ be the Debye length. Since $R_1 >> \lambda^1$ in solving equation (59) assume a local plane geometry (other than a cylindrical geometry). Assume the Gemini is metal, and has a uniform potential, $-\varphi_0$, on the surface. Then the equation of motion (59) is

$$m\ddot{x} = -\frac{e\varphi_0}{\lambda} e^{-\frac{x}{\lambda}} \tag{60}$$

and the energy equation is

$$\tfrac{1}{2} m \dot{x}^2 - e\varphi_0 e^{-\frac{x}{\lambda}} = \tfrac{1}{2} m V_{x_1}^2 - e\varphi_0 e^{-\frac{x_1}{\lambda}} \tag{61}$$

This may be written

$$dt = \frac{dx}{\left(V_{x_1}^2 - \frac{2e\varphi_0}{m} e^{-\frac{x_1}{\lambda}} + \frac{2e\varphi_0}{m} e^{-\frac{x}{\lambda}}\right)^{\frac{1}{2}}} =$$

$$\frac{e^{\frac{x}{2\lambda}}\, dx}{\left[\left(V_{x_1}^2 - \frac{2e\varphi_0}{m} e^{-\frac{x_1}{\lambda}}\right) e^{\frac{x}{\lambda}} + \frac{2e\varphi_0}{m}\right]^{\frac{1}{2}}}$$

Set $\quad v = e^{\frac{x}{L\lambda}} \qquad \therefore \quad e^{\frac{x}{L\lambda}}\, dx = 2\,\lambda d v$

$$dt = \frac{2\,\lambda\, d\, v}{\left[\left(V_{x_1}^2 - \frac{2e\varphi_0}{m}\, e^{-\frac{x_1}{\lambda}}\right) v^2 \quad \frac{2e\varphi_0}{m}\right]^{\frac{1}{2}}}$$

Set $\quad v = \left(\dfrac{\dfrac{2e\varphi_0}{m}}{V_{x_1}^2 - \dfrac{2e\varphi_0}{m}\, e^{-\frac{x_1}{\lambda}}}\right)^{\frac{1}{2}} \tan\varphi$

$$dt = \frac{2\lambda}{\left(V_{x_1}^2 - \frac{2e\varphi_0}{m}\, e^{-\frac{x_1}{\lambda}}\right)^{\frac{1}{2}}} \quad \sec\varphi\, d\varphi$$

or $\left(V_{x_1}^2 - \dfrac{2e\varphi_0}{m}\, e^{\frac{-x_1}{\lambda}}\right) \dfrac{t}{2\lambda} = \ln(\tan\varphi + \sec\varphi) + \text{const.}$

$$= \ln\left\{\left(\frac{V_{x_1}^2 - \frac{2e\varphi_0}{m}\, e^{-\frac{x_1}{\lambda}}}{\frac{2e\varphi_0}{m}}\right)^{\frac{1}{2}} e^{\frac{x}{2\lambda}} + \left(\frac{V_{x_1}^2 - \frac{2e\varphi_0}{m}\, e^{\frac{-x_1}{\lambda}}}{\frac{2e\varphi_0}{m}}\, e^{\frac{x}{\lambda}} + 1\right)^{\frac{1}{2}}\right\} + \text{const.}$$

Let particles pass back end of cone at $t = 0$. Thus at $t = 0$, $x = x_1$, and

$$\text{const.} = -\ln\left\{\left(\frac{V_{x_1}^2 - \frac{2e\varphi_0}{m}e^{-\frac{x_1}{\lambda}}}{\frac{2e\varphi_0}{m}}\right)^{\frac{1}{2}} e^{\frac{x_1}{2\lambda}} + \left(\frac{mV_{x_1}^2}{2e\varphi_0}e^{\frac{x_1}{\lambda}}\right)^{\frac{1}{2}}\right\}$$

