~~TOP SECRET~~ - GAMBIT

BYE 24553-64

SPB 4 017

TOTAL PAGES ~~119~~ Dodd

CY 1 of 7 CYS

Mar '64

SYSTEM
PERFORMANCE EVALUATION TEAM
(FLIGHT MISSION CHARACTERISTICS)
MISSION 4005 / 64

Handle Via BYEMAN Controls Only

~~TOP SECRET~~ - GAMBIT

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

FOREWORD

THIS REPORT PREPARED FOR AND BY DIRECTION OF

THE DIRECTOR OF SPECIAL PROJECTS

OFFICE OF

THE SECRETARY OF THE AIR FORCE

Preparing Unit:

Performance Evaluation Team
AF Unit Post Office
Los Angeles 45, California

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

PUBLICATION REVIEW

This report has been reviewed and is approved.

Victor M Genez

VICTOR M GENEZ
Colonel, USAF
Team Manager

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

TABLE OF CONTENTS

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

LIST OF PHOTOGRAPHS

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

LIST OF ILLUSTRATIONS

SAFSP PERFORMANCE EVALUATION TEAM

SAFSP

Col Victor M Genez
LtCol Charles L Stevenson
Maj Bernard W Quinn
Maj David B Coleman
Capt Ralph U George
Capt Donald W Hillman

6594TH AEROSPACE TEST WING

Capt Everitt W Dickman

6594TH TEST SQUADRON (AFSPPL)

Col Harold Z Ohlmeyer, Commander
Technical Staff

NPIC

ACIC

Mr Randall F Gehrke
and Associates

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

SECTION I

DESCRIPTION OF MISSION 4005

Mission 4005 was launched into orbit from Point Arguello Launch Complex II, Pad 3, at 1900Z on 25 February 1964.

The satellite vehicle consisted of the Gambit Camera and the Orbital Control Vehicle System. The satellite was boosted into orbit by an Agena D/Atlas combination with the following sequence of launch events:

	Nominal (sec)	Actual (sec)
Booster Engine Cut-off	138.15	138.15
Sustainer Engine Cut-off	271.37	271.50
Vernier Engine Cut-off	288.30	288.62
Atlas/Agena Separation	290.90	291.12
Agena Ignition	359.00	359.60
Agena Engine Cut-off	599.20	599.72

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

The satellite vehicle (OCV) achieved an orbit with the following parameters:

	Nominal	Actual
Inclination (degrees)	95.8	95.603
Period (minutes)	88.42	88.374
Apogee (nautical miles)	122.31	124.40
Perigee (nautical miles)	94.16	95.30
Eccentricity	.00397	.004097

At lift-off, 1,280 feet of Eastman Type 4404 film, plus 200 feet of Eastman Experimental Type 3703 color film, was in the supply spool. This amount was sufficient for full operational, R&D, and run-out use for at least four days' operation.

The operational objectives for Mission 4005 were to obtain operational photography over a two-day period, with option for a third-day activity if vehicle operating conditions warranted such a decision; and secondly, to stress system performance evaluation, investigate problem areas, and verify a five-day operational capability. Mission 4005 was conducted in the full system design mode: under OCV control, with full camera pointing capability. Recovery of the re-entry capsule was accomplished using the primary OCV system.

Primarily due to an anomalous yaw condition which began after Rev 2, no useful operational photography was obtained on

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

Mission 4005. Targets programmed for Revs D04 and D05 were not obtained, due mainly to an in-track positioning error caused by an inaccurate ephemeris derived from Rev 1 tracking data. The circumstances surrounding both of these anomalies are outlined below.

EARLY EPHEMERIS INACCURACY

The Command Console located at the Thule tracking station was inoperative during the first several revs of Mission 4005. For this reason, the decision was made to load the day one flight program into the satellite on Rev 2 (using the ephemeris generated from Rev 1 tracking data), since the normal load on Rev 4 (using an ephemeris generated from Revs 1 and 2) from Thule would probably not be possible. The Rev 1 ephemeris had a period inaccuracy in excess of ten seconds; thus, an in-track positioning error of over one hundred miles affected the photography obtained on Revs 4 and 5. A new program, based on tracking data from the first three revs, was loaded on Rev 6, and removed these in-track errors beginning with Rev 6. However, a combination of uncertain ephemeris due to rapidly rising drag, and photographic smear due to vehicle yaw, effectively degraded photography beyond any possible operational use for the remainder of the mission.

YAW ANOMALY

An examination of the Augmentation (Auggie) telemetry obtained on TULE pass 1 indicated the possibility that the OCV

inertial platform might still be caged in the roll mode. It was decided to send an "uncage" command to the satellite on KODI pass 2, considered safe as the command would be redundant in the event that telemetry was in error and the inertial platform was actually uncaged. The "uncage" command was sent on KODI 2; later analysis of additional telemetry obtained during OCV maneuvers revealed that the "uncage" command sent on KODI 2 had indeed probably been unnecessary and therefore redundant. The alarming telemetry indications received prior to Rev 2 were ascribed to difficulties with instrumentation and telemetry data transmission to the Satellite Test Center (STC).

Beginning with the Rev 5 tracking radar fit, an anomalously high drag of the OCV was observed. Discussion of this anomaly considered the effects of error and magnetic storm indications but the telemetry was interpreted to indicate that the OCV control system was probably operating normally, with a somewhat higher than normal expenditure of control gas. Rapidly rising drag factors derived from tracking radar data subsequent to Rev 7 prescribed that if normal control system operation was indeed the case, a small but increasing leakage of control gas in the forward direction could be the cause of the observed anomalous drag factors. After Rev 14, when the Rev 13 tracking data was fit, a drag factor three times normal was derived. Using the hypothesis of the variable control gas leak, no guarantee could be made that the vehicle lifetime would extend

to Rev 34, the planned recovery rev. Therefore, planning was initiated for a film wrap-up on Rev 17 and capsule recovery on Rev 18. The plan became a decision upon completion of a Rev 16 tracking radar data fit, which implied a drag factor four times normal.

At this point a history of drag factors versus time developed, which was consistent with an assumption that there was no control gas leak at all, but that early in the mission the OCV began to drift about the normal attitude in such a manner as to increase its angle of attack a constant rate of about 5 degrees per rev. Two hypotheses were then suggested: (a) the horizon sensor was completely inoperative and the OCV was free to drift in three dimensions; and (b) the horizon sensor was operating properly, constraining the OCV in pitch and roll, but the gyrocompassing loop was open and the OCV was free to drift in yaw.

An OCV lifetime calculation was made after Rev 16 under the assumption that the vehicle had no gas leak but would tumble in the "worst" way: with the roll axis perpendicular to the air stream at minimum altitude. Although this calculation indicated a lifetime to at least Rev 50, the decision to wrap up film and re-enter on Rev 18 was retained, for the gas leak hypothesis could not be rejected. However, it was decided that recovery on Rev 18 would be by LIFEBOAT (BUSS), since the hypothesis of loss of yaw control could not be re-

jected either.

Late on Rev 17, control engineers discovered that the "uncage" command sent on Rev 2 would indeed open the gyrocompassing loop in the yaw axis. Under such conditions, an OCV (with no gas leak) would fly with the drag observed if the yaw rate were of the order of 5 degrees per Rev. A "fly forward" command would probably close the gyrocompassing loop again; thus, it was decided not to recover on Rev 18, but to proceed to normal recovery on Rev 34. The "fly forward" command was sent on Rev 18, and within two revolutions a normal drag factor was indicated by the tracking radar data. Unfortunately, the film supply had been wrapped up on Rev 17, and no further photography could be obtained on this mission.

SECOND-DAY OPERATION AND RECOVERY

The orbiting payload and OCV were extensively exercised on the second day with very good attitude control indicated by both tracking and telemetry. On Rev 22, the environmental door failed in the "open" position; otherwise, the second-day operation was nominal.

Excellent precision in re-entry was obtained under OCV yaw-around and pitch down control. Recovery was completely nominal.

SECTION II

FLIGHT PROGRAM

A. Performance of the Command System

1. The command loads generated and sent to the vehicle which contained camera operations with film in the camera and the environmental door open were as follows:

a. Command message 102 contained Revs 4 and 5 operations based on Rev 1 tracking data and generated from the preplanned nominal target tape.

b. Command message 103 contained Revs 6 and 7 operations based on Rev 3 tracking data and generated from a target tape from the Rev 3 STL/CART programs plus fakes.

c. Command message 105 contained Revs 8 and 9 operations based on Rev 5 tracking data and generated from a target tape from WAHOO based on the preplanned nominal program.

d. Command message 107 contained Revs 10, 11 and 12 operations based on Rev 7 tracking data and generated from a target tape from WAHOO based on the preplanned nominal program, with added R&D operations for Revs 11 and 12.

e. Command message 108 contained Revs 15 and 16 R&D operations only based on Rev 10 tracking data.

2. All command loadings were successfully transmitted to the satellite vehicle and verified without exception.

3. A number of discrepancies, mostly minor in nature, occurred in the commands generated during the course of Mission 4005. Some resulted from slight differences in interface between the STL Mission Profile Generation Program and the GE "GMINT" Command Generation Program and, in a few cases, resulted from some incompatibility between the preplanned, or "hand-spec" program, and GMINT. These discrepancies are generally flagged by GMINT as "INSUFFICIENT TIME TO ROLL" remarks, and may involve times from .1 second to several seconds. The following discrepancies were reported by the Command Generation Unit at the Satellite Test Center, and were observed to have the following effects:

Rev D06, Frame 5: Although flagged as insufficient time to roll, this problem involved insufficient time for the stereo mirror to move from the aft position to the forward position between stereo pairs. Only .6 seconds separated camera off from camera on; therefore, approximately 3.4 seconds of mirror movement, including settling motion, was recorded in the frame. A major degradation of this frame would have occurred, had acceptable photography been obtained.

Rev D06, Frame 6: Roll motion was not clearly detectable at the beginning of the frame, but would have been well within the normal start-up transient.

Rev D06, Frame 15: Approximately 1.5 seconds of roll motion was seen on this frame. This extended somewhat beyond the

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

camera start-up transient.

Rev D08, Frames 7 and 11: Roll motion was present for less than one-half second in both cases. No effective photographic degradation would have occurred.

Rev D09, Frame 11: No roll motion was detected.

Rev D10, Frame 5: Roll motion was observed for 2 1/2 seconds into the frame. Major degradation of this photograph would have occurred, had acceptable images been obtained.

Rev D10, Frames 8, 9 and 14: Roll motion detected for one-fifth second or less.

Because of the poor condition of the photographic images due to smear, the above times are approximate to perhaps ten to fifteen percent.

4. It was noted in the above cases that distortion of the image was much more severe in the case of mirror movement than in the case of roll motion. Although neither distortions are acceptable, cases may arise where the acquisition of an extra target might warrant the calculated risk of some roll motion in a photographic frame; however, a mirror motion would render the affected image absolutely unusable. Therefore, it is felt that another GMINT flag, labelled, "INSUFFICIENT TIME TO MOVE MIRROR", be included in the GE Program, so that such an event could not possibly be overlooked.

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

B. Geopositioning

1. The geopositioning phase of the PET Evaluation consisted of a comparison of the true location of the photographic frame with the predicted position. This was done for the majority of frames having recognizable map details.

2. Photographic Bench Marks (PBM) were used to locate the photographs. The PBM are identifiable cultural features such as highway and railroad intersections, bridges, centers of towns, etc. Where no culture was available, natural features such as shore line indentations, small lakes and topographic features were used. No frame outlines were used in developing geopositioning data.

3. PBMs were impossible to locate for some frames having usable terrain detail. These areas were in desert regions where the charts could not portray the actual natural features. These same areas were devoid of recognizable cultural features. The quality of the photography due to vehicle attitude prevented the recognition of the detailed cultural features. The oblique appearance of the photography made identification difficult in areas of featureless terrain. Considerable more time was required to search for photographic map-matching positions than on previous missions because of the deviations from predicted locations.