$$\therefore \left(V_{x_1}^2 - \frac{2e\varphi_0}{m}e^{-\frac{x_1}{\lambda}}\right)^{\frac{1}{2}}\frac{t}{2\lambda} = \ln\left\{\frac{\left(\frac{mV_{x_1}^2}{2e\varphi_0} - e^{-\frac{x_1}{\lambda}}\right)^{\frac{1}{2}} e^{\frac{x}{2\lambda}} + \left[\left(\frac{mV_{x_1}^2}{2e\varphi_0} - e^{-\frac{x_1}{\lambda}}\right)e^{\frac{x}{\lambda}} + 1\right]^{\frac{1}{2}}}{\left(\frac{mV_{x_1}^2}{2e\varphi_0} - e^{-\frac{x_1}{\lambda}}\right)^{\frac{1}{2}} e^{\frac{x_1}{2\lambda}} + \left(\frac{mV_{x_1}^2}{2e\varphi_0}\right)^{\frac{1}{2}} e^{\frac{x_1}{2\lambda}}}\right\}$$

$$= \ln\left\{\frac{\alpha e^{\frac{x}{2\lambda}} + \left(\beta + \alpha^2 e^{\frac{x}{\lambda}}\right)^{\frac{1}{2}}}{(1+\alpha)e^{\frac{x_1}{2\lambda}}}\right\} \qquad (62)$$

where $\alpha \equiv \left(1 - \frac{2e\varphi_0}{mV_{x_1}^2}e^{-\frac{x_1}{\lambda}}\right)^{\frac{1}{2}}, \quad \beta \equiv \frac{2e\varphi_0}{mV_{x_1}^2}$ (63)

By equation (62),

$$\alpha e^{\frac{x}{L\lambda}} + \left(\beta + \alpha^2 e^{\frac{x}{\lambda}}\right)^{\frac{1}{2}} = (1+\alpha) e^{\frac{x_1}{L\lambda}} \exp\left\{\alpha \frac{V_{x_1} T}{L\lambda}\right\} \quad (64)$$

Now particle passes front end of cone at $t = \dfrac{L}{V_{z_1}\cos\theta} = \dfrac{L}{V_{z_0}\cos\theta}$ at which time, $x = x_0$.

Thus, x_0 is determined by

$$\alpha e^{\frac{x_0}{L\lambda}} + \left(\beta + \alpha^2 e^{\frac{x_0}{\lambda}}\right)^{\frac{1}{2}} = (1+\alpha) e^{\frac{x_1}{L\lambda}} \exp\left\{-\frac{\alpha L}{2\lambda\cos\theta} \frac{V_{x_1}}{V_{z_1}}\right\}$$

Solving

$$\beta + \alpha^2 e^{\frac{x_0}{\lambda}} = (1+\alpha)^2 e^{\frac{x_1}{\lambda}} \exp\left\{-\frac{\alpha L}{\lambda \cos\theta} \frac{V_{x_1}}{V_{z_1}}\right\}$$

$$-2\alpha(1+\alpha) e^{\frac{x_0}{2\lambda}} e^{\frac{x_1}{2\lambda}} \exp\left\{-\frac{\alpha L}{2\lambda\cos\theta} \frac{V_{x_1}}{V_{z_1}}\right\}$$

$$+\alpha^2 e^{\frac{x_0}{\lambda}}$$

$$\therefore 2\alpha e^{\frac{x_0}{2\lambda}} = (1+\alpha) \exp\left(\frac{x_1}{2\lambda} - \frac{\alpha L}{2\lambda\cos\theta} \frac{V_{x_1}}{V_{z_1}}\right) - \frac{\beta}{1+\alpha} \exp$$

$$\left(-\frac{x_1}{2\lambda} + \frac{\alpha L}{2\lambda\cos\theta} \frac{V_{x_1}}{V_{z_1}}\right)$$

But $$\frac{\beta}{1+\alpha} = \frac{\beta(1-\alpha)}{1-\alpha^2} = \frac{\frac{2eV_0}{mV_{x_1}^2}(1-\alpha)}{\frac{2eV_0}{mV_{x_1}^2} e^{\frac{-x_1}{\lambda}}} = (1-\alpha) e^{\frac{x_1}{\lambda}}$$

$$\therefore \quad 2\alpha e^{\frac{x_0}{2\lambda}} = e^{\frac{x_1}{2\lambda}}\left\{(1+\alpha)e^{-p} - (1-\alpha)e^{p}\right\}$$

where $$p \equiv \frac{\alpha L}{2\lambda\cos\theta}\,\frac{V_{x_1}}{V_{z_1}} \tag{65}$$

$$\alpha e^{\frac{x_0}{2\lambda}} = e^{\frac{x_1}{2\lambda}}(\alpha\cosh p - \sinh p)$$

or

$$e^{\frac{x_0}{2\lambda}} = e^{\frac{x_1}{2\lambda}}\left(\cosh p - \frac{1}{\alpha}\sinh p\right) \tag{66}$$