4. The centerline of each plotted frame was obtained by relating the PBM to the photo principal line through a distance

measurement and photo scale factor. In those areas where two PBMs were selected, the centerline was obtained by connecting the two computed points. This was placed on the selected charts. The density and accuracy of the map detail had a bearing in the accuracy obtained on the World Geodetic System. The assurance factor for each series of charts is listed on the data sheets. This data is a direct input to the development of the cross-track error.

5. The time word on the edge of the photography was used to relate the location of the PBM to a specific instance of time. The time words were difficult to read in a large majority of cases. A fourth generation print was used in the geo-positioning effort at ACIC, and it was impossible to read the time track on Rev 5, on the last half of Rev 8, and on Revs 9 and 16. Rev 9 was read on material at the 6594th Test Squadron. This data was a direct input in the development of in-track miss-distance.

6. The miss-distances for each measured PBM are shown in the Technical Data Sheets. Although the directions N and S are used for cross-track (Y) miss-distance, the measurements are made parallel and perpendicular, respectively, to the vehicle nadir line. For example a measurement of 1.0S means the actual PBM location is 1.0 n.m. down-track from the calculated position; and 1.0E means the actual location is 1.0 n.m. to the left (looking in the direction of flight) of

the calculated position. For stereo pairs, a PBM common to both frames was selected, if possible.

7. Ninety-five PBMs were located on the photography. Thirty were not used due to lack of a readable time track. The cross-track and in-track miss-distances are related to the camera mode of operation and vehicle attitude. The plots obtained evaluating Mission 4005 confirmed attitude difficulties in the vehicle. Typically, aft looking shots missed to the east. The amount of miss was dependent upon the degree of roll associated with the particular burst. In-track errors vary somewhat and confirm a non-linear increase in drag. Due to the short time period allocated to the preparation of this report, it was impossible to isolate any bias in either the vehicle attitude or the ephemeris. Separation of the coupling effects generated by an unstable condition in yaw was not attempted. The geoplots do support the theory that such a condition did exist.

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

SECTION III

PHOTOGRAPHIC CHARACTERISTIC EVALUATION SUMMARY

(SPPL Report No. 101-1-21)

Analysis of the original negative (black and white) obtained during the 11 normally operated passes of Reconnaissance Satellite Mission 4005 leads to the following observations and remarks:

A. An unusual amount of lint and foreign particles were present on this film.

B. Random pinholes, minor scratches and abrasions were noted through the Mission.

C. Titling was generally good; a few instances were noted where titling was flaking.

D. Continuous minus-density lines are generally present, consisting of six lines located 1 1/8", 2 3/16", 2 1/4", 2 7/8", 3", and 3 3/16" from the titled edge of the film.

E. A continuous pattern of minus-density spots form three rows parallel with the film edges. One row is located 1 1/2" from the non-titled edge. The center row is located 5 1/8" from the non-titled edge. The third row is found 7" from the non-titled edge. These spots appear at 3 1/8" intervals. Spots are readily apparent only in areas of moderate to high density. Spots fade intermittently in areas of low density.

SECTION IV

CAMERA SYSTEM OPERATION

A. Film Transport

There was no malfunction observed. The starting transients were exceptionally short. The stopping distances were about half that observed in previous missions. The actual average values of film velocity measured in the 1/20th second time bits were within 1/2 percent of that commanded. However, the local velocities varied at times beyond ± 1 percent of that commanded. The effects on the image quality were obscured by the yaw error effects.

B. Slit Quality

Minus density streaks due to dirt accumulations in the focal plane slit were fewer than any other mission. There was a slight increase in number toward the end of the mission. The fiducial lines appeared to the eye to be different in degree of sharpness from one side of a frame to the other. Edge traces made across the lines did not show any appreciable change in sharpness of edges. The line nearest the time track appeared less sharp than the other side. The yaw slit areas were free - not vignetted as in other missions. This aided the yaw slit analysis necessary for the large yaw error determinations.

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

C. Time Track

The time track in this camera consisted of an inner 1/20th second time-bit track, with the time word every 0.8 seconds, and an outer time track consisting of a continuous 500 bits per second without a time word. This is the first use of the 500 cycle time track. Both tracks appeared to be considerably out of focus. Previous payloads had time tracks whose bits had distinct edges and sharp corners. The density of the 500 cycle track was about half that of the 20 cycle track. There may be a frequency modulation effect on the neon bulb in the 500 cycle track. The lowered density of this track made it very sensitive to film processing level. During primary processing, not enough density is developed to survive through the second generation duplicate. Time tracks which have undergone intermediate processing are barely visible in this dupe.

D. "Curleycues"

The half-moon or comet-shaped marks which have inhabited previous payload records were absent from this record. The "wobble" roller used in the "bucket" prior to the takeup cassette had been suspected of causing the markings. The teflon coating previously used was replaced by a chrome plating in this takeup.

E. Re-Entry Vehicle

The interior of the "bucket" was cleaner than any other mission. However, metal curlings were observed trapped in crevices. The removal of the takeup cassette was easier than any other mission.

F. Processing and Exposure

At the time of this report, the processing summary had not been received from the processor (6 March). It is known that most of the processing was done at the Intermediate level with some at the Full and more at the Primary level. This was effected by the predominance of fresh snow cover whose effects require more extensive analysis. Due to the brightening effects of snow cover, imagery was obtained at 0° Sun Angle and normal densities obtained at 3° Sun Angle. Predictions of such exposures indicated a Full stop under-exposure at 3° Sun Angle. Mission densities appear heavy by one-quarter to one-half photographic stop.

G. Film Footage

Excellent film footage information was provided the processor, permitting him to preplan processing levels for the mission. Approximately 12-13 feet of blank film (wrap-up) was introduced at appropriate places during some passes. At the end of each pass, about 12 feet of blank film is drawn through the camera. These periods permitted a change of pro-

cessing level more appropriate to the next exposures. This 12-13 feet appears to be a small price to pay to insure correct processing level for a high ground acuity photo recce system.

H. Photographic R&D

a. CORN Targets: One ground target was obscured by weather; the second ground target was not identified due to the photographic smearing. BLACKBIRD was flown but not obtained in the photos of St Louis due to the error in pointing induced by the large yaw error.

b. Rev 11, Sunline Experiment: Photos were taken starting at a -2° Sun Angle progressively to a 19° Sun Angle to determine image quality at extremely low illumination conditions. Of the eight photos, the last five had 100 percent cloud cover. The first photo had no visible imagery. The second, at a 0° Sun Angle, had faint imagery. The third had normal densities at 3° Sun Angle. With fresh snow cover and 1/250th second exposure, this system can obtain normal densities at 3° Sun Angle on 4404 emulsion.

c. Rev 12, Illumination Experiment: Photos were taken from about 15° to 70° Sun Angles over the Atlantic Ocean. The intent is to use the average water surface as a constant tone target in each photo. Measurement of large area densities (1/4" diameter densitometer aperture) plotted against Sun Angle should reveal the general shape of the Sun Illu[redacted]

versus Sun Angle curve for satellite altitudes. Previously published curves now used for exposure determinations show a constant level of illumination from about 40° to 90° Sun Angles. The large area densitometer is used to average out sea tone fluctuations. Accumulations of such readings taken over about five missions should begin to statistically define the shape of the Sun's Illumination versus Sun Angle curve. Present indications are that the illumination value continues to rise in the 40°-90° Sun Angle region instead of being constant. Of the seventeen photos taken, nine had 70 percent or more cloud cover.

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

SECTION V

SUMMARY OF OBSERVATIONS

Gambit System Mission 4005 was launched from Point Arguello on 25 February 1964. A nominal orbit was achieved, with vehicle altitudes over the area of interest ranging from 95 to 100 miles.

Beginning with Rev 2, the satellite vehicle experienced a free drift condition in yaw, due to an open gyrocompassing loop in the yaw axis. Yaw angles ranged from 3-4 degrees on Rev 4 to an estimated 40-45 degrees on Rev 16. Photographic smear was noted at a minimum of 12 feet on Rev 4, and reached values in excess of 100 feet during the mission.

Revs 4 and 5 camera programs were carried out based on an incorrect early ephemeris, resulting in in-track errors of over 100 miles on these two Revs.

As a result of the above conditions, no programmed intelligence information was derived from this mission.

The command system operated generally very well; however, a few discrepancies in phasing roll motion and mirror movements with camera operating times were caused by the present practice of manually adjusting the computed camera programs prior to command generation.

Results of map-matching the photography were consistent with the calculated attitude anomalies, and expected in-track

errors caused by the non-linear drag condition experienced by the satellite vehicle. No stereo pairs were acquired after Rev 4.

The camera payload operated very well, with considerable decrease in the length of starting transients compared with previous missions. Film velocity was generally within 1 percent of program. A slight out-of-focus condition was noted in the time track; a few density streaks caused by dirt in the camera slit were noted, but scratches formerly caused by a "wobble" roller were no longer in evidence.

Recovery on Rev 34 was nominal and precise, utilizing the Orbital Control Vehicle's primary recovery system for the first time in this program.

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

APPENDIX A

COMMAND INFORMATION

Rev D04

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
001	3092.9	40.0	61 25N	159 08E	61 25N	159 08E	2.4671	2.4800*	0°	1.5	40.4
PBM-A											
PBM-B											
PBM-C											
002	3172.3	11.0	56 06N	156 50E	56 05N	156 50E	2.3011	2.3060	15°F	2.0	40.4
PBM-A											
003	3187.6	11.7	55 04N	156 27E	55 04N	156 27E	2.2783	2.2850	15°A	1.5	41.1
PBM-A											

Note: * Film velocities measured were within 1/2 percent of commanded velocities; therefore, only a sampling is registered on these sheets.

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

BYE 24553-64

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

PHOTO-MAP POSITIONING

Rev D04

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
001					½E/108S			3.4	
PBM-A	204	06	14.5N	1.6W					5700
PBM-B	186	00	11.5N	6.7W					5700
PBM-C			13.1N	1.0W					6000
002					1 1/2E/108S			3.2	
PBM-A			14.3N	1.6E					5400
003					3E/115S			3.4	
PBM-A			13.3N	6.2W					5400

TOP SECRET - GAMBIT

A-2

Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

PHOTOGRAPHIC EVALUATION

Rev D04

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001	.46	1.74		19.3	97.62	1.90
002	.50	1.72		24.9	24.44	0.00
003	.61	1.70		24.8	25.79	0.00

Approved for Release: 2018/09/11 C05103023

COMMAND INFORMATION

Rev D05

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mir-ror Pos.	Cra Deg.	Obliq Angle
001	8563.6	5.8	49 52N	132 40E	49 51N	132 40E	2.2783	2.2840	15°F	2.5	41.1
PBM-A											
PBM-B											
002	8573.1	6.9	49 14N	132 29E	49 12N	132 28E	2.3708	2.3730	15°F	2.5	39.0
PBM-A											
PBM-B											
003	8589.5	6.9			48 06N	132 09E	2.3011	2.3010	15°A	2.5	39.0
PBM-A											
PBM-B											
004	8602.4	6.9	47 15N	131 55E	47 13N	131 55E	2.8359	2.8380	15°F	2.5	24.1
PBM											
005	8616.9	7.6	46 16N	131 39E	46 14N	131 39E	2.9510	2.9490	15°F	2.5	19.9
PBM-A											
PBM-B											

TOP SECRET GAMBIT

A-4

Handle Via BYEMAN Controls Only

Handle Via BYEMAN Controls Only

Rev 085 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
006	8629.8	7.6			45 22N	131 25E	2.8929	2.8950	15°A	2.5	19.9
PBM-A											
PBM-B											
007	8688.5	15.0	41 25N	130 26E	41 23N	130 26E	2.6982	2.7010	0°	2.0	-40.4
PBM-A											
PBM-B											
PBM-C											
008	9242.1	6.9	03 36N	123 32E	03 33N	123 32E	3.2275	3.2300	15°F	3.5	- 9.2
009	9254.3	6.9			02 43N	123 24E	3.2598	3.2620	15°A	3.5	- 9.2
010	9320.1	6.9	01 45S	122 41E	01 47S	122 41E	3.1326	3.1330	15°F	3.5	-17.0
011	9332.3	6.9			02 37S	122 33E	3.1639	3.1590	15°A	3.5	-17.0

PHOTO-MAP POSITIONING

Rev D05

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
001					Approx. 143S				
PBM-A	192	30							6000
PBM-B									6000
002					Approx. 141S				600
PBM-A	199	00							600
PBM-B									600
003					Approx. 139S				
PBM-A	192	48							2500
PBM-B									600
004					Approx. 145S				
PBM									
005					Approx. 146S			9.4	
PBM-A	196	48							1000
PBM-B									1000

TOP SECRET GAMBIT

Handle Via BYEMAN Controls Only

A-6

Rev D05 (Contd)

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
006					Approx. 146S				
PBM-A	192	36		7.9W					500
PBM-B				8.6W					1000
007					Approx. 143S				
PBM-A	181	36		12.2E					500
PBM-B	212	06		15.2E					500
PBM-C				5.5E					500
008									
THRU									
010									
PBM									
011					101S/1.0W				
PBM			23.0S	11.0E					5000

PHOTOGRAPHIC EVALUATION

Rev D05

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001	.72	1.92		30.8	12.47	1.92
002	1.20	1.90		31.4	15.64	0.00
003	1.30	1.94		31.4	15.37	0.00
004	.66	1.88		33.0	18.74	1.71
005	.99	1.82		33.8	21.51	0.00
006	.82	1.82		33.8	21.43	1.67
007	.58	1.90		37.1	39.53	1.68
008				66.7	21.18	1.96
009				66.7	21.87	2.04
010				68.3	20.55	2.16
011	.91	1.51		68.3	21.11	2.23

A-8
Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

COMMAND INFORMATION

Rev DOG

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
001	13665.4	6.9	63 05N	115 50E	63 04N	115 50E	2.7252	2.7270	15°F	1.0	-26.2
PBM-A											
002	13679.7	6.9			62 06N	115 19E	2.7525	2.7540	15°A	1.0	-26.2
PBM											
003	13803.0	8.3	53 51N	111 51E	53 50N	111 51E	2.4918	2.4950	15°F	2.0	34.0
PBM											
004	13818.7	8.3			52 47N	111 30E	2.4427	2.4400	15°A	2.0	34.0
PBM											
005	13827.5	6.2	52 12N	111 18E	52 11N	111 18E	2.5167	2.5220	15°F	2.0	33.3
PBM-A											
PBM-B											
006	13843.2	6.2			51 07N	110 58E	2.4671	2.4690	15°A	2.0	33.3
PBM-A											
PBM-B											

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

BYE 24553-64

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

COMMAND INFORMATION

Rev D06 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Oblique Angle
007	13982.6	7.6	41 42N	108 25E	41 41N	108 25E	2.6189	2.6150	15°F	2.5	31.9
PBM											
008	13997.6	7.6			40 39N	108 11E	2.5419	2.5390	15°A	2.5	31.9
PBM											
009	14031.9	6.9	38 21N	107 39E	38 20N	107 39E	3.1955	3.2020	15°F	3.0	0
PBM											
010	14044.1	6.9			37 30N	107 28E	3.1955	3.1940	15°A	3.0	0
PBM											
011	14079.1	7.6	35 08N	106 58E	35 07N	106 58E	2.5673	2.5730	15°F	3.0	34.0
PBM-A											
PBM-B											
012	14094.1	7.6			34 05N	106 45E	2.4918	2.4910	15°A	3.0	34.0
PBM-A											
PBM-B											

COMMAND INFORMATION

Rev D06 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
013	14119.6	6.9	32 32N	106 24E	32 21N	106 24E	3.0708	3.0708	15°F	3.0	-17.7
PBM											
014	14131.8	6.9			31 31N	106 14E	3.1326	3.1330	15°A	3.0	-17.7
PBM											
015	14145.5	6.9	30 36N	106 04E	30 35N	106 03E	3.1955	3.2000	15°F	3.0	3.5
PBM-A											
PBM-B											
016	14157.7	6.9			29 45N	105 54E	3.1955	3.1940	15°A	3.0	3.5
PBM-A											
PBM-B											
017	14174.8	4.6	28 37N	105 41E	28 35N	105 41E	3.1955	3.1930	15°A	3.0	-11.3
PBM											
018	14551.1	50.0	02 52N	101 20E	02 50N	101 20E	3.1015	3.0990	0°	3.0	-27.7
PBM											

PHOTO-MAP POSITIONING

Rev D06

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
001					2.8N/0.5W			16.1	
PBM-A	None		14.0N	11.8E					15000
002					3.5N/1.8E				
PBM									
003					6.5N/0				
PBM			24.0N	4.0E					5000
004					8.2N/2.2				
PBM			17.0N	16.0W					5000
005					3.6N/1.6W			16.2	
PBM-A	200	18	25.0N	5.0E					850
PBM-B			19.5N	4.5E					850
006					5.5N/1.1E				
PBM-A	191	30	19.2N	16.0W					4000
PBM-B			21.6N	16.1W					4000

TOP SECRET GAMBIT

A-12

Handle Via BYEMAN Controls Only

PHOTO-MAP POSITIONING

Rev D06 (Contd)

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
007									
PBM									
008									
PBM									
009					11E/6.3S				
PBM			6.5N	1.5W					15000
010					14E/6.3S				
PBM			1.0S	8.5W					15000
011					6N/0.8E				
PBM-A	183	06	27.9N	3.2E					15000
PBM-B			28.0N	5.4E					15000
012					5.5N/2.5W				
PBM-A	191	00	23.6N	14.5W					15000
PBM-B			22.2N	14.8W					15000

PHOTO-MAP POSITIONING

Rev D06 (Contd)

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
013									
PBM									
014									
PBM									
015					7N/1W				
PBM-A	183	30	5.2N	5.6E					3000
PBM-B			7.8N	6.9E					3000
016					7N/2E				
PBM-A	192	30	5.1S	8.5W					3000
PBM-B			10.5S	9.4W					3000
017					3.5N/0.6W				
PBM			3.7S	7.8W					3000
018									
PBM									

TOP SECRET - GAMBIT

A-14

Handle Via BYEMAN Controls Only

PHOTOGRAPHIC EVALUATION

Rev D06

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001	.44	1.84		17.5	17.79	0.00
002	.69	1.80		17.5	18.26	0.00
003	.70	2.10		27.0	19.74	0.00
004	.74	2.10		27.0	19.66	0.00
005	.60	2.04		28.5	15.03	0.00
006	.58	1.98		28.5	14.66	0.00
007	1.20	2.32		38.2	18.97	0.00
008	1.00	2.28		38.3	18.64	0.00
009	.57	1.50		40.8	20.98	0.00
010	.64	1.50		40.8	21.38	0.00
011	.56	2.07		44.2	18.77	0.00
012	1.07	2.12		45.9	18.40	0.00
013	--	--		45.9	20.12	2.28
014	--	--		47.7	20.83	2.22

PHOTOGRAPHIC EVALUATION

Rev D06 (Contd)

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
015	.58	1.34		47.7	20.87	2.26
016	.72	1.38		48.5	21.20	2.32
017	.66	1.30		48.5	13.51	2.35
018				66.3	153.69	2.27

Approved for Release: 2018/09/11 C05103023
Handle Via BYEMAN
Controls Only

COMMAND INFORMATION

Rev 007

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
001	18816.2	8.3	72 46N	101 38E	72 43N	101 34E	2.8359	2.8350	15°F	1.0	16.3
PBM											
002	18829.8	8.3			71 50N	100 32E	2.8078	2.8107	15°A	1.0	16.3
PBM											
003	19022.9	4.6	59 08N	91 49E	59 04N	91 48E	3.0404	3.0350	15°F	2.0	5.7
PBM											
004	19051.2	6.2	57 14N	91 02E	57 10N	91 00E	2.8642	2.8550	15°F	2.0	19.9
PBM											
005	19064.8	6.2			56 15N	90 39E	2.8359	2.8350	15°A	2.0	19.9
PBM											
006	19096.1	10.0	54 13N	89 54E	54 09N	89 53E	2.8078		0°	2.0	30.5
PBM-A											
PBM-B											
007	19239.4	7.6	44 31N	87 02E	44 27E	87 01E	2.9805		15°F	2.5	17.0
PBM											

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

BYE 24553-84

TOP SECRET - GAMBIT

A-17

Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

COMMAND INFORMATION

Rev D07 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Cross Deg.	Oblique Angle
008	19252.3	7.6			43 35N	86 48E	3.0404		15°A	2.5	17.0
PBM											
009	19287.7	6.9	41 15N	86 14E	41 11N	86 13E	3.1639		15°F	2.5	- 5.7
PBM											
010	19299.9	6.9			40 21N	86 01E	3.1955		15°A	2.5	- 5.7
PBM											
011	19530.2	50.0	24 43N	82 53E	24 39N	82 52E	3.4949		0°	3.0	12.1
PBM-A											
PBM-B											
PBM-C											
PBM-D											
PBM-E											
PBM-F											
PBM-G											

TOP SECRET - GAMBIT

A-18

Handle Via BYEMAN Controls Only

Controls Only

PHOTO-MAP POSITIONING

Rev D07

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
001					8.0N/0.4E				
PBM			18.2N	8.8E					6000
002					8.2N/1.6E				
PBM			14.2N	16.3W					5200
003					6.0N/1.0W				
PBM			16.0W	9.0E					15000
004									
PBM									
005									
PBM									
006					6.8S/1.3W			20.7	
PBM-A	194	00	31.07W	7.8W					2600
PBM-B			31.0W	7.8W					2200

PHOTO-MAP POSITIONING

Rev D07 (Contd)

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy
	Deg	Min	X	Y		P	R	Y	± Ft
007									
THRU									
010									
PBM									
011					7.0M/2.0W			20.5	
PBM-A	189	42	14.4W	3.7W					600
PBM-B			16.1W	3.8W					600
PBM-C			14.0W	4.0W					
PBM-D	189	42	15.8W	4.0W					
PBM-E			13.9W	4.0W					
PBM-F			15.0W	4.0W					
PBM-G			16.3W	4.0W					

Approved for Release: 2018/09/11 C05103023

PHOTOGRAPHIC EVALUATION

Rev D07

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001	.88	1.38		8.4	22.49	0.00
002	.86	1.51		8.4	22.62	0.00
003	.84	2.00		21.6	12.91	0.00
004	.88	1.90		23.6	16.71	2.10
005	.86	1.92		23.6	16.88	2.11
006	.81	2.16		26.2	27.01	0.00
007	.82	2.16		35.5	21.49	0.00
008	.85	2.15		35.5	22.36	0.00
009	1.15	1.68		38.2	20.62	0.00
010	1.12	1.66		38.2	21.22	0.00
011	.70	1.91		52.5	177.58	0.00

TOP SECRET · GAMBIT

A-21

Handle Via BYEMAN Controls Only

COMMAND INFORMATION

Rev D08

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mir-ror Pos.	Crab Deg.	Obliq Angle
001	24092.5	7.6	74 09N	81 25E	74 01N	81 14E	2.9510	2.9540	15°F	1.0	- 2.8
PBM-A											
PBM-B											
002	24105.4	7.6			73 12N	80 06E	2.9510	2.9550	15°A	1.0	- 2.8
PBM											
003	24417.9	7.6	52 36N	67 16E	52 28N	67 14E	2.9510	2.9450	15°F	2.5	15.6
PBM-A											
PBM-B											
004	24430.8	7.6			51 36N	66 57E	2.9218	2.9200	15°A	2.5	15.6
PBM											
005	24458.4	5.6	49 52N	66 25E	49 44N	66 23E	2.7525	2.7490	15°F	2.0	-29.8
PBM											
006	24486.4	8.0	47 59N	65 52E	47 50N	65 50E	3.0708	3.0605	15°F	2.5	-11.3
PBM											

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

BYE 24486-80

Approved for Release: 2018/09/11 C05103023

COMMAND INFORMATION

Rev D08 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
007	24506.9	7.6	46 35N	65 29E	46 27N	65 27E	2.4918	2.4930	15°F	1.5	-37.6
PBM-A											
PBM-B											
008	24521.9	7.6			45 26N	65 11E	2.5673	2.5650	15°A	1.5	-37.6
PBM-A											
PBM-B											
009	24594.7	8.0	40 38N	64 00E	40 29N	63 59E	2.3241	2.3170	15°F	2.5	39.7
PBM											
010	24629.9	7.6	38 14N	63 28E	38 05N	63 26E	2.5167	2.5170	15°F	2.0	-38.3
PBM											
011	24644.9	7.6			37 04N	63 13E	2.5929	2.5920	15°A	2.0	-38.3
PBM											
012	24664.5	6.9	35 53N	62 57E	35 44N	62 56E	3.1015	3.1040	15°F	2.5	-16.3
PBM											
013	24676.7	6.9			34 54E	62 46E	3.1326	3.1420	15°A	2.5	-16.3
PBM											

PHOTO-MAP POSITIONING

Rev D08

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
001					9.3N/0.4E				
PBM-A	199	00	12.9N	11.7E					7000
PBM-B			10.6N	13.7E					7000
002									
PBM									
003					10N/1.0W				
PBM-A	185	12	31.0N	7.5E					4500
PBM-B			31.0N	7.0E					4500
004					9.4N/1.9E			29.0	
PBM			19.1N	20.6W					700
005									
PBM									
006					2N/0.1W				
PBM				16.0E					5000

~~TOP SECRET~~ GAMBIT

A-24

Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

PHOTO-MAP POSITIONING

Rev D08 (Comtd)

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
007					10.7N/1.2E			29.7	
PBM-A	189	36	27.6S	27.0E					5000
PBM-B			26.0S	26.8E					5000
008					9.6N/1.8E				
PBM-A	190	36		5.0W					5000
PBM-B				5.3W					5000
009									
THRU									
013									
PBM									

Note: This information based on Best Fit Ephemeris Revs 4-8.