But, by equations (56) and (57),

$$\frac{V_{x_1}}{V_{z_1}} = \frac{\sin\theta(z - x_1\sin\theta) - (R_1 + x_1\cos\theta)\cos\theta}{\cos\theta(z - x_1\sin\theta) + (R_1 + x_1\cos\theta)\sin\theta} = \frac{z\sin\theta - R_1\cos\theta - x_1}{z\cos\theta + R_1\sin\theta} \equiv \sigma \tag{67}$$

$$p = \frac{\alpha\sigma L}{2\lambda\cos\theta}$$

$$\alpha^2 = 1 - \frac{2e\varphi_0}{mV_{x_1}^2}e^{\frac{-x_1}{\lambda}} = 1 - \frac{2e\varphi_0}{mV_{z_1}^2\sigma^2}e^{\frac{-x_1}{\lambda}} = 1 - \frac{2e\varphi_0}{mV^2\sigma^2}\left(\frac{V}{V_{z_0}}\right)^2 e^{\frac{-x_1}{\lambda}} \tag{68}$$

nondimensionalized with respect to satellite velocity V.

By equation (61),

$$V_{x_0}^2 = V_{x_1}^2 - \frac{2e\varphi_0}{m}e^{\frac{-x_1}{\lambda}} + \frac{2e\varphi_0}{m}e^{\frac{-x_0}{\lambda}}$$

Using equation (66),

$$\left(\frac{V_{x_0}}{V_{x_1}}\right)^2 = 1 - \frac{2e\varphi_0}{mV_{x_1}^2}e^{\frac{-x_1}{\lambda}} + \frac{\frac{2e\varphi_0}{mV_{x_1}^2}e^{\frac{-x_1}{\lambda}}}{(\cosh p - \frac{1}{\alpha}\sinh p)^2} = \alpha^2 + \frac{1-\alpha^2}{(\cosh p - \frac{1}{\alpha}\sinh p)^2}, \tag{69}$$

with (68). By (67), $V_{x_1} = \sigma V_{z_1} = \sigma V_{z_0}$, so that with (69),

$$V_{x_0} = \sigma\left\{\alpha^2 + \frac{1-\alpha^2}{(\cosh p - \frac{1}{\alpha}\sinh p)^2}\right\}^{1/2} V_{z_0} \tag{70}$$

Now rotate coordinate system back, as in figure 110. Then

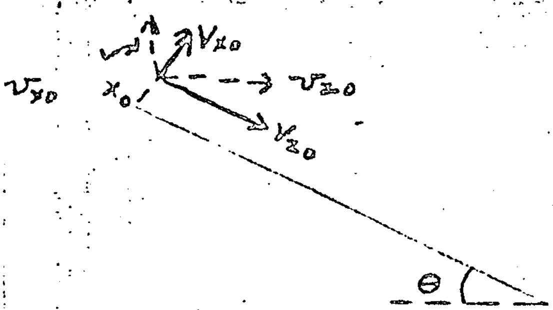

Figure 110.- Coordinate system.

$$v_{z0} = V_{z0}\cos\theta + V_{x0}\sin\theta \tag{71}$$

$$v_{x0} = V_{x0}\cos\theta - V_{z0}\sin\theta \tag{72}$$

But $v_{z0} = V$, the satellite velocity

Then by (71) and (70),

$$\frac{V}{V_{z0}} = \cos\theta + \sigma\sin\theta\left\{\alpha^2 + \frac{1-\alpha^2}{(\cosh\rho - \frac{1}{2}\sinh\rho)^2}\right\}^{\frac{1}{2}} \tag{73}$$

By (71), $\quad V_{x0} = \dfrac{V - V_{z0}\cos\theta}{\sin\theta}$

and substituting into (72)

$$v_{x0} = \frac{V\cos\theta - V_{z0}\cos^2\theta}{\sin\theta} - V_{z0}\sin\theta = \frac{V\cos\theta - V_{z0}}{\sin\theta}$$

or

$$\frac{v_{x0}}{V} = \frac{\cos\theta - \left(\frac{V_{z0}}{V}\right)}{\sin\theta} \tag{74}$$