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

BYE 24551-68

Approved for Release: 2018/09/11 C05103023

PHOTO-MAP POSITIONING

Rev D08

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
001					2.8N/0.4E				
PBM-A	199	00	4.3N	11.7E					7000
PBM-B			2.0N	13.7E					7000
002									
PBM									
003					3.0N/0.6W				
PBM-A	185	12	24.0N	7.5E					4500
PBM-B			23.0N	7.0E					4500
004					2.8N/2.3E				
PBM-A			13.0N	20.2W					700
005									
PBM									
006					1.5N/0.5W				
PBM-A				16.0E					5000

~~TOP SECRET~~ - GAMBIT

A-26

Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

PHOTO-MAP POSITIONING

Rev D08 (Contd)

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
007					2.3N/0.9W				
PBM-A	189	36	33.6S	27.9E					5000
PBM-B			33.3S	28.2E					5000
008					0.9N/1.6E				
PBM-A	190	36		5.0W					5000
PBM-B				5.3W					5000
009									
THRU									
013									
PBM									

Note: This information based on Best Fit Ephemeris Revs 8-11.

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

PHOTOGRAPHIC EVALUATION

Rev D08

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001	.72	1.35		6.8	21.81	0.00
002	.59	1.16		6.8	21.66	1.21
003	1.05	1.96		27.9	21.36	0.00
004	.99	1.99		27.9	21.54	0.00
005	1.42	2.03		29.1	14.38	0.00
006	1.60	2.00		31.9	23.51	0.00
007	.85	1.86		33.0	17.98	0.00
008	1.18	1.95		33.0	--	0.00
009	1.40	2.13		39.5	--	2.12
010	--	--		40.5	--	2.00
011	--	--		40.5	--	2.05
012	--	--		42.9	--	2.10
013	--	--		42.8	--	2.00

TOP SECRET GAMBIT

Handle Via BYEMAN Controls Only

A-28

A-28

Controls Only

Approved for Release: 2018/09/11 C05103023

COMMAND INFORMATION

Rev 009

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
001	29480.1	7.6	68 20N	53 04E	68 18N	153 03E	2.9805	2.9810	15°F	1.5	5.7
PBM											
002	29493.0	7.6			67 27N	52 23E	2.9805	2.9810	15°A	1.5	5.7
PBM-A											
PBM-B											
003	29604.1	8.5	60 06N	48 06E	60 04N	48 05E	2.7525	2.7580	15°F	2.0	24.1
PBM											
004	29616.6	8.5	59 16N	47 43E	59 14N	47 43E	2.7525	2.7800	15°A	1.5	24.1
PBM											
005	29641.7	9.7	57 35N	47 01E	57 33N	47 00E	2.7800	2.7800	15°F	2.0	23.4
PBM-A											
PBM-B											
006	29656.0	8.0	56 38N	46 38E	56 35N	46 37E	2.7800	2.7830	15°A	1.5	23.4
PBM											

TOP SECRET · GAMBIT
A-29
Handle Via BYEMAN Controls Only

COMMAND INFORMATION

Rev D09 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Creep Deg.	Oblique Angle
007	29674.0	7.6	55 25N	46 10E	55 23N	46 10E	2.2783	2.2740	15°F	2.0	39.7
PBM-A											
PBM-B											
008	29691.1	7.6			54 14N	45 45E	2.2334	2.2300	15°A	2.0	39.7
PBM-A											
PBM-B											
009	29706.7	11.1	53 13N	45 24E	53 10N	45 23E	2.4185	2.4210	15°F	2.0	36.9
PBM-A											
PBM-B											
010	29723.1	11.1			52 04N	45 01E	2.3474	2.3940	15°A	2.0	36.9
PBM-A											
PBM-B											
011	29737.7	6.6	51 07N	44 43E	51 05N	44 43E	2.7525	2.7480	15°A	2.0	25.5
PBM-A											
PBM-B											

Handle Via BYEMAN Controls Only

Handle Via BYEMAN Controls Only

BYE [redacted]

COMMAND INFORMATION

Rev D09 (Contd)

Acc No.	System Time Sec	Buret Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Ephemeris Lat Deg Min	Best Ephemeris Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Oblig Angle
012	29756.4	10.7	49 51N	44 20E	49 49N	44 20E	2.3011	2.3040	15°F	2.0	38.7
PBM											
013	29771.7	11.4	48 49N	44 02E	48 47N	44 01E	2.2783	2.2790	15°A	1.5	40.4
PBM											
014	29829.3	5.9	44 55N	42 58E	44 53N	42 58E	2.3708	2.3690	15°F	2.5	39.0
PBM											
015	29863.8	9.0	42 35N	42 23E	42 32N	42 23E	3.1015	3.1050	15°F	2.5	-12.8
PBM											
016	29876.0	9.0			41 42N	42 11E	3.1326	3.1270	15°A	2.5	-12.8
PBM											

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

PHOTO-MAP POSITIONING

Rev D09

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
001									
PBM									
002					4.0N/0.4E				
PBM-A	189	48	7.4S	18.3W					5500
PBM-B			12.2N	19.6W					5500
003									
PBM									
004									
PBM									
005					3.2N/1.3W				
PBM-A	194	00	38.5N	6.1E					3000
PBM-B			14.1N	5.7E					3000
006					2.6N/1.6E				
PBM-A			22.6N	28.2W					3000

Rev D09 (Contd)

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
007					4.1N/1.3E				
PBM-A	192	18	64.0W	1.0E					900
PBM-B			62.4W	1.9E					1800
008					5.6N/3.8E				
PBM-A	195	24	47.6W	40.7W					450
PBM-B			39.4W	41.3W					450
009					5.4N/0				
PBM-A	195	24	54.2W	3.2W					540
PBM-B			55.4W	1.3W					540
010					7.4N/2.4E				
PBM-A	190	12	45.0W	39.6W					540
PBM-B			34.7W	37.9W					630
011					7.2S/1.1E				
PBM-A	190	30	23.3W	28.8W					630
PBM-B			19.8W	28.7W					630

PHOTO-MAP POSITIONING

Rev D09 (Contd)

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Alt Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
012 THRU 016 PBM									

PHOTOGRAPHIC EVALUATION

Rev D09

Acc. No.	Density Dmin	Density Dmax	Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
001	1.04	1.37		12.7	21.6	0.00
002	.95	1.94		12.7	21.965	0.00
003	.57	1.86		20.9	22.450	1.95
004	.56	1.94		20.8	22.541	2.09
005	.67	2.10		23.3	25.715	0.00
006	.62	2.10		23.3	21.430	0.00
007	1.04	2.18		25.7	16.539	0.00
008	.68	2.16		25.7	16.429	0.00
009	.68	2.18		27.7	26.038	0.00
010	.75	2.12		28.7	25.420	0.00
011	.80	2.06		28.6	17.300	0.00
012	2.08	2.10		30.9	--	0.00
013	1.28	2.09		30.9	--	0.00
014	--	--		35.5	--	2.11

PHOTOGRAPHIC EVALUATION

Rev D09

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
015	.90	2.08		36.9	--	2.05
016	--	--		36.9	--	1.98

COMMAND INFORMATION

Rev D10

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
001	34752.9	8.3	69 54N	32 22E	69 53N	32 19E	2.8078		15°F	1.5	19.1
PBM											
002	34766.5	8.3			69 00N	31 32E	2.7800		15°A	1.5	19.1
PBM											
003	34856.6	8.3	63 03N	27 32E	63 02N	27 30E	2.1463		15°F	1.5	42.5
PBM											
004	34874.4	8.3			61 51N	26 52E	2.1040		15°A	1.5	42.5
PBM											
005	34902.3	71.	60 00N	26 00E	59 59N	25 58E	2.8929		15°F	1.5	-19.1
PBM											
006	34914.0	71.	59 13N	25 39E	59 12N	25 37E	2.9218		15°A	2.0	-19.1
PBM-A											
PBM-B											

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

COMMAND INFORMATION

Rev D10 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
007	34944.1	5.8	57 12N	24 48E	57 11N	24 46E	3.2275		0°	2.0	-14.9
PBM-A											
PBM-B											
008	34954.7	6.5	56 29N	24 31E	56 28N	24 30E	2.9218		15°F	1.5	-18.4
PBM-A											
PBM-B											
009	34980.1	10.0	54 47N	23 53E	54 45N	23 52E	2.5929		15°F	2.0	31.2
PBM											
010	34995.5	10.0	53 44N	23 31E	53 43N	23 30E	2.7252	3.2300	15°F	2.0	26.9
PBM											
011	35012.6	7.0	52 35N	23 08E	52 34N	23 07E	2.8642		15°F	2.5	21.3
PBM											
012	35031.7	7.0	51 18N	22 43E	51 16N	22 42E	2.5167		15°F	2.0	34.0
PBM											

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

Rev D10 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq. Angle
013	35048.3	8.0	50 11N	22 22E	50 09N	22 21E	2.6189		15°F	2.5	30.5
PBM											
014	35065.1	7.6	49 02N	22 02E	49 01N	22 01E	3.0103		15°F	2.5	12.8
PBM											
015	35078.0	7.6			48 09N	21 46E	2.9805		15°A	2.5	12.8
PBM											
016	35119.7	6.9	45 20N	21 01E	45 19N	21 00E	3.0708		15°F	2.5	-14.9
PBM											
017	35131.9	6.9			44 29N	20 47E	3.1015		15°A	2.5	-14.9
PBM											
018	35185.1	6.9	40 54N	19 56E	40 52N	19 55E	3.1326		15°F	2.5	-11.3
PBM											
019	35197.3	6.9			40 03N	19 43E	3.1639		15°A	2.5	-11.3
PBM											

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

BYE

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

PHOTO-MAP POSITIONING

Rev D10

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
001								32.8	
THRU								to	
005								33.0	
PBM									
006					1.1N/0.5W				
PBM-A	189	24	24.7S	10.1W					700
PBM-B			27.7S	9.4W					400
007					3.6N/0.9W				
PBM-A	182	48	15.3S	3.5E					900
PBM-B			20.1S	5.8E					400
008					3.1N/0.4W				
PBM-A	190	00	5.2S	23.5E					400
PBM-B			8.9S	24.1E					400
009									
THRU									
019									
PBM									

PHOTOGRAPHIC EVALUATION

Rev D10

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001	--	--		11.3	22.42	1.58
002	--	--		11.3	22.36	1.64
003	.61	1.67		18.5	16.95	1.88
004	.97	2.03		18.5	16.85	2.09
005	.52	1.92		20.6	19.43	0.00
006	.49	1.85		20.5	19.62	0.00
007	.40	1.89		22.9	17.41	0.00
008	.75	1.98		23.9	18.06	0.00
009	.97	2.06		26.1	25.09	2.14
010	1.23	2.13		27.0	25.61	2.15
011	--	--		28.0	19.08	2.10
012	--	--		29.5	16.80	2.23
013	--	--		30.5	20.10	2.24
014	--	--		31.2	21.90	2.23

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

Approved for Release: 2018/09/11 C05103023

PHOTOGRAPHIC EVALUATION

Rev D10 (Contd)

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
015	--	--		31.3	21.97	2.22
016	.50	1.20		34.4	20.09	1.56
017	.52	1.75		34.4	20.75	1.04
018	--	--		38.5	20.58	2.10
019	--	--		38.5	21.10	2.04

Approved for Release: 2018/09/11 C05103023

COMMAND INFORMATION

Rev D11

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
001	39813.4	8.0	83 32N	55 21E	83 31N	54 55E	3.1326	3.1330	0°	0	- 2.1
PBM											
002	39873.7	8.0	80 46N	32 29E	80 44N	32 15E	3.1326		0°	.5	- 3.5
PBM											
003	39921.9	8.0	78 00N	22 42E	77 57N	22 32E	3.1630		0°	.5	- 3.5
PBM											
004	39971.1	8.0	74 58N	16 27E	74 55N	16 21E	3.1955		0°	1.0	- 3.5
PBM											
005	40019.6	8.0	71 52N	12 17E	71 49N	12 12E	3.1955		0°	1.0	- 1.4
PBM											
006	40070.5	8.0	68 32N	09 06E	68 29N	09 03E	3.2275		0°	1.0	- 2.1
PBM											
007	40119.8	8.0	65 17N	06 46E	65 14N	06 43E	3.2598		0°	1.5	- .7
PBM											

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

Rev D11 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position		Best Epheremis		Film Velocity in./sec.		Mirror Pos.	Crab Deg.	Obliq Angle
			Lat Deg Min	Long Deg Min	Lat Deg Min	Long Deg Min	Command	Actual			
008	40176.1	8.0	61 32N	04 39E	61 29N	04 37E	3.2924		0°	1.5	0
PBM											
009	40617.0	6.9	31 42N	04 06W	31 38N	04 08W	2.6982		15°F	3.0	30.5
PBM											
010	40631.3	6.9			30 39N	04 19W	2.5929		15°A	3.0	30.5

PHOTO-MAP POSITIONING

Rev D11

Acc No.	Azimuth of Photo Center Deg	Azimuth of Photo Center Min	Predict to Actual (Miss Dist-NM) X	Predict to Actual (Miss Dist-NM) Y	Alm Error	Attitude Error (Deg) P	Attitude Error (Deg) R	Attitude Error (Deg) Y	Map Accuracy ± Ft
001								35.1	
THRU									
002									6000
PBM									
003					5.4W/0.5E				
PBM			3.6S	0.7E					
004									
THRU									
008									
PBM									
009					8.0W/0.5W				
PBM-A			19.2W	48.8W					5000
010									
PBM									

PHOTOGRAPHIC EVALUATION

Rev D11

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001				-2.4	23.82	0.00
002	.40	1.46		- .2	23.82	0.00
003	--	--		2.6	23.97	0.00
004	--	--		5.7	24.27	1.10
005	--	--		8.8	24.27	1.44
006	--	--		12.1	24.49	1.97
007	--	--		15.3	24.83	2.10
008	--	--		18.9	25.07	2.16
009	.64	1.40		47.3	17.55	0.00
010	.81	1.55		47.3	17.18	0.00

PHOTO-MAP POSITIONING

Rev D12

Acc No.	Attitude of Photo Center Deg	Attitude of Photo Center Min	Predict to Actual (Miss Dist-NM) X	Predict to Actual (Miss Dist-NM) Y	Alt Error	Attitude Error (Deg) P	Attitude Error (Deg) R	Attitude Error (Deg) Y	Map Accuracy ± Ft
001 THRU 006 PBM								35.9	
007 PBM 008 THRU 017 PBM			4.0N	5.0W	3.0N/0.8W			37.0	6000

PHOTOGRAPHIC EVALUATION

Rev D12

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001	--	--		18.5	15.07	2.02
002	--	--		19.4	15.19	1.82
003	--	--		23.2	15.33	1.92
004	.30	.31		27.9	15.32	2.15
005	--	--		32.6	15.59	2.20
006	.38	.36		37.2	15.58	2.34
007	.42	.43		41.7	15.72	2.22
008	.36	.34		46.0	15.72	2.12
009	--	--		50.3	15.72	2.28
010	.39	.40		54.3	15.59	2.30
011	.44	.45		58.2	15.59	2.18
012	.50	.52		61.7	15.59	0.80
013	.76	.79		64.8	15.58	2.10
014	--	--		67.2	15.60	2.30

A-40

PHOTOGRAPHIC EVALUATION

Rev D12 (Contd)

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
015	--	--		68.5	15.19	2.14
016	.72	.82		69.0	15.06	1.78
017	.68	.71		68.2	14.67	2.00

COMMAND INFORMATION

Rev D15

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
001	61546.7	5.5	48 34N	88 29W	48 34N	88 28W	2.9805		15°F	2.0	-20.6
PBM											
002	61559.6	5.5			47 42N	88 43W	3.0404		15°A	2.0	-20.6
PBM											
003	61587.2	4.8	45 49N	89 14W	45 49N	89 13W	3.1639	3.1640	15°F	2.5	- 5.7
PBM											
004	61599.4	4.8			45 00N	89 26W	3.1955		15°A	2.5	- 5.7
PBM											
005	61624.3	2.5	43 18N	89 52W	43 18N	89 52W	3.0708		15°F	2.5	14.2
PBM											
006	61630.6	2.5	42 52N	89 59W	42 53N	89 58W	3.3253		0°	2.5	11.3
PBM											
007	61636.7	2.5	42 28N	90 05W	42 28N	90 04W	3.1326		15°A	2.5	7.8
PBM											

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

BYE 24553-68

A-60

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

COMMAND INFORMATION

Rev D15 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
008	61688.6	5.5	38 56N	90 54W	38 56N	90 53W	3.0708		15°F	3.0	14.9
PBM-A											
PBM-B											
PBM-C											
009	61701.5	5.5			38 03N	91 05W	3.0404		15°A	3.0	14.9
PBM-A											
PBM-B											
010	61783.2	10.0	32 29N	92 15W	32 29N	92 14W	3.4949	3.4950	15°F	2.5	-16.3
PBM											
011	61804.6	2.5	31 02N	92 32W	31 02N	92 32W	3.4949		0°	3.0	- 2.8

TOP SECRET - GAMBIT

Handle Via BYEMAN Controls Only

Handle Via BYEMAN Controls Only

TOP SECRET - GAMBIT

Approved for Release: 2018/09/11 C05103023

PHOTO-MAP POSITIONING

Rev D15

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
001					23N/1.0E				
PBM									
002					26N/2.5E				
PBM									
003					21.8N/0.2W			37.8	
PBM									
004					23.2N/1.9E			40.0	
PBM									
005					22.4N/0				
PBM									
006					22.0N/0.9			43,5	
PBM									
007					22.4N/1.1E				
PBM									

PHOTO-MAP POSITIONING

Rev D15 (Contd)

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Aim Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Min	X	Y		P	R	Y	
008					23.2N/0.2E				
PBM-A	186	00	30.6N	7.1					600
PBM-B	195	00	28.4N	7.8					600
PBM-C			22.8N	7.2					600
009					24.8N/2.2E			46.9	
PBM-A	195	36	11.3N	30.8W					600
PBM-B			13.4N	31.5W					600
010					49N/18.5E				
PBM									
011					22.3N/0.5W				
PBM									

PHOTOGRAPHIC EVALUATION

Rev D15

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001	--	--		31.4	15.41	2.14
002	--	--		31.4	16.09	2.10
003	.76	1.52		34.1	13.97	2.16
004	.82	2.18		34.1	14.47	2.28
005	.43	1.22		36.6	6.29	2.16
006	.37	1.22		36.6	7.12	1.86
007	.54	1.52		36.6	6.71	0.00
008	.50	1.94		40.6	15.71	0.00
009	.58	1.93		40.6	15.9	0.00
010	--	--		45.9	31.45	2.24
011	--	--		47.0	7.33	2.24

COMMAND INFORMATION

Rev D16

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
001	66914.8	2.5	43 28N	111 53W	43 27N	111 53W	3.1955		15°F	2.5	- 7.1
PBM											
002	66920.8	2.5	43 04N	111 59W	43 02N	111 59W	3.4260	3.4250	0°	2.5	- 6.4
PBM											
003	66926.8	2.5	42 39N	112 05W	42 38N	112 05W	3.1955		15°A	2.5	- 5.7
PBM											
004	66941.0	3.4	41 41N	112 19W	41 40N	112 19W	3.1955		15°F	2.5	- 7.1
PBM											
005	66952.3	5.5	40 55N	112 30W	40 54N	112 30W	3.0708		15°F	3.0	14.2
PBM											
006	66965.2	5.5			40 01N	112 42W	3.0404		15°A	3.0	14.2
PBM											
007	67064.1	4.0	33 19N	114 09W	33 17N	114 08W	3.4949		0°	3.0	- 4.3
PBM											

Rev D16 (Contd)

Acc No.	System Time Sec	Burst Time Sec	Command Position Lat Deg Min	Command Position Long Deg Min	Best Epheremis Lat Deg Min	Best Epheremis Long Deg Min	Film Velocity in./sec. Command	Film Velocity in./sec. Actual	Mirror Pos.	Crab Deg.	Obliq Angle
008	67079.0	4.5	32 18N	114 21W	32 16N	114 21W	3.4260		0°	3.0	-13.5
PBM											
009	67085.0	4.5	31 53N	114 26W	31 51N	114 25W	3.1955		15°A	3.0	-12.8
PBM											
010	67104.0	3.0	30 35N	114 41W	30 34N	114 40W	3.4603		0°	3.0	-11.3
PBM											
011	67145.2	4.8	27 46N	115 13W	27 45N	115 12W	3.2275		15°F	3.0	6.4
PBM											
012	67157.4	4.8			26 55N	115 22W	3.1955		15°A	3.0	6.4
PBM											

TOP SECRET · GAMBIT
Handle Via BYEMAN Controls Only

Approved for Release: 2018/09/11 C05103023

~~TOP SECRET~~ - GAMBIT

PHOTO-MAP POSITIONING

Rev D16

Acc No.	Azimuth of Photo Center		Predict to Actual (Miss Dist-NM)		Alt Error	Attitude Error (Deg)			Map Accuracy ± Ft
	Deg	Mils	X	Y		P	R	Y	
Time Tracks Not Available for Geo Plots									

PHOTOGRAPHIC EVALUATION

Rev D16

Acc. No.	Density		Brightness Range	Sun Angle	Total Frame Length	Cloud Dmax
	Dmin	Dmax				
001	--	--		36.3	--	2.12
002	.85	2.13		36.3	--	2.14
003	1.29	2.17		36.3	--	2.20
004	.48	2.22		37.9	--	0.00
005	.47	2.30		38.9	--	0.00
006	.60	2.28		38.9	--	0.00
007	.36	1.83		45.0	--	0.00
008	.43	1.70		45.8	--	0.00
009	.77	1.90		45.8	--	1.42
010	.40	1.39		47.3	--	0.00
011	--	--		50.3	--	2.06
012	--	--		50.3	--	2.00

A-88

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

APPENDIX B

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

PHOTOGRAPHS

The following series of photographs are 20X enlargements taken from each pass to illustrate the effects of the yaw angles encountered.