But v_{x0} is the velocity that goes into equation (54). Since the cylindrical symetry is (ρ, z), equation (74) can be written as

$$\frac{v_\rho}{V} = \frac{\cos\theta - \left(\frac{V_{z0}}{V}\right)}{\sin\theta} \tag{75}$$

and equation (54) as

$$n(z) = \frac{n_0}{(2\pi)^{3/2}\bar{v}^3} \int_{v_0}^{\infty} 2\pi v_p \, dv_p \int_{-\infty}^{0} dv_z \exp\left\{-\frac{v_p^2 + (v_z + V)^2}{2\bar{v}^2}\right\} \tag{76}$$

Since $V >> \bar{v}$, then

$$\int_{-\infty}^{0} \exp\left\{-\frac{(v_z+V)^2}{2\bar{v}^2}\right\} dv_z \approx \int_{-\infty}^{\infty} \exp\left\{-\frac{(v_z+V)^2}{2\bar{v}^2}\right\} dv_z = (2\pi)^{\frac{1}{2}}\bar{v}$$

$$\therefore n(z) \approx \frac{n_0}{\bar{v}^2} \int_{v_0}^{\infty} \exp\left(-\frac{v_p^2}{2\bar{v}^2}\right) v_p \, dv_p = n_0 \exp\left(-\frac{v_0^2}{2\bar{v}^2}\right) \tag{77}$$

Now v_0 is a value of v_p of equation (75), which causes trajectory to barely touch front end of cone (fig. 108). By figure 109 this corresponds to $x_0 = 0$. Thus by equation (66), v_0 is determined by

$$\cosh p - \frac{1}{2}\sinh p = e^{-\frac{x_1}{2\lambda}} \tag{78}$$

Equations (78) and (73) are two simultaneous equations, from which both x_1 and V_{zo} can be determined. With the V_{zo} thus obtained, then from equation (75),

$$\frac{v_0}{V} = \frac{\cos\theta - \left(\frac{V_{z0}}{V}\right)}{\sin\theta} \tag{79}$$

and combining this with (77), the density on the axis is obtained.

For the touching trajectory needed, equation (73) is simplified by using (78) and

$$\frac{V}{V_{z0}} = \cos\theta + \sigma \sin\theta \left\{\alpha^2 + (1-\alpha^2) e^{\frac{x_1}{\lambda}}\right\}^{\frac{1}{2}}$$

$$= \cos\theta + \sigma \sin\theta \left\{1 - \frac{2e\varphi_0}{mV^2\sigma^2}\left(\frac{V}{V_{zo}}\right)^2 e^{-\frac{x_1}{\lambda}} + \frac{2e\varphi_0}{mV^2\sigma^2}\left(\frac{V}{V_{zo}}\right)^2\right\}^{\frac{1}{2}}$$

$$= \cos\theta + \sin\theta \left\{\sigma^2 + \frac{2e\varphi_0}{mV^2}\left(\frac{V}{V_{zo}}\right)^2 \left(1 - e^{-\frac{x_1}{\lambda}}\right)\right\}^{1/2} \qquad (80)$$

where (68) has been used. Also equation (78) may be written

$$\cosh p - \frac{\sigma \sinh p}{\left[\sigma^2 - \frac{2e\varphi_0}{mV^2}\left(\frac{V}{V_{zo}}\right)^2 e^{-\frac{x_1}{\lambda}}\right]^{1/2}} = e^{-\frac{x_1}{2\lambda}} \qquad (81)$$

where by (68),

$$p \equiv \frac{L}{2\lambda\cos\theta}\left[\sigma^2 - \frac{2e\varphi_0}{mV^2}\left(\frac{V}{V_{zo}}\right)^2 e^{-\frac{x_1}{\lambda}}\right]^{1/2} \qquad (82)$$

The dependence on z comes only through σ of equation (67). For a given z (or σ), equations (80) and (81) can be solved simultaneously for x_1 and V_{zo}, and then equation (79) is used. Of course, $x_1 > 0$, must be found or else the back end of truncated cone blocks out particles and then there would be no electrostatic effect and the old solution would hold. Since the solution for many z values is desired, it is easier to guess at V values of $\frac{V_{zo}}{V}$, solve equations (80) and (81) for x_1, and then take whatever σ (or z) value is obtained.