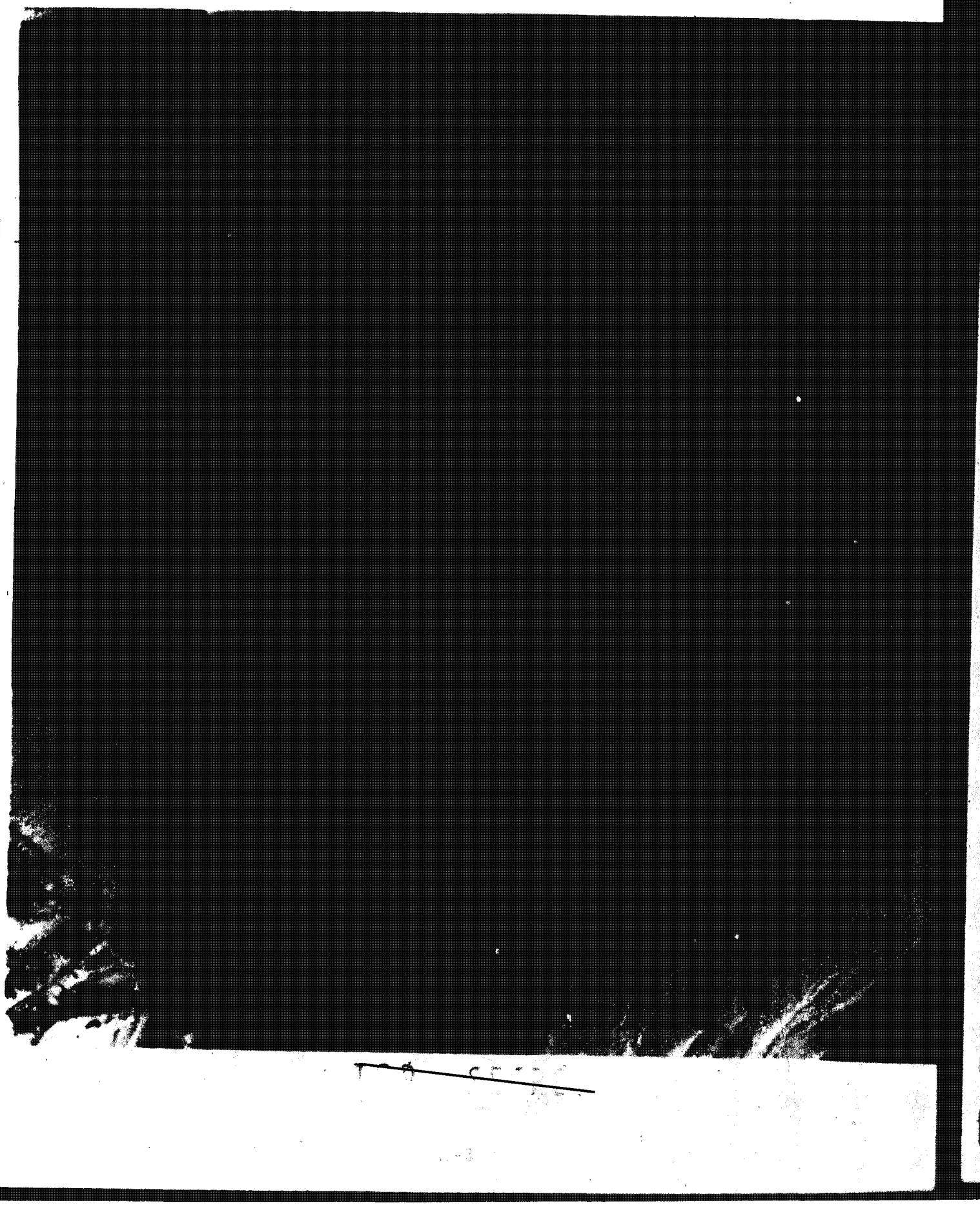
Rev DO4, Frame 002

Yaw 3.4°, Mirror 15° Fwd.

44° Obliquity, Smear 12 ft.

~~TOP SECRET~~

BYE 24553-64



Rev 005, Frame 005

Yaw 9.4°, Mirror 15° Fwd.

26° Obliquity, Smear 21 ft.

[redacted]

Rev 006, Frame 001

Yaw 16.1°, Mirror 15° Fwd.

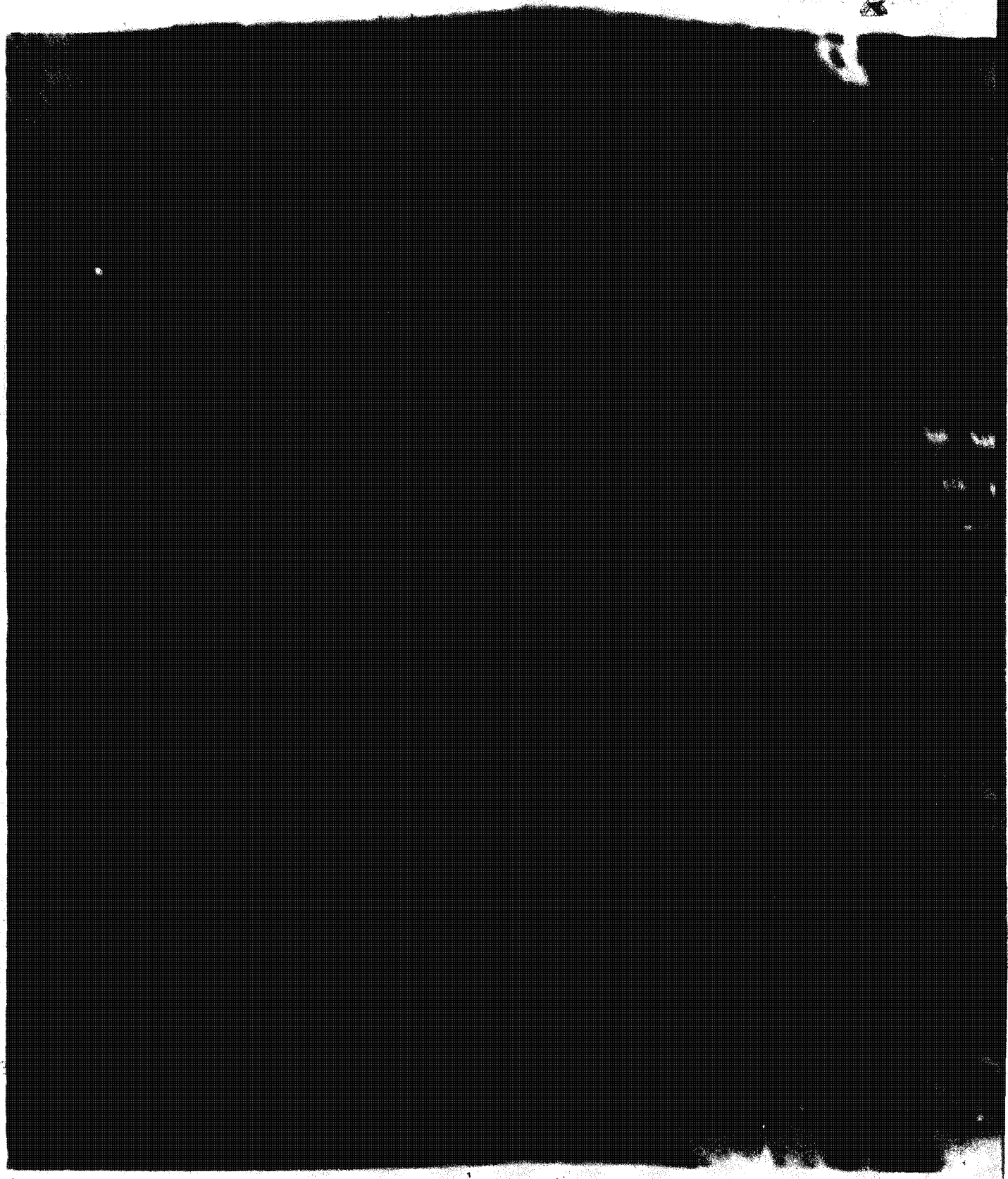
29° Obliquity, Smear 41 ft.

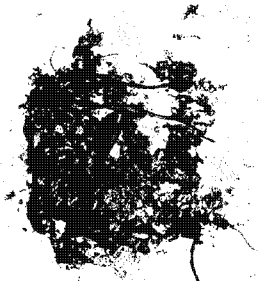
[redacted]

Rev D07, Frame 011

Yaw 20.5°, Mirror 0°

15° Obliquity, Smear 37 ft.





[redacted]

[redacted]

[redacted]

[redacted]

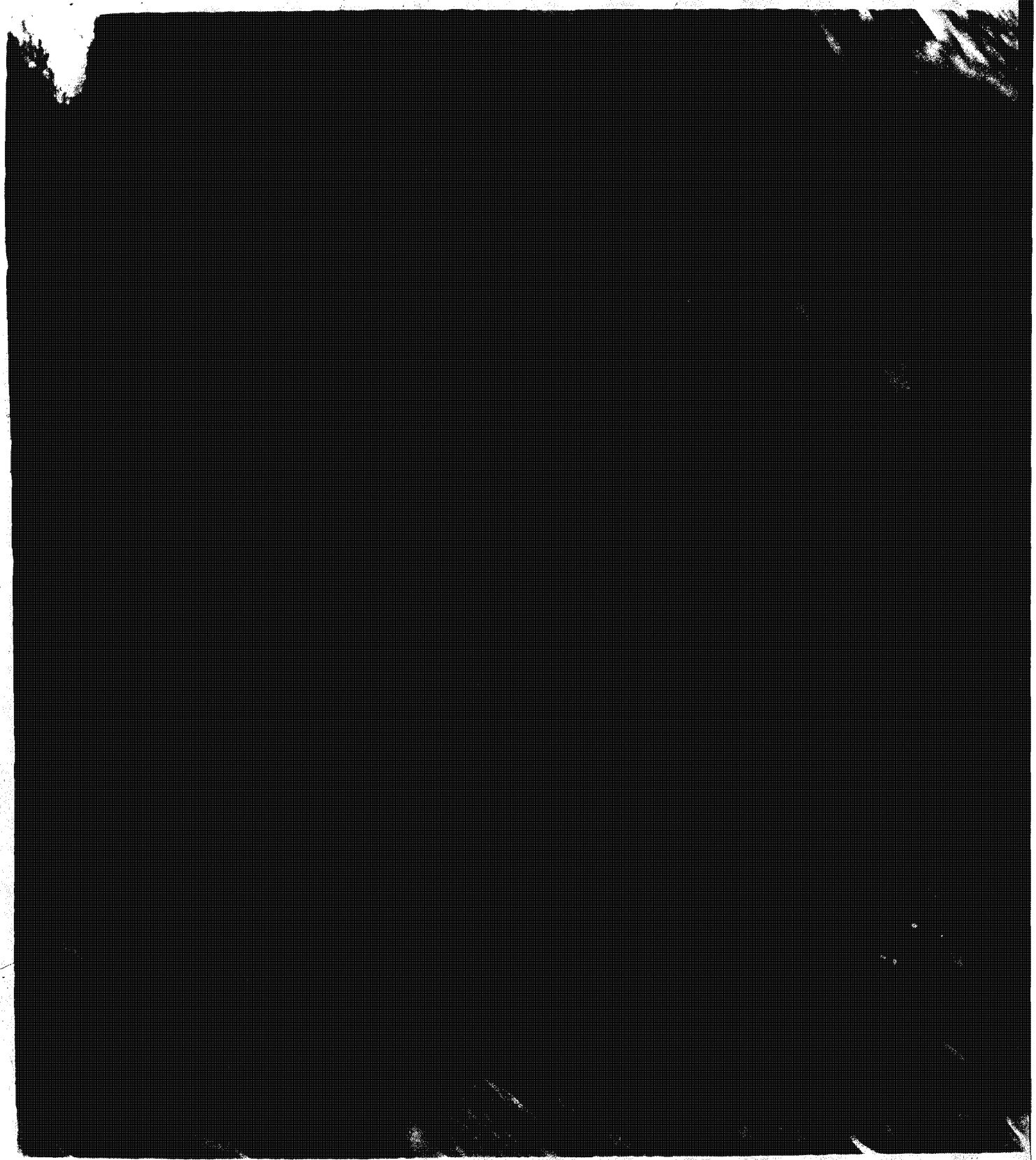
TOP SECRET

[redacted]

Rev DO8, Frame 007

Yaw 29.8°, Mirror 15° Fwd.

38° Obliquity, Smear 99 ft. (Note roll motion)



Rev D09, Frame 010

Yaw 33°, Mirror 15° Aft

41° Obliquity, Smear 110 ft.

BYE 24553-64

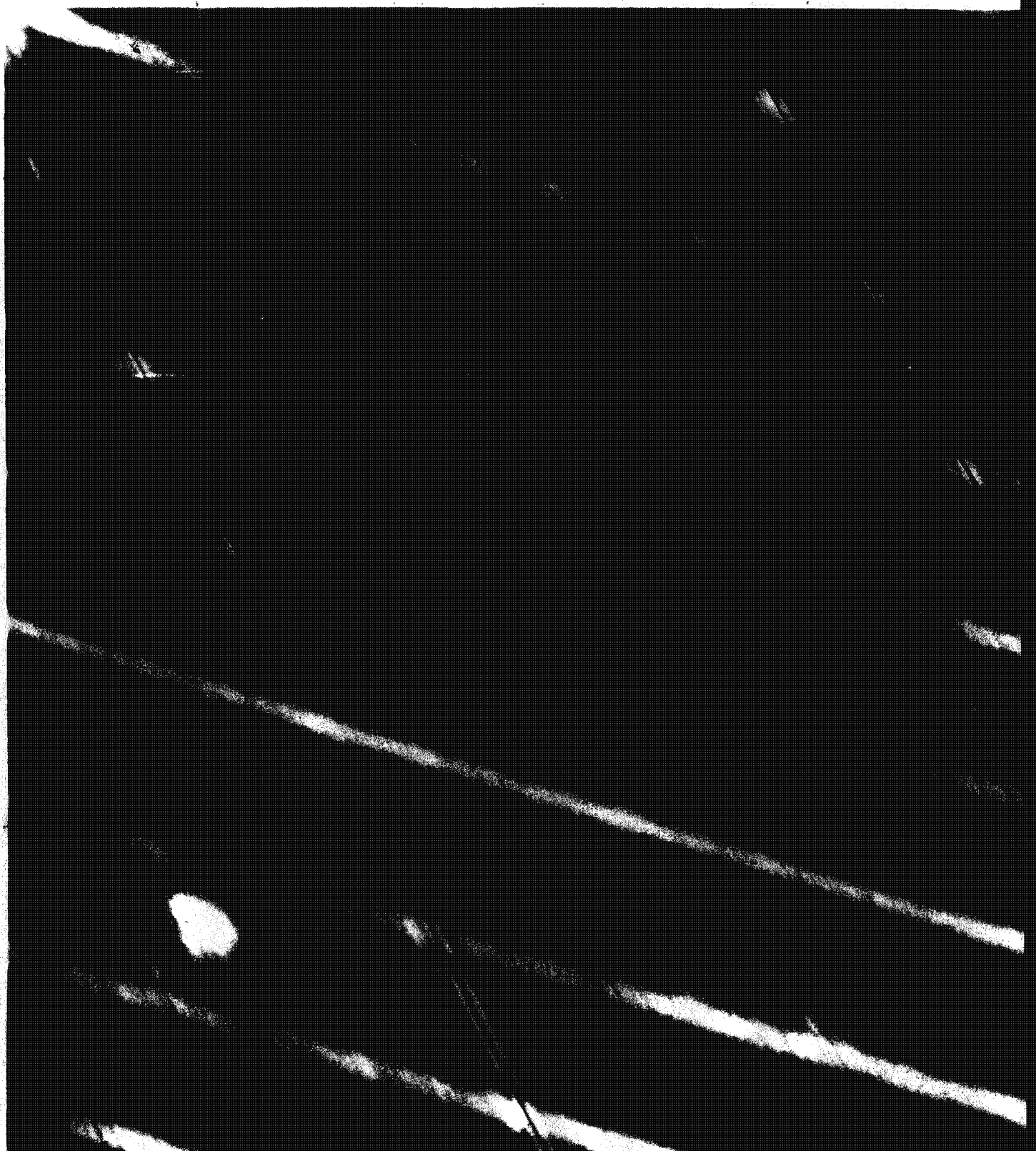
102

GAMBIT

Rev D10, Frame 005

Yaw 33°, Mirror 15° Fwd.

23° Obliquity, Smear 75 ft.



TOP SECRET
CAMEL

Rev D12, Frame 007

Yaw 37°, Mirror 0°

5° Obliquity, Smear 60 ft.

Wave white caps smeared

Rev D15, Frame 004

Yaw 43.5°, Mirror 15° Fwd.

15° Obliquity, Smear 77 ft.

Rev 216, Frame 004

Yaw 43.5°, Mirror 15° Fwd.

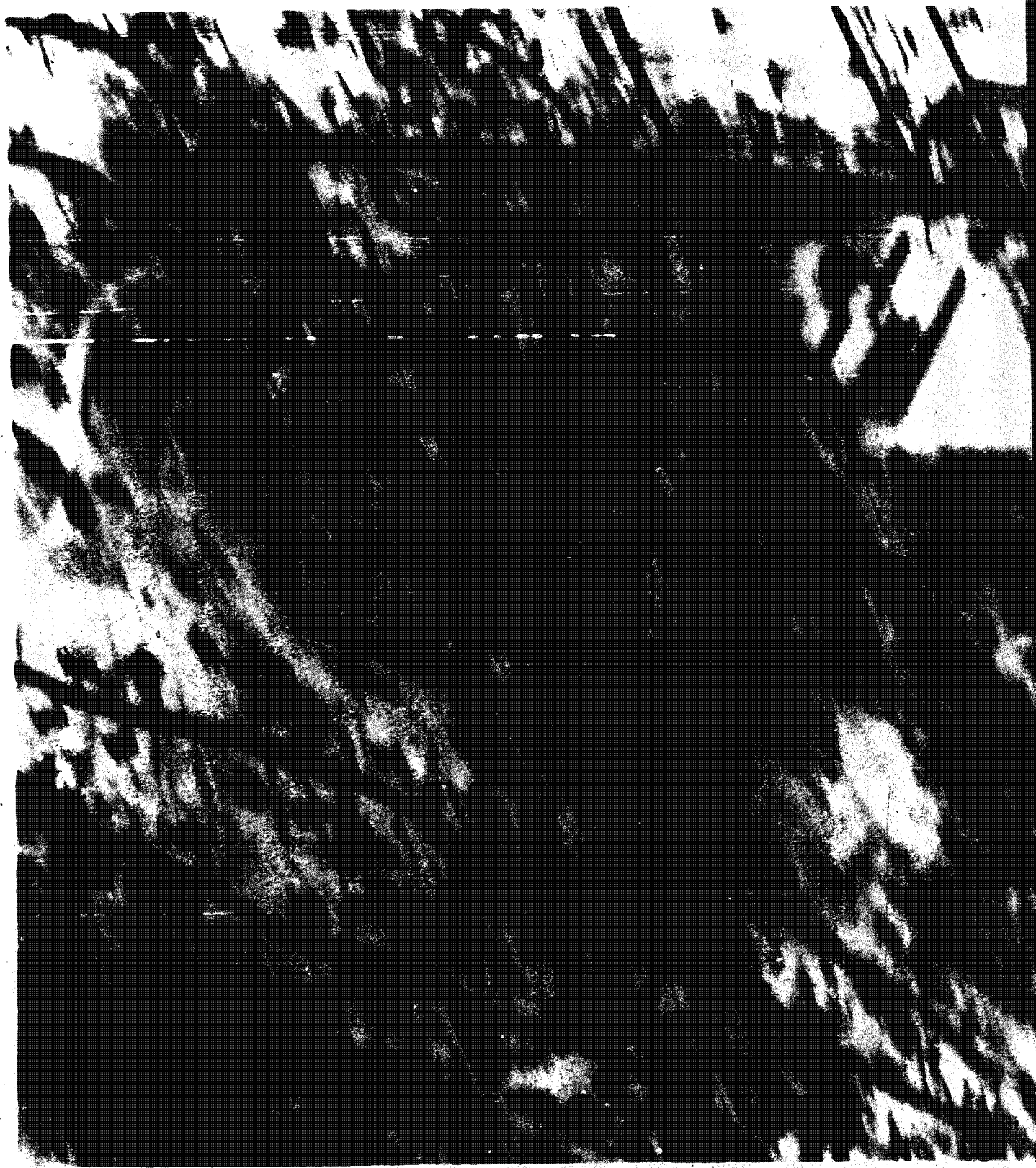
15° Obliquity, Smear 85 ft.

Rev D16, Frame 005

Yaw 41°, Mirror 15° Fwd.

~~2~~2° Obliquity, Smear 86 ft.

BYE 24553-64



TF
GAMBIT
B-25

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

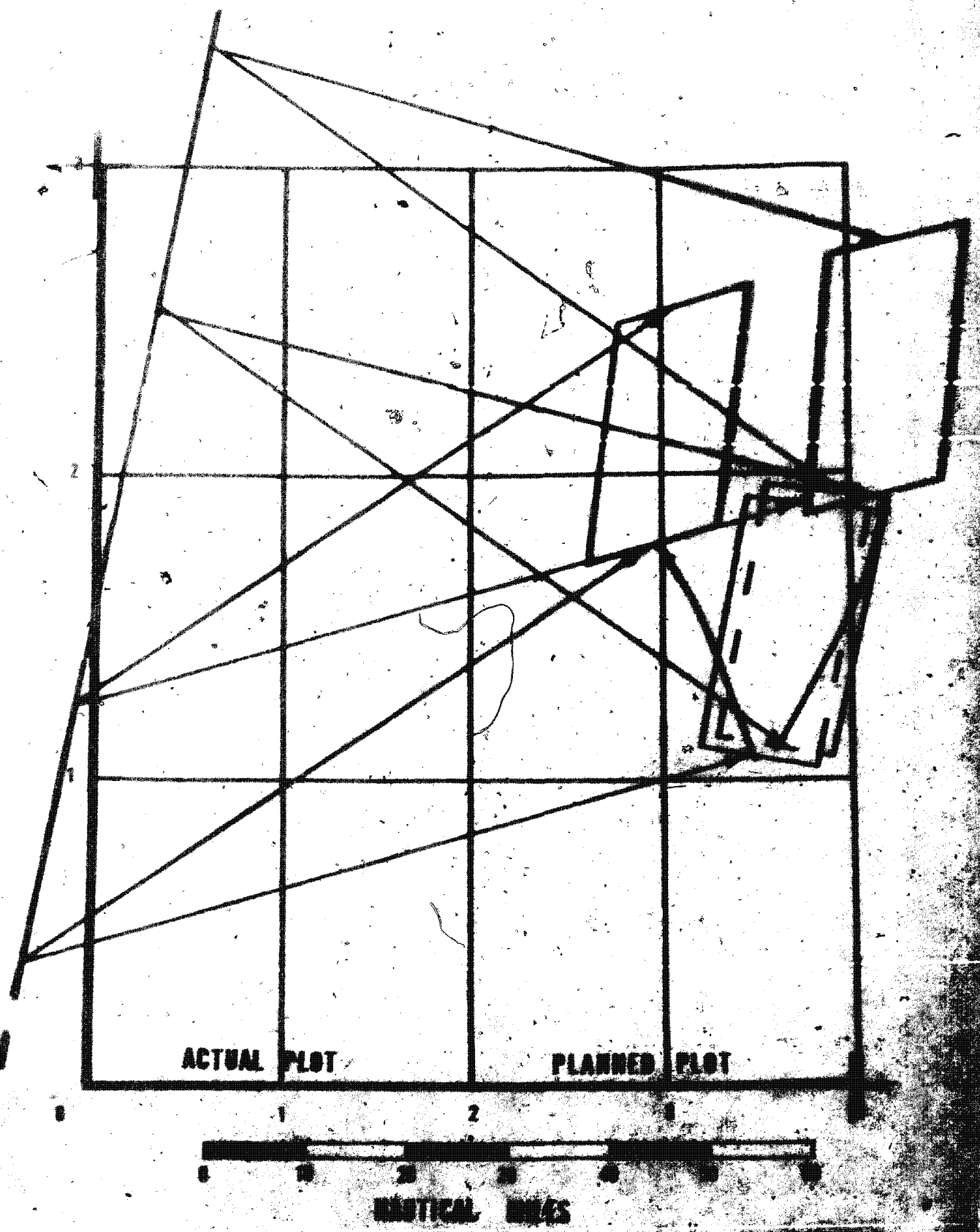
APPENDIX C

ILLUSTRATIONS

PERFORMANCE EVALUATION TEAM
REPORT NO. 4005/64

ILLUSTRATION 1

A typical example of the effects of the vehicle's yawed condition on the positioning of photography. This planned stereo pair was obtained on Rev D06. The yaw angle was approximately 16 degrees left at the time of the photography