By equation (80),

$$\sigma^2 = \left(\frac{\frac{V}{V_{zo}} - \cos\theta}{\sin\theta}\right)^2 - \frac{2e\varphi_0}{mV^2}\left(\frac{V}{V_{zo}}\right)^2\left(1 - e^{-\frac{x_1}{\lambda}}\right)$$

and by equation (81),

$$\sigma^2 \sinh^2 p = \left[\left(\frac{\frac{V}{V_{z0}} - \cos\theta}{\sin\theta}\right)^2 - \frac{2e\phi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2\right]\left(\cosh p - e^{-\frac{x_1}{2\lambda}}\right)^2 \qquad (83)$$

Set $$K \equiv \left(\frac{\frac{V}{V_{z0}} - \cos\theta}{\sin\theta}\right)^2 - \frac{2e\phi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2$$

Then $$\sigma^2 = K + \frac{2e\phi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2 e^{-\frac{x_1}{\lambda}}$$

Equation (83) becomes

$$\left[K + \frac{2e\phi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2 e^{-\frac{x_1}{\lambda}}\right]\sinh^2 p = K\left[\cosh^2 p - 2\cosh p\, e^{-\frac{x_1}{2\lambda}} + e^{-\frac{x_1}{\lambda}}\right]$$

or $$\left\{K - \frac{2e\phi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2 \sinh^2 p\right\} e^{-\frac{x_1}{\lambda}} - 2K\cosh p\, e^{-\frac{x_1}{2\lambda}} + K = 0$$

or $$a\, e^{-\frac{x_1}{\lambda}} - 2\cosh p\, e^{-\frac{x_1}{2\lambda}} + 1 = 0 \qquad (84)$$

where
$$a = 1 - \frac{\frac{2e\phi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2 \sinh^2 p}{\left(\frac{\frac{V}{V_{z0}} - \cos\theta}{\sin\theta}\right)^2 - \frac{2e\phi_0}{mV^2}\left(\frac{V}{V_z}\right)^2} = \frac{\left(\frac{\frac{V}{V_{z0}} - \cos\theta}{\sin\theta}\right)^2 - \frac{2e\phi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2 \cosh^2 p}{\left(\frac{\frac{V}{V_{z0}} - \cos\theta}{\sin\theta}\right)^2 - \frac{2e\phi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2} \qquad (85)$$

By equation (82),

$$p = \frac{L}{2\lambda\cos\theta}\left[\left(\frac{\frac{V}{V_{z0}}-\cos\theta}{\sin\theta}\right)^2 - \frac{2e\varphi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2\right]^{1/2}$$

Prescription: Guess $\frac{V}{V_{z0}}$

Set

$$b = \left(\frac{\frac{V}{V_{z0}}-\cos\theta}{\sin\theta}\right) \qquad c^2 = \frac{2e\varphi_0}{mV^2}\left(\frac{V}{V_{z0}}\right)^2$$

$$K = b^2 - c^2 \qquad p = \frac{L}{2\lambda\cos\theta}K^{1/2}$$

$$a = \frac{b^2 - c^2\cosh^2 p}{K}$$

Solve

$$e^{-\frac{x_1}{2\lambda}} = \frac{\cosh p \pm \sqrt{\cosh^2 p - a}}{a} \tag{86}$$

Find

$$\sigma^2 = b^2 - c^2\left(1 - e^{\frac{-x_1}{\lambda}}\right) \text{ and then } z.$$

For sign of (86): Consider $\varphi_0 = 0$. Then

$$c = 0 \quad K = b^2 \quad a = 1$$

$$e^{\frac{-x_1}{2\lambda}} = \cosh p \pm \sinh p$$

+ sign: $\cosh p + \sinh p = e^p \qquad \frac{x_1}{2\lambda} = -p = -\frac{L}{2\lambda\cos\theta}\,\frac{\frac{V}{V_{z0}}-\cos\theta}{\sin\theta}$

$\therefore$ since $x_1 > 0$, this is wrong.

$-$ sign: $\cosh p - \sinh p = e^{-p}$ $\qquad \frac{x_1}{2\lambda} = p$

$$\therefore \quad e^{-\frac{x_1}{2\lambda}} = \frac{\cosh p - (\cosh^2 p - c)^{\frac{1}{2}}}{a} \qquad (87)$$

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