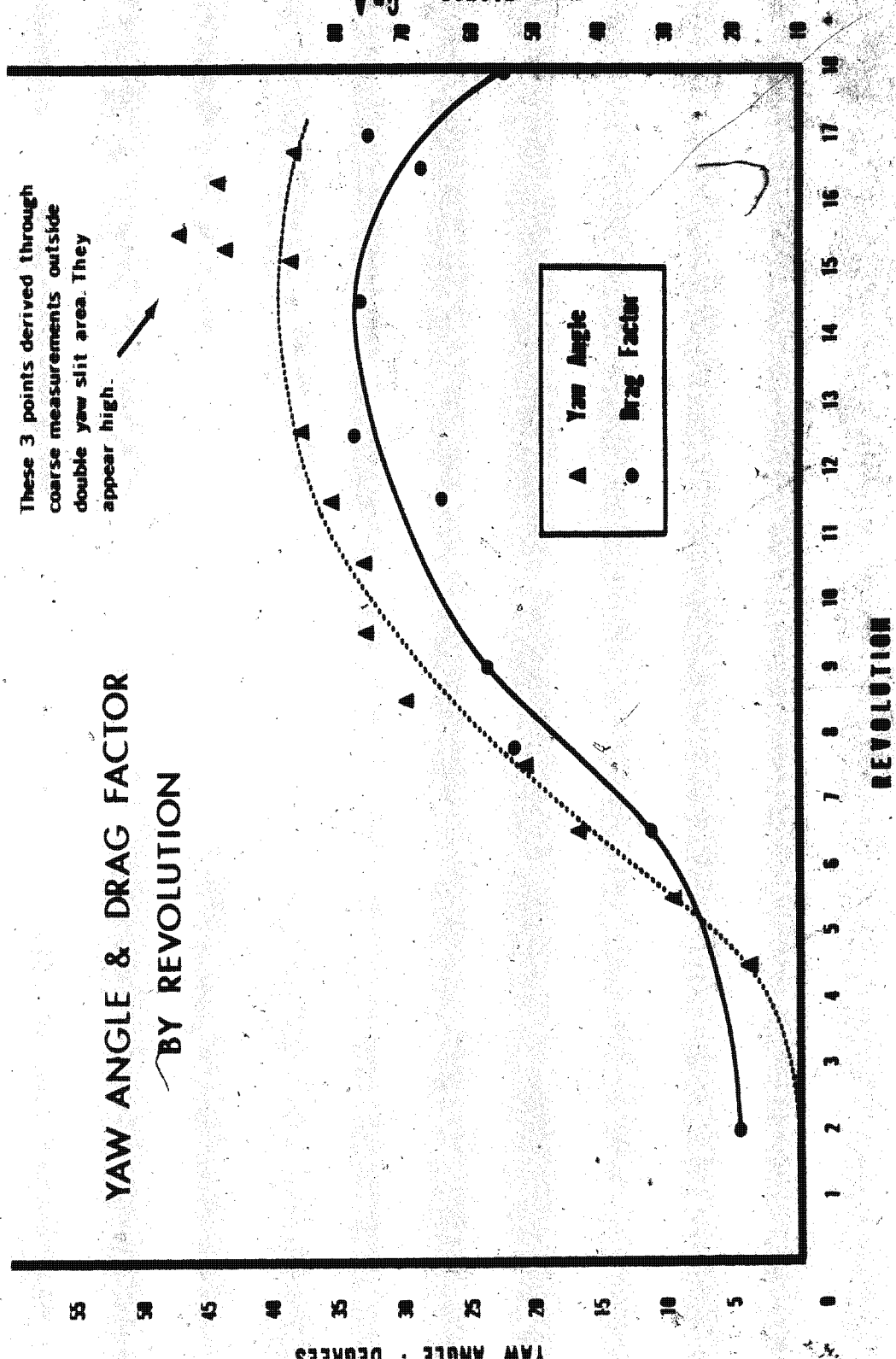


ILLUSTRATION 2

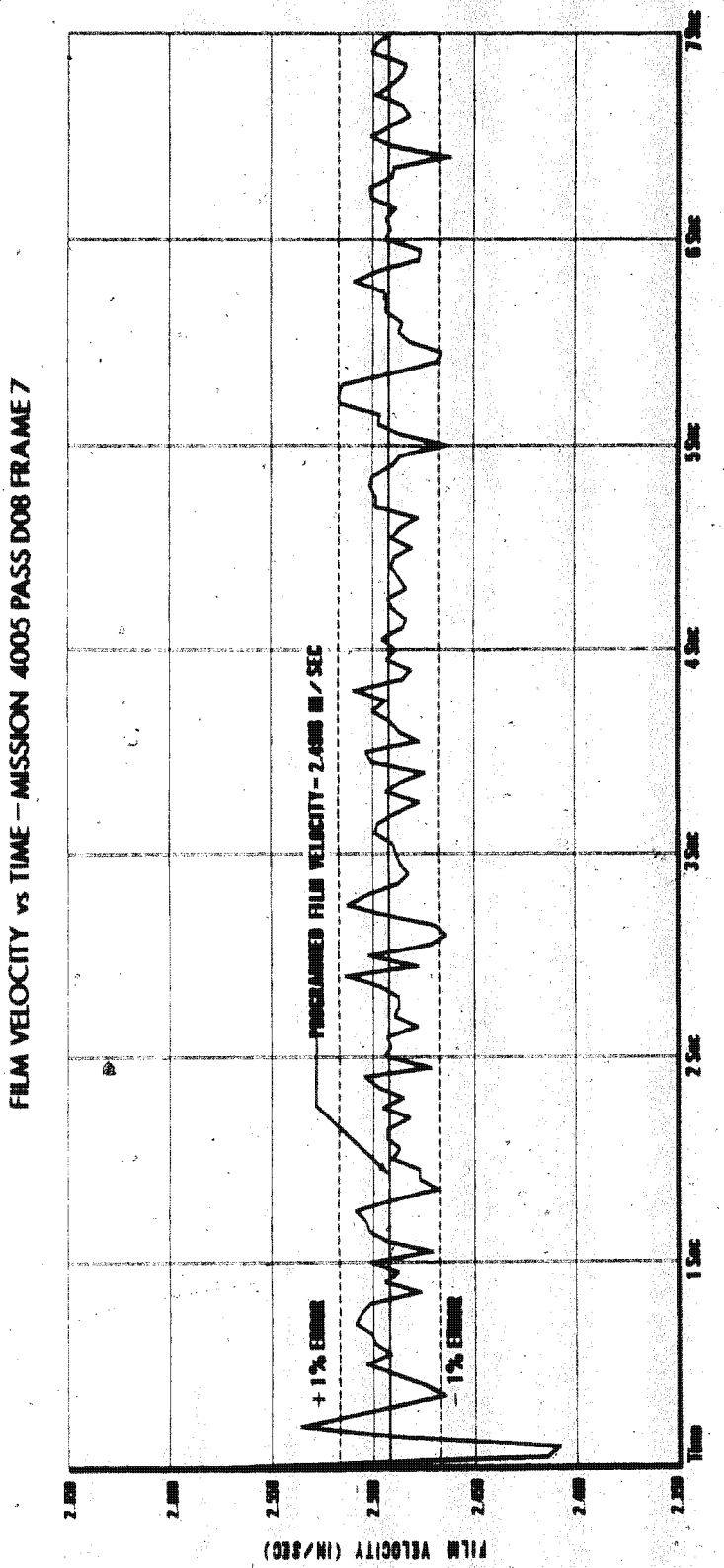
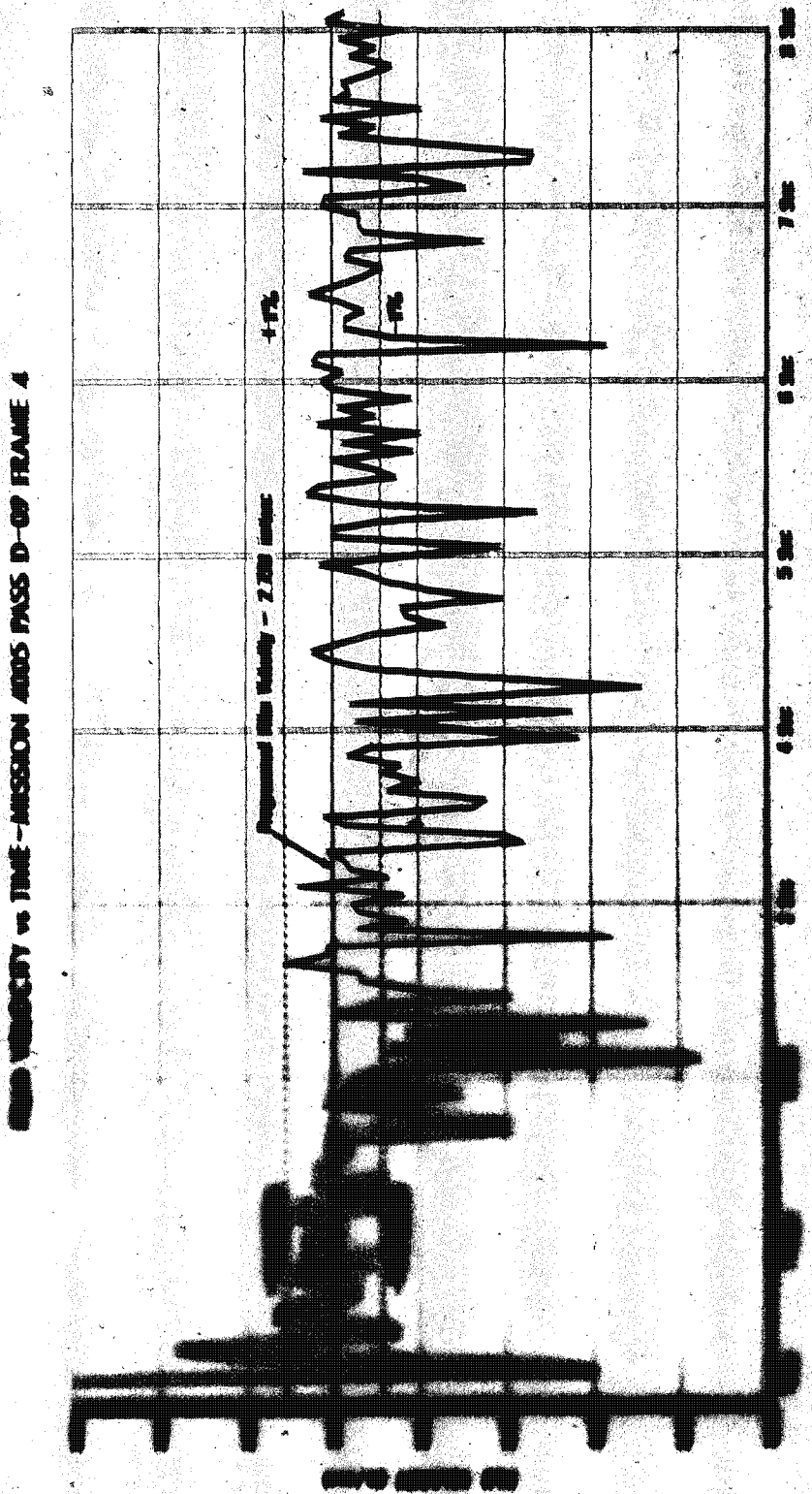


ILLUSTRATION 3



VELOCITY vs TIME - MISSION 4005 PASS D-69 FRAME 4

ILLUSTRATION 4